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THE COLLECTED WORKS OF L. S. VYGOTSKY

Volume 6
Scientific Legacy

Edited by
ROBERT W. RIEBER

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L. S. VYGOTSKY

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Volume 6
Scientific Legacy

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PROLOGUE

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1. Preamble

Scientific Legacy is the title of this collection, which was published in Russian after Vygotsky's death. This volume is divided into three sections, ranging from tools and signs in child development to emotions, ending with an analysis of the emotions of actors. Before beginning this prologue, an introduction will be offered in memory of Lev Semonovich Vygotsky as a Russian first, a man who lived only until 1934, and who died at the early age of thirty-seven. Readers are encouraged to position his thoughts within the framework of *phenomenological bracketing*, or suspending one's own perspective, in order to gain an understanding of Vygotsky through his Russian roots. Vygotsky did not separate deeper levels of psychology from European (in particular, German and Spinozian) philosophy, all of which can be labeled non-classical psychology.[1] D. B. Elkonin was of the opinion that

> . . . L. S. Vygotsky's transition from the interpretation of social environment as a 'factor' to the understanding of the 'social' as the '*source*' of personality development symbolizes the beginning of *non-classical psychology of consciousness*.[2]

In speaking metaphorically, much of *classical* psychology can be compared with Newtonian physics, where Vygotsky's thoughts would then relate to newer areas of physics, such as complexity-chaos theory.[3] Vygotsky's vision was for the next century,[4] and has been called *height psychology* (viewing the potential future of an

[1] A. Asmolov (1998, pp. 6-24).
[2] A. Asmolov (1998, p. 21).
[3] "It seems almost certain that he [Vygotsky] used—and the editors have deleted—his favorite quotation from Trotsky: 'Man is himself *stikhiia*,' *stolcheion* or elemental chaos, which is yet to be shaped into an authentic human being or superhuman . . ." (Joravsky 1989, p. 263).
[4] V. S. Sobkin and D. A. Leontiev (in: Cupchik and László (eds.), 1992, p. 192). "Vygotsky treated human psychology not as a natural science but rather as a synthetic science, integrating natural, humanitarian, and social knowledge. That is why so many of Vygotsky's enlightening hypotheses and insights have not yet been realized in concrete research on and knowledge of the human being. Vygotsky moved toward a new psychology . . . Perhaps it is the science of the human mind for the next century, which is expected to be the age of psychology. The more time has passed since Vygotsky's death, the more we see him ahead of us, lighting our path." It should be stated that within Asmolov's understanding of *non-classical* psychology, Freudian descriptions of the unconscious in psychoanalysis are viewed as an important source; however, within the parameters of *height* and *depth* psychology as described by A. A. Leontyev, the Freudian psychoanalytic treatment of the unconscious deals with personal problems for the most part.

individual), as opposed to Freudian (inter alia) *depth psychology*.[5] Vygotsky was a *meaning-seeker*, as opposed to a *rational formalist*,[6] focusing attention on the entire formation of *individual personality*.[7] He was a Marxist philosopher, and although it has been claimed that his Marxism could be compared to Althusser and Habermas,[8] Vygotsky lived in modern revolutionary times, implementing his psychology-philosophy as a guideline for ultimate societal change, especially in the development of the individual personality. And just as most contemporary interpreters of Descartes leave out his numerous references to God, many interpretations of Vygotsky have not attempted to position him within a Marxist framework. Even when this attempt is made, the *dialectic* often serves as the ultimate positioning of Vygotsky's thoughts (together with other concepts such as "cell"); however, there was another, higher level within which Vygotsky placed his overall theoretical framework, which was Spinozian *monism*. For example:

> Monism was one of the central assumptions of the truly scientific . . . Marxist methodology; mind and body constitute a single reality in the functioning human being; therefore a single science must ultimately describe and explain the unity.[9]

In other words, Vygotsky truly transcended the concept of *dualism* while accepting it as a necessary point of departure for dialectical change. Readers are now encouraged to view Vygotskian thought as an attempt at synthesis, outside of Cartesian polarity. It is with this *double vision* that the reader is asked to view this collection of works from two perspectives simultaneously: the *dialectic* within a *monistic* framework. Vygotsky used variables such as *structure, function, organization*, etc., as instruments of dialectical analysis; however, dichotomies were placed within a unified whole. In other words: *one of the highest realms of Vygotskian psychology-philosophy is not located with the polarities of Cartesian dualism, but within Spinozian philosophy, which is ultimately monistic.* Within this perspective, the concept of *determinism* needs to be redefined. For example:

> Since Spinoza was an eminent determinist, it followed from Vygotsky's presentation that a new form of determinism was generated in the philosophy of Spinoza—as a methodological base of a new psychological theory free of the birthmarks of the Cartesian method of thinking. According to Vygotsky, this theory has as its subject man as an integral and active psychophysical being, striving toward self-development, motivated only by bodily-spiritual needs. Its key category is the concept of motivation (Yaroshevsky, this volume, p. 264).

Vygotsky did not remain at the level of opposing dualities, such as conscious vs. unconscious, relativism vs. determinism, continuum vs. transitional break, etc. Higher ground is taken by Vygotsky in this volume (and in all of Vygotsky's works), which lifts his psychology-philosophy beyond many contemporary scientific theories of today.

Vygotsky's thoughts are situated within a Russian context and should not be directly compared with the Cartesian understanding of life. There is an overall continuity of Vygotsky's works from the very beginning, emerging in aesthetics, art,

[5]A. A. Leontyev (1992, p. 42). "If 'superficial psychology' (for example, behaviorism) passes appearance off as essence, and if 'depth psychology derives psychical existence from the sphere of the unconscious' and the 'unconscious itself does not develop,' that is, if depth psychology is in principle antisocial and antihistorical, then only our 'height psychology' is a truly scientific, social, and historical psychology."
[6]A. Asmolov (1998, p. 21).
[7]A. Leontiev (1996, p. 9): "Vygotsky is the creator of this 'new look' in psychology based on the priority of personality and on the idea of a constant dialogue between man and the world, man and culture, man and another people, man and himself."
[8]J. Bruner (1987, p. 2).
[9]D. Joravsky (1989, p. 264).

theater, literature, semiotics, poetry, etc. Vygotsky's untimely death prevented him from completing one of the most important articles explaining his detailed understanding of Spinoza. At the same time, Vygotsky was not totally uncritical of Spinozian philosophy related to his own psychology-philosophy. The last chapter of this volume is a fitting close to all of the *Collected Works of L. S. Vygotsky*, with a return to Vygotsky's love of aesthetics and the theater. This volume is a tribute to the continuity of Vygotsky's thoughts and life, and to the organic and systematic valuing he not only wrote about, but also lived.

2. Tool and Sign in the Development of the Child

Vygotsky discussed Bühler's attempt to compare human and anthropoid behavior, concluding that this is not possible (except at the genetic level) because of the inclusion of speech and practical thinking. The discussion turns from the development of work, connecting tools, speech, and practical intellect to that of signs, child development, and symbolic activity. Vygotsky stated clearly that "the symbolic activity of the child is not invented by him and is not memorized" (p. 9). The question remains as to the sign: is it first mediated within the lower mental functions, or the higher mental functions? Vygotsky answers this question consistently:

> The sign arises as a result of a complex process of development—in the full sense of the word. At the beginning of the process, there is a transitional, mixed form that combines in itself the natural and the cultural in the behavior of the child (p. 9).

Therefore, sign and meaning are not congruent at the beginning, but develop with the transition of the function of a word, ultimately turning inward, which transforms the whole structure.

Vygotsky's conceptualization of *word* can be used in understanding the relationship between the externalized/internalized *dialectical* whole. This example also offers insight into Vygotsky's use of *explanatory* psychology. *Word* for Vygotsky implies a socialized context that never stands alone. *Word* for him is a central feature of consciousness with an invisible, but constant circular relationship between *word–thought–word*. *Word*, according to A. A. Potebnya (1835-1891), is composed of sound, inner form (which consists of image-representation), and meaning.[10] Potebnya's theories contained a core element of the *asymmetrical*, necessary for the *dialectical process*. Each *word* was viewed by Potebnya as a *theory* within a socialized context, never standing alone. Once again, the example of Potebnya (a philosopher and linguist whom Vygotsky read in depth) reflects to some degree the *doubling experience* that one finds throughout Vygotsky's writings, and regarding *word*, it is understood here from a Russian perspective.

Often within linear, symmetrical models, development is assumed to progress continually; however, Vygotsky is of the opinion that for development to proceed from the social-intermental stage to the individual-intramental stage, the functions of simpler laws must be activated first, allowing for periodic regression:

> Social forms of behavior are more complex and develop earlier in the child; becoming individual, they drop to functioning according to simpler laws (p. 11).

Another way of stating this is that transition from the *collective* to the *individual* form of behavior "initially lowers the level of the whole operation" (p. 53). Speech and symbolic signs are used for transformations from natural laws to higher mental

[10]See M. Yaroshevsky (1989, pp. 77-78); L. Matejka in R. W. Bailey et al. (1978, pp. 146-172); A. Kozulin (1990, pp. 19-20).

functions. Allowing for *asymmetry* is a key feature of Vygotsky's thoughts in many of his works, as in the following example: " . . . speech and action are related to each other and form a mobile system of functions with an unstable [hence, asymmetrical] type of interconnections" (p. 23). With speech, behavior can be controlled, in particular when the *planning function* is used to anticipate the future. In dividing the *planning function* from the *reflective function* of speech, many psychologists of Vygotsky's day viewed these aspects as being opposed to each other, while Vygotsky affirmed that there is an internal connection between these two functions. They actually connect the lower to the higher functions of speech, which helps to explain their true origin, while uniting the higher mental processes located within *origin, structure, and function* (p. 40). Once again, the paradox resurfaces, in which Vygotsky claims that one must be clear that the "history of development of each of the higher mental functions is not the direct continuation and further improvement of the corresponding elementary functions . . ." (p. 42). The higher mental functions *permeate* the lower mental processes, and *reform* all of them (p. 44). In studying the higher mental functions, Vygotsky is of the opinion that the only path is experimentation (p. 45), which demonstrates that he does not side with descriptive psychology, while at the same time placing his theories within philosophy. The path to understanding the unity of all mental functions is *development*. His concept of development is neither *intellectualist* ("discovery") nor *mechanistic* ("habits"), both of which serve only a subordinate position. In the beginning stages of child development, both natural and cultural components can be observed, and with this, *play* is considered to be the path of development of the child, along with the growth of sign activity. Development then proceeds from external to internal mediation, with Vygotsky cautioning the reader that a necessary regression usually takes place, as mentioned before:

> Development, as frequently happens, moves not in a circle in this case, but along a spiral returning on a higher plane to a point that was passed (p. 53).

In touching upon the topic of perception, Vygotsky rephrases his understanding that

> the laws that hold in psychophysiology of natural perception are not abolished with the transition to the higher forms that interest us but move as if to the background and continue to exist in a contracted and subordinate form within the new patterns (p. 28).

The older functions continue to exist as *subordinate units of the new whole.* From early stages, speech functions as an active part of perception, all of which includes movement. In the beginning of childhood, the initial focus is *direct* perception, without mediated speech, where the child perceives the *whole*. In the article "From the Notebooks of L. S. Vygotsky" (1983), there is a discussion of Asya (Vygotsky's oldest daughter) regarding perception, where Vygotsky stated that

> speech dissects perception, pushes it along the way of analysis; it does not see ears plus eyes, etc., but enumerates like this. At first there is a verbal enumeration (analytical), which was taken for the atomistic character of perception itself (from the part to the whole); now it becomes clear . . . that this is not the case, that perception goes from the whole to parts. Our problem: Why does Asya, after perceiving the whole, enumerate just the parts in speech? (p. 11).

The natural positioning of perception and movement changes when the *word*, or another sign, appears in this process, with an *indirect, mediated* character being assumed. The description of perception follows the same developmental line of other theories, from centripetal to centrifugal, with an asymmetrical dialectic being included, and much room left for development from the whole to the center, returning to the whole.

3. Emotions

In Volume 1 of this series, Lecture 4 offers introductory thoughts on emotions, with an excellent summary by Jerome Bruner (pp. 11-13), much of which applies to the section in this volume. In the chapter on emotions, there is a long, detailed discussion regarding the James–Lange theory, and the general problem of deriving an understanding of emotions from physiological reactions. Although the James–Lange theory freed emotions from their phylogenetic roots (see Vol. 1, p. 11), the problem of emotions was still tied to primitiveness. W. B. Cannon (a physiologist and student of James), "rejected the concept that there is any simple connection between an emotion and its physical expression" (Vol. 1, p. 12). The fact that this chapter was not completed by Vygotsky, with the needed explanation regarding Spinozian theory, is disappointing in many respects (see p. 261 for an explanation). This chapter begins with a long and detailed discussion describing various animal operations in which Sherrington severed nerves, sometimes the spinal cord, internal organs, and at times, other groups of skeletal muscles in gruesome experiments, yet the dogs still experienced emotions after being operated on. Vygotsky was quick to point out that the *functional* consequences of emotions as a result of these experiments were not real emotions themselves; meaning that the animals only experienced *impotent emotions* in reality, not being able to respond appropriately with action, such as fleeing as a result of fear. Another example of the lack of correspondence of physical reactions being equivalent to emotions was given regarding patients with facial paralysis who could experience an internal sense of laughter.

The problem in general is that the theory of emotions has traditionally been positioned within an *anti-historical* (p. 155) understanding, without the inclusion of theories of *development* (p. 158). Vygotsky strongly felt a need to overcome Cartesian principles, with a link being made between the philosophical tenets of Spinoza, even though Vygotsky clearly believed that Spinoza did not have all of the answers to solving future psychological problems of emotions. Cartesian principles could not solve the problems of emotions/passions within a dualistic understanding, according to Vygotsky, who stated: "But passions, this basic phenomenon of the human soul, are the primary manifestations of the dual human nature combining the spirit and the body in one being" (p. 162). Instead of opposing one side with the other, Vygotsky stated that the duality between the lower/higher nature, body/soul, passion/will are natural occurrences; however, it was felt that although passions are situated within duality, they may be overcome.[11] Vygotsky's overall framework remains consistent, offering the final blow to the theory of Descartes. Vygotsky simply took Cartesian thought to its logical conclusion, which runs counter to human intuition:

> The soul is localized and, thus, it is materialized and mechanized. Moving and activated by the body, the soul must itself be bodily; it is made of material substance regardless of all protestations that it is a thinking substance completely different from the body (p. 189).
> . . . if the soul is involved in the mechanical circuit of passions and acts as a mechanical force, it must be subject to the basic laws of mechanics (p. 170).

At the same time what actually arises is a parallelism of *spiritual* and *bodily* facets of human passions. The soul is then viewed as functioning outside of life (p. 197).

[11] "He [Spinoza] believed that human freedom was not, as was commonly held, indeterminacy of choice, but was self-determination, entirely by one's own nature, free from external compulsion. This, for him, was action proper, while determination by extraneous causes was passion, the subjection to which he called bondage" (Harris, 1992, p. 6).

Put together, Cartesian dualism leads to body/spirit, animals/humans, consciousness/life (p. 198). V. F. Asmus, with whom Vygotsky agreed, stated that the Cartesian doctrine is consistent with the church teaching of the day, namely *that the world from the beginning was created in all its perfection* (p. 199) for humans. Therefore, Cartesian philosophy is not only mathematical and mechanical, it is simultaneously metaphysical. Since Descartes' understanding of emotions can be traced back to embryonic development, originating close to the digestive tract, there is the conclusion that complex passions result from the embryonic states, with passions being innate (p. 202). If one accepts this position, then there is no real capability for *development*, with the *appearance* of emotions being able to change, but not the emotions themselves (p. 205).

In general, the James–Lange theory incorporated Spinoza's thinking while actually being linked to the thoughts of Descartes. The next position was represented by Dilthey, who returned to Spinoza's thoughts of *definition, precise nomenclature,* and *classification,* in order to focus on descriptive philosophy-psychology. Vygotsky voiced his surprise at the fact that the backward, *dead* issues of Spinoza were taken up by Dilthey, as opposed to other Spinozian future-oriented explanations that were *naturalistic, deterministic, materialistic,* and *causal* (p. 219). The problem here is that Lange's explanatory theories and Dilthey's descriptive theories both claim that their ideas lie within a Spinozian framework, while being opposed to each other. In the end, Vygotsky concludes that " . . . something of Spinozist teaching is contained in each of these theories that fight each other" (p. 222); however, Vygotsky goes beyond description and explanation, with what he calls *reconstruction, reestablishment, recreation of the whole concreteness of what is experienced* (p. 225). An overall summary of emotions is given on p. 227, paragraph 3, which would be an excellent starting point for understanding the entire chapter.

Although Vygotsky saw the need for both descriptive and explanatory psychology, he was most disturbed by the inherent *determinism* (here Cartesian, not Spinozian) within introspective psychology. By using Spinozian philosophy, Vygotsky was consistent when he avoided the attempt at splitting the mind–spirit–soul into bodily *elements,* since it is the preservation of the whole that is important. For Spinoza, the drive toward homeostasis did not represent equilibrium only but *self-development* (p. 263), being future-oriented. If more time would have been allowed Vygotsky, he would have written in more detail on Spinoza, including a critical analysis as well (e.g., perhaps regarding the lack of inclusion of *historicism* within Spinozian naturalism, see p. 264).

In conclusion, Vygotsky defended explanatory psychology; however, when separating *explanation* from emotions, experience needs to be viewed within historical development. Vygotsky's causal explanation of emotions is labeled *sociodeterminism* (p. 265) by Yaroshevsky.

4. On the Problem of the Psychology of the Actor's Creative Work

The last section is a fitting close to the *Collected Works of L. S. Vygotsky*. There is a discussion of different theories, for example, those of Stanislavsky[12] (whose

[12]K. S. Stanislavsky lived from 1863 to 1938. "His [Stanislavsky's] concept of acting, which he called the theory of emotional experience, was essentially opposed to the two dominating systems of theatrical performance of the time: the craft theory and the performance theory. Neither system needed active human communication and therefore did not study it. The adherents of the craft theory reduced every role to mere reproduction of certain clichés established in theatrical practice by generations of actors and completely ruled out the very idea of meaningful communication between actors on stage. Nor did the performance theory (D. Diderot, V. Meyerhold, and others) make a connection between partner communication and acting standards . . ." (Berkhin, 1988, p. 7).

acting method was used in Hollywood during the 1940s-1950s); T. Ribot (who within the psychology of emotions replaced *dualism* with a *monistic* hypothesis of parallelism and interaction (p. 228)); and Diderot (who did not believe that the real passions of the actor were necessary for good acting). Two opposing positions regarding acting are presented: Stanislavsky's *internal justification,* or finding the *truth of the feelings on stage,* and Diderot's (in which the actor brings the audience to emotional heights, being devoid of personal emotion). Vygotsky quotes L. Ya. Gurevich in stating that "... the solution of the problem ... lies not in the middle between two extremes, but on a different plane that makes it possible to see the subject from a new point of view" (p. 243). This position represents the core of overall Vygotskian thought on various levels. It is argued that in order to understand Vygotsky's psychology, one must be versed in Vygotskian aesthetics.

By closing this volume with a return to the theater, including aesthetics, there is final closure to Vygotsky's thoughts and life, which recaptures the spirit of his first book *The Psychology of Art* (1925). It seems appropriate to end in a way Vygotsky loved best: Dobkin (in: Levitin, 1982, p. 31) remembers that "he [Vygotsky] even grew more fond of Tyutchev's poetry in those years. And with Tyutchev too he was able to find 'his own' lines, which were not purely lyrical but had a philosophical message. He would often recite:

We still believe in miracles
For all the lessons and the Truths
That life has taught us;
We know there's beauty that won't pall
And strength that cannot be exhausted;
That flowers of a loveliness unearthly
To earthly withering will not succumb.
And dewdrops, fallen on them in the morning,
Will not be dried up by the midday sun.
It is a faith that won't deceive you
If you live by it alone from first to last;
Not everything that flowered once must wilt,
Not everything that was must pass.

REFERENCES

Asmolov, A. (1998). *Vygotsky today: Up the stairs of On the verge of non-classical psychology.* (Preprint). Moscow: n.p.

Asmolov, A. (1990). Vygotsky today: on the verge of non-classical psychology. (A Volume in Horizons in Psychology). James Wertsch (ed.). Commack, New York: Nova Science Publishers.

Bailey, R. W., Matejka, L., and Steiner, P. (eds.). (1978). *The sign: Semiotics around the world.* Ann Arbor: Michigan Slavic Publications.

Bakhurst, D. (1986). Thought, speech and the genesis of meaning: On the 50th anniversary of Vygotsky's *Myšlenie I Rec.* In: *Studies in Soviet Thought,* 31, 103-129.

Bakhurst, D. (1991). *Consciousness and revolution in Soviet philosophy.* Cambridge, England: Cambridge University Press.

Berkhin, N. B. (1988). The problem of communication in K. S. Stanislavsky's works. In: *Soviet Psychology.* XXVI/3.

Bruner, J. (1987). Prologue to the English edition. *The Collected Works of L. S. Vygotsky,* Vol. 1. R. W. Rieber and A. S. Carton (eds.) New York: Plenum Press.

Cupchik, G. C., and László, J. (eds.) (1992). *Emerging visions of the aesthetic process: Psychology, semiology, and philosophy.* Cambridge, England: Cambridge University Press.

Harris, E. E. (1992). *Spinoza's philosophy: An outline.* New Jersey: Humanities Press.

Joravsky, D. (1989). *Russian psychology: A critical history.* England: Basil Blackwell.

Kline, G. L. (1952). *Spinoza in Soviet philosophy.* London, England: Routledge and Kegan Paul, Ltd.

Kozulin, A. (1990). *Vygotsky's psychology: A biography of ideas.* New York: Harvester-Wheatsheaf.
Leontiev, A. A. (1996). Vygotsky's theory yesterday, today and tomorrow. Paper presented at AILA (International Applied Linguistic Conference) in Jyväskylä, Finland.
Leontyev, A. A. (1992). Ecce Homo: Methodological problems of the activity-theoretical approach. In: *Multidisciplinary Newsletter for Activity Theory.* Nr. 11(12), 41-45.
Levitin, K. (1982). *One is not born a personality: Profiles of Soviet education psychologists.* V. V. Dayvdov (ed.). Moscow, Russia: Progress Publishers.
Llyenkov, E. V. (1977). *Dialectical logic.* Moscow, Russia: Progress Publishers.
Matejka, L. (1978). *The roots of Russian semiotics of art.* In: R.W. Bailey et al. (pp. 146-172). *The sign: semiotics around the world.* Ann Arbor, Michigan: Michigan Slavic Publications.
Sobkin, V. S., and Leontiev, D. A. (1992). The beginning of a new psychology: Vygotsky's psychology of art. In: G. C. Cupchik and J. László (eds.). *Emerging visions of the aesthetic process: psychology, semiology, and philosophy.* Cambridge, England: Cambridge University Press.
Vygotsky, L. S. (1983). From the notebooks of L. S. Vygotsky. In: *Soviet Psychology.* Vol. XXI(3), 3-17.
Vygotsky, L. S. (1994). *Language and thought.* A. Kozulin (ed.). Cambridge, Massachusetts: The M.I.T. Press.
Vygotsky, L. S. (1997). *Educational psychology.* Boca Raton, Florida: St Lucie Press.
Yaroshevsky, M. (1989). *Lev Vygotsky.* Moscow, Russia: Progress Publishers.

CONTENTS

Tool and Sign in the Development of the Child

Chapter 1: The Problem of Practical Intellect in the Psychology of Animals and the Psychology of the Child 3

Experiments on the Practical Intellect of the Child 4
The Function of Speech in the Use of Tools. The Problem of Practical and Verbal Intellect 12
Speech and Practical Action in the Behavior of the Child 14
Development of Higher Forms of Practical Activity in the Child 17
The Path of Development in Light of Facts 20
The Function of Socialized and Egocentric Speech 22
Change in the Function of Speech in Practical Activity 23

Chapter 2: The Function of Signs in the Development of Higher Mental Processes 27

Development of Higher Forms of Perception 27
Division of the Primary Unity of the Sensory-Motor Function 30
Reconstruction of Memory and Attention 34
The Voluntary Structure of Higher Mental Functions 35

Chapter 3: Sign Operations and Organization of Mental Processes 39

The Problem of the Sign in the Formation of Higher Mental Functions . . 39
Social Genesis of Higher Mental Functions 41
Basic Rules of Development of Higher Mental Functions 41

Chapter 4: Analysis of Sign Operations of the Child 45

The Structure of Sign Operations 45
Genetic Analysis of the Sign Operation 49
Further Development of Sign Operations 52

Chapter 5: Methods of Studying Higher Mental Functions 57

Conclusion 61

The Problem of Functional Systems 61
The Use of Tools by Animal and Man 63
Word and Act 65

The Teaching about Emotions. Historical-Psychological Studies

Sections 1–20 71–235

On the Problem of the Psychology of the Actor's Creative Work 237

Epilogue 245

Notes to the Russian Edition 267

References 279

Works of L. S. Vygotsky 283

Works about L. S. Vygotsky 305

Author Index 327

Subject Index 331

TOOL AND SIGN IN THE DEVELOPMENT OF THE CHILD

Chapter 1
THE PROBLEM OF PRACTICAL INTELLECT IN THE PSYCHOLOGY OF ANIMALS AND THE PSYCHOLOGY OF THE CHILD[1]

At the very beginning of the development of child psychology, as a separate branch of psychological study, K. Stumpf[2] attempted to define the character of the new scientific area, comparing it to botany. He said that C. Linnaeus,[3] as is known, called botany a pleasant science. This is scarcely applicable to modern botany. . . . If any science deserves to be called pleasant, then it is specifically child psychology, the science of what is most dear, loved, and pleasant in the world, what we care for especially and what we are, for this reason, obliged to study and understand.[4]

Behind this beautiful comparison is hidden something much greater than a simple transfer to child psychology of an epithet applied by Linnaeus to botany. Behind it is hidden the whole philosophy of child psychology, a unique conception of child development that emerged silently in all studies from the premise advanced by Stumpf. The botanical, plant-like character of child development was brought to the forefront in this conception and the mental development of the child was understood basically as a phenomenon of growth. In this sense, even contemporary child psychology has not been liberated definitively from a botanical tendency that hangs over it and interferes with its recognizing the uniqueness of the mental development of the child in comparison with the growth of a plant. For this reason, A. Gesell[5] is completely right when he indicates that our ordinary conception of child development thus far is still full of botanical comparisons. We speak of the *growth* of the child's personality and we call the system of education in early childhood a *garden*.

Only in the process of long-term studies that encompass decades has psychology been able to overcome the initial conceptions that the processes of mental development are constructed and occur along the botanical model. In our time, psychology has started to master the idea that the processes of growth do not exhaust the whole complexity of child development and that frequently, especially when we speak of forms of behavior that are most complex and specific to man, growth (in the direct sense of the word) enters into the complement of the processes of development, not as a determining, but as a subordinate, constant. The processes of growth themselves also exhibit complex qualitative conversions of one set of forms into another, and, as Hegel might say, with respect to such transitions of quantity into quality and vice versa, the concept of growth seems quite inapplicable.

But if contemporary psychology has parted, as a whole, from a botanical prototype of child psychology, it seems to have ascended the ladder of the sciences and is now full of ideas that child development essentially represents only a more

complex and developed variant of the appearance of those forms of behavior that we observe even in the animal world. The botanical enslavement of child psychology was replaced by its zoological enslavement, and many of the strongest trends of our contemporary science are seeking a direct answer to the question of the psychology of child development in experiments with animals. These experiments, with insignificant modifications, are being transferred from the zoopsychological laboratory to the children's room, and it is not without reason that one of the most authoritative investigators in this area has been forced to admit that the most important methodological successes in the study of the child are due to the zoopsychological experiment.

The convergence of child psychology with zoopsychology contributed a great deal to the biological basis of psychological studies. It actually led to the establishment of many important points that bring together the behavior of the child and the animal in the area of lower and elementary mental processes. But, recently, we have come to an exceptionally paradoxical stage of the development of child psychology when a chapter is being written on the development of higher intellectual processes typical specifically to man and consisting of a direct continuation of the corresponding chapter in zoopsychology. Nowhere is this paradoxical attempt to resolve the specifically human in child psychology and its establishment, in the light of analogous forms of behavior of higher animals, so clearly evident as in the teaching on the practical intellect of the child, the most important function of which (of the intellect) is the use of tools.

Experiments on the Practical Intellect of the Child

A new and fruitful series of studies was started by W. Köhler[6] in his widely recognized work with human-like apes. As we know, Köhler from time to time compared the reactions of a child with the reactions of a chimpanzee in experiments in similar situations. This was fateful for all later studies. A direct comparison of a child's practical intellect with similar actions of apes became the guiding thread of all further experiments in this area.

Thus, at first glance, we can see that all the studies generated by Köhler's work can be regarded as a direct continuation of the ideas developed in his work, which is already a classic. But this seems to be so only at first glance. If we look carefully, it is easy to see that while there is an external and apparent similarity, new studies essentially present a trend that seems to be opposite to that which Köhler followed.

One of Köhler's basic ideas, as Lipmann[7] correctly points out, was the idea of innateness of behavior of anthropoids and man in the area of practical intellect. Over the course of all his work, Köhler was occupied essentially with an effort to show the behavior of the anthropoid to be similar to human behavior. Here, as a silent prerequisite, he is served by the assumption that corresponding behavior of man is known to everyone from direct experience. However, new studies in which an attempt was made to transfer to the child the patterns of practical intellect of the ape discovered by Köhler followed an opposite trend that is beautifully specified in the interpretation of experiments of K. Bühler[8] presented by the author himself. The investigator speaks of his observations of the earliest manifestations of practical intellect of the child. These were actions, in his words, completely similar to the actions of the chimpanzee. For this reason, the indicated phase of the child's life can appropriately be called the chimpanzee-like age. In the child observed, this period encompassed the tenth, eleventh, and twelfth months. At the chimpanzee-

like age, the child makes his first inventions, extremely primitive of course, but from the mental aspect, extremely important, according to K. Bühler.

Naturally, as applied to the child, Köhler's methodology must be changed in many respects. But the principle of the study and its basic psychological content remain the same. Bühler used a game of catch with the child to study the child's ability to use alternate ways to achieve a goal and to use primitive tools. Some of the experiments transferred Köhler's experiments directly to the child. These were experiments that could be solved by taking a ring off a rod on which the ring had been placed or experiments with a string tied to a piece of dry bread.

Bühler's experiments led him to a quite important discovery, specifically: the first manifestations of practical intellect by the child, like the action of the chimpanzee, are completely independent of speech. (In subsequent studies by C. Bühler,[9] manifestations of practical intellect on the part of the child were also established, but these studies placed the first rudiments at a still earlier age—the sixth or seventh month of the child's life.) K. Bühler firmly establishes the fact, important from the genetic aspect, that instrumental thinking exists prior to speech, that is, grasping mechanical connections and devising mechanical means for reaching mechanical final goals.

Actually, the child's practical thinking thus precedes the first rudiments of his speech, being, obviously, the most primary phase in the development of the intellect from the genetic aspect. If Köhler tries to disclose the human-like aspects in the actions of higher apes, then Bühler tries to demonstrate similarity to the chimpanzee in the actions of the child.

This tendency remains unchanged with all subsequent investigators with few exceptions. Expressed most clearly in it is the cited danger of zoologizing child psychology, which, as has been said, is the dominant trait of all the studies in this area. In Bühler's studies, however, this danger is presented in the least serious form. Bühler deals with the child before the development of speech, and in this respect, the basic conditions necessary for confirming the psychological parallels between the chimpanzee and the child can be observed. True, Bühler himself underestimates the significance of the similarity between the basic conditions, saying that the actions of the chimpanzee are completely independent of speech and that in the later life of man, technical, instrumental thinking is connected to a much lesser degree with speech and concepts than other forms of thinking.

Thus, Bühler proceeds from the assumption that characteristic for the ten-month-old child is a relation between practical thinking and speech—independence of intelligent action from verbal thinking—that is also preserved in the later life of the person, and that development of speech, consequently, essentially changes nothing in the structure of the child's operation based on practical intelligence. As we shall see subsequently, this assumption of Bühler's is not factually confirmed during experimental study directed toward elucidating the connection between verbal thinking in concepts and practical, instrumental thinking. Our experiments show that the independence of practical action from speech typical for the ape has no place in the development of the practical intellect of the child, which basically follows exactly the opposite path, a path in which speech and practical thinking are closely intertwined.

As we have already said, Bühler's incorrect assumption, however, is shared by most of the investigators whose experiments are done with an older child who can already speak. We cannot present any very complete and detailed review of the main studies of this problem. We shall only consider the basic conclusions that may have a real significance for our principal theme, the connection of practical action with the symbolic forms of thinking in the development of the child.

Elegant, systematically conducted investigations of O. Lipmann and H. Bogen[10] brought these authors, as is known, to a conclusion that is not very different from Bühler's position. They used a more complex method of study that made it possible to catch the practical intellect of the school-age child within the net of the experiment and, on the whole, the experimentally confirmed dogma on the chimpanzee-like practical actions of the child remains, that is, the dogma of the general similarity of the mental nature of animal and human operation of using tools, and of the principal unity of the path along which the development of practical intellect in the ape and in the child proceeds, moving forward in both cases through a growing complexity of internal factors that determine the operations we are interested in, but not through a radical and basic change in its structure.

Bühler correctly noted that mentally, the child is less stable, less formed biologically, less capable than a four-year-old or seven-year-old almost-adult chimpanzee. Subsequent studies proceed along the same path, developing newer and newer, but not essential, differences between the operations of the child and the operations of the chimpanzee. Lipmann and Bogen see the main difference in the domination of physical structures in the behavior of the child, but not an optical structure that is dominant in the behavior of the ape. If the behavior of the ape in an experimental situation that requires the use of tools is determined, as Köhler demonstrated, mainly by the structure of the visual field, then in the child, a "naive physics," that is, his naive experience pertaining to the physical properties of the objects around him and his own body, takes the forefront as a determining factor.

H. Bogen briefly summarizes the results of a comparison between the actions of children and anthropoids as follows. As long as the physical action is dependent predominantly on optical structural components of the situation, the difference between the child and the ape is only a matter of degree. If the situation requires a reasoned inclusion of physical structural properties of things, then we must admit that the actions of the ape differ from the actions of the child. As long as there are no new interpretations of the behavior of the ape, like Köhler, we can explain the difference by the fact that the actions of the ape are determined predominantly by physical relations.

Thus, we see that the whole difference between the development of the practical intellect of the child and that of the ape can be reduced to replacing optical structures with physical structures, that is, development of practical intellect is determined essentially by purely biological factors rooted in the biological difference between man and the chimpanzee. It is true that the author admits a change in this hypothesis in connection with new studies of the actions of apes, evidently not expecting that specifically the actions of the child, when considered more closely, would be an occasion for reviewing the conclusion reached.

For this reason, it is not surprising that after finishing the experiments, Lipmann and Bogen had to admit that even in Köhler's descriptions referring to the chimpanzee, there is much that is very applicable to the behavior of the child. To a certain degree, the descriptions contradict Köhler, who says that in describing the practical action of man, we are speaking of a *terra incognita*, about an area that has not been studied at all. For this reason, we must not anticipate in advance that a comparison of the actions of the child and the actions of the ape will yield anything substantially new. The authors see the whole significance of their studies in the fact that it allows them to show with greater clarity the similarity and difference already noted by Köhler. Not surprising, therefore, is the authors' conclusive admission that on the basis of the experiments on children, they could not obtain a substantially different picture of training of intelligent action than that which was drawn so elegantly and convincingly by Köhler on the basis of his experiments with

apes. For this reason, as their experiments show, they had to conclude that with training, no qualitative difference can be established between the behavior of the child and the behavior of the anthropoid.

Further studies in this area differ little in main respects from corresponding experiments of Bühler and Bogen. Similar experiments done with mentally retarded children and children of low intelligence are closer to the methodology of Köhler. In precisely the same way, applying these experiments to psychotechnical screening and to deaf-mute children, using the experiments as mute tests, and finally, systematically using them for a comparative study of children of different ages—none of these studies revealed anything essentially new from the aspect that interests us.

As an example, we shall give one of the last studies published in 1930. We are speaking of the work of Brainard, who repeated Köhler's experiments very precisely step by step. He came to the conclusion that in all of the children studied, the same general attitudes, devices, and methods of solving the problem are disclosed. He says that older children solve the problem more easily, but use the same processes. A three-year-old child exhibits approximately the same difficulties in solving the problem as does Köhler's ape. The child has an advantage in the form of speech and understanding instruction, while the apes have an advantage in the form of longer arms and more experience in dealing with large objects.

Thus, we see that the reaction of the three-year-old child is approximately comparable to the reaction of the ape, and the participation of speech in the process of solving a practical problem, which, by the way, all the authors noted, is comparable also to one of the two-step, secondary factors that give the advantage to the child in comparison with the longer arms of the ape, which are its advantage over the child. Most of the investigators do not admit at all that, together with speech, the child also acquires an essentially different relation to the whole situation in which solving the practical problem occurs and that, from the psychological aspect, his practical action itself presents a completely different, superior structure.

Summarizing the results of his experiments, Brainard says directly that the three-year-old child displays almost the same reaction with respect to similar problems as do adult apes.

The first attempt to find not only similarity, but also a substantial difference, in the practical intellect of the child and the intellect of the ape was done in the laboratory of M. Ya. Basov.[11] In an introduction to the series of their experiments, S. A. Shapiro and E. D. Gerke note that social experience plays a dominant role in man. Drawing a parallel between the chimpanzee and the child, the authors propose to carry out this comparison mainly from the point of view of that factor. The authors see the influence of social experience in the fact that the child, in imitating and using tools or objects according to a given example, not only develops ready, stereotypically reproduced patterns of action, but in the last analysis, develops mastery of the principle of the given activity. The authors say that repeated actions are sequentially superimposed one atop the other like a multiple exposure in a photograph with isolation of general traits and suppression of those that do not conform. In the process, the pattern is crystallized, and the principle of the action is mastered. As the child's experience increases, the number of models of concepts that he uses increases. The authors assume that the models are a kind of refined pattern of all past actions of the same type and a theoretical plan of possible forms of future behavior.

We will not speak in detail of the fact that the appearance of such patterns, which resemble F. Galton's[12] group photograph, resurrects, in the theory on the practical intellect, the theory of concept formation or innate representations corresponding to verbal meaning long established in psychology. We will also put aside

the question of the extent to which a factor different from intellect, understood as a function of adaptation to new circumstances, is involved as well as the involvement in the solution of the problem of any patterns that are formed purely mechanically as a result of repetition. We will only point to the fact that the very significance of social experience in this case is understood exclusively from the point of view of the presence of adequate models that the child finds in his environment. Thus, while it does not change anything substantial in the internal structure of the intellectual operations of the child, social experience simply fills these operations with a different content, creating a series of ready clichés, a series of stereotypic motor formulas, a series of motor patterns that the child uses in solving the problem.

True, in the process of factual description of their experiments, Shapiro and Gerke, like almost all investigators, are forced to indicate the unique role that speech plays in the practical-action adaptation of the child. This role, however, is indeed unique since speech, in the words of the author, replaces and compensates for authentic adaptation but it does not serve as a bridge for transition to past experience and the purely social form of adaptation that occurs through the mediation of the experimenter.

Thus, speech does not create an essentially new structure of practical activity for the child, and the former dominance of ready patterns in his behavior and the use of ready clichés from the archive of old experience remain in effect. What is new is that speech is a surrogate that replaces unsuccessful action with the word or with the actions of others.

Here we could conclude the review of the most important experimental studies of the problem that interests us. But before forming a general conclusion, we would like to point to still another recently published work that allows us to visually identify the general inadequacy of all the works mentioned and to mark the point of departure for an independent solution to the problem in which we are involved. We have in view the work of Guillaume and Meyerson (1930) to which we will return later. These authors studied the use of tools by apes. Children were not involved in their experiments. However, comparing the general results of the experiments with corresponding actions of man, the authors reach the conclusion that the behavior of apes is similar to the behavior of a person suffering from aphasia, that is, the behavior of a person whose speech is switched off.

This indication seems to us to have much significance and to touch on the most central point of the problem we are considering. We are returning, in essence, to what we spoke of at the beginning of our review. If, as Bühler's experiments establish, the practical actions of the child before the development of speech are completely similar to the actions of apes, then, according to the new studies of Guillaume and Meyerson, the actions of a person who has lost speech as a result of a pathological process begin again to be, on the whole, somewhat similar to the actions of the chimpanzee. But is not all of the diversity of forms of practical human activity that lie between the two extreme points, are not all of the practical actions of the child who can speak also, on the whole, similar in structure and in psychological nature to the actions of mute animals? This is the basic question that we must answer. To solve it, we must turn to the experimental studies which we and our colleagues performed that start from main premises that are different in kind from those which are at the base of most of the studies mentioned thus far.

Most of all, we tried to disclose the specifically human in the behavior of the child and the history of the establishment of this behavior. In particular, in the problem of practical intellect, we were interested in the first place in the history of the appearance of those forms of practical activity that could be recognized as specific to man. It seemed to us that this most important element was missing in

a number of previous studies that were guided by the basic methodological premise of zoopsychological similarity. All preceding studies undoubtedly have great significance: they disclose the connection between the development of human forms of activity and their biological rudiments in the animal world. But in the behavior of the child, they do not disclose anything except what it contains of the former animal forms of his thinking. The new type of relation to the environment characteristic for man, new forms of activity which led to the development of work as a determining form of relation of man to nature, the connection between use of tools and speech—for previous studies, all of this remained out of reach because of the basic, original points of view. Our further problem is a consideration of this problem in the light of experimental studies directed toward disclosing specifically human forms of practical intellect in the child and the basic lines of their development.

The study of the use of signs by the child and development of this operation brought us, of necessity, to the study of how the symbolic activity of the child arises and what its origin is. Special studies were devoted to this problem which were developed in four series: 1) a study of how symbolic meaning arises in the child's experimentally organized play with objects; 2) analysis of the connection between sign and meaning, between the word and the object it designates for the child of preschool age; 3) a study of motivation that the child gives in explaining why a given object is called by a given word (according to the clinical method of J. Piaget[13]); 4) the same study using a selective test (N. G. Morozova[14]).

If we can generalize their results from the negative aspect, the studies indicated brought us to the conclusion that this activity arises neither through the path along which a complex habit is developed nor through the path along which the child's discovery or invention arises. The symbolic activity of the child is not invented by him and is not memorized. Intellectualistic and mechanistic theories are equally incorrect, although points in the development of habit and points of intellectual discoveries frequently are interwoven into the history of the use of signs by the child; they do not, however, determine the external course of this process, but are included in it as subordinate, auxiliary, secondary structures. The sign arises as a result of a complex process of development—in the full sense of the word. At the beginning of the process, there is a transitional, mixed form that combines in itself the natural and the cultural in the behavior of the child. We call it the stage of the child's primitiveness or the natural history of the sign. In contrast to naturalistic theories of play, our experiments compel us to reach the conclusion that play is the main channel of cultural development of the child, and specifically of the development of his symbolic activity.

Experiments show that in play and in speech, consciousness of conditionality, of the arbitrariness of uniting sign and meaning, is foreign to the child. In order to be a sign for a thing, a word must be supported by the properties of the thing signified. Not "everything can be anything" in the child's play. In play, real properties of the thing and its symbolic significance exhibit a complex structural interaction. In the same way, for the child, the word is coupled with the thing through its properties and is interwoven in their general structure. For this reason, in our experiments, the child does not agree that the floor might be called a tumbler ("you couldn't walk on it"), but he makes a chair a train, changing its properties in the game, that is, treating it as a train. The child refuses to change meanings of the words "table" and "lamp" because "you could not write on a lamp and a table would burn." For him, to change the name means to change the properties of the thing.

The fact that the child does not discover the connection between the sign and the meaning at the very beginning of the development of speech and does not

become conscious of this connection for a long time could not be more clearly expressed. Subsequent experiments show that the *function of the name* does not arise through a single discovery, but also has its own natural history. What appears at the beginning of the child's formation of speech is not the discovery that each thing has its name, but a new method of dealing with things, specifically their names.

Thus, those connections between the sign and the meaning that, according to external traits, begin very early to suggest corresponding connections due to similarity of method of functioning, are, according to their internal nature, psychological formations of an entirely different kind in the adult. To refer the mastery of the connection between sign and meaning to the very beginning of the cultural development of the child is to ignore the most complex history of the internal construction of this connection that stretches over more than a whole decade.

With the turning in, that is, the transition of the function inward, there is a most complex transformation of its whole structure. As experimental analysis shows, the following must be considered as the essential points that characterize the transformation: 1) replacement of function, 2) change in the natural functions (elementary processes that are the basis for the higher function and enter into its composition), and 3) the appearance of new psychological functional systems (or systemic functions) that assume the function in the whole structure of behavior that was fulfilled earlier by particular functions.

For the sake of brevity, we will elucidate all three internally interconnected factors with an example of the change that occurs with the revolution of higher functions of memory. Even with the simplest form of mediated remembering, the fact of replacement of function is most obvious. Not in vain did A. Binet[15] call mnemotechnical remembering of a number series a simulation of number memory. The experiment shows that it is not the power of memory or the level of its development that is the deciding factor in remembering of this type, but the combinative activity, the creation and change in the structure of perceiving relations, thinking in the broad sense of the word, and other processes that replace memory in the given operation and determine the fate of the whole activity. With the transition of the operation inward, substitution of the functions leads to verbalization of memory and remembering in concepts which is connected with this. Due to the substitution of functions, the elementary process of remembering is shifted from its place, but even now is not wholly eliminated from the new operation, but loses central significance and occupies a new position with respect to the whole new system of cooperating functions. Entering into the new system, it begins to function according to the laws of that whole, part of which it now is.

As a result of all the changes, the new function of memory (the internally mediated process) coincides only in name with the elementary processes of remembering; according to internal essence, it is a specific neoformation with its own special laws.[16]

This transfer of a social method of behavior into a system of individual forms of adaptation nevertheless is not purely mechanical and is not accomplished automatically, but is connected with the adaptation of the structure and function of the whole operation, and itself forms a whole stage in the development of higher forms of behavior. The former, complex form of cooperation begins to function according to laws of the primitive whole of which it is now an organic part.

There is a genetic, but not a logical, contradiction between the claim that higher mental functions, an inseparable part of which is the use of signs, arise in the process of cooperation and social intercourse, and the other claim that these functions develop from primitive roots on a base of lower or elementary functions, that is, a contradiction between the sociogenesis of higher functions and their natural history. The transition from a collective form of behavior to the individual form lowers the character of the whole operation in the first stages, includes it in a system of primitive functions, and places it on a level common to all of these functions. Social forms of behavior are more complex and develop earlier in the child; becoming individual, they drop to functioning according to simpler laws. Egocentric speech,[17] for example, is lower than speech but higher as a stage in the development of thinking than the social speech of a child of this age. For this reason, perhaps, Piaget considers it a precursor of socialized speech and not as its derived form.

Thus, we come to the conclusion that the operation of using a sign, which stands at the beginning of the development of each of the higher mental functions, initially has, of necessity, a character of external activity. At first, as a rule, the sign is an external auxiliary stimulus, an external means of autostimulation. This is due to two factors: first, to the origin of this operation from a group form of behavior that always belongs to the sphere of external activity, and, second, to the primitive laws of the individual sphere of behavior, which in its development has still not separated from external activity, still not been emancipated from visual perception and external action (for example, the visual or practical thinking of the child). The laws of primitive behavior state that the child masters external activity earlier and more easily than he does the course of internal processes.

For this reason, the operation, changing from intermental into intramental, does not at once become an internal process of behavior. For a long time, it continues to exist and change as an external form of activity before it finally moves inward. For a number of functions, the stage of the internal sign always remains the last stage of their development. Other functions proceed further in development and gradually become internal functions. They acquire the character of internal processes at the end of a long path of development. Making the transition inward, they again change the laws of their activity and again become part of a new system where new patterns are dominant.

We cannot now consider in any great detail the process of the transition of higher functions from a system of external into a system of internal activity; we omit many pertinent abrupt changes in development, but we will try to present briefly the more important points connected with the transition of higher functions inward.

As experimental material in a careful study of the structure and development of the function of perception, we used the mute tests of S. Kohs,[18] which are usually used for testing combinative activity. In solving the test, the child must produce a more or less complex, varicolored figure by combining cubes with varicolored borders. In this case, we can observe how the child perceives the sample and the material and how he produces the form and color in various combinations, how he compares his construction with the sample, as well as many other points that characterize the activity of his perception. The study involved more than 200 subjects and was carried out from the comparative-genetic aspect. Together with the children (ages four to twelve years), adults were also studied (normal, belonging to various cultural environments and levels, as well as neuropsychiatric patients with hysteria, aphasia, and schizophrenia), as were deaf-mute children and the mentally retarded (L. S. Geshelina[19]).

If we consider the most basic and general results pertaining to the aspect that interests us, the study shows that factual data do not confirm the standard conception of the independence of the processes of perception from speech, of the essential directness of the mental function of perception, or the conception of the possibility of using mute tests to study adequately the nature of the function of

perception at all levels of its development and, at the same time, completely independently of speech.

The facts speak for the opposite status of the matter. Just as in our experiments with the transmission of the content of pictures by verbal description and by acting out, by comparing the solution of one and the same problem by a deaf-mute and a hearing child, an aphasic and a normal subject, a child at early and later stages of development, we could establish profound changes introduced by speech into the process of perception, precisely so in this special study we could observe how verbal thinking, whose system increasingly includes processes of perception, transforms its own laws of perception. This is especially easy to observe because the laws of the one function and the other exhibit opposite tendencies at an early stage: integral perception, analytical speech.

In the processes of *direct* perception and transfer of the perceived form, not mediated by speech, the child captures and fixes an impression of the whole (colored spot, basic traits of the form, etc.)—all the same, he does this, as far as we know, reliably and, as far as we know, not primitively. When speech comes into play, his perception is no longer connected with the direct impression of the whole; new centers fixed by words and connections of various points with these centers arise in the visual field; perception stops being "the slave of the visual field" and, independently of the degree of correctness and completeness of resolution, the child perceives and transfers an impression deformed by the word.

Very important conclusions may be reached from this with respect to mute tests: to solve a problem in silence does not yet mean, as our studies show, that it is solved without the help of speech. Knowing how to think as humans do, but without words, is possible only through the word. This hypothesis of psychological linguistics (A. A. Potebnya[20]) is fully confirmed and borne out by the data of genetic psychology.

A study of the function of concept formation, started by our colleague, L. S. Sakharov, who developed a special methodology of experimentation for this purpose, showed that functional use of the sign (word) as a means of guiding attention, abstraction, establishing connection, generalizing, etc. of operations entering into the composition of the given function is a necessary and central part of the whole process of development of a new concept. All the basic, elementary mental functions participate in this process in a unique combination dominated by the operation of using a sign (L. S. Sakharov,[21] Yu. V. Kotelova,[22] E. I. Pashkovskaya).

The Function of Speech in the Use of Tools. The Problem of Practical and Verbal Intellect

Two processes of exceptional importance which are the subject of this paper—the use of tools and the use of symbols—have been considered thus far in psychology as isolated and independent of each other.

For a long time, there existed in science the opinion that practical intellectual activity connected with the use of tools does not have a substantial relation to the development of sign, or symbolic, operations, for example, speech. In the literature of psychology, almost no attention was given to the problem of the structural and genetic connection of these two functions. On the contrary, all the information that was available to contemporary science was more likely to lead to understanding these mental processes as two completely independent lines of development that might possibly be in contact, but had, on the whole, nothing in common with each other.

In the classical study of the use of tools by apes, W. Köhler observed a form of behavior that might be called a pure culture of practical intellect adequately developed, but not connected with the use of a symbol. Describing the splendid examples of the use of tools by human-like apes, he showed, in subsequent studies, how futile were all attempts to develop in animals even the most elementary sign and symbol operations.

The practical, intellectual behavior of the ape was completely independent of symbolic activity. Further attempts to develop speech in apes (see the work of R. Yerkes[23] and B. Learned) also gave negative results, showing once again that practical *ideational* behavior of the animal occurs completely autonomously and in isolation from speech activity and that speech remains inaccessible to the ape regardless of the similarity of the vocal apparatus of ape and man.

Admitting the fact that the beginnings of practical intellect may be observed in almost full measure in pre-human and pre-speech periods led psychologists to the following hypothesis: the use of tools, appearing as a natural operation, remains the same in the child also. A number of authors, studying practical operations in children of different ages, tried to establish with great precision the time before which the behavior of the child in all respects resembled the behavior of the chimpanzee. The child's adding speech was evaluated by these authors as something completely different in nature, secondary and not connected with practical operations. At best, speech was considered as something that accompanied operations, like an accompaniment that goes with a basic melody. For this reason, it is natural that in studying signs of practical intellect, there was a tendency to ignore speech, and the practical activity of the child was analyzed through simple mechanical subtraction of speech from the whole system of the child's activity.

The tendency toward isolated study of the use of tools and symbolic activity was firmly rooted in the works of authors occupied with the study of the natural history of practical intellect; psychologists studying development of symbolic processes in the child adhered mainly to this line. The origin and development of speech and any other symbolic activity was considered as something that had no connection with the practical activity of the child, just as if he were purely a rational subject. This approach to speech necessarily led to a proclamation of pure intellectualism, and psychologists, inclined to study development of symbolic activity not so much as natural but as mental history of the development of the child, frequently attributed the appearance of this form of activity to the child's spontaneous discovery of the relation between signs and their meaning. This fortunate moment, in the well-known expression of W. Stern,[24] is the greatest discovery in the life of the child. Many authors claim that this occurs at the boundary between the first and second year of life and is considered to be the result of conscious activity of the child. The problem of development of speech and other forms of symbolic activity was thus eliminated, and the matter was presented as a purely logical process that was laid down in early childhood and contained in a finished form all the stages of subsequent development.

From studies of symbolic speech forms of activity, on the one hand, and practical intellect on the other, as isolated phenomena, it not only followed that genetic analysis of these functions led to viewing them as processes that had absolutely different roots, but even their participation in one and the same activity was considered to be an accidental factor that had no major psychological significance. Even when speech and the use of tools were closely intertwined in one and the same activity, they were considered separately as processes that belonged to two completely different classes of independent phenomena and the reason for their joint existence was believed to be external at best.

If the authors who studied practical intellect in its natural history concluded that its natural forms were not in the least degree connected with symbolic activity, then child psychologists who studied speech reached similar conclusions from the opposite aspect. Tracking the mental development of the child, they established that over the whole period of development of symbolic processes, speech, which accompanied the general activity of the child, exhibits an egocentric character, but existing mainly separately from action, does not interact with it, but proceeds parallel to it. J. Piaget described egocentric speech of the child from this point of view. He did not ascribe to speech any substantial role in the organization of the behavior of the child and did not admit a communicative function for it, but was forced to admit its practical importance.

A series of observations led us to the idea that such isolated study of practical intellect and symbolic activity is absolutely wrong. If one could exist without the other in higher animals, then it follows naturally from this that the combination of the two systems is specifically what must be considered as characteristic for the complex behavior of man. As a result of this, symbolic activity begins to play a specifically organizing role, penetrating into the process of using tools and ensuring the appearance of basically new forms of behavior.

We were led to this conclusion by the intense study of the child and new studies that succeeded in discovering the functional features that distinguish his behavior from the behavior of animals and at the same time the specifics of this behavior as human behavior.

Subsequent studies convince us that nothing can be more false than those two points of view discussed above that consider practical intellect and verbal thinking as two independent lines of development that are isolated from each other. The first, as we have seen, expresses an extreme form of zoological views which, once having found natural roots of human behavior in the behavior of apes, tries to consider the higher forms of human work and thinking as a direct continuation of those roots, ignoring the leaps that exist in the transition of man to a social form of existence. The second point of view, defending the independent origin of higher forms of verbal thinking and considering it as "the greatest discovery in the life of the child," which happens at the threshold of the second year of life and consists in disclosing the relations between the sign and its meaning, expresses, primarily, an extreme form of spiritualism on the part of contemporary psychologists who treat thinking as a purely mental act.

Speech and Practical Action in the Behavior of the Child

Our studies led us not only to be convinced of the falsity of this approach, but also to a positive conclusion that the greatest genetic point in all intellectual development, from which purely human forms of practical and cognitive intellect arose, consists in uniting the two initially completely independent lines of development.

The child's use of tools resembles the tool activity of apes only while the child is at the pre-speech stage of development. As soon as speech and the use of symbolic signs are included in the manipulation, it is transformed completely, superseding the former natural laws and engendering for the first time properly human forms of using tools. From the moment the child begins, with the help of speech, to master situations, having preliminarily mastered his own behavior, a radically new organization of behavior arises, as well as new relations to the environment. Here, we are present at the birth of specifically human forms of behavior that,

having broken away from animal forms of behavior, subsequently create intellect and then become the basis for work—specifically the human form of using tools.

This connection is apparent with absolute clarity in the experimental genetic example taken from our studies. The first observation of the child in an experimental situation, similar to the situation in which Köhler observed practical use of tools by apes, shows that the child does not simply act to achieve his goal, but speaks at the same time. As a rule, speech appears spontaneously in the child and goes on almost continuously over the course of the whole experiment. It is manifested with great persistence and increases whenever the situation becomes more difficult and the goal not so easily attained. Attempts to interfere with the speech (as experiments of our colleague R. E. Levina[25] have shown) either had no effect or stopped the action, freezing the whole behavior of the child.

In this situation it seems natural and necessary for the child to speak as he acts. The experimenters usually get the impression that speech does not simply follow practical activity, but plays some kind of relatively important and specific role in it. The impression we have as a result of similar experiments brings the investigator face to face with the following two facts that are of great significance:

1. The child's speech is an inseparable and internally necessary part of the process, just as important as the action, for achieving the goal. According to the impression of the experimenter, the child does not simply speak of what he is doing, but, for him, the discussion and action in this case are a single, complex mental function directed toward solving the problem.

2. The more complex the action required and the less direct the path toward solution, the more important does the role of speech in the whole process become. Sometimes speech becomes so important that without it, the child is definitely not capable of concluding the task.

These observations bring us to the conclusion that the child solves a practical problem not only with his eyes and hands, but also with the help of speech. The unity of perception that has developed, of speech and action, which leads to a reorganization of the signs of the visual field, also makes up a subordinate and very important object of analysis directed toward the study of the origin of specifically human forms of behavior. In experimental study of the child's egocentric speech involved in one activity or another, we also established the following fact, which is very significant for elucidating the mental function and genetic description of this stage in the child's development of speech: the coefficient of egocentric speech, computed according to Piaget, clearly increases as difficulties and interference are introduced into the child's activity. As our experiments have shown, for a certain group of children, the coefficient almost doubles at the moment difficulties arise. This fact forces us to assume that the child's egocentric speech begins very early to fulfill the function of primitive verbal thinking—thinking aloud. Further analysis of the character of this speech and its connection with difficulties fully confirmed our assumption.

On the basis of these experiments, we developed the hypothesis that the child's egocentric speech must be considered as a transitional form between external and internal speech. Egocentric speech, according to the proposed hypothesis, is internal speech psychologically if we take into account its function, but external in its form of expression. From this point of view, we are inclined to ascribe to egocentric speech the function that internal speech fulfills in the developed behavior of the adult, that is, an intellectual function. From the genetic point of view, we are inclined to present the general sequence of the basic stages of development of speech as, for example, J. Watson[26] formulates it: external speech—whispering—internal speech or, in other words, external speech—egocentric speech—internal speech.

What is especially remarkable in the actions of the child who has mastered speech in comparison with the ape's solving of a practical problem?

The first thing that strikes the experimenter is the incomparably greater freedom in operations carried out by children, the children's incomparably greater independence than that of the animal from the structure of the directly presented visual or practical situation. The child forms significantly greater potentials in words than the ape can realize in action. The child can free himself more easily from the vector that directs attention directly to the goal and he can carry out a series of complex additional actions using a comparatively long chain of auxiliary instrumental methods. He is capable of independently introducing objects that are not in the direct or in the peripheral visual field into the process of solving the problem. Creating certain designs with the help of words, the child develops a substantially larger circle of operations, using objects that are not at hand as tools, but he also seeks and prepares those that may become useful for solving the problem and plans further actions.

Among the reorganizations to which practical operations were subjected due to including speech in them, two are striking. First, the practical operations of the child who has mastered speech are significantly less impulsive and direct than in the human-like ape that makes a series of uncontrolled attempts to resolve a given situation. The activity of the child who has mastered speech can be divided into two sequential parts: in the first, the problem is solved on the speech plane with the help of verbal planning, and in the second, in a simple motor realization of the prepared solution. Direct manipulation is replaced by a complex mental process in which internal planning and creation of design, postponed in time, themselves stimulate their own development and realization. These completely new mental structures are not present in any kind of complex form in the ape.

Second, and this is a fact of decisive importance, with the help of speech, in the sphere of things available to the child for transformation, is his own behavior. Words directed toward solving a problem refer not only to the objects of the external world, but also to the child's own behavior, his actions and intentions. With speech, the child is, for the first time, able to control his own behavior, relating to himself as if from the sideline, considering himself as a certain object. Speech helps him master this object by preliminary organization and planning of his own actions and behavior. The objects that were outside the sphere of activity available for practical activity, owing to speech, now become accessible for the child's practical activity.

The fact described cannot be considered only as a special moment in the development of behavior. Here we see cardinal changes in the relation itself of the individual to the external world. With more careful consideration, the changes seem to be exceptionally profound. The behavior of the ape, described by Köhler, is limited to the animal's manipulation in a directly presented visual field, while the child who is able to speak moves away from the natural field to a significant degree. Owing to the planning function of speech directed toward his own activity, the child creates from the environment, in addition to stimuli available to him in the environment, another series of auxiliary stimuli that stand between him and the environment which guide his behavior. Specifically due to the second series of stimuli created with the help of speech, the child's behavior is raised to a higher level and acquires a relative freedom from the immediate attracting situation, and impulsive attempts are transformed into planned, organized behavior.

Auxiliary stimuli (speech in this case) that fulfill a specific function of organization of behavior are nothing other than the symbolic signs that we have been considering here. They serve the child primarily as a means of social contact with

the people around him and begin to be used as a means of acting on himself, as a means of autostimulation, engendering in this way a new, higher form of behavior.

An interesting parallel to the facts presented above and pertaining to the role of speech in the acquisition of specifically human forms of behavior can be found in the extremely interesting experiments of R. Guillaume and G. Meyerson and in their analysis of the use of tools by apes. Our attention was drawn to the conclusions in this work in which the intellectual operations of apes were compared to the processes of solving practical problems by aphasics (clinically and experimentally studied by H. Head[27]). The authors find that the methods of carrying out a task by the aphasic and the human-like ape are similar on the whole and coincide in the most essential points. This fact thus confirms our idea that speech plays an important role in the organization of higher mental functions.

If on the genetic plane we saw a combining of practical and speech operations and the birth of a new form of behavior and the transition from lower forms of behavior to higher, then in the disintegration of the unity of speech and action, we note the reverse movement—the transition of the person from higher forms to lower. In a person with disturbed symbolic functions, that is, in the aphasic, intellectual processes lead not simply to a decline of the function of practical intellect or more difficulty in realizing it, but are a manifestation of another more primitive level of behavior of the same genetic formation that we found in the behavior of the ape.

What is lacking in the actions of the aphasic and what, consequently, is due in its origin to speech? It is sufficient to analyze the behavior of an aphasic patient in a practical situation that is new to him to see how much it differs from the behavior of a normal person who can speak in a similar situation. The first thing that strikes the eye in observing an aphasic is his unusual confusion. As a rule, there is not even a hint of the somewhat complex planning for solving the problem. Producing a preliminary intention and its subsequent systematic realization are absolutely inaccessible to such a patient. Every stimulus arising in the situation and attracting the attention of the aphasic evokes an impulsive attempt to answer directly with an appropriate reaction without taking into account the situation and solution as a whole. The complex chain of actions presuming the creation of intention and its systematic sequential realization is inaccessible to the patient and is turned into groups of generalized unorganized trials.

Sometimes the actions are inhibited and take on a rudimentary form, and sometimes they are turned into complex and unorganized bodies of practical actions. If the situation is sufficiently complex and can be carried out only by means of a sequential system of preliminarily planned operations, the aphasic becomes confused and seems completely helpless. In simpler cases, he solves the problem with the help of simple simultaneous combinations within the limits of the visual field and with methods of solving that differ very little essentially from those that Köhler observed in experiments with human-like apes.

Having lost speech, which should have made him free from the visual situation and would have made planning connected with a sequence of actions possible, the aphasic seems to be a slave to the direct situation a hundred times more than a child who is able to speak.

Development of Higher Forms of Practical Activity in the Child

From what has been said, it follows that both in the behavior of the child and in the behavior of a cultured adult, the practical use of tools and the symbolic form

of activity connected with speech are not two parallel chains of reaction. They form a complex psychological unity in which symbolic activity is directed toward the organization of practical operations through the creation of stimuli of the second order and through the subject's planning his own behavior. As a counterpoise to higher animals, in man, a complex functional connection between speech, use of tools, and the natural visual field develops. Without analyzing this connection, the psychology of practical activity of man would always remain incomprehensible. But it would be completely erroneous to think, as some behaviorists do, that the indicated unity is simply the result of training and habit and forms a direct line of natural development proceeding from animals and only accidentally acquiring an intellectual character. It would be just as erroneous to consider the role of speech, following a number of child psychologists, as the result of a random discovery made by the child.

The formation of a complex unity of speech and practical operation is the product of a process of development that goes profoundly inward in which the individual history of the subject is closely tied to his social history.

Due to a lack of space, we are forced to simplify the actual problem and take the phenomena that interest us in their extreme genetics forms, comparing only the beginning and end of the process of development under consideration. The process of development itself with its great variability of phases and manifestation of ever new factors remains outside our consideration. We deliberately take the phenomenon in its most developed form, by-passing the mixed intermediate stages. This allows us to show with maximal clarity the end result of development and, consequently, to evaluate the basic direction of the whole process. A combination of logical and historical approaches in a study such as this one, which voluntarily drops a number of stages of the process studied, has its dangers, which destroyed more than one theory that seemed flawless. The investigator must circumvent the dangers and remember that this is the only way to study the phenomena behind which history lies; he must inevitably turn to an analysis of the history.

We cannot stop to consider all of the sequential changes in the process. Here, we can isolate only the central connecting link; consideration of this will be adequate for making clear the general character and direction of the whole process of development. We must, consequently, turn again to the results of experiments.

We observed the activity of the child in experiments similar in structure, but spread over time and representing a series of situations of increasing difficulty. We established an important point that psychologists overlook, which makes it possible to describe definitively the difference between the behavior of the ape and the behavior of the child on the genetic plane. Previous observations allowed us to attain this with respect to the structure of activity since, as we studied it, the child's activity changed over the course of a number of experiments and did not simply improve, as happens in the process of training, but underwent such deep qualitative changes that they must be described as development in the true sense of the word.

As soon as we made the transition to studying activity from the point of view of the process of its formation (in a series of experiments over a course of time), we immediately were confronted by the fact that we were actually studying not one and the same activity in its concrete expression, but, over the course of a number of experiments, the object itself of the study changed. Thus, we obtained, in the process of development, forms of activity completely different in structure. This was an unpleasant increased complexity for all the psychologists who wanted at any price to preserve the unchanging quality of the activity they were studying, but for us, this immediately became the central fact and we turned all of our attention to its study. It led to the conclusion that the child's activity differs from the behavior

of the ape in organization, structure, and methods of action and is not instantly available in ready form, but grows out of sequential changes in psychological structures connected genetically, and thus forms a whole historical process of development of higher mental functions.

This process is the key to understanding the organization, structure, and methods of activity in the child's development that we observed. In it, we are inclined to see from a new point of view the main difference that distinguishes the complex behavior of the child from the behavior of the ape. Actually, the use of tools by apes remains unchanged over a whole series of experiments if we do not take into account the secondary points that are more likely connected with gradual improvement of the function due to training than with changes in their organization. In experiments, neither Köhler nor any other investigator of the behavior of higher animals observed the appearance of qualitatively new operations formed in a genetic series that unfolded over time. The stability of the operations they described and their unchangeability in various situations was one of the remarkable characteristics of all of these studies.

This never occurred in the child. Combining a number of transformations in the experiment and creating in this way a kind of model of development, we never observed constancy, unchangeability of activity (except for extreme cases in children who were mentally retarded). For us the real reorganization of the process of activity was obvious at every new stage of the experiment.

We will describe the process of transformation primarily from the negative aspect.

The first thing that draws our attention and may seem to be paradoxical is the following: the process of forming higher intellectual activity resembles least of all the developed process of logical transformations. This means that the subject forms, interconnects, and divides the operations according to a different law of connection from one that would have to connect them in logical thinking. Very often the mental process of development of children's thinking resembles the process of discovery of methods of logical thinking. Some maintain that the child initially involves the basic principle of thinking, and individual, various, concrete forms are derived subsequently by the deductive method flowing as a logical and not a genetic consequence from this fundamental discovery by the child. The process of development is understood incorrectly here; in fact, confirmed here is Köhler's claim that intellectualism is not wrong anywhere as much as in the theory (and we must add, in the history) of intellect. This is the first and basic conclusion that prompted our study. The child does not invent new forms of behavior and he does not derive them logically, but forms them by the same means as walking displaces crawling and speech displaces babbling, not at all by his being convinced of their advantages.

Another hypothesis that we must reject in light of our studies is the opinion that higher intellectual functions develop in the process of improving complex habits and in the process of teaching the child, and that all qualitative difference of form of behavior is a change of the same type as a change in memorized text when it is repeated. This kind of possibility was excluded from the very beginning because there was a new situation in the experiment each time which required that the child be adequately adapted to new conditions and to a new method for solving the problem. But the matter was not exhausted by this: as the child developed, the problems presented to him made new and qualitatively different demands. The complexity of the structure of solving the problems increased corresponding to the demands so that even a solution that seemed most effective and was most fixed by training was necessarily inadequate to the new demands and became more of an obstacle than a factor helping with the solution of the new problem.

In light of the data that describe the process of development under discussion, it becomes clear that not only from the point of view of facts, but also from the point of view of theory, the two hypotheses we rejected at the beginning were wrong. According to one of them, the essence of the process is considered as a result of intellectual actions; according to the other, it is a product of an automatic process of perfecting a habit that arises as an insight at the very end of the process. Both hypotheses ignore development equally and are clearly unsatisfactory in the face of facts.

The Path of Development in Light of Facts

As is apparent from our experiments, the actual process of development occurs in a different form.

Our reports show that even at the earliest stages of the child's development, the factor that moves his activity from one level to another is neither repetition nor discovery. The source of development of activity lies in the social environment of the child and is concretely expressed in those specific relations with the experimenter that permeate the whole situation that requires the practical use of tools and that introduce a social aspect into it. In order to express the essence of the forms of the child's behavior characteristic for the earliest stage of development, we must say that the child enters into relations with the situation not directly, but through another person. Thus, we come to the conclusion that the role of speech, which we identified as the basic point in the organization of the practical behavior of the child, is crucial for understanding not only the structure of behavior, but also its genesis: speech stands at the very beginning of development and is its most important and decisive factor.

The child who talks as he solves a practical problem connected with the use of tools and unites speech and action into one structure adds a social element to his action in this way and determines the fate of this action and the future path of development of his behavior. In this way, the behavior of the child is first carried to a completely new plane, it begins to be guided by new factors and results in the appearance of social structures in his mental life. His behavior is socialized. This is the main determining factor in all further development of his practical intellect. A situation in which people begin to act as well as things, acquires for him social significance as a whole. For him, the situation is like a problem set up by the experimenter, and the child feels that a person stands behind it the whole time regardless of whether that person participates directly or not. The child's own activity acquires its own meaning in the system of social behavior and, being directed toward a certain goal, is refracted through the prism of the social forms of his thinking.

The whole history of the child's mental development teaches us that from the first days, his adaptation to the environment is achieved by social means through the people around him. The path from the thing to the child and from the child to the thing lies through another person.[28] The transition from the biological to the social path of development is the central link in the process of development, a cardinal turning point in the history of the child's behavior. The path through another person is the central track of development of practical intellect, as our experiments demonstrated. We are speaking here of a paramount role.

The following picture opens up before the investigator. The behavior of very small children in the process of solving a problem is a very specific merging of two forms of adaptation—to things and to people, to the environment and to the social situation; these are differentiated only in adults. Reactions to things and to people

comprise in children's behavior an elementary, undifferentiated unity from which both actions directed toward the external world and social forms of behavior later evolve. At this time, the child's behavior is an odd mixture of the one with the other—a chaotic (as it seems to adults) mixture of contacts with people and reactions to things. Combination in one activity of the different objects of behavior that can be explained by the preceding history of the child's behavior, beginning with the first days of his existence, can be observed in every experiment. The child left alone by himself and stimulated to action by the situation, begins to act according to principles that developed earlier in his relations with the environment. This means that action and speech, the mental influence and physical influence, are syncretically mixed. This central feature in the child's behavior we term *syncretism of action* in analogy to syncretism of perception and verbal syncretism, which have been so thoroughly studied in contemporary psychology due to the works of E. Claparède[29] and J. Piaget.

Records of experiments we conducted with children show a similar picture of syncretism of action in their behavior. A small child placed in a situation in which the direct attainment of a result seems impossible exhibits very complex activity which can be described as a random mix of direct attempts to get the desired object, emotional speech, sometimes expressing the wishes of the child and sometimes substituting for the unattainable actual satisfaction with a verbal substitute, attempts to get the object by verbal formulation of methods, turning to the experimenter for help, etc. These manifestations are a confused bundle of actions, and the experimenter at first finds himself in trouble before this rich, frequently grotesque mix of forms of activity that interrupt one another.

With further consideration of the experiments, our attention is drawn to a series of actions that are, at first glance, outside the general plan of activity of the child. After the child carried out a series of sensible and mutually connected actions that should have helped him solve the problem successfully, confronted suddenly by a difficulty in realizing his plan, he abruptly stops his attempts and turns to the experimenter with a request that the object be moved closer so that it would be possible for him to carry out the task.

An obstacle in the child's path breaks up his activity and the verbal turning to another person is an attempt to correct this break. The circumstances that play a psychologically decisive role consist in the following. The child, turning for help to the experimenter at a critical moment, shows in this way that he knows what must be done to attain the goal, but cannot attain it himself and that the plan for solving is basically ready, although inaccessible to the child's own actions. For this reason, the child, having earlier separated the verbal description of the action from the action itself, takes off on a path of cooperation, socializing practical thinking by sharing his activity with another person. Due to this specifically, the child's activity enters into a new relation with speech. The child, consciously including the action of another person in his attempts to solve the problem, begins not only to plan his activity in his head, but also to organize the behavior of an adult according to the requirements of the problem. Owing to this, socialization of practical intellect leads to the need for socialization not only of objects, but also of actions, creating in this way a reliable prerequisite for carrying out the task. Control of the behavior of another person in this case is a necessary part of the whole practical activity of the child.

The new form of activity directed toward control over the behavior of another person is still not separated from the syncretic whole. We have frequently observed that in the process of carrying out a task, the child, grossly mixing the logic of his own activity with the logic of solving the problem cooperatively, introduces into his

own activity the action of the other person. It seems that the child unites the two approaches to his own activity, combining them into one syncretic whole.

Sometimes the syncretism of action is exhibited against a background of primitive thinking of the child, and in a number of experiments, we observed how the child, seeing the hopelessness of his attempts, turned directly to the object of his activity, to the goal, asking it to come closer to him or to drop out, depending on the conditions of the task. Here we see a mixture of speech and action of the same person. We are confronted by this kind of mixture when the child, in carrying out an action, talks to the object, dealing with words the same way he does with a stick. In the latter cases, we see an experimental demonstration of how deeply and inseparably speech and action are connected in the activity of the child and how much this connection differs from the connection between them which can frequently be observed in adults.

Thus, the behavior of the small child in the situation described above is an intricate complex in which are mixed direct attempts to attain a goal, the use of tools, and speech directed either toward the person doing the experiment or simply accompanying the action, and, as if augmenting the exertions of the child, directed toward the goal. Sometimes speech, regardless of how paradoxical this sounds, is turned directly toward the object of the activity. The odd merging of speech and action seems to be senseless if we consider it outside the dynamics. However, if we analyze it on the genetic plane, tracing the stages of the child's development, or in a condensed form in a number of sequential experiments, this strange merging of two forms of activity discloses its fully determined function in the history of the development of the child as well as the internal logic of its development.

We shall consider two points of the dynamics of this complex process. They play a decisive role in the appearance in the child of higher forms of control of his own behavior.

The Function of Socialized and Egocentric Speech

The first process we studied (egocentric speech) is connected with the formation of *speech for oneself*, which, as was noted above, regulates the action of the child and allows him to do the problem set before him in an organized way by means of preliminary control of himself and his activity.

With an attentive study of the records of our experiments with small children, one can note that together with turning to the experimenter for help, the child also exhibits a wealth of egocentric speech. We already know that complicated situations elicit copious egocentric speech and that under conditions of increased difficulty, the coefficient of egocentric speech almost doubles in comparison with situations that are not complicated. In another case, deciding to study more thoroughly the connection between egocentric speech and difficulties that arise before the child, we organized experimental complexities in the child's activities.

We were convinced that the situation requiring the use of tools, the central point of which was the impossibility of direct actions, best presents conditions for the appearance of egocentric speech. Facts confirmed our assumptions. Both psychological factors connected with difficulties—emotional reaction and deautomatization of action, which required including intellect in the process—basically determine the nature of egocentric speech and the situation that interested us. To understand egocentric speech correctly and disclose its genetic function in the process of socialization of practical intellect of the child, it is important to remember the fact, which the experiments bring out and which we emphasized, that egocentric

speech is connected with social speech of the child by thousands of transitional stages.

Very often we did not understand the transitional forms well enough to determine to which form of speech one expression of the child or another may belong. The similarity and interdependence of both forms of speech exhibit the close connection of those functions of the child that both of these forms of speech activity fulfill. It is a mistake to think that the child's social speech consists exclusively of turning to the experimenter for help; the child's speech invariably contains emotional-expressive moments, information on what he intends to do, etc. During the experiment, it was enough to inhibit his social speech (for example, the experimenter left the room, ignored the child's questions, etc.) in order for egocentric speech to increase immediately.

If at the earliest stages of the child's development, egocentric speech still does not contain indications of the method for solving the problem, then this is expressed in speech turned to the adult. The child despairs of attaining the goal in a direct way, he turns to the adult and verbally formulates a method which he himself cannot apply. Enormous changes in the child's development occur when speech is socialized, when instead of turning to the experimenter with a plan for solving the problem, he turns to himself. In the latter case, speech that participates in solving the problem is converted from the category of intermental to intramental function. The child, organizing his own behavior according to a social type, applies to himself the same method of behavior that he applied earlier to the other person. The source of intellectual activity and control over his behavior in solving a complex practical problem is, consequently, not the invention of some kind of purely logical act, but applying social relation to himself, a transfer of the social form of behavior to his own mental organization.[30]

The series of observations allows us to note the complex path taken by the child in transition to interiorization of social speech. The cases we described in which the experimenter to whom the child formerly turned for help left the site of the experiment demonstrate this decisive moment most clearly. Specifically under these conditions, the child is deprived of the possibility of turning to an adult, and this socially organized function is switched over to egocentric speech and indications of the path for solving the problem gradually bring him to their independent realization.

The series of sequential experiments carried out over time makes it possible to identify a series of stages of this process, and the formation of the new system of behavior of a social type becomes significantly more understandable. The history of this process is, consequently, the history of socialization of the practical intellect of the child and at the same time the social history of its symbolic functions.

Change in the Function of Speech in Practical Activity

We would like to identify a second no less important transformation that the child's speech undergoes in our experiments. Disclosing the mutual relation between the speech and actions of the child over time and studying this dynamic structure, we established the following fact: The structure is not constant over the duration of the experiments; speech and action are related to each other and form a mobile system of functions with an unstable type of interconnections.

If we turn away from a number of complex changes that interest us on a different plane, we will be able to identify the basic functional shift in the system that has a decisive influence on its fate and leads it to an internal reconstruction: the

child's speech, which formerly accompanied his activity and reflected its essential changeability in an unconnected and chaotic form, shifts more and more to reversing, to initial points of the process, beginning to anticipate action and explaining the action thought about but not yet realized. In the development of practical intellect, we observed a process similar to the process that occurs in another dynamic system of functions—in drawing with the participation of speech. Just as initially, the child draws and only when he sees the results of his work, recognizes and indicates in words the subject of the drawing, in practical activity, at first, he fixes in words the result of the activity or its separate points. At best, he does not name the result, but indicates the preceding moment of the action. Just as the naming of the subject of the drawing in the process of developing the drawing shifts to the beginning of the process, in our experiments, the *plan of action* begins to be formulated by the child in words directly before the beginning of the action, anticipating its further development.

This kind of shift represents not just a temporal shift of speech with respect to action, but also a change in the functional center of the whole system. At the first stage, speech, following action, reflecting it, and augmenting its results, remains subordinate to action in structural relation and is elicited by the action; at the second stage, speech shifts to the initial moment of action, begins to dominate action and direct it, and determines its subject and its course. For this reason, at the second stage, the planning function of speech is born in earnest and in this way, begins to determine the direction of action in the future.

The planning function of speech usually is considered as isolated from its reflecting function and is even opposed to it. Nevertheless, genetic analysis shows that this opposition is based on a purely logical construction of both functions. In experiments, we noted that there are, on the contrary, various forms of internal connection between both functions, and from this fact, it follows that the transition from one function to the other and the development of the planning function of speech from the reflecting function, is the same genetic nodal point that connects the lower functions of speech with the higher and explains their true origin.

Specifically because at first it is a verbal model of an action or a part of it, the child's speech reflects action or augments its results and begins later to shift to the beginning of the action and to predict and direct the action, forming it to correspond to the model of former activity that was previously fixed in speech.

This process of development has nothing in common with the process of logical *deduction*, logical conclusion from a principle of practical application of speech discovered by the child. Studies at each step indicate facts that compel us to assume that this summarizing speech, which creates a model of the path followed, plays an important role in the formation of the process, and due to this, the child acquires the possibility not only of accompanying his actions with speech, but of finding a reliable way of solving a problem with its help. As speech becomes an intramental function, it begins to prepare in verbal form a preliminary solution of the problem which, in the course of our further experiments, is improved and, from the speech-model that summarizes what has been completed, it is converted into preliminary verbal planning of future action.

This reflecting function of speech helps us disclose the process of formation of its complex planning function and understand its true genetic roots. We can then see the origin of higher degrees of intellectual activity in all their complexity and with the whole complement of sequential transitions from stage to stage. What was formerly considered to be a process of unexpected *discovery* by the child turns out to be the result of a long and complex development in which the emotional and communicative functions of primary speech and the function of reflecting and creating a model from a situation have their place at a certain step of the genetic ladder. The ladder begins with primitive reactions of the child's glance and concludes with complex activity planned over time.

The history of speech, flowing in the process of practical activity, is connected with profound reconstructions of the whole behavior of the child. In this, there is something greater than the simple point indicating the fact that speech, being at first an intermental process, now becomes an intramental function, and that, at first diverting from the solution of the problem, at the end of the genetic path begins to play an intellectual role and becomes the instrument for an organized solution of the problem. This reconstruction of behavior has an incomparably more profound significance. If at the beginning of the genetic path, the child carried out manipulations in a direct situation, aiming his activity directly at the objects that attracted him, now the situation has become significantly more complex. Between the object that attracts the child as a goal and his behavior, stimuli of a second order appear that are no longer aimed directly at the object, but toward organization and planning of his own behavior. Verbal stimuli directed toward the child himself, being transformed in the process of evolution from a means of stimulating another person to stimulating one's own behavior, radically reconstruct his whole behavior.

The child is in a position to adapt to the situation presented to him by a mediated path through preliminary control over himself and preliminary organization of his own behavior, and this differs essentially from the behavior of animals. The child's behavior contains, as internal necessary factors, social relation to himself and to his actions, which are social activity transferred to within the subject. The child attains this as a result of the path of development passed, ensuring freedom of behavior with respect to the situation and independence from the concrete objects that surround him which the ape does not have, being, in the classical expression of Köhler, "slave to the visual field." Moreover, the child stops acting in a directly given and visual space. Planning his behavior, mobilizing and generalizing his previous experience for organizing future activity, he makes a transition to active operations developed over time.

At the moment when, with the planning aid of speech, a conception of the future is included as an active component in the activity of the child, the whole mental field in which he operates changes radically and his whole behavior is restructured in a radical way. The child's perception begins to be constructed according to new laws different from the laws of the natural visual field.

The merging of sensory and motor fields is overcome, and the direct, impulsive actions with which he reacted to every object that appeared in the visual field and that attracted him are now restrained. His attention begins to work anew and his memory is transformed from passive recording into a function of active selection and active and intellectual remembering.

With the inclusion of the complex mediated level of higher mental functions, there is a radical reconstruction of behavior on a new basis. Having studied the genetic progress that resulted from including methods of using tools and symbolic forms of activity in development, we must now turn to an analysis of the reconstructions that this progress engendered in the development of basic mental functions.

Chapter 2
THE FUNCTION OF SIGNS IN THE DEVELOPMENT OF HIGHER MENTAL PROCESSES

We have considered some of the complex behavior of the child and have concluded that in a situation connected with the use of tools, the behavior of a small child differs substantially and in a major way from the behavior of the human-like ape. We could say that in many ways, it is characterized by an opposite structure and that instead of a complete dependence of the operation with tools on the structure of the visual field (as in the ape), in the child we observe a significant emancipation from it. Due to the participation of speech in the operation, the child acquires an incomparably greater freedom than is observed in the instrumental behavior of the ape; the child has the possibility of resolving the practical situation by using tools that are not in the direct field of his perception; he controls the external situation with the help of preliminarily mastering himself and preliminarily organizing his own behavior. In all of these operations, the very structure of the mental process changes substantially; direct actions on the environment are replaced by complex mediated acts. Speech included in the operation was the system of psychological signs that acquired a very special functional significance and resulted in a complete reorganization of behavior.

A series of observations convinces us that this cultural reorganization is characteristic not just for that form of complex behavior connected with the use of tools that we described. On the contrary, even separate mental processes, more elementary in character, are components of the complex act of practical intellect and are profoundly changed and restructured in the child in comparison with the way they occur in higher animals. In the child, even those functions that are considered most elementary are subject to laws other than those of earlier stages of phylogenetic development, and they are characterized by the same mediated psychological structure that we have just considered using the example of the complex act of using tools. A detailed analysis of the structure of separate mental processes that participate in the act of child behavior that we described convinces us of this and shows that even the teaching on the structure of separate elementary processes of child behavior requires a radical review.

Development of Higher Forms of Perception

We shall begin with perception, an act that always seemed to be an act wholly subordinate to elementary natural laws, and we shall try to show that, in the child, this developmental process, most dependent on the actual given situation, is reconstructed on a completely new base and, preserving external, *phenotypic* similarity

to the same function in the animal, in its internal composition, structure, and method of action, in its whole psychological nature, belongs to higher functions established in the process of historical development and has a special history in ontogenesis. In the higher function of perception, we already encounter patterns completely different from those that were disclosed by psychological analysis for its primitive, or natural, forms. It is understood that the laws that hold in psychophysiology of natural perception are not abolished with the transition to the higher forms that interest us, but move as if to the background and continue to exist in a contracted and subordinate form within the new patterns. In the history of development of perception in the child, we observe a process essentially similar to that which has been well studied in the history of the construction of the nervous apparatus where lower, genetically older systems with their more primitive functions are included in the newer and higher levels and continue to exist as subordinate units within the new whole.

Following the works of Köhler (1930), we know the kind of decisive significance the structure of the visual field has in the process of the practical operations of the ape; the whole course of solving a problem presented, is, from beginning to end, essentially the function of the ape's perception, and Köhler is fully justified in saying that these animals are slaves of the sensory field to a much greater degree than adult humans and that apes are not capable of tracking the available sensory structure through voluntary efforts. Specifically in the subordination to the visual field, Köhler sees what brings the ape close to other animals even as remote in their organization as the crow (experiments of M. Hertz). Actually, we are scarcely in error if, in the slavish dependence on structure of the sensory field, we see a general law that dominates perception in all the multiplicity of its natural forms.

This common trait is part of every perception since it does not go beyond natural psychophysiological forms of organization.

Since the child's perception becomes the adult's perception, it develops not as a direct continuation and a further improvement of those forms that we observed in animals, even those closest to man, but it leaps from the zoological to the historical form of mental evolution.

A special series of experiments that we set up for elucidating this problem disclosed the main patterns that characterize higher forms of perception. We cannot consider this problem in its full extent and complexity here, but will limit ourselves only to an analysis of one point which is truly central in significance. This can be done most conveniently with experiments on the development of the perception of pictures.

Experiments that made it possible for us to describe the specific features of children's perception and its dependence on the involvement of higher mental mechanisms were set up in their essential form by A. Binet and analyzed in detail by W. Stern (1922). Observing the description of a picture by a small child, both established that this process is not the same at different levels of the children's development. If, in describing what he sees in the picture, a two-year-old child usually limits himself to indicating separate, disparate objects, after a time, he makes a transition to describing actions in order later to indicate complex relations between the separate objects pictured. These data moved Stern to establish a certain path of development of children's perception and to describe the stages of perception of separate objects, actions, and relations as stages through which perception passes during childhood.

Now these data, accepted by contemporary psychology as firmly established, aroused very serious doubts in us. Actually, it is enough to consider this material carefully to see that it contradicts everything that we know of the development of

children's behavior and its basic psychophysiological mechanisms. A number of incontrovertible facts indicate that the development of psychophysiological processes begins in the child with diffuse, whole forms and only later makes a transition to the more differentiated.

A remarkable number of physiological observations show this for the motor system: the experiments of H. Volkelt,[31] H. Werner,[32] and others convince us that the child's visual perception passes along this same path. Stern's assertion that the stage of perceiving separate objects precedes the stage of perception of the whole situation directly contradicts all of these data. Moreover, taking Stern's idea to its logical conclusion, we are forced to assume that at even earlier phases of development, the child's perception has an even more fragmented and particulate character and that perception of separate objects is preceded by a stage in which the child can perceive their separate parts or qualities and only later unites them into objects and after that unites the objects into actual situations. We have before us a picture of development of children's perception permeated by rationalism and contradicting everything that we know from newer studies.

The contradiction that we see between the basic line of development of psychophysiological processes in the child and facts described by Stern can be explained only by the fact that the process of perceiving and describing a picture is significantly more complex than a simple, natural psychophysiological act and that new factors are involved here that radically reconstruct the process of perception.

Our first task was to show that the process of describing the picture studied by Stern is inadequate to the child's direct perception, the stages of which this author tries to disclose in his experiment. We were able to establish this with a very simple experiment. It was enough to ask a two-year-old to show us by pantomime the content of a picture, eliminating speech, to convince ourselves that the child at the *object* stage, according to Stern, splendidly perceived the whole real situation of the picture and very easily reproduced it.*

Behind the phase of *object perception* was actually hidden a rich and integral perception wholly adequate to the picture presented, which destroyed the hypothesis on the elementary character of perception at that age. What was usually considered a property of the child's natural perception was in fact a feature of his speech, or, in other words, the feature of his verbalized perception.

Observations of children at a very early age showed us that the primary function of the word that the child uses actually can be reduced to pointing, to isolating a given object from all the whole perceived by the child in the integral situation. The fact that the child's first words are accompanied by very expressive gestures as well as a series of test observations convinces us of this. Even at the first steps of the child's development, the word intrudes into his perception, isolating separate elements, surmounting the natural structure of the sensory field, and seemingly forming new, artificially introduced and mobile structural centers. Speech does not simply accompany children's perception—from the very early stages, it begins to assume an active part in it; the child begins to perceive the world not only through his eyes, but also through his speech. The essential point in the development of children's perception can be reduced specifically to this process.

This complex, mediated structure of perception also affects the character of the descriptions that Stern got from the child in the experiments with pictures. The child, giving a response about the picture presented, does not simply verbalize his natural perception of it, expressing it in an incomplete verbal form; speech dissects

*For the experiments, we used Stern's original pictures; the dynamics of these pictures made it possible for the child to disclose his perception of the pictures quite adequately by pantomiming the scene.

his perception, isolates definite points from the whole complex, introduces into perception an analyzing moment, and in this way replaces the natural structure of the process under consideration with a complex, psychological, mediated structure.

Only later when intellectual mechanisms connected with speech are transformed, when the isolating function of speech develops into a new synthesizing function, does verbalized perception undergo further changes, overcoming the initial dissecting character and passing into more complex forms of comprehending perception. The natural laws of perception, which can be observed in especially striking forms in receptor processes of higher animals, are restructured in their elements because of the inclusion of speech which dissects, and human perception takes on a completely new character.

The fact that including speech actually has a certain restructuring influence on the laws of natural perception is obvious with special clarity when speech intrudes into the process of reception, impedes and complicates adequate perception, and constructs it according to laws sharply different from the natural laws of reflecting the situation. Most clearly, we can see the child's verbal reconstruction of perception in a specially conducted series of experiments.*

Division of the Primary Unity of the Sensory-Motor Function

The child's transition to qualitatively new forms of behavior is not at all limited to the changes within the sphere of perception that we described. What is much more important, also changed are the relation of perception to other functions that participate in the whole intellectual operation and its place and role in the dynamic system of behavior that is connected with the use of tools.

Perception of higher animals never acts independently and in isolation, but always forms a part of a more complex whole, and only in connection with this can the laws of this perception be understood. The ape does not passively perceive the visually presented situation, but its whole behavior is directed toward getting an object that attracts it. The complex structure that constitutes a real merging of instinctive, affective, motor, and intellectual factors is the only actual object of psychological study from which only by abstraction and analysis can perception be isolated as a relatively independent system closed within itself. Experimental-genetic studies of perception show that this whole dynamic system of connections and relations among separate functions is restructured in the process of the child's development no less radically than the separate points in the system of perception itself.

As to objective significance, of all the changes that play a decisive role in the child's mental development, the special relation, perception—movement, must be placed first.

In psychology, the fact that all perception has its dynamic continuation in movement has long been established, but only in more recent times has the position of the old psychology been refuted according to which perception and movement, as separate, independent elements, can act in an associative connection with each other like two meaningless syllables in experiments on memorizing. Contemporary psychology is increasingly adopting the idea that the initial unity of sensory and motor processes is a hypothesis much more in accordance with the facts than the teaching on their initial isolation. Even in initial reflexes and simplest reactions, we observe a merging of perception and movement which convincingly shows that

*Editor's note: For more details, see Chapter 1.

both these parts are inseparable points of one dynamic whole, one psychophysiological process. The specific adaptation of the structure of the motor response to the character of the stimulation, which was an insoluble problem for the old views, is explained only if an initial unity and wholeness of the sensory-motor structures are assumed.

We find such correspondence of the structure of sensory and motor processes, elucidated by the dynamic character of perception, not only in elementary forms of reactive processes, but also at higher levels of behavior in experiments with intellectual operations and the use of tools by apes: the observation of the experimenter (W. Köhler[33]) shows that objects seemingly acquire vectors and move in the visual field in the direction of the goal when the ape considers the situation it must solve. The self-observation that is inaccessible to the ape is fully replaced here by the beautiful description of its movements which are as if a direct dynamic continuation of its perception. E. Jaensch[34] gives a felicitous experimental commentary (we had the occasion to confirm it in our own laboratory) on experiments with eidetics who resolved the same situation in a purely sensory way in which movement actually carried out by the ape was replaced by moving the object in the visual field. Thus, in this case, the unity of sensory and motor processes in an intellectual operation acts in pure form; movement is included in the sensory field, and the internal mechanisms that elucidate the corresponding sensory and motor parts of the intellectual operation in the ape become completely understandable.

In experiments on the study of the motor system linked to internal affective processes, we demonstrated that the motor reaction is so merged and inseparably participates in the affective process that it can serve as a reflecting mirror in which it is possible to literally read the hidden structure of the affective process that is hidden from direct observation. Specifically this is a fact of major significance that is decisive in using an involuntary, linked motor reflex to produce an elegant symptomatological means for establishing objectively both experiences hidden by the subject (experiments with diagnostics of traces of crimes) and displaced complexes (posthypnotic suggestion, subconscious affective traces, etc.).

The initial natural relation of perception and movement and their being included in a single psychological system, as experimental-genetic study shows, disintegrates in the process of cultural development and is replaced with completely different structural relations as soon as the word or some other sign appears between the initial and final stage of this process, and the whole operation acquires an indirect, mediated character.

Specifically with this fate of psychological structures and with the elimination of the initial relationship between perception and movement, elimination that occurs on the basis of including stimuli-signs (new in the functional sense) in the psychological structure, it becomes possible to overcome the primitive forms of behavior, a necessary prerequisite for the development of all higher mental functions specific to man. In this case, experimental-genetic study also sees the complex and tortuous path of development in the old series of experiments, one of which can serve as an instructive example for us.

In studying the child's movement in a complex selection reaction under experimental conditions, we were able to establish that his movement does not remain completely the same at different stages, but, on the contrary, undergoes evolution, the central turning point of which is a radical change in relations between sensory and motor parts of the reactive process. Up to a certain point, the child's movement is directly merged with the perception of the situation, blindly follows each shift in the field, and in this way reflects the structure of the perception directly in the

dynamics of the movement just as in Köhler's experiment, the chick at the garden fence repeats in movement the structure of the field it perceives.

The concrete experimental situation makes it possible to trace this. For example, we ask a child age four or five to press one of five keys in response to a specific stimulus. The task exceeds the natural capabilities of the child and for this reason elicits in him intensive difficulties and even more intensive attempts to solve the problem. We have before us the real process of selection as distinct from the analysis of a learned reaction that always replaced the process of genuine selection with stereotypic functioning of habit. Most remarkable here is that in the child, the whole process of selection is not separated from the motor system, but is moved to the outside and concentrated in the motor sphere: the child selects, directly making possible movements to which the selection situation impels him. The structure of his action does not in the least resemble the action of an adult who makes a preliminary decision and then carries it out in the form of a single effective movement. The child's selection is more likely to resemble a somewhat delayed selection of his own movements; here, fluctuations in the structure of perception are directly reflected in the structure of the movement; a mass of diffuse, probing trials arrested in the very process, interrupting and replacing each other, represents in the child the process of selection itself.

We could not better express the essence of the difference in processes of selection between the child and the adult than to say that in the child, selection is replaced by a series of trial movements. He selects not the stimulus (the required key) as a guide point for subsequent movements but selects the movement, comparing his result with the instruction. Thus, the child solves the problem of selection not in the perception, but in the movement when he fluctuates between two stimuli and his finger moves from one to the other, returning at midpoint; when he turns his attention to a new point, creating in this way a new center in the dynamic structure of perception controlled by the selection, his hand, forming a single merged whole with his eye, obediently goes to the new center. In short, the child's movement is not separated from perception: the dynamic curves of the one process and the other coincide almost completely in the one case and in the other.

However, this primitive-diffuse structure of the reactive process changes radically as soon as a complex mental function is introduced into the process that converts the natural process, fully available to animals, into a higher mental operation characteristic for man.

We suggested that the child, in whom we have just observed a diffused impulsive process of motor selection organically merged with perception, facilitate the task of selection by placing before each of the keys corresponding auxiliary signs to serve as supplementary stimuli to guide and organize the process of selection. A child of five or six years carries out this task very easily using an auxiliary sign to mark the key which he must press when a certain stimulus is presented. The use of an auxiliary device does not, however, remain as a secondary and additional fact that only somewhat complicates the character of the operation of selection; the structure of the mental process is reconstructed radically under the influence of the new ingredient, and the primitive, natural operation is replaced here by a new cultural operation.

The child, resorting to an auxiliary sign in order to find the right key for the given stimulus, no longer produces the hesitantly seeking movements in the air that arise directly with perception of motor impulses, which we observed in the primitive selection reaction. The use of an orienting sign disrupts the fusion of the sensory and the motor fields and introduces a certain *functional barrier* between the beginning and end point of the reaction, replacing the direct outflow of excitation into

the motor sphere with preliminary closures with the help of higher mental systems. Earlier, the child solved the problem impulsively, now he solves it by an internal establishment of the connection of the stimulus with a corresponding auxiliary sign, and the movement, which itself carried out the selection earlier, now serves only as a goal of the operation. The symbolic system radically reconstructs the structure of this operation, and the child who can speak controls his movement on a completely new basis.

Including the functional barrier moves the complex reactive processes of the child to another plane: it excludes blind impulsive trials, affective in nature, that distinguish the primitive behavior of an animal from behavior based on preliminary symbolic combinations of intellectual behavior of man. Movement separated from direct perception and subject to symbolic functions included in the reactive act breaks from the natural history of behavior and turns a new page—the page of higher intellectual activity of man.

With special clarity, pathological material convinces us that including speech in behavior, and the higher symbolic functions connected with it, restructures the motor system itself and moves it to a new and higher level. We had the opportunity to observe that in aphasia with cessation of speech, the functional barrier we described arose, and movement again became impulsive, merging into a single whole with perception. In an experimental situation similar to the one described, in a number of aphasics, we observed the characteristic diffuse and premature motor impulses, seeking motor trials, with which the patients made a selection. These trials showed that the movements were no longer subject to preliminary planning in symbolic factors that created genuine intellectual behavior out of the movements of an adult cultured person.

We considered the genesis and fate of two fundamental functions in the behavior of the child. We saw that in a complex operation of using tools and practical intellectual action, these functions, which play a real decisive role, do not persist in the child as one and the same, but, in the process of development, undergo a complex transformation, changing not only their internal structure, but also appearing in new functional relations with other processes. Consequently, according to psychological composition, the use of tools, as we observe it in the behavior of the child, is not a simple repetition or direct continuation of what comparative psychology observed in the ape. Psychological analysis discloses, in this act, substantial and qualitatively new traits, and the inclusion in this act of higher, historically created symbolic functions reconstructs the primitive process of solving a problem on a completely new basis (of these functions, we considered speech and the use of tools here).

True, at first glance, in the use of tools by the ape and by the child, we see a certain external similarity that caused investigators to consider both of these cases as essentially related. The similarity was connected exclusively with the fact that in both cases functions are used that are similar in their final purpose. However, the study shows that these externally similar functions differ from each other no less than the depositions on the Earth's crust in different geological eras. If in the first case, the functions of the biological formation solve the problem presented to the animal, then in the second case, similar functions of the historical formation come forward and begin to play a leading role in solving the problem. From the aspect of phylogenesis, being a product not of biological evolution of behavior but of historical development of the human personality, and from the aspect of ontogenesis, these functions also have their own special developmental history closely connected with the biological formation, but not coinciding with it or with the second line of mental development of the child that is formed together with it. We call these func-

tions higher, having in mind primarily their place in development, but we are inclined to call the history of their formation sociogenesis of higher mental functions, in contrast to biogenesis of lower functions, having in mind, in the first place, the social nature of their origin.

The appearance in the process of the child's development of new historical formations together with comparatively primitive layers of behavior is, thus, the key without which the use of tools and all higher forms of behavior will remain a puzzle for investigators.

Reconstruction of Memory and Attention

The brief form of a review does not allow us to analyze in detail all the basic mental functions that participate in the operation we studied. We will limit ourselves therefore to the most general reference to the fate of those that are the most important without which the psychological structure of using tools would remain unclear for us. Attention must be first according to degree of participation in this operation. All investigators, beginning with Köhler, note that the appropriate directing of attention or distracting of it is an essential factor in the success or lack of success of a practical operation. This fact, noted by Köhler, retains its significance in the behavior of the child also. However, it is essential that, in contrast to the animal, the child first is in a state of independently and actively shifting his attention, restructuring his perception and, in this way, freeing himself to a large degree from subjection to the structure of the visual field that he is given. At a certain stage of development that connects the use of tools with speech (at first syncretically, and later also synthetically entering into this operation), the child in this way transfers the activity of his attention to a new plane. With the help of the indicative function of words, which we noted above, he begins to control his attention, creating new structural centers of the perceived situation, and in this way, changing, in the fortuitous expression of G. Kafka,[35] not the degree of clarity of one part of the perceived field or another, but its center of gravity, the significance of its separate elements, isolating ever new figures from the background and, in this way, infinitely broadening the possibility of actively controlling his attention.

All of this frees the child's attention from the power of the actual situation that affects him directly. Using speech to create, together with the spatial field, a temporal field of action that is just as visible and real as the optical situation (although perhaps somewhat more vague), the child who can speak has the possibility of dynamically directing his attention, acting in the present from the point of view of a future field, and frequently referring to actively created changes in the present situation from the point of view of his past actions. Specifically owing to the participation of speech and the transition to a free distribution of attention, the future field of action is converted from the old and abstract verbal formula into an actual, optical situation; in it, all of the elements that are part of the plan of future action enter into the basic configuration, eliminating possible actions from the general background in this way. With the help of speech, the fact that the field of attention does not coincide with the field of perception extracts from the latter the elements of an actual *future field* and results in the specific difference between the child's operation and the operation of higher animals. In the child, the field of perception is organized by the verbalized function of attention and if, for the ape, absence of direct optical contact between the object and the goal is enough to make the problem insoluble, the child easily eliminates this difficulty by verbal intervention, reorganizing his sensory field.

Owing to this circumstance, the possibility arises of placing into a single field of attention a figure of a future situation consisting of elements of the past and present sensory fields. And in this way, the field of attention encompasses not one perception, but a whole series of potential perceptions that form a general successive dynamic structure spread over time. The transition from a simultaneous structure of the visual field to a successive structure of a dynamic field of attention is accomplished as a result of a reconstruction—on the basis of including speech—of all the basic connections between separate functions that participate in the operation: the field of attention is separated from the field of perception and develops over time, including the given actual situation as one instance of a dynamic series.

The ape, perceiving a stick at one moment, in one visual field, no longer turns its attention to it in the following moment when its visual field changes. It must see the stick first of all in order to pay attention to it; the child can turn his attention in order to see.

The possibility of placing elements of the past and the present visual fields (for example, the tool and the goal) into a single field of attention leads, in turn, to a major reconstruction of another important function that participates in the operation—memory. Just as the action of attention, in the valid observation of Kafka, has its effect not in augmenting the clarity of one part or another of the sensory field, but in shifting the center of gravity, in its structure and in a dynamic change of this structure, in a change in the figure and background, the role of memory in the operation of the child affects not simply the extension of the segment of the past that actually is merged into a single whole with the present, but results in a new method of combining the elements of past experience with the present. A new method develops on the basis of including into a single focus of attention the speech formulas of past situations and past actions. As we have seen, speech forms the operation along laws different from direct action precisely just as it merges, unites, synthesizes the past and the present in a different way, freeing the action of the child from the power of direct remembering.

The Voluntary Structure of Higher Mental Functions

Subjecting the mental operation of practical intellect connected with the use of tools to further analysis, we see that the temporal field created for action with the help of speech extends not only backward, but also forward. Anticipation of subsequent moments of the operation in a symbolic form makes it possible to include special stimuli in the present operation; the task of these is reduced to presenting in the situation at hand instances of future action and actually realizing their effect in the organization of behavior in the present moment.

In this case, including symbolic functions in the operation, as we have seen in the example of the operation of memory and attention, does not lead to a simple extension of the operation over time, but creates conditions for a connection of a completely new character, a connection of elements of the present and future (actually perceived elements of the situation at hand are included in one structural system with symbolically represented elements of the future), and a completely new psychological field for action is created that leads to the appearance of the function of formation of intention and of a target action planned in advance.

This transformation in the structure of the child's behavior is connected with changes of a significantly more profound order. In comparing the solving of a problem by deaf-mute children in Köhler-like experiments, even Lindner turned his attention to the fact that stimulating motives that compel the ape and the child to

attain a goal must not be considered to be identical. The animal's dominant instinctive motives yield in the child to new motives, social in origin that have no natural analog, but, regardless of this, reach a significant intensity in the child. K. Lewin[36] called these motives, which have a decisive significance in the mechanics of a developed volitional act, quasi-needs,* noting that including them constructs in a new way the affective and volitional systems in the child's behavior, and specifically changes his relation to the organization of future actions. Two principal features make up an original form of this new layer of "motors" of human behavior: the mechanism of implementing an intention at the moment of its appearance, first, is separated from the motor apparatus and, second, contains an impulse to action, the implementation of which is referred to a future field. Neither of these features is present in the action organized by a natural need where the motor system is inseparable from direct perception and all the action is concentrated in a real mental field.

The way in which actions referring to the future develop, thus far inadequately explained, is revealed from the point of view of a study of symbolic functions and their participation in behavior. This functional barrier between perception and the motor system, which we established above and which is forced by its origin to insert a word or other symbol between the beginning and end of action, explains the separation of the impulses from the direct realization of the act, separation that in turn is a mechanism of preparation for actions postponed for the future. Specifically the inclusion of symbolic operations makes possible the appearance of a psychological field completely new in composition, not based on what is at hand in the present, but presenting a sketch of the future, and in this way creating free action independent of the direct situation.

A study of the mechanisms of symbolic situations, which seemingly extract the action from the three natural primary connections already present due to the biological organization of behavior and transfer it into a completely new psychological system of functions, allows us to understand by which pathways man arrives at the possibility of forming "any intentions"—a fact that thus far has not received adequate attention and which, according to Lewin's correct observation, distinguishes the cultured adult from the child and the primitive.

If we attempt to summarize the results of analysis of how separate mental functions and their structural connections are changed under the influence of including symbols, and to compare on the whole, the non-verbal operation of the ape with the verbalized operation of the child, we will find that one is related to the other the way voluntary action is related to involuntary.

The traditional view refers everything to voluntary actions that are not primary or secondary automatic action (instinct or habit). Moreover, actions of a third order are possible that are neither automatic nor voluntary. As K. Koffka[37] demonstrated, *intellectual actions* of the ape cannot be reduced to ready automatisms, but neither do they have a *voluntary* character. Studies that we rely on explain for us what is lacking in the action of the ape that would make it *voluntary: a voluntary* action begins only where one controls one's own behavior with the help of symbolic stimuli.

*With the transition to artificially established needs, the emotional center of the situation is transferred from the goal to the solving of the problem. Essentially, the "situation of the problem" in the experiment with the ape exists only in the eyes of the experimenter; only the goal and the obstacle that interferes with achieving it exist for the animal. The child, however, tries most of all to solve the problem that has been presented to him, in this way including in his world completely new relations to the goal. Because of the possibility of forming quasi-needs, the child is in a position to segment the operation, converting each of its separate parts into an independent problem which he formulates for himself with the help of speech.

Rising to this level in the development of behavior, the child makes a leap from the "rational" action of the ape to the rational and free action of man.

Thus, in the light of the historical theory of higher mental functions, the boundaries, standard in contemporary psychology, that separate some and unite other mental processes, shift. What was earlier ascribed to different areas proved to be united into one, and what was placed in one class of phenomena actually proved to belong on completely different rungs of the genetic ladder and was subject to different laws. For this reason, the higher mental functions form a system united in genetic character, but dissimilar in the structures that comprise it. At the same time, this system is constructed on bases completely different from those that underlie elementary mental functions. The decisive factor that cements the whole system, whether or not one mental process or another is related to it, is the unity of the origin of structures and the character of functioning.

Genetically, in terms of phylogenesis, their basic trait is the fact that they were formed as a product not of biological evolution, but of historical development of behavior; they preserve a specific social history. In terms of ontogenesis, from the point of view of structure, their characteristic is that, in contrast to the direct structure of elementary mental processes, they are direct reactions to stimuli and are constructed on a base of utilizing mediating stimuli (signs), and because of this, they have a mediated character. Finally, with respect to function, they are characterized by the fact that they play a new and essentially different role in comparison with elementary functions, and appear as a product of the historical development of behavior.

All of this integrates the given functions into a broad field of genetic study and, instead of being interpreted as lower or higher variants of the same functions consistently manifested parallel to each other, they begin to be considered as different stages of a single process of the cultural formation of personality. From this point of view, we can, on the same basis on which we spoke of logical memory or voluntary attention, speak of logical attention and voluntary or logical forms of perception, which differ sharply from natural forms of these processes that operate according to laws proper to a different genetic stage.

As a logical consequence of admitting into the system of psychological categories the use of signs as being of decisive importance to the history of the development of higher mental functions, external symbolic forms of activity such as verbal communication, reading, writing, counting, and drawing are also involved. Usually these processes were considered as dissimilar and auxiliary with respect to internal mental processes, but from the new point of view from which we proceed, they are admitted into the system of higher mental functions as equivalent to all other higher mental processes. We are inclined to consider them primarily as special forms of behavior formed in the process of sociocultural development of the child and forming the external line of development of symbolic activity that exists together with the internal line represented by cultural development of such formations as practical intelligence, perception, and memory.

Not only the activity connected with practical intellect, but all other functions, just as primary and frequently even more elementary, that enter into the biologically formulated forms of behavior manifest, in the process of development, those laws that we discovered in the analysis of practical intellect. The path taken by the practical intellect of the child constitutes, in this way, the general line of development of all basic mental functions, each of which, like practical intellect, has its own human-like form in the animal world. This path is similar to the one we considered in preceding pages: it also begins with natural forms of development, soon outgrows

them, and results in a radical reconstruction of elementary functions on the basis of using signs as means of organizing behavior.

Thus, as strange as this may seem from the point of view of the traditional approach, the higher functions of perception, memory, and attention, movements internally connected with sign activity of the child, can be understood only on the basis of analysis of their genetic roots and of the reorganization to which they are subjected in the process of their cultural history.

Now we are confronted with a conclusion of enormous theoretical importance. Shortly, we will consider the problem of the unity of higher mental functions based on the substantial similarity that is manifested in their origin and development. Such functions as voluntary attention, logical memory, higher forms of perception and movement, which thus far have been studied in isolation, as separate psychological facts, now, in the light of our experiments, appear essentially as phenomena of one order—united in their genesis and in their psychological structure.

Chapter 3
SIGN OPERATIONS AND ORGANIZATION OF MENTAL PROCESSES

The Problem of the Sign in the Formation of Higher Mental Functions

The material collected leads us to psychological positions whose meaning goes far beyond the limits of an analysis of the narrow and concrete group of phenomena which was thus far the main subject of our study. Upon closer examination, the functional, structural, and genetic patterns disclosed in the study of factual data appear to be patterns of a more general order and compel us to revise altogether the problem of the construction and genesis of higher mental functions. Two paths lead to this review and general conclusion.

On the one hand, a broader study of other forms of symbolic activity of the child shows that not just speech, but all operations connected with the use of signs, with all their differences in concrete forms, display the same patterns of development, construction, and functioning as does speech in its role as considered above. Their psychological nature seems to be the same as the nature of the speech activity we considered in which properties common to all higher mental processes are presented in a full and developed form. Consequently, in the light of what we have learned concerning the functions of speech, we must consider other psychological systems similar to it, whether we are dealing with symbolic processes of a second order (writing, reading, etc.) or with the most basic, such as speech and forms of behavior.

On the other hand, not only the operations connected with practical intellect, but all other functions that are just as primary and frequently even more elementary, functions that belong to the inventory of biologically formed types of activity, display, in the process of development, patterns that we have found in the analysis of practical intellect. The path that the child's practical intellect takes, which we considered above, is, thus, a common path of development of all basic mental functions; these are united with practical intellect by the fact that they have human forms in an animal world. The path is similar to the one we have taken: beginning with the natural forms of development, it soon outgrows them and undergoes a radical reconstruction of those functions on the basis of using a sign as a means for organizing behavior. Thus, no matter how strange it seems from the point of view of traditional teaching, the higher functions of perception, memory, attention, movement, and others are internally connected with the development of the symbolic activity of the child, and they can be understood only on the basis of an analysis of their genetic roots and the reconstruction that they were subjected to in the process of cultural history.

We are confronted by a conclusion of great theoretical significance: opening before us is a unity of higher mental functions based on an essentially identical origin and mechanism of development. Functions such as voluntary attention, logical memory, higher forms of perception, and movement that thus far were considered separately, as specific psychological facts, in the light of our experiments, appear as phenomena of one psychological order, a product of a basically single process of historical development of behavior. By the same token, all of these functions enter into the broad aspect of genetic study and instead of constantly co-existing together with lower and higher varieties of one and the same function, are seen as actually being different stages of a single process of the cultural formation of the personality. From this point of view, we would have the same basis with which we speak of logical memory or voluntary attention to speak of voluntary memory and logical attention, of voluntary or logical forms of perception, which are decidedly different from natural forms.

The logical conclusion from recognizing the paramount importance of using signs in the history of the development of all higher mental functions is to include in the system of psychological concepts the external symbolic forms of activity (speech, reading, writing, counting, drawing) that are usually considered as something peripheral and accessory with respect to internal mental processes and which, from the new point of view that we are defending, enter into the system of higher mental functions on equal footing with all other higher mental processes. We are inclined to consider them first of all as unique forms of behavior constituted during the history of sociocultural development of the child and forming an external line in the development of symbolic activity together with the internal line represented by the cultural development of such functions as practical intellect, perception, memory, etc.

Thus, in the light of the historical theory on higher mental functions that we are developing, the customary boundaries that divide or unite separate processes according to contemporary psychology are shifted: what was formerly placed in different cells of the pattern actually belongs to one area and conversely, what seemed to belong to one class of phenomena actually is placed on completely different rungs of the genetic ladder and is subject to completely different laws.

The higher functions, therefore, are one according to genetic nature although they are different in the constitution of the psychological system constructed on quite different bases from the system of elementary mental functions. The uniting points of the whole system that determine the relation to it of one specific mental process or another is the common quality of their origin, structure, and function. In the genetic respect, they differ in that, on the plane of phylogenesis, they arose as a product not of biological evolution, but of historical development of behavior, and on the plane of ontogenesis, they also have their special social history. With respect to structure, their uniqueness lies in the fact that, as distinct from the direct reactive structure of elementary processes, they are constructed on the basis of using stimuli-means (signs) and because of this, they have an indirect (mediated) character. Finally, with respect to function, they are characterized by the fact that they play a new and essentially different role in behavior from the role of the elementary functions; they carry out an organized adaptation to a situation with preliminary control of the person's own behavior.

Social Genesis of Higher Mental Functions

Thus, if the sign organization is the most important distinguishing characteristic of all higher mental functions, then, naturally, the first question that arises before the theory of higher functions is the question of the origin of this type of organization.

While traditional psychology was looking for the origin of symbolic activity either in a series of "discoveries" or other intellectual operations of the child or in processes of formation of ordinary conditioned connections, seeing in them only a product of invention or a complicated form of habit, the whole course of our research compelled us to isolate an independent history of sign processes that form a special line in the general history of the mental development of the child.

In this history, both diverse forms of habits connected with the full functioning of any system of signs and complex processes of thinking necessary for rational use of these habits also find their subordinate place. But neither of these can provide an exhaustive explanation for the origin of higher functions, but are themselves explained only in the broader connection with the processes of which they are an ancillary part. The process of the origin of operations connected with the use of signs, however, not only cannot be deduced from the formation of habits or invention, but is, in general, a category that cannot be deduced, a category that remains within the limits of individual psychology. By its very nature, it is a part of the history of the social formation of the child's personality, and only within the structure of this whole can the patterns that control it be disclosed. Human behavior is the product of development of a broader system than just the system of a person's individual functions, specifically, systems of social connections and relations, of collective forms of behavior and social cooperation.

The social nature of every higher mental function has thus far escaped the attention of investigators who did not think to represent the development of logical memory or voluntary activity as part of the social formation of the child because in its biological beginning and in the end of mental development, this function appears as an individual function; only genetic analysis discloses the path that unites the beginning and end points. Analysis shows that every higher mental function was formerly a unique form of psychological cooperation and only later was converted into an individual method of behavior, transferring into the psychological systems of the child the structure that, even in the transfer, retains all the basic traits of symbolic structure, changing only its situation basically.[38]

Thus, the sign initially acts as a means of social connection in the behavior of the child, as an intermental function; subsequently it becomes a means of controlling his own behavior and he just transfers the social relation to a subject inward into his personality. The most important and basic of the genetic laws, to which the study of the higher mental functions leads us, states that every symbolic activity of the child was at one time a social form of cooperation and retains, along the whole path of development to its very highest points, the social method of functioning. The history of higher mental functions is disclosed here as the history of converting means of social behavior into means of individual-psychological organization.

Basic Rules of Development of Higher Mental Functions

The general positions at the base of the historical theory of higher mental functions that we are developing allow us to reach certain conclusions connected

with the most important rules that control the process of development that is of interest to us.

1. The history of development of each of the higher mental functions is not the direct continuation and further improvement of the corresponding elementary functions, but undergoes a radical change of direction in development and a subsequent movement of the process to a completely new plane; each higher mental function is, thus, a specific neoformation.

On the plane of phylogenesis, this position does not present any difficulties because the biological formation and the historical formation of any function are so sharply delimited from each other and so clearly belong to different forms of evolution that they present two processes in pure and isolated form. In ontogenesis both lines of development are complexly interwoven and for this reason frequently led investigators into error, being merged for the observer into an inseparable whole and, as a result of this, the illusion always developed that the higher processes are a simple continuation and development of the lower. We will cite only one factual reason that confirms our position based on the material from more complex mental operations: we shall consider the development of counting and arithmetic processes.

In a series of psychological studies, the view was established that arithmetic operations of the child are, from the very beginning, a complex symbolic activity and grow out of elementary forms of the operation with numbers through continuous development.

Experiments conducted in our laboratory (Kuchurin, N. A. Menchinskaya[39]) convincingly show that there cannot be any talk here of a direct, gradual perfecting of elementary processes but that the change in forms of counting operations is a deep, qualitative change of the mental processes that participate in it. Observations have shown that if in the beginning of development, the operation with numbers is reduced only to direct perception of certain numbers and number groups, and the child cannot count at all but perceives a number, then further development is characterized by a breaking up of this direct form and its replacement by a different process in which a series of mediated auxiliary signs participate, specifically such as analytical speech, the use of fingers and other auxiliary objects that lead the child to the process of counting. Further development of counting operations is again connected with radical reconstructions of the mental functions that participate in them, and counting with the help of complex counting systems again presents a qualitatively special psychological neoformation.

We have come to the conclusion that the development of counting is reduced to the participation in it of basic mental functions, and the transition from preschool arithmetic to school arithmetic is not a simple, continuous process, but a process of surmounting primary elementary patterns and replacing them with new, more complex processes. We shall demonstrate this with a concrete example.

If, for a small child, the process of counting on the whole is determined by perception of forms, then subsequently, this relation is inverted and perception of form itself is determined by the segregating tasks of counting. In our experiments, we asked a small child to count the number of buttons in the figure of a cross made up of them. As a result, we invariably got a mistake: the child perceiving this figure as a whole system of a cross, counted twice the center element, which is part of both systems that cross each other. Only significantly later did he move to a different type of process; from the very beginning, perception was determined by the tasks of counting and was divided into three separate groups of elements that were counted in sequence. In this process, we cannot help but see a replacement of two psychological methods of behavior with the emancipation from a direct

connection of sensory and motor fields and with the processing of perception by complex psychological units.

All of these studies convincingly show that evolutionism in the study of development of the child's behavior must yield to more adequate ideas that take into account the completely unique, dialectical character of the process of formation of new mental forms.

2. Higher mental functions are not built up as a second story over elementary processes, but are new psychological systems that include a complex merging of elementary functions that will be included in the new system, and themselves begin to act according to new laws; each higher mental function is, thus, a unit of a higher order determined basically by a unique combination of a series of more elementary functions in the new whole.

In our experiments on the reorganization of perception when speech is included, and more broadly, on the mutual and deep change in the function with the formation of the complex psychological system "speech–practical intellectual operation," we have already traced the aspect that has a decisive significance in the study of the formation and structure of higher mental functions. In these cases, we actually observed the formation of complex psychological systems with new functional relations between separate members of the system and corresponding changes of the functions themselves. If perception connected with speech begins to function not according to laws of the sensory field, but according to laws organized by the system of attention, if the meeting between the symbolic operation and the use of tools produces new forms of mediated control of an object with preliminary organization of the person's own behavior, then we can speak here of a certain general law of mental development and the formation of higher mental functions.

In a series of psychological studies, we became convinced that both the most primitive and the most complex higher mental functions undergo this kind of reconstruction; a psychological study of imitation done in our laboratory (L. I. Bozhovich[40] and L. S. Slavina[41]) showed that primitive forms of reflecting mechanical imitation, being included in the system of sign operations, form a new whole, begin to be constructed according to completely new laws, and acquire a different function. In other experiments, in a psychological study of the process of formation of concepts according to the methods developed by Sakharov, our colleagues, Kotelova and Pashkovskaya, showed that, at higher stages of mental processes as well, the inclusion of complex speech functions is connected with the production of completely new forms of categorical behavior not previously observed at all.

3. With the disintegration of higher mental functions, in disease processes, the connection between symbolic and natural functions is disrupted first of all, and this brings about a detachment of a number of natural processes that begin to act according to primitive laws as more or less independent psychological structures. Thus, the disintegrations of higher mental functions represent a process that, from the qualitative aspect, is the reverse of their construction.

It would be difficult to imagine more clearly than in aphasia the general disintegration of higher mental functions with a disturbance of speech symbolics. Damage to speech is accompanied in this case by the loss (or significant disruption) of sign operations; this loss, however, does not at all occur as an isolated monosymptom, but entails general and deeper disruptions in the activity of all higher mental systems. In a special series of studies, we were able to establish that, in practical actions, the aphasic who has lost higher sign operations is wholly subject to elementary laws of the optical field. In another series, we experimentally established sharp changes characteristic for operating activity of the aphasic that reverts to the primitive immaturity of sensory and motor spheres: direct motor manifestation of

impulses and the impossibility of inhibiting action and forming future intentions, an inability to transform an image once developed by shifting attention, and a total inability to move away from understood and habitual structures in reasoning and actions; a return to primitive forms of reflecting imitation — these are the deepest consequences connected with damage to the higher symbolic systems.

Studies of aphasia show with exceptional persuasiveness that higher mental functions do not simply exist alongside the lower or above them; actually, the higher functions permeate the lower and reform all of them, even the deepest layers of behavior, to such an extent that their disintegration, connected with the detachment of lower processes in their elementary forms, radically changes the whole structure of behavior, making it revert to the most primitive, "paleopsychological" type of activity.

Chapter 4
ANALYSIS OF SIGN OPERATIONS OF THE CHILD

We are in a position to close the circle of our discussion and to return to what was indicated at the beginning of this work by the patterns that control the development of the practical intellect of the child, which is only a specific case of the patterns of construction of all higher mental functions. The conclusions we reached confirm this and show that higher mental functions arise as a specific neoformation, as a new structural whole that is characterized by the new functional relations that are being established within it. We have indicated that these functional relations are connected with the operation of using signs as a central and basic factor in the construction of every higher mental function. Thus, this operation appears to be the common trait of all higher mental functions (including the use of tools, which is always our point of departure), a trait that must be taken out of parentheses and subjected in the conclusion of our study to special consideration.

My colleagues and I performed a series of studies on this problem in recent years, and based on the data obtained, we can now sketch the basic patterns that characterize the structure and development of sign operations of the child.

Experimentation is the only path by which we can delve into the patterns of higher processes in sufficient depth; specifically in an experiment, we can elicit in a single, artificially created process the most complex changes separated in time, frequently with years passing latently, which are never accessible to observation in all their real totality in the natural genesis of the child and cannot be comprehended directly in a single glance and correlated with each other. The investigator who is trying to understand the laws of the whole and wants to penetrate beyond the external traits into the causal and genetic connection of these points must go to a special form of experimentation which we describe below from the methodological aspect; the essence of this consists in creating processes that disclose the true course of development of the function that interests the investigator.

The experimental-genetic study also allows us to study the problem from three mutually connected aspects: we will describe the structure, origin, and subsequent fate of sign operations of the child that lead us directly to understanding the internal essence of higher mental processes.

The Structure of Sign Operations

We will consider the history of child memory, and using an example of its development, we will try to show the general features of sign operations in the sections mentioned above. For a comparative study of the construction and method of action of elementary and higher functions, memory is exceptionally convenient material.

Consideration of human memory on the phylogenetic plane shows that even at the most primitive stages of mental development two methods of its functioning, essentially different from each other, can be clearly distinguished. One of these, dominant in the behavior of primitive man, is characterized by direct impression of material, a simple sequence of actual experience, an imprint of those mnemic traces whose mechanism was tracked in especially clear form by E. Jaensch in the phenomenon of eidetism. This memory is as direct as immediate perception with which it has not yet broken the direct connection, and it arises from direct action of the external impression on the person. From the point of view of structure, the directness is the most important characteristic of the entire process as a whole, a characteristic that connects the person's memory with the memory of the animal; this also accords us the right to call this form of memory, natural memory.

This form of the functioning of memory is not, however, the only form even in the most primitive man; on the contrary, even in him, other forms of remembering are noted together with this form, forms which on closer analysis appear to belong to a completely different genetic order and lead us to a completely different formation of human mentality. Even in such comparatively simple operations as the use of a knot or a notch to aid remembering, the psychological structure of the process changes completely.

Two essential points distinguish this operation from elementary retention in memory: in this case, on the one hand, the process clearly goes beyond the limits of elementary functions directly connected with memory and is replaced by more complex operations, which in themselves may not have anything in common with memory, but which carry out the function of a new operation in the general structure that was previously carried out by the direct impression. On the other hand, here, the operation goes beyond the limits of natural, intracortical processes and includes in the psychological structure elements of the environment that begin to be used as active agents that control the mental process from outside. Both points result in an entirely new type of behavior; analyzing its difference from the natural forms of behavior, we can assume this type of behavior to be cultural.

The essential point in the mnemonic operation is the participation in it of certain external signs. Here, the subject does not solve a problem by direct mobilization of his natural potentials; he approaches certain manipulations anew, organizing himself through organization of things, creating artificial stimuli that differ from others in that they are retrograde: they are directed not toward others but toward himself, and make it possible for the subject to remember with the aid of an external sign. We see an example of such sign operations that organize the memory process very early in cultural history. The use of tallies and knots, rudiments of writing and primitive signs—all of this is the equipment that indicates that at early stages of cultural development, man already went beyond the limits of given natural functions and moved on to a new, cultural organization of his behavior.

It is completely understandable that in a higher symbolic operation such as the use of signs for remembering, we have the product of a most complex historical development; comparative analysis shows that this kind of activity does not exist in any species of animals, even in the highest, and there is every basis for thinking that it is the product of specific conditions of social development. It is clear that this kind of autostimulation could have arisen only after similar stimuli were already created for stimulation of another and that behind it lies a great special history. Evidently, the sign operation follows the same path as speech followed in ontogenesis, being formerly a means of stimulating another person and then becoming an intramental function.

With the transition to sign operations, we not only move on to mental processes of a higher complexity, but actually leave the field of the natural history of the mind and enter into the area of the historical formations of behavior.

The transition to higher mental functions by way of their mediation and construction of a sign operation can be successfully traced in an experiment with a child. For this purpose, we can make the transition from elementary experiments with direct reaction to a problem to those in which the child solves the problem with the help of a number of auxiliary stimuli that organize the psychological operation. In the problem of remembering a certain number of words, we can give the child a number of objects or pictures that do not represent the word presented, but can serve as a conditional sign for it which will then help the child reproduce the required word. The process we studied in this experiment must, consequently, be distinctly different from simple, elementary remembering; in this case, the problem must be solved through a mediated operation, by means of establishing a certain relation between the stimulus and the auxiliary sign; in place of simple remembering, a whole process is involved that assumes a significantly more complex method of organization of behavior than that which is characteristic of elementary mental functions. Actually, if, in the final analysis, each elementary form of behavior assumes a certain direct reaction to the problem placed before the organism and may be expressed in the simple formula S—R, the structure of a sign operation is enormously more complex. Between the stimulus and the reaction, previously united by a direct connection, an intermediate member intervenes and plays a completely special role clearly different from anything that we could see in elementary forms of behavior. This stimulus of the second order must be involved in the operation with the special function of serving its organization; it must be specially established by the personality and must have a retrograde effect, eliciting specific reactions; consequently, the pattern of a simple reactive process is replaced here by a pattern of a complex, mediated act in which the direct impulse to react is inhibited and the operation proceeds along an indirect path, establishing an auxiliary stimulus that accomplishes a mediated operation.

Careful study shows that in significantly higher forms, as compared to the elementary pattern presented, we see this structure in the higher mental processes. The mediating member, as one might imagine, is simply a method of improving and perfecting the operation; having the specific function of retrograde effect, it transfers the mental operations into higher and qualitatively new forms and allows man to control his own behavior from outside with the aid of external stimuli. The use of the sign, being simultaneously a means of autostimulation, results in a completely new and specific structure of behavior in man, a structure that breaks with the traditions of natural behavior and creates for the first time a new form of cultural-psychological behavior.

Experiments conducted in our laboratory using an external sign for remembering (A. N. Leontev,[42] 1930) showed that this form of mental operations is not only essentially new in comparison with direct remembering, but also helps the child to overcome the boundaries set before memory by natural laws of mnemonics; moreover, it is preeminently the mechanism in memory that is subject to development.

The presence of such higher or indirect paths of remembering, like the possibility of similar indirect operations, is not an unknown thing. Experimental psychology deserves credit for their empirical isolation. Nevertheless, classical studies could not see in them the new, specific, and singular forms of behavior acquired in the process of historical development. Operations of a similar type (for example, mnemotechnical memorization) were presented as nothing other than a simple ar-

tificial combination of a series of elementary processes; this fortuitous coincidence itself resulted in a mnemotechnical effect; the device created in practice was not considered by psychology as an essentially new form of memory, as a new method of its activity.

Our experiments led to a completely opposite conclusion. Considering the operation of remembering with the aid of an external sign and analyzing its structure, we are convinced that it is not a simple "psychological focus," but has all the traits and all the properties of an actually new and whole function and represents a unit of a higher order, the separate parts of which are united by relations not reducible either to laws of association or to laws of structure that have been well studied with direct mental operations. We designate these specific functional relations as a sign function of auxiliary stimuli on the basis of which a principally different relation of mental processes that are included in the given operation is established.

We can observe the whole and specific character of sign operations with particular clarity in experiments. Experiments show that if the connections with which the child who tries to remember a given word according to a sign are also formed according to laws of association or structure (we are not now in essence going into solving this problem), then the specificity itself of the sign operation cannot be explained by them. Actually, simple association or a structural connection still is not reversible, and the sign connected with the word does not necessarily bring back the given word that is presented again. We have many cases in which a process occurring according to the usual laws of structural or associative connection did not lead to a mediated operation, and the picture presented repeatedly elicited new associations in the child instead of returning him to a certain word. What is still needed for a specific sign relation to the auxiliary stimulus to develop in the child is for the child to become aware of the goal-directed character of the whole operation, and only then will the structural or associative connection acquire its necessary reversible character, and repeated presentation of the sign will, of necessity, return the subject to the word fixed with the help of this sign.

Subsequently we will consider the roots of these complex mental processes; here we would just like to note that only within the limits of an *instrumental operation* will associative or structural processes begin to play an auxiliary, mediated role. Opening before us is not a random combination of mental functions, but an actually new and special form of behavior.

The process we described is characteristic only for the construction of higher forms of memory. We would be wrong, however, if we thought that such operations introduce only a quantitative improvement into the activity of mental functions. Special experiments show that the plan described is a common principle of construction of higher mental functions and that, with their help, new psychological structures will be created that were not there before and, obviously, are impossible without this kind of sign operation,

We will illustrate this idea using an example from genetic study of the child's voluntary attention activity.

Placing a seven- or eight-year-old child in a situation that requires high and constant application of attention (for example, telling him to name the color of objects mentioned in questions without repeating one and the same color twice and not naming two prohibited colors), we find that the child is completely unable to carry out this task correctly when he tries to solve it directly. However, as soon as the child chooses the mediated organization of the process, using certain auxiliary signs, he solves the problem easily.

In experiments done in our laboratory (A. N. Leontev), we gave the child a number of colored cards and proposed that he use them to make the task easier.

When the child did not use these cards in his activity (for example, did not set aside the prohibited colors and did not remove them from the fixed field), the task remained insoluble. However, the child solved it easily if he replaced the direct naming of colors with a complex structure of responses based on auxiliary signs: if he placed the two prohibited colors into a fixed field together with the color that he had already named, forming in this way a group of prohibited stimuli that controlled subsequent responses. Always answering through the mediated auxiliary stimuli, the signs, the child organized his active attention from outside and adapted to the problems that he could not solve by direct, elementary forms of behavior.

Genetic Analysis of the Sign Operation

We shall consider mediated mental operations as a specific characteristic of the structure of higher mental functions. It would be a great mistake, however, to assume that this process arises through purely logical means, that it is invented or discovered by the child in the form of a lightning guess (an aha! experience), by means of which the child assimilates the relation between the sign and the method of using it for all time so that all further development of this special operation occurs purely through deduction. It would be as much a mistake to think that the symbolic relation to certain stimuli will intuitively be comprehended by the child as if he were retrieving it from the depths of his own soul, that symbolization is primary and not reducible further to the Kantian *a priori* by an ability to create and comprehend symbols that was primordially established in the consciousness.

Both these points of view, the intellectualistic and the intuitive, essentially eliminate metaphysically the question of the genesis of symbolic activity since for one of them, the higher mental functions are preliminarily given prior to any experience, as if implanted in the consciousness and waiting only for the chance to appear with the empirical cognition of an object. This point of view also inevitably leads to the *a priori* conception of higher mental functions. For the other view, in general, the question of origin of higher mental functions is not a problem since it admits that these signs are invented and, subsequently, all corresponding forms of behavior will be derived from them like results of logical prerequisites. Finally, we already mentioned in passing the attempt, insupportable from our point of view, to deduce complex symbolic activity from simple interference and summation of habits.

Observing over the course of several experimental series the different mental functions and studying the path of their development step by step, we came to a conclusion exactly opposite to the two views just presented. The facts disclosed before us the process of deepest significance that we call the natural history of sign operations. We were convinced that sign operations develop in no other way than as a result of a most complex and long process that displays all the typical traits of genuine development and is subject to the basic patterns of mental evolution. This means that sign operations are not simply invented by children or acquired from adults, but arise from something that is not at first a sign operation and that becomes a sign operation only after a series of qualitative transformations of which each promotes the next step, being itself promoted by the preceding step, and connects them as a stage of a single process historical in nature. In this respect, the higher mental functions are not an exception to the general rule and do not differ from other elementary processes: they are, without exception, subject in the same way to the basic law of development; they arise not as something introduced from

outside or from inside into the general process of the child's mental development but as a natural result of this process.

True, by including the history of higher mental functions in the general context of mental development and attempting to comprehend their origin from its laws, we must inevitably change the usual conception of this process itself and its laws: even within the general process of development, two basic, qualitatively unique lines are clearly distinguishable—the line of biological forming of elementary processes and the line of sociocultural formation of higher mental functions; these merge and give rise to the real history of child behavior.

Accustomed by the whole course of our observations to distinguishing the two lines indicated, we were confronted, however, by a striking fact that casts light on the question of the origin of the sign function in the ontogenesis of the child: a number of studies established experimentally the existence of a genetic connection between both lines and, by the same token, of the transitional forms between the elementary and higher mental functions. It developed that the earliest maturing of the most complex sign operations is concluded even in the system of purely natural forms of behavior and that the higher functions have in this way their own "intrauterine period" of development connecting them with the natural bases of the child's mind. Objective observation showed that between the purely natural layer of elementary functioning of mental processes and the higher layer of mediated forms of behavior there is an enormous area of transitional psychological systems; in the history of behavior, there is an area of the primitive between the natural and the cultural. These two points—the history of development of higher mental functions and their genetic connection with the natural forms of behavior—we designate as the *natural history of the sign.*

The idea of development seems to be simultaneously the key to the comprehension of the unity of all mental functions and of the origin of higher, qualitatively different forms; we come, therefore, to the position that the most complex mental formations arise from the lower through development.

Experiments studying mediated remembering make it possible for us to track the process of development in its entirety. To a significant degree, a certain primitive quality of all psychological operations is characteristic for the first stage in using a sign. Careful study shows that the sign used here for remembering a certain stimulus is not yet completely separated from it; together with the stimulus, it enters into a kind of common syncretic structure, encompassing both the object and the sign, and does not yet serve as a means for remembering.

For the child who is at the first stage of development, cognition of a goal-directed operation connected with the use of the sign is still strange; if he turns to the auxiliary picture in order to recall the word he is given, this still does not mean that the reverse path—reproducing the word according to the sign presented—is just as easy for the subject. Experiment with such reproduction shows that the child at this stage usually does not recall the initial stimulus according to the sign presented, but reproduces subsequently the whole syncretic situation toward which the sign nudges him and which may include the basic stimulus among other elements. It must be remembered on the basis of the given sign. The period during which the auxiliary sign is not a specific stimulus that necessarily returns the child to the original situation, but is always only an impulse to further development of the whole syncretic structure of which it is a part, is indisputably typical for the first, primitive stage in the history of the development of sign operations.

A series of facts convinces us that at this stage of development, the sign still acts as a part of the general syncretic situation.

1. Not just any sign is suitable for the child's operation and not just any sign can be linked to any meaning. Limited use of the sign is connected with the need for it to enter into a determined, ready complex that includes both the basic meaning and the sign connected with it. This tendency is especially clearly apparent in children age four to six. Among the signs presented, the child seeks one that has an already established connection with the word to be remembered. For the child of this age, statements that among the presented auxiliary cards "there is nothing like it," for recalling the presented stimulus are typical. While easily remembering the word presented with the help of a card that enters into a ready complex with the word, the child is not in a state to use any sign connecting it with the given word with the help of an auxiliary verbal structure.

2. In experiments in which nonsense figures were used as auxiliary material for remembering (L. V. Zankov[43]), we very frequently got neither a refusal to use them nor an effort to connect them with the given word with a certain artificial method, but an attempt to make the figure a direct reflection of the word, its direct picture. In no case was the auxiliary figure connected with the presented meaning through any mediated connection, but was a kind of direct, nonmediated drawing of the word.

Thus, as we might assume, introducing nonsense sign material into the experiment not only failed to stimulate the child's transition from using ready, prepared connections for creating new connections, but it led to the directly opposite result: to an effort to see directly in the given figure a schematic image of one object or another and to refusing to remember when it was impossible to see such a figure.

3. As a rule, this kind of development was also observed in experiments with small children when sensible pictures, not connected directly with the word presented, served as auxiliary stimuli. The experiments of Yusevich showed that, in a significant number of cases, an auxiliary picture was not really used as a sign either, but the child tried to see in it directly the object that he was supposed to remember. Thus, the child easily remembered the word "sun" with the aid of a picture of a hatchet; he pointed to a small yellow spot and said, "Here, this is the sun." The complex mediated character of the operation is replaced here by an elementary attempt to create directly an "eidetoid" image of the content presented in the auxiliary sign.

Thus, in both cases, we can speak of the fact that the child, reproducing the required word, also reminds us of how, in glancing at a photograph, we recall the names in the original.

These facts show that at this stage of development, the word is still united with the sign according to completely different laws than in a developed sign operation. Specifically in connection with this, all the mental processes that enter into the composition of mediated operations (for example, choice of the auxiliary sign, the process of remembering and reestablishing the filled-in meaning) occur here in an essentially different way. Precisely this fact is the functional verification and confirmation that the intermediate stage of development between the elementary and the fully mediated processes actually has its own laws of connections and relations from which the fully developed mediated operation evolves only later.

Special experiments allowed us to study the natural history of the sign in greater detail. In studying the child's use of a sign and development of this activity, we inevitably came to studying how sign activity arises. This problem was the subject of special studies which can be divided into four series.

1. A study of how the meaning of the sign arises in the child in the process of experimentally organized play with objects.

2. A study of the connection between sign and meaning, between word and object.

3. A study of the statements of the child in explaining why a given object is signified by a given word (corresponding to the clinical method of J. Piaget).

4. Studies done with the method of selection reaction.

If we expound these results negatively, the studies bring us to the conclusion that sign activity arises in the child differently from complex habits, inventions, or discoveries. The child does not devise sign activity, neither does he learn it. Intellectualistic and mechanistic theories are equally wrong. Although instances of development of habits or instances of intellectual "discoveries" are frequently interwoven into the history of the use of a sign by the child, they nevertheless do not determine the internal development of this process and enter into it only as auxiliary, subordinate, secondary components of its structure.

Sign operations are the result of a complex process of development. In the beginning of the process, we can observe transitional, mixed forms that combine both natural and cultural components of the child's behavior. We termed these forms stages of children's primitiveness or the natural history of the sign. As a counterbalance to the naturalistic theories of play, our experiments bring us to the conclusion that play is the basic path of the child's cultural development and specifically the development of his sign activity.

Experiments show that in play and speech, the child is far from recognizing the arbitrariness of the sign operation and is far from recognizing the voluntarily established connection between the sign and the meaning. In order to become a sign of a thing (word), the stimulus must be supported by the qualities of the object itself that is denoted. Not all things are equally important for the child in such play. The real qualities of the object and their sign meaning enter into complex structural interrelations in the play. Thus, for the child, the word is connected with the object through its qualities and included in a common structure with it. For this reason, in our experiments, the child does not agree to call the floor a mirror (he cannot walk on a mirror), but converts a chair into a train, which acquires its qualities in his play, that is, he manipulates it as a train. The child refuses to call a lamp a table, and vice versa, since "one must not write on a lamp and a table cannot be lit." For him, to change the designation means to change the qualities of the thing.

We know of nothing that points more obviously to the fact that at the very beginning of mastery of speech, the child still does not see any connection between sign and meaning and does not recognize this connection for a long time. As further experiments show, the *function of naming* does not arise from a single discovery, but has its own natural history; evidently, at the beginning of speech development, the child does not discover that each object has its own name, but masters new methods of acting with objects.

Thus the relations between sign and meaning, which, because of a similar manner of functioning and because of external similarity, begin at first to remind us of corresponding connections in adults, are, in their internal nature, actually psychological patterns of a completely different kind. To place mastery of this relation at the very beginning of the child's cultural development means to ignore the complex history of the internal formation of a relation, a history that covers more than ten years.

Further Development of Sign Operations

We have described the structure and genetic roots of sign operations of the child. It would, however, be improper to think that mediation by means of certain

external signs is a perpetual form of higher mental functions; careful genetic analysis convinces us of the exact opposite and compels us to think that this form of behavior is only a certain stage in the history of mental development growing out of primitive systems and presupposing a transition at subsequent stages to a significantly more complex psychological formation.

Observations of the development of mediated remembering, which we cited above, point to an extremely unusual fact: if mediated operations occur at first exclusively through external signs, then at later stages of development, external mediation stops being the only operation used by higher psychological mechanisms to resolve the problems that confront them. Experiment shows that not just the forms of using signs change in this case, but the very structure of the operation changes in a radical way. Most essentially, we can express this change by saying that from the externally mediated, it becomes internally mediated. This is expressed by the fact that the child begins to remember the material presented to him according to the method we described above, except that he does not resort to the external signs, which at this point become unnecessary for him.

The whole operation of mediated remembering now occurs as a purely internal process, and we cannot say that it differs in any way in external form from the initial forms of direct remembering. Judging only by external data, it may seem that the child simply began to remember more and better, that somehow he improved and developed his memory, and, what is most important, returned to the method of direct remembering from which our experiment diverted him. But the regression is only a seeming regression: development, as frequently happens, moves not in a circle in this case, but along a spiral, returning on a higher plane to a point that was passed.

We call this withdrawal of the operation inward, this interiorization of higher mental functions connected with new changes in their structure *the processes of revolution*, having in mind mainly the following: the fact that higher mental functions are constructed initially as external forms of behavior and depend on an external sign is not to any extent accidental, but, on the contrary, is determined by the very psychological nature of the higher function, which, as we have said above, does not arise as a direct continuation of elementary processes, but is a social method of behavior applied to one's self.

The transfer of social methods of behavior to the interior of the system of individual forms of adapting is not at all a purely mechanical transfer; it is not done automatically but is connected with a change in structure and function of the whole operation and is a special stage in the development of higher forms of behavior. Complex forms of cooperation transferred into the sphere of individual behavior begin to function according to laws of the primitive whole, of which they now make up an organic part. A genetic, but not a logical, contradiction exists between the position that higher mental functions (an inseparable part of which is the use of signs) arise in the process of cooperation and social interaction and the position that these functions develop from primitive roots on the basis of lower or elementary functions, that is, between sociogenesis of higher functions and their natural history. The transition from a collective to an individual form of behavior initially lowers the level of the whole operation since it is included in a system of primitive functions and assumes qualities common to all functions of this level. Social forms of behavior are more complex and their development goes forward in the child; having already become individual, they *are lowered* and begin to function according to simpler laws. For example, egocentric speech as such is lower in structure than ordinary speech, but as a stage in the development of thinking, it is higher

than social speech of a child of the same age and perhaps for this reason Piaget considers it a precursor of socialized speech and not a form derived from it.

Thus we come to the conclusion that every higher mental function inevitably initially has the character of an external activity. As a rule, at first the sign represents an external auxiliary stimulus, an external means of autostimulation. This is due to two factors: first, the roots of this kind of operation lie in the collective forms of behavior that always refer to the sphere of external activity, and, second, this occurs because of the primitive laws of the individual sphere of behavior, laws which are not yet separated from external activity and are not isolated from direct perception and external action, for example, laws of the practical thinking of the child.

The fact of "interiorizing" sign operations was experimentally tracked in two situations: in group experiments with children of various ages and in individual experiments in long-term experimentation with one child. For this purpose, in our laboratory in Leontev's work, a large number of children, beginning with age seven and ending with adolescence, were taken through an experiment in direct and mediated remembering. The change in the number of filled-in elements in both cases yields two lines that disclose the dynamics of sign operations over the course of the whole process of child development. The figure shows the line of development of direct and mediated remembering at different ages.*

A number of points are immediately striking: neither line follows a random path, but each forms a certain pattern. It is completely understandable that the line of direct remembering is lower than the line of mediated remembering and both of them display a certain relation to age. Increase, however, is unequal at different segments of child development: if before age ten to eleven, externally mediated remembering increases sharply and the lower line lags markedly behind this, then specifically during this period, there is a break, and at the upper school age, increase in externally mediated memory displays a special dynamics. In rate, it outstrips the line of development of the externally mediated operations.

An analysis of this pattern, which we conditionally term the *parallelogram of development*, which remains stable in all experiments, shows that the pattern is due to forms that play a primary role in the development of higher mental processes in the child. If it was characteristic for the first stage of development that a child was able to mediate his memory by just turning to certain external devices (this is responsible for the sharp increase in the upper line), abandoning remembering that is not dependent on external signs in a substantial, direct, almost mechanical retention in the memory, then at the second stage of development, a sharp jump occurs: external sign operations reach their limits, but in return the child now begins to reconstruct the internal process of remembering without depending on external signs; the *natural* process is mediated and the child begins to apply certain internal devices—and a sharp increase in the lower curve indicates the break that was made.

The phase of applying external signs plays a decisive role in the development of internal mediated operations. The child makes the transition to internal sign processes because he passed the phase in which these processes were external. The series of individual experiments convinces us of this: having the child's coefficient of natural remembering, over a certain time, we conducted experiments with externally mediated remembering and then again tested operations that did not depend on the use of external signs. The results show that even in the experiment with a mentally retarded child, there is at first a significant increase in externally

*Editor's note: The figure is not given. See: Leontev, A. N., *Collected Psychological Works*: in two volumes, Moscow, 1983, Vol. 1, pp. 55, 56, 58.

mediated, and then in *nonmediated* remembering which, after an intervening series of experiments, results in an effect that is two or three times better, transferring, as analysis shows, the devices of the external sign operation to internal processes.

In describing the operations, we are confronted by a twofold process: on the one hand, the natural process undergoes profound reconstruction, being converted into a circuitous, mediated act, and, on the other hand, the sign operation itself is changed, ceasing to be external and being reorganized into most complex internal psychological systems. The double change also is symbolized in our diagram by a break in both curves that coincides at one point and points to the internal dependence of these processes. We are confronted here by a process of greatest psychological importance: what was an external operation with a sign, a certain cultural method of controlling oneself from outside, is converted into a new intrapsychological layer and gives rise to a new psychological system incomparably higher in composition and cultural-psychological in genesis.

The *process of revolution* of cultural forms of behavior which we have just considered is connected with profound changes in the activity of the most important mental functions and with a radical reconstruction of mental activity on the basis of sign operations. On the one hand, the natural mental processes, as we see them in animals, cease to exist in a pure form, being included in the system of behavior reconstructed on a cultural-psychological base into a new whole. Of necessity, this new whole includes in itself the former elementary functions which, however, continue to exist in it in a derived form, already acting according to new patterns characteristic for the whole system that developed.

On the other hand, the operation itself of using an external sign is radically reconstructed. Being a decisive, important operation for the young child, it is here replaced by substantially different forms; the internally mediated process begins to make use of completely new connections and new devices not similar to those that were characteristic for the external sign operation. In this case, the process undergoes changes similar to those that were observed in the transition of the child from external to internal speech. As a result of the process of revolution of the cultural-psychological operation, we obtain a new structure, a new function of devices used formerly, and a completely new composition of complex mental processes.

It would be extremely primitive to think that further reconstruction of higher mental processes under the influence of the use of the sign occurs on the basis of transferring all the ready sign operation inward; it would be just as wrong to think that in a developed system of higher mental processes, there is a simple building of a higher story over the lower and a simultaneous existence of two relatively independent forms of behavior—the natural and the mediated. Actually, as a result of the revolution of the cultural operation, we obtain a qualitatively new interweaving of the systems which sharply distinguishes human psychology from the elementary functions of animal behavior. These most complex interweavings have not been studied thus far, and we can now only indicate several basic points that are characteristic for them.

With the *revolution*, that is, with the transfer of the function inward, a complex reconstruction of its whole structure occurs. As experiment shows, the following are essential points of the reconstruction: 1) replacement of functions; 2) change in natural functions (elementary processes that form the basis for the higher function and make up a part of it); 3) the appearance of new psychological, functional systems (or systemic functions), taking on in the general structure of behavior a role that had been carried out thus far by separate functions.

We might briefly explain these three points, which are internally connected with each other, on the basis of changes that occur in the revolution in higher

functions of memory. Even in the simplest forms of mediated remembering, the fact of replacement of the function is completely obvious. Not in vain did Binet call the mnemotechnique of remembering a series of numbers a model of number memory. Experiment shows that in such remembering, the decisive factor is made up not of the strength of memory or the level of its development, but actually in combining, in building a structure, in perceiving relations, thinking in the broad sense, and other processes that replace memory and determine the structure of this activity. In the transition of activity inward, the replacement of functions itself leads to verbalization of memory and, in connection with this, to remembering with the help of concepts. Due to the replacement of function, the elementary process of remembering is shifted from the place it initially occupied, and is still not separated from the new operation, but uses its central position in the whole psychological structure and occupies a new position with respect to the whole new system of jointly acting functions. Entering into this new system, it begins to function according to laws of this whole, part of which it now is.

As a result of all the changes, the new function of memory (which has now become an internal, mediated process) is similar only in name to the elementary process of remembering; in its internal essence, this is a new, specific formation with its own laws.

Chapter 5
METHODS OF STUDYING HIGHER MENTAL FUNCTIONS

The methodology of the contemporary psychological experiment is closely tied to the general major problems of psychological theory and, in the last analysis, is always only a reflection of how the most important problems of psychology were solved. Specifically for this reason, criticism of the basic views of the essence and development of mental processes must of necessity also involve a review of the basic positions related to research methodology.

Two psychologies, which we have characterized above as the psychology of pure spiritualism on the one hand and the psychology of pure naturalism on the other, resulted in the construction of two completely independent methods of psychological research which in time assumed definitive forms and which become fully subject to a major review the moment their philosophical basis itself is subjected to criticism.

Actually, if the first psychology saw states of consciousness as a specific subject for study, believing that these higher forms are a special property of the human spirit not accessible to further analysis, then pure phenomonology, a more internal description, and self-observation appeared to be the only adequate methodology for psychological research. One factor seemed to be fateful for spiritualistic attempts to construct a methodology for studying mental processes: the higher mental functions always evaded spiritualistic attempts to establish their origin and structure. Specifically because they were sociohistorical in genesis and mediated in structure, they always remained inaccessible to spiritualistic description. In child psychology, these methods found especially unfavorable soil, and we might say that it was there that they suffered actual defeat even before the basic philosophical premises hidden behind them were subjected to criticism and revision.

In the sphere of child psychology, another group of psychological systems seemed significantly more stable. Based on assumptions that higher forms of the child's behavior are an unbroken continuation of the forms already known from the study of animals and that, while differing from them by their greater complexity, they remain mainly the same in structure, this system found that as the basic mechanism of child behavior, fully applicable is a mechanism, already known from zoopsychology and physiology: the response reaction to external stimulation originating in the environment. The S—R relation was preserved, as these psychologists assumed, in both the simplest and most complex behavioral acts and, being a universal pattern, it provided in this way the possibility of ensuring unity of psychological research over a considerable area.

It is completely understandable that such a general idea of the structure of mental processes was made concrete in the research methods which the authors

considered to be adequate for their purposes. Historically, these methods were a simple transfer to child psychology of devices used in animal physiology and psychology and fixed in most psychological laboratories during the last decades, decades of special progress in psychological experimentation. Directed mainly toward the study of primitive or complex responses with which an organism adapted to the environment, this was always a methodology constructed according to the type already used in experiments with simple reflexes: presenting a stimulus to the subject, the psychologist attentively studied response reactions and believed his task to be finished if these reactions were described with sufficient detail and with the objectivity of natural science.

Two points remained very doubtful in this methodology. Being objective, it was not, however, objectivizing: the core problem confronting the psychologist, which consisted of bringing out those hidden mental mechanisms which facilitate complex mental reactions, remained unsolved here. If in the study of simple reflex acts, the method was adequate, then in attempts to use it to understand the structure of complex mental processes (all the internal devices by which they were accomplished remaining hidden in this case and not brought out), the investigator who wanted to know something more specific about these processes, was forced to turn to a verbal response of the subject whether he wanted to or not.

Another defect of the stimulus–response method that prevailed in experimental child psychology undoubtedly was its profound antigenetic attitude. Approaching functions different in complexity and at different stages of the child's history with one and the same experimental plan, repeating with the child substantially the same experiments that were done with animals, was a method doomed to ignoring the development itself that was connected with the appearance of qualitatively new formations and manifestation of mental functions in essentially new interrelations. Following Wundt in the rigidity of methods used, in many cases with identical repetition of one and the same experiment under conditions as unvaried as possible, the methodology of studying the *reactive* behavior forever cut for itself a path to a study specific to the development of relations.

Finally, what also seems important to us, all the methodology constructed according to that principle seemed inadequate to the tasks of research on higher mental functions; while disclosing the reactive mechanism, it described only an isolated category present in all, including elementary, mental processes, and in this way made the study, *a priori*, meaningless and fruitless, actually sweeping aside what was characteristic for higher mental systems, what distinguishes them from elementary systems, what makes them higher. Thus, in this way, the uniqueness of the genesis, the structure, and functioning of higher mental processes remained completely inaccessible to this elementary psychological methodology.

In our studies, we proceeded differently. Studying the development of the child, we established that development proceeds along a path of profound change of the structure of child behavior itself and that at each new stage, the child not only changes the form of reaction, but also carries it out differently to a significant degree, using new means of behavior and replacing some mental functions with others. A long-term analysis allowed us to establish that development proceeds mainly in the direction of mediating the psychological operations that at the first stages were accomplished by direct forms of adaptation. The increased complexity and development of forms of child behavior also leads to a change in means enlisted for the task, to including psychological systems formerly not involved in the operation, and to a corresponding reconstruction of the mental process. It is easy to see, as we have already shown above, that the essential mechanism of such reconstruction is the creation and use of a number of artificial stimuli that play an auxiliary role

and allow man to control his own behavior first from outside and later by complex internal operations.

It is completely understandable that with this kind of structure of mental development, the process is not made up of the elementary S—R pattern, and the methodology of simple study of reactive responses ceases to be adequate to the complexity and uniqueness of the process we are studying. This methodology, which easily establishes the response movements of the subject, becomes completely impotent, however, when the basic problem is the study of those means and devices that the subject used to organize his behavior in concrete forms most adequate for each given task. In directing our attention to the study of specifically these (external or internal) means of behavior, we must conduct a radical review of the methodology of the psychological experiment itself.

We believe the functional methodology of double stimulation to be most suitable for our task. Wishing to study the internal structure of higher mental processes, we usually do not limit ourselves to presenting the subject with simple stimuli (regardless of whether the stimuli are elementary or the tasks complex) to which we expect a direct response. We simultaneously present the subject another series of stimuli that functionally must play a special role—must serve as means for organizing his own behavior. In this way, we study the process of solving the problem with the use of certain auxiliary means, and the whole psychological structure of the act becomes accessible to us over the whole course of its development and in all the uniqueness of each of its phases. Examples of our experiments show that specifically this way of bringing up auxiliary means of behavior allows us to trace the whole genesis of the most complex forms of higher mental processes.

Whether we study the development of memory in the child, giving him external auxiliary means and observing the degree and character of mediated mastery of the task; whether we use this device for studying how the child organizes his active attention with the aid of certain external means; whether we study the development of the child's counting, compelling him to manipulate some kind of external objects, applying to them devices presented to him or "invented" by him—in all cases, we follow the same main path, studying not the final effect of the operation, but the specific psychological structures of the operation. In all of these cases, the psychological structure of the developing process is disclosed for us with incomparably greater richness and uniqueness than it is with the classical methodology of the simple S—R experiment.

Here, two points seem to us to merit special mention. If the stimulus–response methodology was an objective, psychological method that limited the study to the processes that already appeared externally in the behavior of man, then our methodology can fully justifiably be called objectivizing: its basic attention is directed immediately to the internal psychological devices and structures that are hidden from direct observation. By posing the problem of studying specifically these devices and structures, bringing to the outside those auxiliary operations with which the subject masters one task or another, our methodology makes them accessible for objective study; in other words, it objectivizes them. We consider the path of internally objectivizing mental processes to be more correct and adequate to the purposes of psychological studies than the path of studying prepared objective responses because only the former ensures actual disclosure for scientific study not of isolated but of specific forms of higher behavior.

In one respect, the method we use is sharply distinct from those that prevailed in contemporary child psychology. If the experiment was usually separated from the comparative-genetic device of investigation and studied only the relatively stable forms of behavior, and the comparative-genetic method was usually not connected

with the experiment, then we take a directly opposite course, connecting both lines of investigation into a single experimental-genetic method. Using the methods of double stimulation, we can present tasks to the subject pertaining to disparate phases of development and elicit in him, in a condensed form, those processes of mastering the tasks that make it possible to trace the sequential stages of mental development during the experiment.

By shifting our conditions with respect to difficulty, bringing the devices for mastering the task outside, and extending the experiment over a number of sequential series, we were able to observe the process of development in all its basic characteristics carefully in a laboratory situation and, consequently, to approach the analysis of the factors that participate in it. By including and excluding speech from the operation, giving the subject signs and means which he had not yet used, and removing these signs from a subject already proficient, we obtain a quite complete conception of the separate stages of development, their characteristic features, their sequences, and basic laws of construction of higher psychological systems.

Using the series of experimental-genetic devices, child psychology will for the first time pose a series of concrete questions related to the genesis of higher psychological structures and to the structure of their genesis itself.

In experimental studies, we do not necessarily have to present to the subject a prepared external means with which he might solve the proposed problem. The main design of our experiment will not suffer in any way if instead of giving the child prepared external means, we will wait while he spontaneously applies the auxiliary device and involves some auxiliary system of symbols in the operation.

A significant portion of our experiments is conducted specifically with these methods. Asking the subject to memorize something (stimulus), we asked him to draw something that would help him remember the material (auxiliary symbol). In this way, we created conditions for reconstructing the mental process of remembering and using a certain auxiliary means. In not giving the child a ready symbol, we could trace the way all the essential mechanisms of the complex symbolic activity of the child develop during the spontaneous expanding of the devices he used.

But the best example of methods of active mediation may be our experiments using speech and the reconstruction with its help of the structure of the child's behavior.

If speech was usually observed either as a system of reactions (behaviorists) or as a way of comprehending the inner world of the subject (psychologists-objectivists), then we relate to speech specifically as to a system of auxiliary symbols-means that help the child reconstruct his own behavior. Observations related to the genesis and active application of these means allow us to trace the real social roots of higher mental processes at the same time and provide an analysis of the role that mediated operations play at various stages of child development.

Everything that we have said on the specificity of the methodology we used leads to one conclusion: it specifically helps us out of the collision into which psychology was brought by its encounter with spiritualistic and mechanistic conceptions. If the first of these inclined the psychologist toward a simple description of spontaneous behavior, considering it a special and irreducible form of *vital processes*, and the second led to a study of reactive behavior, which in essence represented an experimental mechanism that was at the lowest rungs of the genetic ladder, then our formulation of the problem leads us to study the unique form of human behavior distinct from both spontaneous and reactive processes. We see this unique form in those mediated (higher) mental functions which, having arisen historically (and not being the product of a free spirit), moved behavior from elementary to higher forms, creating from elementary forms of behavior of the animal the complex behavior of the cultured man.

CONCLUSION

The Problem of Functional Systems

We will conclude this tedious path of reviewing the basic points in the evolution of the practical intellect of the child and in the development of his symbolic activity. It remains for us to gather together and generalize the conclusions to which we have come, to sum up our review of the problem of the development of practical intellect, and to indicate the important theoretical and methodological conclusions that may be reached from a number of similar studies when each is dedicated to one specific problem or another.

If we try to encompass in a single glance everything that has been said about the evolution of practical intellect in the child, we can see the following: the basic content of this evolution can be reduced to the fact that in place of the single, and at the same time simple, function of practical intellect observed in the child before he masters speech, in the process of development, a form of behavior appears that is complex in composition, multiple, with many functions interwoven. In the process of the child's mental development, as study shows, not only is there internal reconstruction and improvement of separate functions, but interfunctional connections and relations change in a radical way. As a result, new psychological systems arise that unite in complex cooperation a number of separate elementary functions. We arbitrarily call these psychological systems, these units of a higher order that replace the homogeneous, single, elementary functions, the *higher mental functions*. Everything we have said thus far compels us to admit that the real, psychological formation that in the process of the child's development replaces his elementary, practical, and intellectual operations cannot be designated as anything but a *psychological system*. This concept also includes the complex combination of symbolic and practical activity which we have been continuously considering, the new relation of a number of single functions which are characteristic of the practical intellect of man, and the new unit to which this whole entity, heterogeneous in composition, has been brought in the course of development.

We thus come to a conclusion directly opposite that which E. Thorndike[44] establishes in his study of the intellect (1925). As we know, Thorndike proceeds from the assumption that higher mental functions are nothing other than a further development, a quantitative growth of associative connections of one and the same order and that these are the connections that form the base of the elementary processes. In his opinion, like phylogenesis, ontogenesis also exhibits a principal identity of connections of a psychological nature that form the base of lower and higher processes.

Our study speaks against this assumption. Our study compels us to admit that connections of a different order are characteristic for those specific neoformations

that we call psychological systems or higher mental functions. Since Thorndike's position, as he himself admits, is directed against the traditional dualism in the teaching on lower and higher forms of behavior and since the problem of overcoming traditional dualism is one of the basic methodological and theoretical problems of all of contemporary scientific psychology, we shall certainly analyze what kind of response to this problem (dualism or unity of higher and lower functions) we must give in light of the experimental studies we have done.

But first we must explain one possible misunderstanding. The objections to Thorndike's theory may be directed most of all not along the line that interests us in this case, but along the line of elucidating the general insupportability of associationism and the whole mechanistic concept of intellectual development that is affirmed on the basis of this point of view. We shall put aside for now the question of the insupportability of the associative principle. We are interested in something else. Nevertheless, whether we admit the associative or the structural character of mental functions, the basic problem remains completely valid: can the higher mental functions be reduced in substantial, specific patterns to the lower or are they only a more complex and involved expression of the same patterns that prevail in lower forms, or, in their essence, construction, and method of activity are they subject due to their origin to the action of new laws unknown in the plan of elementary forms of behavior?

We think that resolving this problem is connected with the change in basic point of view on which K. Lewin insists in contemporary psychology and which he designated as a transition from "the phenotypic to the conditional-genetic" point of view. Further, we think that psychological analysis, penetrating beyond phenomena that are externally visible and disclosing the internal structure of mental processes, specifically the analysis of the development of higher forms, compels us to admit unity, but not identity, of higher and lower mental functions.

The question of dualism of lower and higher functions is not eliminated with the transition from the associative to the structural point of view. From this we see that even within structural psychology, there is always an argument between representatives of the two indicated views of the nature of higher processes. Some insist on admitting the distinction between the two types of mental processes and arrive at a strict delimitation of the two basic forms of activity, one of which is usually designated as a reactive type of activity and the other, whose distinctive point is that activity seems to arise primarily from personality, as a spontaneous type of activity. Representatives of this direction defend the position that we are forced in psychology to proceed from a mainly dualistic conception of both processes. A living being, they say, is not only a system that encounters stimuli, but also a system that pursues goals.

Opponents of a sharp delimitation of higher processes as spontaneous activity and lower as reactive activity defend the opposite point of view. They attempt to show that this sharp dualism, this metaphysical opposition between two types of activity that are usually brought forth, does not actually exist. They try to disclose the reactive character of many factors, intraspontaneous forms of behavior, and the active character of factors that depend on the internal structure of the system itself in the reactive processes. They show that even in so-called spontaneous processes of behavior, the organism depends also on the nature of the stimulus and, conversely, in reactive processes, behavior also depends on the internal structure and state of the system itself. Others, like Lewin, see the solution to this problem in the concept of need, based on the fact that objects of the external world can have a definite relation to needs. They can have a positive or negative "character of an imperative."

Thus, we see that neither rejection of the associative theory nor the structural point of view in themselves, without a special study of the problem, resolves it, but they eliminate or bypass the problem that interests us. True, the new point of view assists in overcoming the metaphysical character of traditional psychological dualism and acknowledges the essential unity of higher and lower functions with respect to internal and external factors acting in the processes of the one and the other. But here inevitably two new problems arise of themselves to which we cannot find the basic answer in the solutions usually recommended.

The first consists in the fact that external and internal factors necessarily present in processes of the one type and the other may have different relative significance and consequently may determine the whole process of behavior in a qualitatively different way in each case. Are we not supposed to separate the higher processes in comparison with the lower empirically, not metaphysically? And the second consists in the fact that the separation between spontaneous and reactive forms of behavior may not coincide with the delimitation of actions controlled predominantly by internal needs and actions controlled by external stimuli.

The Use of Tools by Animal and Man

As our studies show, in genetic, functional, and structural respects, the higher processes represent such significant diversity that they must be placed into a special class, but delimiting the higher and lower functions does not coincide with separating the two types of activity of which we have spoken above. The higher form of activity is present wherever there is mastery of processes of one's own behavior and, first of all, its reactive functions. In subjecting to his will the process of his own reactions, man enters in this way into a substantially new relation with the environment, comes to a new functional exploitation of elements in the environment as stimuli-signs which he uses, depending on external means, and directs and controls his own behavior, controls himself from outside, compelling stimuli-signs to affect him, and elicits reactions that he desires. Internal regulation of goal-directed activity arises initially from external regulation. Reactive action elicited and organized by man himself ceases being reactive and becomes goal-directed.

In this sense, the phylogenetic history of man's practical intellect is closely linked not only with mastery of nature, but also with mastery of himself. The history of work and the history of speech can scarcely be understood one without the other. Man created not only the tools for work with the help of which he subjected to his will the forces of nature, but also the stimuli that induced and regulated his own behavior, subjecting his own powers to his will. This can be noted even at the earliest stages of human development.

K. Bühler tells about special sticks for digging to which small sticks were attached at the upper end which were found in Borneo and the Celebes. Soil is plowed with the stick when rice is being sown, and the small stick makes a noise. This sound is something in the nature of a work cry or command which is intended to set a rhythm for the work. The sound of this gadget attached to the digging stick replaces the human voice or fulfills a function similar to it.

This internal merging of the sign and the tool that found a material symbolic expression in the primitive digging stick indicates how early the sign (and later, its higher form, the word) begins to participate in man's operation of using tools and to fulfill an incomparable, unique, functional role in the general structure of these operations which are at the very beginning of the development of human work. This stick differs from the stick of the monkey in a very radical way, although it

is undoubtedly connected with it genetically. If we ask ourselves what the radical psychological difference is between man's tool and that of the animal, we must answer our question with another question posed by Bühler in connection with considering the actions of the chimpanzee directed toward the future and guided by a conception of the external conditions that must sooner or later follow: to what kind of limitation of abilities of the chimpanzees should we ascribe the circumstance that they display not the least rudiments of cultural development regardless of the fact that a whole series of facts usually found only in civilizations, even the most primitive, can, without a doubt, be found in these animals?

Köhler develops this idea further: the most primitive man prepares a digging stick even when he is not directly preparing to dig, when the objective conditions for using the tool are not realized in any kind of perceptible way. The fact that he provides himself with a tool in advance is undoubtedly connected with the beginning of culture.

Man's action arising in the process of cultural-historical development of behavior is free action, that is, action not dependent on directly acting need or a directly perceived situation, an action directed toward the future. According to Köhler's observation presented elsewhere, monkeys are slaves of the visual field to a much greater extent than adult humans. This must have its basis, and it is not difficult to see that such a basis is at the same time a reliable criterion for genetic, functional, and structural delimitation of the two types of activity of which we spoke above. But instead of a metaphysical basis for this delimitation, prompted by our studies, we propose a historical basis, which fully agrees with the facts established by Köhler regarding the behavior of the chimpanzee. Thus, two types of activity which the psychologist must distinguish are the behavior of the animal and the behavior of man: activity that is the product of biological evolution and activity that arises in the process of the historical development of man.

Life over time, cultural development, work, everything that distinguishes man from animal in the psychological sphere, is closely connected with the fact that in the process of historical development of man, mastery of himself, his own behavior, proceeded parallel to mastery of external nature. The stick of which Bühler speaks is a stick for the future. It is already a tool for work. In the beautiful expression of F. Engels, "work created man himself" (K. Marx and F. Engels, *Works*, Vol. 20, p. 486), that is, created the higher mental functions that mark man as man. Using a stick, primitive man masters from outside, with the help of a sign, processes of his own behavior and subordinates his actions to a goal, making external objects serve his activity—tools, soil, rice.

In this sense, we can again return to the observation of K. Koffka which we have touched on in passing above. He asks, does it make sense to call the actions of the chimpanzee in Köhler's experiments voluntary actions? From the point of view of the old psychology, these actions, like noninstinctive, nonautomatic, and therefore sensible actions, must undoubtedly be classified as voluntary actions. But the new psychology is completely justified in giving a negative answer to this question. In this sense, Koffka is unconditionally right. Only the action of man, subjected to his will, is voluntary action.

In a beautiful analysis of the psychology of purposeful actions, K. Lewin completely clearly distinguishes free and voluntary purpose as a product of historical cultural development of behavior and as the distinguishing trait of human psychology. He says that surprising in itself is the fact that man has an exceptional freedom for the formation of any, even senseless, purposes. This freedom is characteristic for a cultured man. It is proper to an incomparably lesser degree to the child and, evidently, also to primitive man and probably distinguishes man from the animals

closest to him to a greater extent than his more developed intellect. This delimitation coincides with the problem of mastery.

As we tried to show above, the development of *freedom of action* is directly functionally dependent on the use of signs. The unique relation, word—action, which we have been studying the whole time, also occupies a central place in the ontogenesis of the practical intellect of man regardless of the fact that in the area of higher functions, ontogenesis repeats phylogenesis even less than in the area of elementary functions. Whoever follows the development of the free action of the child from this point of view will agree with Bühler's statement that the history of the development of the child's will has not yet been written. In order to lay a foundation for this history, we must first of all elucidate the relation of word to action that stands at the beginning of the formation of the child's will. At the same time, we will take the first, but decisive step toward elucidating the problem of the two types of human activity of which we spoke above.

Word and Act

For some psychologists, the old saying "in the beginning was the word" still retains its validity. New studies, however, leave no doubt that the word does not stand at the beginning of the development of the child's mind. As Bühler correctly notes, on a similar basis, it was said that speech stands at the beginning of the creation of man. Perhaps. But prior to it, there is instrumental thinking. Practical intellect is genetically older than the verbal; action precedes the word, and even mental action precedes the mental word. But now, in confirming this correct idea, the act is usually overvalued to the detriment of the word. Usually it is thought that the relation of the word and the act (independence of the act from the word and primacy of action), which is characteristic for the earliest years, is maintained at all subsequent stages of development even over the whole course of life. This same Bühler, more careful than others, but expressing essentially the same opinion, believes that in man's later life, technical and instrumental thinking is to a much lesser degree connected with speech and concepts than other forms of thinking.

This conviction is based on an erroneous assumption that the initial relations between separate functions remain unchanged over the whole course of development. Research also teaches the opposite. At each step, it teaches us to admit that all of the history of development of higher mental functions is nothing other than a change in initial interfunctional relations and connections and the appearance and development of new mental, functional systems.

This pertains, wholly and completely, specifically to the interfunctional relation of word and act, which interests us now.

Together with Gutzmann, we say: "If even following Goethe, we reject the higher evaluation of the *word* as a vocal word and together with him transform the biblical statement to 'At the beginning was the act,' it is possible nevertheless, to read those verses and understand them from the point of view of development with a different stress: '*In the beginning* was the act.'"[45]

But Gutzmann[46] makes another mistake. Objecting completely justifiably to the teaching on apraxia of H. Lipmann,[47] who is inclined to consider the relation between action and speech and their disturbance in apraxia and aphasia as a relation of the general to the particular, he himself takes the position that word and action are completely independent. For Lipmann, aphasia is only a special case of apraxia, and speech as a special form of movement is only a specific case of action in general. Gutzmann justifiably objects to this conception that makes the word a

specific function in the general conception of action. He indicates that only movement as a more general concept can encompass expressive movements (speech) on the one hand and, on the other, action as coordinate, parallel, coordinated, interrelated, more special concepts. To consider speech as a more particular case of action means to depend on an incorrect definition of the concept of *action*.

The conception according to which speech and action are logically parallel and independent concepts and processes inevitably leads to the antigenetic point of view, to rejecting development, and to the metaphysical raising of this (and consequently to nonintersection of speech and action) to the rank of an eternal law of nature and to ignoring the changeability of functional systemic connections and relations. Gutzmann for an instant, as he himself indicates, takes the point of view of the history of development, but only in order to delimit what was earlier from what was later. In the old pronouncement in which only the beginning was mentioned, he changes nothing except the logical stress. He is interested in what was in the beginning and what developed later and, consequently, what belongs to the more primitive, elementary, lower forms of behavior and what must be ascribed to more developed, complex, and higher functions. He says that speech always implies a higher degree of human development than even the highest expression of action, the act.

But at the same time, Gutzmann, like most authors, takes the formal-logical position. He considers the relation of speech and action as a thing and not as a process; he takes it statically and not dynamically, not in movement; he considers it as eternal and unchangeable, while it is historical and assumes a different concrete expression at each stage of development. All of our studies lead us to the conviction that there cannot be a single formula that would encompass the whole range of variability of relations between speech and action at all stages of development and in all forms of disintegration. In truth, the dialectical character of development of functional systems cannot be adequately reflected in any one constructive formal-logical scheme of relations of concepts—neither in Lipmann's scheme nor in Gutzmann's scheme—since neither the one nor the other considers the movement of concepts and the processes that stand behind them, the changeability of relations, the dynamics and dialectics of development.

As Gutzmann formulates his idea, practically implemented action has nothing in common with speech even if this word were taken in the broadest sense. If the premise of Gutzmann is correct for the beginning of development and describes the primary stages in the development of action, then for later stages of this process, it becomes radically erroneous. It reflects one instant, but not the whole process as a whole. For this reason, theoretical and clinical conclusions that can be reached from this position are valid in a very limited sphere, specifically, in the sphere of initial stages of development of the relation that interests us; to present them as a description of the process as a whole is to fall inevitably into contradiction with factual data on the development and disintegration of higher forms of action.

We shall consider the contradiction between theory and facts.

Gutzmann sees the basic difference between action and word to be that, following Wundt, he considers volitional action as an affect, as a clearly expressed unilateral, personal relation of the person acting to the external world; here communication of internal states, typical for speech and all expressive movements, is relegated to the background and has a peripheral significance. While the internal character of action is predominantly personal and egocentric even with altruistic goals, the nature of expressive movement is opposite to this. Even with an egocentric content, it displays, let us say, its own kind of altruism: Gutzmann maintains that it is "thoucentric"* and has an inevitably social character.

But the most remarkable part of what happens with action and word in the process of development is left aside here: the development of egocentric speech and "thoucentric" action, a conversion of the social method of behavior into a function of individual adaptation, an internal transformation of action with the help of the word, the social nature of all higher mental functions, including practical action in its higher forms. It is not surprising therefore that volitional action becomes comparable to affect with the difference that it leads to external changes that eliminate affect itself. Mastery as an essential internal factor of volitional action is left outside the visual field of the investigator. This new relation of action to the personality, which arises due to the word and leads to mastery of action, this new relation of the actor to the external world that is manifested in free action, controlled and directed by the word—none of this arises at the beginning of the process of development and, for this reason, is not taken into account at all.

Moreover, we can trace along the whole chain of facts how the action of the child is socialized in the process of development and how with the loss of speech, in aphasia, practical action drops to the level of an elementary zoopsychological form.

Whoever pays no attention to this inevitably perceives the psychological nature of both speech and action in a false light since the source of their change lies in their functional merging. Whoever ignores this basic fact and tries to present speech and action as two parallels that never intersect in order to preserve the purity of a classification scheme necessarily limits the true amplitude of the one and the other since the amplitude of the content lies primarily in the connection between the one concept and the other.

H. Gutzmann limits speech to expressive functions, communication of internal states, and communicative activity. But the whole individual-psychological aspect and the whole transforming internal activity of the word simply remain apart. If this parallel and independent relation of word and act were to be preserved over the whole course of development, speech would be powerless to change anything in behavior. The action aspect of the word is mechanically excluded, and for this reason there inevitably develops an underestimation of volitional action, of action in its higher forms—action connected with the word.

As study of the connections between the word and the act during childhood and in aphasia shows, the whole essence of the matter is that speech raises action, formerly independent of speech, to a higher level. Both development and disintegration of higher forms of action confirm this. Despite Lipmann's conclusion, which considers aphasia as a special case of apraxia, Gutzmann claims that apractic disturbances must be placed in parallel to aphasia. It is not difficult to see here a direct continuation of his original idea of the independence of action and speech. But clinical data speak against such a view. Disturbances of higher forms of action connected with the word, disintegration of higher forms and the detachment of action and its functioning according to independent, primitive laws that occurs in this case, a general return to more primitive organization of actions in aphasia and a drop on the whole to a different genetic level, which we were able to establish in all of our experiments—all of this shows that the pathological disintegration of action and speech again, like its construction, does not occur along two independent, nonintersecting parallel lines.

*Editor's note: from the word "thoulsm," which Vygotsky uses as an antonym of the word "ego."

However, we considered this in sufficient detail when we presented our subject; essentially, all of the content of our work was devoted to this alone. Now the task is to condense the whole content into a compressed formula that would express with the greatest precision possible the very essence of everything we have found in our clinical and experimental studies of higher mental functions and their development and disintegration, specifically in the study of practical intellect.

From all that has been said thus far, we cannot decide with sufficient clarity how this follows from either the Gospel formula or from Goethe's formula—regardless of which word is given the stress. We cannot, however, help but note that all of these formulas, including Gutzmann's formula, of necessity require sequels. They speak of what was in the beginning. But what happened next? The beginning is only the beginning, that is, the initial point of movement. The process of development itself must, of necessity, include in itself the rejection of the initial point and movement to the higher forms of action, forms of action that lie not at the beginning, but at the end of the whole path of development. How is this accomplished? The attempt to answer this question inspired us to write this work. We tried in its continuation to show how the word, itself being intellectualized and developed on the basis of action, raises action to a higher level, subordinates it to the will of the child and places the stamp of the will on action. But since we wanted to present all of this in a short formula, in one sentence we might say: if the act, independent of the word, stands at the beginning of development, then at its end stands the word becoming the act. The word, which makes the action of man free.

THE TEACHING ABOUT EMOTIONS
Historical-Psychological Studies[1]

1

C. G. Lange,[2] the author of a well-known theory of emotions, calls Spinoza one of the people whose teaching on emotions preceded the organic theory of emotions. As we know, the latter theory was developed almost simultaneously by two investigators independently—Lange in 1885 and W. James in 1884.[3] Thus, in the expression of J. W. Goethe, some ideas mature at certain times just as fruit falls simultaneously in different orchards.

Lange says: "I do not know whether a similar theory of emotions was proven at any earlier time in scientific psychology; at any rate, I cannot find any indication of that. Perhaps Spinoza comes closest to such a view when he not only does not consider bodily manifestations of emotions as depending on mental movements, but places them on the same plane with them, or even moves them virtually to the forefront" (1896, p. 89). Lange has in view the well-known definition of affect in Spinoza's teaching. Spinoza says: "As affects, I understand states of the body that increase or decrease the capability of the body itself to act, are advantageous to it or limit it, as well as ideas about these states" (1933, p. 82).

In analyzing the genesis of the organic theory of emotions as it was formulated by Lange, G. Dumas[4] points to the sharp disagreement of the theory with that of the evolutionists, particularly C. Darwin[5] and H. Spencer,[6] and to a "certain kind of anti-English reaction in the opinions of Lange" (cited from the book: C. Lange, 1896, p. XI). Actually, Lange reproaches Darwin, and partisans of the theory of evolution in general, for misinterpreting the problem of affective state and for placing the historical point of view above the mechanistic and physiological. He says: "It is doubtful in general whether we should greet as a fortunate event the sharply evolutionist direction that the newest psychology, especially English psychology, has adopted under the influence of Darwin's studies—I think that we certainly should not. At least, as long as we are speaking of the psychology of affects, since here the evolutionist direction resulted in scorning physiological analysis especially and, in this way, compelling psychology to abandon the one correct path to which physiologists tried to direct it and along which they would have reached their goal if such basic phenomena as vasomotor functions were known in their time" (ibid., p. 85).

The fact we have just noted has an exceptionally important significance for the correct understanding of the very essence of the organic theory of emotions. Later it will serve as the working point for our critical analysis, the task of which will be to disclose the whole antihistorical quality of this theory. At present this fact is of interest to us in a different connection. From the negative aspect, it not only elucidates very well the ideological precursors of the organic theory of emotions but also shows to which trends of philosophical and scientific thought it is kin and to which it is openly antagonistic.

Speaking of Lange, Dumas says: "He very willingly cites French adherents of the mechanistic worldview, and actually, he is their latest pupil. Breaking down joy and sorrow into motor and mental phenomena, eliminating imagined essences of poorly defined forces—all of this is done according to the traditions of N. Malebranche[7] and Spinoza" (ibid., p. XII). E. Titchener[8] states that "it would be completely wrong—and for James and Lange, this would be a small compliment—to propose that this theory is something completely new" (1914, p. 163). Indications of the organic basic parts of emotions are actually as old as systematic psychology. Titchener finds them beginning with Aristotle and ending with H. Lotze[9] (H. Lotze, 1852, p. 518) and H. Maudsley,[10] that is, with contemporaries of Lange and James. Finding everything more or less close to the organic theory of emotions, Titchener does not identify any kind of trend in philosophical or scientific thought, including the philosophy of Spinoza, as a basic historical precursor of the theory under consideration. But he indicates that Spinoza gives definitions pointing in that direction and cites the definition of affect given above which appears in *Ethics* (Spinoza, 1933, p. 82).

It is true that James himself does not recognize, as Lange does, the historical or ideological kinship between his theory and Spinoza's teaching on the passions. On the contrary, in spite of Titchener's opinion and the almost universal opinion established in scientific psychology, James is inclined to consider his theory as something absolutely new, a child without forebears, and to contrast his teaching with all the studies of emotions of a purely descriptive nature wherever they might be found—in novels, or in classical philosophical works, or in psychology courses. This purely descriptive literature, in the words of James, beginning with Descartes to our time, presents the dullest section of psychology. In studying him, you have little sense that the subdivision of emotions proposed by psychologists is in most cases a simple fiction or completely unimportant.

Thus, if James himself is not inclined to see a hereditary connection between the Spinoza theory of passions and the theory of emotions which he developed, others do this for him. We are not at all speaking of the expert evidence of Lange, Dumas, and Titchener presented above; their statements refer, strictly speaking, in equal measure to the theory of James as well as to the theory of Lange. Both these theories are, in any case, a single theory, from the point of view of its main ideological content, which can interest us only in explaining the genesis of any theory; the disagreements between them pertain, as is known, to more detailed physiological mechanisms that determine the genesis of emotions; we will further concentrate our critical analysis on this.

In order to conclude the review of the thesis we developed, which states that Spinoza's teaching about passions is usually connected with the theories on emotions of James and Lange, we shall refer only to the detailed and convincing study of G. Sergi,[11] the results of which we will use subsequently. Tracing the origin of the organic theory of emotions, Sergi focuses in on the critical point of this theory, specifically, on the inevitable reduction of emotion to a confused, poorly differentiated, global sensation of a general organic state that follows from the sequentially logical development of this doctrine. In this case, it seems that there is neither passion nor emotion, but only sensation. In the words of the investigator, the result which the organic theory approaches at its critical point frightens James to such a degree that it compels him to lapse into the Spinoza theory. In passing, we will note that, on the whole, with respect to the true genesis of the theory of emotions, Sergi comes to conclusions that differ substantially from the generally accepted views cited above. Subsequently, we shall use these conclusions again and depend on them in explaining certain fundamental problems connected with the basic problem of our studies. At this point, this circumstance interests us only to the extent to which it supports the "objectivity and impartiality" of the position stated above on the Spinoza-like nature of the James theory.

We will not continue further the enumeration of various views on the problem under consideration; there is no need for this. All these differ from each other in shades and nuances of ideas and agree with each other in the basic tone of what they claim. Reviewing them as a whole, we cannot but note that all of them represent an opinion quite firmly rooted in contemporary psychology and that, with respect to this opinion, as the French proverb has it, the more it changes in separate expressions, the more it remains the same. Even if, on closer inspection, this opinion developed to be nothing more than an error or prejudice, we would nevertheless have to begin with an investigation of this position since the battle around the theory of James and Lange that is being played out before our eyes leads us directly to the very center of the problem in which we are interested. Here, according to the widespread view, something is taking place that is not only substantially important for the whole fate of the psychology of emotions but is also something directly connected with the teaching of Spinoza on passions. Even if this connection is presented in the widespread view in a distorted form, even if it develops to be a prejudice, some kind of objective threads must nevertheless be hiding behind it that tie the teaching of Spinoza to the current battle and the reconstruction taking place in one of the most basic chapters of scientific psychology of our day. For this reason, if we want to study the fate of the Spinoza theory on passions in the living tissue of contemporary scientific knowledge, we must begin by explaining its connection to the ideas of Lange and James on the nature of human emotions.

2

But first, we must consider the James–Lange theory itself and find what is true and what is false in it from the point of view of strict testing of theoretical thought and the facts, testing to which it was subjected from the moment of its first formulations right up to our day. It is true that the empirical theory created more than a half century ago survived to our day regardless of the destructive criticism to which it was subjected from various quarters. It is true also that thus far, it is still the living center around which, as around a basic axis, a turn is being taken in psychological teaching on the nature of human feeling. We are evidently present at the final act in the resolution of this whole scientific drama which opened in 1884-1885, in the last century. We are present at the elucidation of the final historical verdict on this theory and at the resolution of the fate of the whole direction of psychological thought which was not only of major importance for psychology in the past, but which is directly connected to determining the future course of development of this chapter in scientific psychology.

True, thus far, opinion has held that this theory has withstood with honor a continuous half-century of scientific testing and stood firm as an immovable base for contemporary teaching on the psychology of human feelings. In any case, this is how the matter stood in most psychology courses. However, not only school psychology, accustomed to the necessities of instruction, holds firmly to this theory, which seemingly is only waiting for elimination, but even presenters of the very newest psychological trends frequently try to renew this theory, which, in their eyes, seems not to age, and to present it as a most adequate representation of the objective nature of emotions. In any case, in many variations of American behavioral

psychology and in certain trends in Soviet psychology this theory is considered, if you please, as the only definitive and supportable theoretical construction that can be transferred as a whole from the old psychology to the new.

It is rather remarkable that in the most extreme trends of contemporary objective psychology, this chapter is directly transcribed from or retold with the words of Lange and James. It impresses contemporary reformers of psychology mainly due to two circumstances. First, what ensured exclusive dominance for this psychology over the course of a half century is connected with the nature of its presentation. Titchener notes caustically: "The James–Lange theory with its wide distribution among English-speaking psychologists undoubtedly owes much to the nature of its presentation. The presentations of mental movement in psychology texts had a somewhat academic, somewhat conventional character, and James presented to us raw material and brought us to the well-spring of actual experience" (1914, pp. 162-163). Actually, this theory is, if you please, the only one that, with a coherence approaching the paradoxical, satisfactorily resolves the problem of the nature of emotions with such obvious simplicity, with such conviction, with such an abundance of factual evidence that is confirmed daily and available to everyone so that involuntarily an illusion of truth and irrefutability of this theory is created, and somehow readers and investigators not only forget or do not note the fact that, according to the valid observation of P. Bard,[12] its authors did not confirm it with any kind of experimental evidence, but that it was based exclusively on speculative arguments and theoretical analysis.

A second circumstance that recruited as supporters of this theory the most radical reformers of contemporary psychology consists of the following: in explaining emotions, this theory brings the organic base of emotions to the forefront and for this reason poses as a strictly physiological, objective, and even uniquely materialistic conception of emotions and feelings. Here a surprising illusion arises again which continues to exist with remarkable persistence regardless of the fact that James himself was careful to explain his theory from the very beginning as a theory that was not necessarily connected with materialism. In connection with this theory, James wrote: "My point of view cannot be termed materialistic. It contains no more or less materialism than is present in every view according to which our emotions are due to nervous processes" (1902, p. 313). For this reason, he considered it logically absurd to argue against the proposed theory with reference to the fact that it leads to a base materialistic interpretation of emotional phenomena. This, however, developed to be insufficient for understanding that it is just as logically absurd to defend this theory by reference to the materialistic explanation it gives for human feelings.

This double illusion was so strong that even now it is still thought that the seemingly organic theory of emotions had withstood continuous scientific testing with honor and stood firmly as a secure base for contemporary psychological teaching on the feelings of man. From the moment of its appearance, the authors proudly opposed their theory to everything that was formerly termed teaching on the emotions. We have already spoken of how James regarded the whole period that preceded this teaching: over the whole course of its history, James found "no fruitful guiding beginning, no basic point of view" (ibid., p. 307). (We note parenthetically: this was after Spinoza developed his remarkable teaching on the passions in which he gave a guiding beginning, fruitful not only for the present, but also for the future of our science. It is difficult to imagine greater historical and theoretical blindness than that which James exhibits in this case. We will easily be able to disclose the reason for this subsequently.)

James continues: "Emotions differ and are set apart endlessly, but you will not find any logical generalizations in them" (ibid.).

Lange pronounces a verdict no less severe. He says: "Since the time of Aristotle, we have an almost infinite literature on the problem of the influence of affects on the body but truly scientific results on the question of the nature of emotions were not achieved with all the information accumulated over the centuries because in essence, there is nothing pertinent to that except notes . . . Actually, without exaggeration, we could state that in a scientific way, we understand absolutely nothing about emotions, that we have not even a shadow of any theory on the nature of emotions in general or about each of them in particular" (1896, p. 19). It is Lange's opinion that everything that we know about emotions is based on nebulous impressions that have no scientific basis. Some statements on the nature of emotions by chance developed to be true, but scarcely any actual conception of the subject is connected even with these true positions.

In a historical study similar to ours on the analysis of past and future in the development of teaching on passions and their analysis in light of contemporary scientific knowledge, we cannot but note that Lange and James almost literally repeat Descartes, who 300 years before their time said the same thing about the whole preceding history of this teaching. He said: "Nowhere can we see as distinctly as in the treatment of the passions how great are the inadequacies of the sciences transmitted to us by the ancients" (1914, p. 127). The teachings of the ancients on passions seemed to him to be meager to such a degree and shaky in most of their parts to such a degree that he saw himself "forced to abandon completely the usual paths in order to come nearer to the truth with a certain confidence." "I am forced," he said, "for this reason to write as if I am dealing with a subject that no one has touched on before" (ibid., p. 127).

Moreover, a simple historical inquiry, cited correctly by Titchener, clearly demonstrates that both the problem of Descartes and the problem of James–Lange were familiar and close even to Aristotle. According to the idea of Aristotle, a representative of speculative philosophy says that anger is a striving for revenge or something similar. A representative of natural philosophy says that anger is a boiling of the blood that surrounds the heart. Which of these is a true philosopher? Aristotle replies that the true philosopher is the one who unites these two positions. This coincidence does not seem to us to be accidental, but its true sense will be disclosed for us in the further course of study.

No matter how mistaken the authors of the organic theory of emotions might be concerning the absolute newness of their ideas, in the eyes of their followers, this mistake retained the importance of indisputable and unadulterated truth to our day.

Even in our time, K. Dunlap,[13] summing up the fifty years of existence of this doctrine, maintains that it not only became rooted in scientific thought so firmly that at present it is practically the basis for the study of emotional life, but it also led to the development of the hypothesis of reaction or response as the basis for all mental life as a whole (in: W. B. Cannon, 1927, p. 106-124). R. Perry[14] seconds this: this famous doctrine is so firmly supported by evidence and confirmed by experience so many times that it is impossible to deny the truth of its essence. Regardless of the carefully worked out refutations, it shows no signs of becoming obsolete (in: W. B. Cannon, 1927, p. 106).

But we will say at the very outset: the James–Lange theory must be considered more likely to be error than truth in its teaching on the passions. In this way, we have expressed in advance the basic idea, the main thesis of all of the present chapter of our study. Let us consider more closely the basis for this idea.

The illusion of invulnerability and critical impermeability of the James–Lange theory, like every illusion, is harmful first of all in that it prevents things from being seen in a true light. Striking evidence of this is the fact that a series of new studies, which under objective and careful consideration deal a crushing blow to the theory we are analyzing, is perceived by followers of this doctrine as new evidence of its strength. An example of this kind of error is the fate of the first experimental studies of W. Cannon,[15] who undertook a systematic experimental study of the problem of organic changes that arise in emotional states. His studies translated into Russian[16] contain, strictly speaking, a deadly criticism of the organic theory of emotions. But they were perceived and recognized by our scientific thought as completely indisputable evidence of its correctness.

The foreword to the Russian translation of these studies written by B. M. Zavadovsky[17] states directly that the ideas of James on the nature of emotions, brilliant in insight, in our eyes, assume the real, concrete forms of the biological experiment (in: W. B. Cannon, 1927 p. 3). This statement is reinforced with a reference to the revolutionary quality of the ideas of James, who prominently stressed the material, purely physiological roots of mental states. This general idea, indisputable for any biologist who does not imagine mental activity without its material base, becomes the common denominator which, owing to the illusion mentioned more than once, permits identifying the ideas of James with the facts presented by Cannon regardless of the fact that they are in irreconcilable contradiction. Cannon himself clearly shows that Zavadovsky is not alone in his error in evaluating the significance of his [Cannon's] experimental work. The error was shared by everyone who shared this illusion with him.

In the words of Cannon, the multifaceted changes (which he studied in detail) that occur in internal organs as a result of great excitation were interpreted as confirming the James–Lange theory. But from the facts presented in these studies, it must be clear that such an interpretation is wrong. What did Cannon's studies show?

If we stop to consider their most essential and basic result, which alone can interest us in the present study, we must say the following: they disclosed experimentally that pain, hunger, and strong emotions such as fear and anger elicit deep bodily changes in the organism. These changes are distinguished by their reflex nature, representing a typical organic reaction that arises due to hereditary automatism and, consequently, these changes exhibit a biologically expedient character.

The bodily changes during the time of excitation, as Cannon's studies show, are elicited by an increased secretion of adrenaline by the adrenal glands; the changes are analogous to those elicited by an adrenaline injection. Adrenaline elicits increased decomposition of carbohydrates and increases sugar content of the blood. It promotes the flow of blood to the heart and its outflow from the inhibited organs of the abdominal cavity. Adrenaline rapidly eliminates muscle fatigue and increases blood coagulation. Such are the principal changes that are observed in strong excitation connected with a state of hunger, pain, and strong emotion. Their basis is the internal secretion of the adrenal glands. All of these changes exhibit, as we have said, internal dependence and a merging with each other, and all of them as a whole clearly exhibit their adaptive and expedient significance.

In his studies, W. Cannon discloses, step by step, the significance of the increased sugar content in the blood as a source of muscle energy; the significance of increased adrenaline content in the blood as an antidote to muscle fatigue; the significance of the change in blood supply to the organs under the influence of adrenaline as a circumstance that promotes the greatest muscle tension; the analogous significance of changes in respiratory function; and the expedient significance of increased blood coagulation that prevents blood loss.

The key to explaining the biological significance of all of these phenomena is correctly seen by Cannon in the old idea, newly enunciated recently by McDougall,[18] on the interrelation between the flight instinct with the emotion of fear and the fight instinct with the emotion of anger. Under natural conditions following the emotions of fright and anger, there may be an increase in activity of the organism (for example, fleeing or fighting) that requires prolonged and intensive tension of a large group of muscles. For this reason, it seems completely probable that increased secretion of adrenaline as a result of reflex affect of pain or strong emotions may play the role of a dynamic factor in producing muscle work. If it is true, as Cannon establishes experimentally, that muscle work is done mainly through the energy of sugar and that substantial muscle work can markedly decrease the quantity of reserve glycogen and circulating sugar, then we must admit that an increase in sugar content in the blood that accompanies strong emotions and pain significantly increases the capacity of the muscles for prolonged work.

Further studies showed that adrenaline freely entering the blood has a marked effect on rapid recovery of fatigued muscles that have lost the initial excitability and potential for rapid reaction of fresh muscles, and strengthens in this way the effect of the nervous system on the muscles, preparing them for maximal work. Blood supply to the organs and change in respiration evidently have the same purpose; urgent need of attack or flight requires an abundant supply of oxygen for the working muscles and a rapid excretion of exhausted carbon dioxide from the body. Finally, the expediency of increased blood coagulation can be considered as a process that is favorable for the organism.

Generalizing these data, Cannon proposes considering all the reactions of the organism elicited by painful stimulation and emotional excitation as naturally arising defensive, instinctive reactions. These reactions may be justifiably interpreted as preparation for severe tension that the organism may need. Thus, Cannon says, from this general point of view, bodily changes that accompany strong emotional states may serve as an organic preparation for coming battle and possible injury and naturally promote the reactions that pain in itself may elicit.

If we wanted to summarize briefly the general significance of the facts Cannon found, we would have to agree with his pointing to the dynamogenic effect of emotional excitation as a basic factor. Here Cannon closely follows Sherrington,[19] who more energetically than anyone else pointed to this aspect of emotional processes. He said that emotions control us from the very beginning of life on earth and increasing intensity of emotions becomes the commanding stimulus for strong movement. Each bodily change that occurs in the internal organs—cessation of digestive processes (which is accompanied by a release of a supply of energy that may be used by other organs), outflow of blood from internal organs whose activity is decreased to organs that participate directly in muscle tension (lungs, heart, central nervous system); strengthening of heart contractions; rapid elimination of muscle fatigue; mobilization of large reserves of sugar that contains energy—each of these internal changes results in a direct benefit, fortifying the organism during great expenditure of energy elicited by fright, pain, or anger (see R. Creed et al., 1935).

In this connection, very important is the circumstance that during a period of strong excitation, there is frequently a feeling of colossal power. This feeling appears suddenly and raises the individual to a high level of activity. During strong emotions, excitation and feeling of strength are merged and in this way they free stored energy, unrealized before, and lead to consciousness of an unforgettable feeling of possible victory.

Before we move on to a theoretical analysis and evaluation of these evidently indisputably established positions, we cannot but return to the basic problem of our investigation which is present the whole time on every page of our considerations: to the teaching of Spinoza on the passions. But the somewhat unusual and strange path we selected for investigation, which emanated inevitably from the essence itself of the problem we posed, resulted in a situation in which the superficial impression may be that we were diverted from solving the basic problem with which we are concerned. In essence, a review of the teaching of Spinoza on the passions in light of contemporary psychoneurology cannot but be to the same extent a review of the contemporary state of the problem of the nature of emotions in light of the teaching of Spinoza on the passions so that we could with equal justification title our investigation with the latter words.

For this reason, we cannot but take advantage of the first factual position that we derive from the first experimental study of emotions in order to connect it with the corresponding idea of Spinoza that forms a point of departure of all of his teaching on the passions. If we recall the definition of affects cited above, given in *Ethics*, we cannot but see that experimental evidence of the dynamogenic effect of emotions that raise the individual to a higher level of activity is at the same time empirical evidence for the idea of Spinoza, which defines affects as states of the body which increase or decrease the capacity of the body itself for action, promote or limit it, as well as ideas of these states.

But we noted above that Lange cites specifically this definition of Spinoza as bringing Spinoza's teaching on passions close to the organic theory of emotions. For this reason, it is easy to conclude that the empirical confirmation of Spinoza's ideas, together with experimental evidence, favors the James–Lange theory. This is how these studies were perceived initially. And actually, at first glance, with superficial consideration, it may seem that this theory finds complete confirmation in Cannon's studies and is celebrating a greater triumph. The serious organic changes that Lange and James advanced as the source of emotional processes, based on everyday observations, introspective analysis, and purely speculative constructs, appeared to be not only a completely real fact, but now seem to us to be much more deeply involved, more all-encompassing, more significant for the general change in vital function, more radical and fundamental than the boldest idea of the founders of this doctrine could anticipate.

But now, if we want to remain true to the spirit of critical investigation that always guides our thought, we must ask ourselves: are we not once again falling into the historical illusion that circumscribes with a vicious circle the famous paradox on the organic nature of emotions and, in confirming its great triumph which it shares with the victory of Spinoza's ideas, are we not in this way accepting error for truth?

3

Let us look more intently at the fact just described and we will then note that together with the apparent confirmation of the organic theory of emotions, it also contains conclusions that clearly do not speak in its favor. In order to disclose them, we must move from an absolute to a relative consideration of this fact. In itself, the fact removes from all doubt the position that strong emotions such as fear and anger are accompanied by very deep organic changes. But, of course, the essence of the question is not contained in this position in itself. It could scarcely evoke

serious doubt in anyone even before Cannon's experiments. His experiments disclosed the physiological mechanism, the structure, and the biological significance of these organic reactions. But they added hardly an iota of authenticity to the fact itself of the existence of these changes.

Consequently, the essence of the problem is not the presence of changes in themselves that accompany emotions, but in the relation of these bodily changes to the mental content and structure of the emotions on the one hand and the functional significance of these changes on the other. Even the classical theory of emotions, against which Lange and James spoke, considered bodily expression of emotions as an inherent factor in any emotional process. But it considered these bodily changes to be the result of emotional reactions. The new theory began to consider these reactions as the source of emotions. The whole paradoxical quality of the new theory in comparison with the classical consists, as we know, in the fact that it brought forth as the cause of emotions what was formerly considered to be their consequence. The authors of the new theory were not only well aware of this but placed it in the center of their construct as its principal and dominating idea.

C. G. Lange, defining the basic problem, completely clearly recognizes that he is putting the question upside down (feet upward). As a result of his studies, he comes to the question that we indicated above as the central point that separates the classical theory from the organic theory of emotions. He says: "We now have before us a question that is of substantial interest with respect to psychophysiology and, at the same time, is the central point of our study—the question of the nature of the relation that exists between emotions and the physical changes that accompany them. Usually turns of phrase are used such as physiological manifestations elicited by emotions, or physiological manifestations accompanying emotions . . ." (1896, p. 54). Moreover, the question of the relation between emotion as such and the physiological manifestations accompanying it has never been posed with sufficient clarity.

Lange says: "It is strange that this relation has never yet been defined in a precise way. I do not know of even one study that attempted to explain its true nature . . . Regardless, however, of this lack of clarity, nevertheless it must be said that scientific psychology also shares the theory that emotions elicit and promote the bodily manifestations that accompany them. It does not ask itself what this feature of emotions really consists of that they should have such power over man" (ibid., pp. 54-55). Lange criticizes the classical theory of emotions according to which "emotions are the essences, the beings, the powers, the demons that control man and elicit in him both physical and mental manifestations" (ibid.). Lange formulates in two basic points the insupportability of the traditional theory of emotions according to which "every event followed by emotion initially directly elicits purely mental action which is the real emotion—true joy, true sorrow, etc.—bodily manifestations of emotions, although they always accompany emotions, are only peripheral, in themselves completely nonessential" (ibid., pp. 55-56). The traditional theory seems to him to be as insubstantial as all metaphysical hypotheses in general. Without hindrance of experiments, they clothe mental processes with any properties and powers they find convenient, and these always provide whatever service is required of them. Can mental fright explain why people grow pale, tremble, etc.? It is no calamity if they do not understand this. An explanation can be made up even without understanding it. Of course, people became accustomed to reassuring themselves in this way.

For Lange, the second point of attack on this theory consists of the position that "feeling cannot exist without its physical manifestations. Eliminate all symptoms of fear in a frightened man, make his pulse beat calmly, restore his steady gaze

and a healthy color to his face, make his movements quick and confident, his speech strong and his thoughts clear—what then will be left of his fear?" (ibid., p. 57). For this reason, Lange continues to assume that bodily manifestations of emotions can be accomplished purely physically and that the mental hypothesis is superfluous.

In a positive formulation of his own theory, Lange tries to reduce all physiological changes that occur with emotions to one general source and in this way to establish a mutual connection between these manifestations, simplifying to a high degree the totality of the whole relation and also facilitating its physiological understanding, which would be understood with difficulty if we should have to assume a direct primary origin for each of these manifestations. Lange believes the common source that unites all physiological changes to be the general functional changes in the vasomotor system.

In a classical formulation of his basic idea, Lange even puts forward the vasomotor reaction as a source and essential basis of the whole emotional process. He says: "We are obliged to the vasomotor system for the whole emotional part of our mental life, our joys and sorrows, our happy and sad days. If impressions we perceive with our external organs of feeling did not have the ability to arouse its activity, we would pass our life as apathetic and indifferent spectators; all impressions from the external world would enrich only our experience and increase the sum of our knowledge without arousing in us either joy or anger, without causing us grief or fear" (ibid., p. 77). In keeping with this, Lange sees the true scientific task for the given set of manifestations to be a precise determination of the emotional reaction of the vasomotor system to various kinds of influences.

After what has been said, it is hardly possible that any doubt should remain that the center of the theory around which the whole construct is developed is not in itself the presence of physiological reactions during emotion, but the relation of these reactions to the emotional process as such. With no less clarity the same thing follows from the theory of James. James himself formulated this in a classical excerpt which we will also recall: "It is usually thought that in raw forms of emotion, the mental impression perceived from a given object elicits in us a mental state termed emotion, and the latter entails a certain bodily manifestation. According to my theory, bodily excitation follows directly after perception of that which elicits it, and our realization of this excitation as it comes about are the emotions. This is usually expressed as follows: we lost a fortune—we were distressed and cried; we met a bear—we were frightened and began to run; we were insulted by an enemy—we became angry and hit him. According to the hypothesis that I am defending, the order of these events must be somewhat different, specifically: the first mental state is not replaced immediately by the second; between them, there must be bodily manifestations and for this reason this is most rationally expressed as follows: we are saddened, therefore we cry; we are angered, therefore we hit someone; we are afraid, therefore we tremble and do not speak; we cry, hit, tremble because we are sad, angered, frightened. If the bodily manifestations did not follow the perception immediately, then the latter would be a purely cognitive act in its form—pale, devoid of coloring and emotional 'warmth.' In such a case, we could see a bear and decide that it would be best to run, we would suffer an insult and find it fair to retaliate, but we would not feel fright or indignation" (1902, pp. 308-309).

As we can see, for James also, the problem consists not in adding any substantial point to the traditional description of the emotional process, but exclusively in changing the sequence of these points, establishing the true relation between them, and introducing as a source and cause of emotion what was formerly considered to be its consequence and result. The substantial difference between James

and Lange is reduced to only two points that are secondary from the point of view that is of interest to us. First, Lange bases the change in the traditional relation between emotion and its bodily expression on materialistic tendencies, while James clearly sees that this theory contains no more and no less materialism than does any view according to which our emotions are due to nervous processes, although his formulation contains a certain cryptic objection addressed to Platonizing psychologists who consider mental phenomena as phenomena connected with something exceptionally base. But James understands that even the Platonizing, that is, consistently idealistic psychology, can be reconciled with his theory. The second point of difference lies in the physiological mechanism of emotional reactions itself. If, for Lange, the change in the vasomotor system is of exclusive importance in this mechanism, James brings to the forefront the functional changes in internal organs and skeletal musculature. As to the rest, the theories resemble each other like twins.

Thus, we see that in order to resolve the problem of whether the facts found by Cannon speak for or against the organic theory of emotions, we cannot limit ourselves to considering these facts in themselves in their absolute meaning, but necessarily must, first of all, study their relation to the essence of the emotional processes and ask what these facts say with respect to the cause-and-effect dependence that James and Lange concordantly advance as being of paramount importance to their whole theory. Consequently, the problem must be posed thus: do these facts confirm the position that organic changes must be considered as the direct cause, the source and essence itself of the emotional process without which emotion stops being what it is, or do these facts speak in favor of the opposite view which is inclined to see in the bodily changes the more or less direct consequences of mental processes that lie at the base of emotions, that is, to see the bodily changes as only secondary phenomena, to put it in Lange's language, which, although constantly present, are in themselves completely nonessential. In other words, the problem can be precisely and briefly translated into this form: in the light of these facts, must we accept that organic changes in the presence of emotions comprise the principal and basic phenomenon and their reflection in consciousness only an epiphenomenon, or, conversely, must we assume that conscious experience of emotions represents the basic and principal phenomenon and the accompanying bodily changes, only an epiphenomenon? Specifically this is the essence of the debate, the point of the whole controversy between the two theories of emotions. Let us turn to the resolution of the problem posed.

As we are now beginning to see, we need only pose the problem in this way: in Cannon's experimental studies, there is no small amount of material that is unfavorable to the organic theory that can serve to seriously diminish the triumph of this doctrine, which many saw in the light of the new factual data. What is unfavorable appears most distinctly in two basic conclusions that can be reached from these studies. The first conclusion: organic changes, no matter how profound and biologically significant they may seem to us, no matter how serious the organic shock they mask, appear as surprisingly similar in emotions that are most different or even opposite from the point of view of experience.

The elucidation of this situation, most important for the problem in which we are interested, was furthered by both the more precise determination of the physiological mechanism of these reactions, concealed in the processes of internal secretion, and by the careful and systematic study of these reactions under experimental conditions. Cannon's earlier research established the following. Visceral manifestations that accompany fear and anger are made evident through the participation of neurons of the sympathetic system. We must recall that these neurons serve mainly for generalized and not for strictly organic reactions. Although

we are speaking of two completely different emotions (fear and anger), facts known to physiology indicate that the accompanying visceral changes do not differ very sharply from each other. Moreover, there are facts that convincingly show why visceral changes in fear and anger cannot be different, but, on the contrary, are more likely to be similar. As has already been indicated, these emotions accompany preparation of the organism to act, and for the same reason that conditions which elicit them lead to flight or to fight (it may be that each of them requires extreme tension), in each of these reactions, the need of the organism is identical. The mechanism of the sympathetic section also begins to act as a whole or partially with emotions of a moderate type, for example, joy or sorrow or aversion, when they appear with sufficient intensity.

Thus, it seems that not so much the psychological nature of emotions as the intensity of their manifestation and their course are primarily responsible for the profound bodily changes that are elicited more likely by the high degree of excitation of the central nervous system that affects the threshold of stimulation of the sympathetic section and disturbs the function of all organs innervated by this section. Consequently, the organic changes seem to us to be processes not strictly modified according to the psychological nature of emotions, but, more likely, by the standard, intense, typical reaction that is activated in a uniform way in the most various emotions.

From this, W. Cannon justifiably reaches a conclusion that is fatal for the basic premise of the James–Lange theory: "If different strong emotions can thus be manifested in a widespread activity of one section of the autonomic system, a section that accelerates the work of the heart, inhibits movement in the stomach and intestines, results in contraction of the blood vessels, raising of the hair, release of sugar and secretion of adrenaline, then we may consider that bodily conditions, which, as some psychologists proposed, may make it possible to distinguish some emotions from others, are not suitable for this purpose, that these conditions must be sought anywhere except in the internal organs . . . We are not willing to say, as James does, that 'we are crying because we are sad,' but we are crying either from sadness or from joy or from strong anger or from a tender feeling; when one of these different emotional states is present, nerve impulses along sympathetic paths are directed toward various internal organs, including the tear glands. In fear, anger, or great joy, for example, at least in man, reactions of the internal organs seem to be too much alike to give us a suitable method of differentiating those states colored by different subjective shades. In view of this, I am inclined to think that visceral changes simply communicate to the emotional complex a more or less indeterminate, but nevertheless real feeling of those disturbances in organs of which we are usually not conscious" (1927, pp. 155-158).

Essentially speaking, these words already contain the final verdict on the theory that saw the solution of the problem of the nature of emotions in the conscious perception of multifaceted, finely differentiated reactions corresponding to the type of emotional process. Cannon himself modifies the quite unambiguous basic position of James in such a way that the main relation between organic reactions and emotional processes can in no way be understood as a relation of cause and effect. In place of the position taken by the classical: we are crying because we are sad, Cannon formulates the following: we are crying either from sorrow, or from joy, or from strong anger, or from a tender feeling. Leaving aside for the time being the problem of the blow that this formulation inflicts on the traditional theory of emotions, we cannot but see that basically, it returns us to the idea so disputed by Lange and James, specifically, the idea of dependence of bodily manifestations on the emotional process as such.

As we know, in his hypothesis, C. G. Lange insists that direct physical expressions that accompany emotion create changes in functions of the vasomotor apparatus that are different for each emotion. He even constructed a diagram of organic changes for seven emotions: disappointment, sadness, fear, embarrassment, impatience, joy, and anger. James assumed that his theory would lead to a radical reorganization of the whole problem of classification of emotions. A question arose earlier as to what variety or type a given emotion belongs, but now what is under discussion is explaining the causes of emotions, what kind of modifications one object or another specifically elicits in us, and why it elicits specifically these modifications and not others. From a superficial analysis of emotions, we thus move to a study that is deeper and of a higher order. Classification and description are lower steps in the development of science which are placed on a secondary level as soon as the problem of the causal connection in a given scientific area of investigation appears on the stage.

Once we elucidate that the cause of emotions are innumerable reflex acts that arise under the influence of external objects and are immediately perceived by us, then we will immediately understand why an innumerable multitude of emotions may exist and why they may vary infinitely in different individuals in both composition and in motives that elicit them. The fact of the matter is that in the reflex act there is nothing unchangeable or absolute, the most various effects of the reflex are possible, and these effects, as we know, vary infinitely.

To put it more briefly, any classification of emotions may be considered as true and natural as long as it satisfies its purpose, and questions as to what the true or typical expression of anger or fear is have no objective meaning. Instead of resolving such questions, we must undertake elucidation of how one expression of fear or anger could have occurred, and this comprises, on one hand, the problem of physiological mechanics, and on the other, the problem of the history of the human mind, that is, the problem which, like all scientific problems, is essentially solvable, although finding its solution may be difficult.

We shall speak later of what history has to say of the human mind in connection with the theory under consideration. Physiological mechanics, to which James appeals, however, has scarcely spoken its final word on this, and this word not only does not defend the hypothesis of James, but is in irreconcilable opposition to it. At the same time that Lange maintains that the difference between emotions must be explained by the difference in vasomotor reactions and James believes that the point of view he proposes explains the astounding variation of emotions, physiological mechanics establishes the incontrovertible fact that organic changes in emotions arise as a standard reaction, identical for the most various affects, similar to innate reflexes of a lower order to which it belongs, for example, the nasal reflex. Cannon summarizes: "The facts I presented and the observations of Sherrington lead us to think that the internal organs play an insignificant role in the emotional complex, especially in the sense of recognizing the nature of the emotions" (1927, p. 157). Experiments that indicate the uniform visceral reactions support the idea that visceral factors play an insignificant role in the genesis of differences in emotional states.

Evaluating the significance of this fact for confirming or refuting the theory, P. Bard finds that it is a sharp argument against the assertion of Lange, but is not as strong when applied to the later formulation that James gave to his basic hypotheses ten years after the first publication. In a later formulation of his views, James no longer insists as sharply as he did before on the possibility of differentiating emotions on the basis of differences in bodily changes. However, even with respect to the later formulation, the critical argument remains since even there

James stresses the significance of visceral factors in the whole emotional reaction, factors which he maintains are the essential cause of any affective state. In response to the objection that laughter from tickling and shivering from cold elicit purely local bodily perception, but not the real emotions of happiness or fear, he responds that under these circumstances the production of emotional reactions is not complete. Visceral factors difficult to localize are absent, but evidently they are most essential of all. When for some internal reason they are added, we have emotion present and then the subject seems to be enveloped by pathological or groundless terror, sorrow, or anger. Thus, even with respect to the later formulation of the theory of James, as we see, this damaging argument basically retains full force.

To the same extent, the persuasiveness of these ideas remains in our eyes to be unyielding even after the commentaries which many followers of the theory of James use to try to protect the teaching from the destructive force of this argument. Thus, J. Angell[20] admits that the presence of a significant stereotypic basis of substantially identical visceral changes is possible in all emotions, but assumes that differential traits can be found in extravisceral disturbances, especially in differences in tonus of the skeletal musculature (in: W. B. Cannon, 1927, p. 108). R. Perry also points to proprioceptive structures, to the motor aspect of emotional expression, in which elements distinct for various affective states can be found.

The sense of the commentaries is completely clear: they are trying to sacrifice the factual and concrete content of the theory in order to save its ideological and theoretical nucleus. Suppose that the concrete mechanisms of emotional reactions to which Lange points (the central unifying significance of the functional changes of the vasomotor system) and those that James had in mind (visceral reaction) prove to be insupportable in light of the newer physiology; the main significance of the theory may be retained fully if we assume that we must look for these mechanisms among the extravisceral, especially the motor and proprioceptive processes. In this case, the theory would need factual correctives and perhaps even a radical revision of the physiological part, but the basic psychophysiological idea underlying it could be preserved.

We must take these considerations into account; they provide only half of the basis on which the organic theory was consolidated, and for this reason we must investigate further the data that pertain to the possibility of retaining the theory of James on a different factual base. We shall limit ourselves for the time being to what hopelessly compromises the factual aspect of the theory even in the eyes of the principal followers of James–Lange. As Cannon properly notes, Lange does not give any place to the possible new source of genesis of emotional processes in his theory and James ascribes a smaller role to it in comparison with the main participation of the visceral and organic part of bodily changes in the genesis of emotion. Let us add to these considerations only what is indicated by data from everyday experience, with which Lange and James predominantly operate, referring to the presence in the experience of emotions of components emanating from the perception of organic changes; these data also primarily favor the visceral and organic components, but not the extravisceral, specifically, the motor components.

We will not make a definitive judgment before we consider the whole polemic that has flared up between critics and partisans of the organic theory. At this time, we will add only one thing: with all of the uniformity, with all the sameness, standardized nature of a stereotypic reaction as it is described above, it is understood that we observe certain variations in its course. Thus, we cannot deny the fact that in different emotional states, we have different changes in the blood vessels (pallor or reddening of the face). However, as Cannon notes, even these changes are of little significance from the point of view of what we are interested in: the uniformity

of the passage of the organic reactions. Cannon says that the sympathetic system acts as a unit but there may be insignificant variations, for example, the presence or absence of perspiration; in the basic traits, however, the integration of reactions always maintains its characteristic appearance.

We can now move on to the second conclusion connected with the first, but even more lethal for the James–Lange theory. The conclusion flows directly from Cannon's earlier studies from which we drew our first critical argument. Its essence is that the uniform, stereotypic organic reaction, which, as we have said, is no basis for differentiating the most opposite affective states according to their psychological nature, can be observed in the same form also in states that have nothing in common with emotional excitation. Consequently, it contains nothing in itself that is characteristic not only for separate emotional states, but also for emotional states in general; more likely, it is the result of a high degree of excitation of the central nervous system, whatever the causes of this excitation might be and under whatever kinds of circumstances it might have arisen. We cannot but see that this new consideration definitively paralyzes the attempt of Angell to assume an identical stereotypic organic base for all emotional reactions in general, a base on which extravisceral components specific for each emotion are constructed.

With all the unalterability of the logic of facts, studies show that the common and identical organic base does not contain anything specific to an emotional state as such and that it is completely identical for many other states of an indisputably nonaffective nature; consequently, it may characterize an emotional reaction not in that it is distinct and special in it, making it what it is, but only in that it has something in common with other *non*emotional states.

Even Cannon's first study established that the stereotypic reaction of the sympathetic section can be observed not only in fear and anger, but also in such states as pain and asphyxia. Manifestations elicited by asphyxia are similar to those elicited by painful stimulation and strong emotional excitation.

Further studies wholly confirmed this observation and showed that the same reaction occurs with severe chilling, in fever, in hypoglycemia, asphyxia, and stressful muscular work (for example, in running). In all the indicated states, the sympathetic system is activated in exactly the same way as it is in strong emotional states. In the words of Cannon, this occurs in all strong excitation in any circumstances.

As Bard and Cannon correctly noted (in: W. B. Cannon, 1927), this manifestation is found in irreconcilable contradiction with the basic theses of James. If we recall the following: according to James, sensation in the crudest forms of emotion is the result of its bodily manifestation; further, James saw additional evidence in favor of his theory in the fact that in eliciting external manifestation of one emotion or another, we must experience the emotion itself also; finally, if we recall James' objections to the argument brought against his theory, the fact of absence of emotion in shivering from cold and laughter from tickling, then it becomes completely clear that according to the James theory, we must have experienced a stronger emotional excitation in all the nonemotional states listed above in which the typical reaction of the sympathetic section is observed. Of course, present here is the whole complex of bodily manifestations as they are found in fear and anger, here are the visceral factors in the absence of which James saw an identical cause for the fact that tickling induces laughter but joy does not, and cold induces shivering but fear does not. Finally, here the requirement that James himself advanced, which flows from his theory, is fully realized, that is, the bodily manifestations corresponding to an emotional state are present, but the result, the consequence of the emotion itself, which we should have expected according to James, is not manifested.

P. Bard says that a complete refutation of James' observation cited above on laughter from tickling and shivering from cold is the fact that shivering from cold occurs with the same visceral changes that are observed in actual fear. In this nonemotional state and in others (for example, in running) the full reaction, including visceral changes, is the same reaction as in fear, but there is, nevertheless, a remarkable absence of emotion that might have been expected according to the James theory. Cannon states the same thing as a basic conclusion from these studies. He says: "If emotions arise from afferent impulses coming from external organs, we would have to expect not only that fear and anger would be experienced in the same way, but that supercooling, hypoglycemia, asphyxia and fever would be felt in precisely the same way. But in reality this does not happen" (W. B. Cannon, 1927, p. 110).

We see that the James–Lange theory cannot withstand the criticism of facts in the first attempt to study it experimentally. It appears to be an idea that is not consistent with its objective; consequently, in accordance with the basic axiom of Spinoza, it must be admitted to be a mistake rather than the truth.[21]

4

Over the course of still another chapter, we must conclude the first part of the study we have begun that has as its purpose ascertaining the extent to which the James–Lange idea, which was assumed to be a vital continuation of the Spinoza teaching on passions, is consistent with its objective. Consequently, we must continue the critical analysis of the theory from the point of view of its factual validity. Having concluded the analysis, we can turn directly and immediately to the final critical experiments and to the data of pathological psychology of emotional life grouped around these experimental and clinical facts (they cast no small light on the problem that concerns us), all supplementary and auxiliary critical considerations that are part of this pointed polemic that evidently is the last page, or even the epilogue, in the history of a renowned and paradoxical teaching.

As we know, Lange and James saw the basic evidence in favor of their theory not so much in the fact that emotional states are accompanied by physiological changes (this was recognized in classical theory), as in that without physiological changes, emotion itself cannot exist. From this they reached the conclusion that emotion is the direct result of what was formerly assumed to be its bodily manifestation. Factual testing of this idea was inaccessible to the authors of the theory. They could reproduce the required experiments only in imagination and theoretically anticipate the results of clinical studies of cases which would be suitable for confirming or refuting their theory. We have already cited the position of Lange: "Eliminate in the frightened man all physical symptoms of fear . . . what will then remain of his fright?" (1896, p. 57). His is the theory that feeling cannot exist without physical manifestations.

James expresses the same thing in a still more radical form: "Now I want to approach the presentation of the most important point in my theory, which consists of the following. If we imagine any strong emotion and try in our imagination to exclude from this state of our consciousness one after another all sensations of bodily symptoms connected with it, then in the final analysis, nothing of the given emotion will remain, not any kind of 'mental material' from which the given emotion could be formed. In what remains, there will be a cold, undifferentiated state of purely intellectual perception . . . I cannot at all imagine what sort of emotion

of fright will remain in our consciousness if sensations are eliminated that are connected with increased heart rate, rapid breathing, trembling of the lips, weakness of the extremities, with 'goose bumps' and with excitation of the internal organs. Can anyone imagine a state of anger and at the same time imagine no agitation in the chest, no flow of blood to the face, no expansion of the nostrils, no clenching of the teeth and no urge toward energetic action, but conversely, muscles in a relaxed state, calm breathing and a tranquil face? The same reasoning is applicable also to the emotion of sorrow: what would sorrow be without tears, sobbing, a decreased heart rate, pangs in the pit of the stomach?" (1902, pp. 311-312).

According to James, in all of these cases, anger and sorrow as such, as emotions, would be completely absent, and in what remains, there would have to be calm, indifferent judgment belonging wholly to the intellectual sphere, pure thought about whether a certain person deserves condemnation for his sins or whether circumstances are quite sad, and nothing more. He says: "The same thing can be observed in an analysis of any other passion. Human emotion devoid of any bodily backing is an empty sound" (ibid., p. 312). Naturally, from such a position, two consequences inevitably follow. The first: "If we suppress the external manifestations of passion, it must die off. Before yielding to an outburst of anger, try counting to ten—and the reason for the anger will appear to you to be laughably insignificant" (ibid., p. 315). It is noteworthy that Lange, completely independently of James, also cites counting as a means of suppressing anger. He recalls "the hero of the classical comedy of L. Holdberg,[22] Herman von Bremen, who always counts to twenty when his wife beats him and then he is able to remain calm" (1896, p. 79). Lange says that when the hero "counts to twenty, then with this insignificant mental effort, he removes so much blood from the motor part of his brain that he loses all inclination to fight with his wife" (ibid., p. 79). The second consequence: James says: "If my theory is correct, it must be confirmed by the following indirect evidence: according to it, by eliciting in ourselves voluntarily when we are inwardly calm so-called external manifestations of one emotion or another, we must experience the emotion itself" (1902, pp. 314-315). Lange maintains the same thing: emotions can be elicited by a multitude of causes that have absolutely nothing in common with agitation of the spirit, and frequently they may be suppressed or ameliorated by purely physical means.

It remained to us to test the two positions experimentally and clinically: (1) is it possible for emotion to arise in the absence of its bodily manifestations, and (2) is it possible for emotion to arise in the absence of any mental activity exclusively by eliciting it through artificially induced bodily manifestations? We did this in a number of studies which we shall now consider.

An answer to the first question was provided by Sherrington in the well-known study in which he cut the vagus nerve[23] and the spinal cord and cut off all the main internal organs and large groups of skeletal muscles from the influence of the brain. In this way, in his experiments, the main bodily manifestations of emotions which arise through reflexes were excluded by surgical means. However, there was no doubt that under appropriate conditions, the experimental dogs exhibited emotional reactions without noticeable changes in the manifestation of characteristic symptoms that are usually taken as signs of anger, fear, satisfaction, or aversion. Thus, the only conclusion that can be reached from these studies is the conclusion that Sherrington himself reaches: the brain continues to produce emotional reactions even after it seems to be disconnected from the internal organs and significant groups of skeletal muscles.

Sherrington says that if we believe the signs that are usually accepted as an indication of satisfaction, anger, fear, and repulsion, we cannot doubt that the ani-

mals exhibit these symptoms after the operation exactly as they did before it. The author refers to the example he observed of fear in a young monkey that had been operated on when approached threateningly by an old macaque. The dropped head, face turned away and frightened, and ears bristling indicated the presence of emotion just as lively as emotion that the animal exhibited before the operation (see R. Creed et al., 1935, p. 184).

In the next series of experiments, Sherrington went still further. After the animals recovered from the first operation, he cut both vagus nerves at the neck and disconnected the brain from the whole body except for the head and the pectoral girdle. In this way, any doubt that remained after the first operation concerning external manifestations of emotion that might have been established previously with the help of afferent impulses from the remaining internal organs was also subjected to experimental testing. Affective reactions of experimental dogs did not change even after the second operation. A very emotive dog that had undergone both operations continued to produce intensive and appropriate reactions of anger, satisfaction, and fear.

The only doubt that arose after Sherrington's experiments in which a practically complete elimination of visceral reactions and reactions of almost all the skeletal musculature was achieved was formulated by C. Lloyd Morgan[24]; connecting paths were severed after the visceral and motor changes determined the genesis of emotion, according to the hypothesis that assumes this origin for emotional reactions. Thus, regardless of the fact that actual visceral and motor influences were suppressed, in Sherrington's experiments, traces and results of the first influences were not excluded (see R. Creed et al., 1935, p. 187). For this reason, it might be assumed that we are dealing with simple mimetic reactions of a nonemotional nature, similar to those elicited by V. M. Bekhterev[25] in animals without a brain cortex. Finally, one more objection might be entertained: Sherrington's dogs, having been tested over the course of earlier life when emotions were caused peripherally, were not tested again after the operation when emotions arose along a purely cerebral path outside their normal peripheral conditions.

To the first objection, Sherrington replies with a reference to a ten-week-old pup he operated on, which was not moved from his place from the day of birth but nevertheless displayed repulsion toward dog meat. In this case, it would scarcely be possible to assume that we were dealing with a reaction that had been established in previous experience and was now activated anew. However, regardless of the completely clear sense of his experiments, Sherrington nevertheless refrains from a definitive conclusion on the doubtfulness of the theory of Lange and James because even after the operations, the animals retained a sufficient quantity of peripheral elements (muscle, skin, vessels of the head and neck) to cause and exhibit emotion. Moreover, Sherrington cannot but note that his experiments do not provide any confirmation for the theories of Lange, James, and Sergi on the nature of emotions. "We must return to the statement that the visceral expression of emotions is secondary and that the activity of the cerebral hemispheres and the corresponding mental state are primary" (see: R. Creed et al., 1935, p. 187).

We will mention in passing the experiments of Pogano and Gemelli and Deseaumere and Heymans in which an attempt was made to achieve conditions similar to Sherrington's by pharmacological means and which basically reinforce his conclusions. We cannot but agree with the observations of A. Pieron[26] relative to the incompleteness of the experiments of the latter two authors and, consequently, the inconclusiveness of any conclusions that may be drawn from these experiments (A. Pieron, 1920). However, we cannot but see with A. Binet the enormous historical significance of the first step Sherrington took in a new direction: Binet said that,

for the first time, a physiologist had tackled a problem posed by psychologists and approached it with the method of vivisection characteristic for that study.

The idea at the base of Sherrington's experiments was realized not long ago by others, in a much bolder way by Cannon, J. Lewis, and S. Britton (W. B. Cannon, J. T. Lewis, S. W. Britton, 1927) in experiments that removed the whole sympathetic section of the autonomic system. Thus, after the operation, all vasomotor reactions, adrenaline secretion, visceral reaction, bristling of the hair, and release of sugar in the liver, were precluded in the animals. In animals subjected to sympathectomy, no noticeable changes in emotional reactions arising through the completely normal way (with the exception of bristling) were found in pertinent situations. The absence of afferent impulses from internal organs did not in any way change their usual emotional behavior. Experimental cats exhibited a completely normal emotional reaction in the presence of a barking dog.

In 1929, Cannon and his colleagues published further observations of animals that had undergone this operation. The observations wholly confirmed what was established in the very beginning. The standard reaction of the sympathetic section of the autonomic system that was so carefully studied in Cannon's earlier works as an obligatory accompaniment of strong emotions was absent in the animals observed and, at the same time, after a bilateral sympathectomy, the animals did not exhibit any changes in normal emotional behavior.

In order to conclude the review of this perhaps most important argument against the James–Lange theory, it remains for us to interpret briefly certain points connected with the studies cited. The first point: the experiments of Sherrington and Cannon provide no direct evidence that sensations from internal organs do not play a significant role in the development of the mental aspect of the reaction and that this state precedes the bodily manifestation of emotion (Angell) just as it might be assumed that together with the exclusion of these sensations, emotion stops being experienced in a specific way as a feeling in the consciousness of the animal (Perry). Actually, on the basis of the experiments in which there is no direct evidence on the mental experience of the animals, we must admit that we have no direct possibility of confirming or denying the presence of one feeling or another in the emotional reaction. Obviously, direct evidence might have been obtained only with a person who could place at our disposal data of an introspective nature. We shall yet turn to such data.

But even now we cannot but note that this objection is based on a certain logical error: it proves somewhat much and for this reason, it proves nothing. In any case, it proves much more than it wants to. Of course, in general, our judgment on the emotional experience of an animal is always based on inferences from external manifestations of some state; consequently, if this criterion is doubtful, we must give up altogether any right to ascribe to the animals any kind of feelings and experiences and in this way adopt the point of view of Descartes who considered animals as robots, as reflex machines. If we assume that for normal animals we are justified in deducing from external manifestations of any emotion the presence of an emotional mental state similar to that of a human being, although infinitely removed from it, then we have no basis for making an exception with respect to the animals operated on by Sherrington and Cannon that retained all the behavioral symptoms that compel us always to presume the presence of a mental component in an emotional reaction in normal animals. As Sherrington justifiably notes in response to this objection, "it is difficult to think that a perception that elicits a full manifestation of anger and corresponding behavior is nevertheless powerless to elicit a feeling of anger" (see R. Creed et al., 1935, p. 188).

The second point that requires interpretation consists of the fact that Cannon's new experiments confront us with serious theoretical difficulty since they are in apparent contradiction to the interpretation which we, following the author, accepted above with respect to his earlier works. We saw that the organic changes that arise as a result of strong emotions exhibit an undoubted biological expediency, the explanation of which is no small achievement of psychological thought. These reactions, as we have seen, serve as a preparation of the organism for increased activity that usually follows strong emotions in situations that require flight or fight. Meanwhile new experiments seem to favor the opposite. They establish that complete exclusion of organic reactions does not produce any noticeable change in the behavior of the animals. Emotions occur precisely as they did before the operation and the behavior of the animal remains just as adequate to the situation, biologically sensible both with complete disconnection of the brain from the internal organs and with full removal of the sympathetic section of the autonomic system. This contradiction would be an insurmountable difficulty for experimental and theoretical criticism of the organic theory of emotion if it were real and not only seeming. Actually, between the first results of experimental studies and the new, there is not only no contradiction, but, on the contrary, there is complete agreement.

Cannon says that in comparison with normal animals, under quiet laboratory conditions, there are no differences in the behavior of the animals with a removed sympathetic section of the autonomic system. At first glance, for this reason it may appear that the sympathetic system has no great significance for normal bodily functioning. But such a conclusion is erroneous. Under conditions of real life, in critical, real situations, an animal that had been operated on could scarcely be compared with a normal animal as to the real possibility of self-preservation. As was established in connection with Cannon's earlier studies, the biological significance of organic reactions that arise as a result of emotion and accompany strong emotions consists exclusively in preparing the organism for activity (flight, fight), for an increased expenditure of energy, for intense muscular work.

Thus, the biological significance of these reactions is connected not so much with emotion in itself, with emotion as such, as with the functional consequences of strong emotions. Specifically because of the fact that functional consequences (increased muscle work) are the same for such different emotions as fear and rage, the corresponding organic reactions not only appear to be factually identical, but, speaking theoretically, they cannot be different. Consequently, the fact that emotion as such is preserved even with complete elimination of organic reactions changes nothing in our representation of the biological significance of these organic changes, but, on the contrary, only confirms it again: the significance can be reduced exclusively to preparation of the organism for activity naturally flowing from the emotion.

From this point of view, it becomes clear that, under laboratory conditions, the animal that had been operated on does not differ in any way from the normal animal. Like the normal animal, it exhibits the emotion of fear and anger, but under natural conditions, the difference between them must be apparent immediately and very forcefully. Because of the absence of organic changes that usually accompany emotions and prepare the organism for increased expenditure of energy, the animal operated on must be unprepared for fighting or fleeing, which under natural conditions follow directly after the emotions of anger or fear and consequently, at the first serious confrontation with real danger, the animal must die. Emotions that are observed in these animals as completely preserved under laboratory conditions are, so to speak, impotent emotions, emotions devoid of their biological significance, if I may say so, emotions that have been deprived of their stinger: the animal operated on can adequately experience and exhibit the affect of anger, but it is powerless

when the situation requires from him the natural consequences of this affect—fight and attack.

To agree with the interpretation presented above of the two debatable points that develop as a result of new studies, we unavoidably must come to the basic conclusion that Cannon reaches from these studies.

Of course, we do not have any real basis for confirming or denying the presence of emotional experience in the animals operated on. But we have a solid basis for judging the relation of these experiments to the James–Lange theory. James ascribes the main role in emotional experience to visceral sensations. Lange ascribes it wholly to sensation of the vasomotor system. Both maintain that if we mentally deduct the organic sensations from emotional experience, nothing will be left of it. Sherrington and Cannon and their colleagues subtracted the sensations surgically. Their animals were without the possibility of reflex impulses from internal organs. According to James, emotional experience would have had to shift to a significant degree toward nothing. According to Lange, it must have disappeared completely. (I will remind you that without excitation of our vasomotor system, impressions of the external world would elicit in us neither joy nor sorrow, would cause us neither concern nor fear.) However, to the extent that nerve connections permitted this, the animals showed no decrease in intensity of emotional reaction. In other words, the operations, which according to the given theory were supposed to destroy emotion very significantly or completely, regardless of this, left anger, joy, and fear in the behavior of the animals to the same extent as they were manifested before the operation.

Together with Sherrington, however, we prefer to refrain from a final judgment on the theory under consideration on the basis of these experiments alone: these data will acquire their true significance only in comparison with all other experimental results, on the one hand, and, on the other, with clinical facts that will provide us with indispensable evidence on the conscious emotional experience of man.

5

The persuasiveness of the experimental argument considered above would increase significantly in our eyes if we also had evidence reciprocal to that which was developed experimentally by Sherrington and Cannon. In other words, if we had experimental data pertaining to artificially elicited organic reactions that accompany strong emotions, we would be able to have greater confidence in the conclusions that thrust themselves on us from the studies under consideration. Then we would have before our eyes direct and reciprocal theorems demonstrated with identical logical force: the one and the other taken together would allow us to reach sufficiently solid conclusions.

Let us recall that James and Lange developed purely speculatively an understanding favoring the theory of emotions along the same logical path, seeing the two main pieces of evidence for their theory in the idea that emotion must disappear when bodily manifestations are suppressed, and that emotion must just as inevitably arise when bodily manifestations are artificially elicited. It is natural that experimental confirmation of the theory also should have been conducted along the same two paths. We already find the first attempts to demonstrate the reciprocal theorem (emotion does not arise even if all its bodily manifestations are present) in the experiments considered above that show that such unemotional states as

supercooling, overheating, and asphyxia elicit organic changes similar to those that can be observed in fear and fury and emotion does not arise immediately following these changes. A direct transition from the mental experiment of James and Lange to the real experiment was made in the studies of G. Maranon[27] (in W. B. Cannon, 1927, p. 113).

Maranon's experiments actually are a kind of evidence for the reciprocal theorem in comparison with that which was based on the experiments of Sherrington and Cannon. These experiments showed that an adrenaline injection in doses sufficient to induce organic manifestations typical of strong emotions does not induce emotional experiences in the subjects in the true sense of the word regardless of the fact that all the bodily manifestations are present. What is new in Maranon's experiments is the use of self-observation, which gives us evidence of direct experiences of the subjects. This is the advantage of the latter experiments in comparison with those that were conducted with animals. Thus, with respect to the new studies, there is a definite impression that we do not have direct evidence of the presence or absence of emotional experiences corresponding to bodily manifestations.

In Maranon's experiments, both planes, the objective and the subjective, are found within the field of sight of the experimenter. The investigator was able to produce changes that occur in the consciousness of the subject and bodily manifestations of emotion simultaneously and to study their relation to each other. The experiences of the subjects consisted in perceptions of heart rate, diffuse arterial pulsation, a tightness in the chest, constriction of the larynx, trembling, cold, dryness in the mouth, nervousness, indisposition, and feeling unwell. In association with these sensations, in some cases there was an indeterminate affective state that was devoid of real emotion and was coolly evaluated by the subject. The indications of the subjects were of this kind: "I feel as if I were frightened"; "as if I were anticipating great joy, as if I were deeply moved"; "as if I were going to cry, not knowing why"; "just as if I were experiencing great fear and still remained calm" etc.

As a result of his studies, Maranon notes a clear difference between perceiving peripheral phenomena of vegetative emotion (that is, bodily changes) and truly mental emotion that did not arise in his subjects, the absence of which let him respond about sensing the vegetative syndrome with complete calmness without real feeling.

It is true that there was genuine emotion in a small number of subjects during the experiments, usually distress with tears, sobbing, and sighing. But this occurred only when an emotional predisposition of the subject was noted earlier, especially frequently in hyperthyroidism. In some cases, this state developed only if adrenaline was introduced after a conversation with the subject about his sick children or his deceased parents. Thus, these cases also show that adrenaline has an auxiliary emotiogenic effect only when there is an earlier corresponding emotional mood. We note an exceptional, significant new circumstance that we see in Maranon's experiments and that is usually lost from sight when they are used unilaterally for resolving the serious problem—"for" or "against." This circumstance consists in a very close merging of mental and organic, or, more precisely, cerebral and somatic components of the emotional reaction. At this point, Maranon's experiments indicate not only the relative independence of the one type of component and the other and the possibility of their separate arousal, but also the fact that the one type of component may facilitate the development and reinforcement of the other and that they may exhibit mutual support, may intermingle, and in this way arouse the full affect, undoubted in all its reality from both the aspect of experience and the aspect of its bodily manifestations.

In cases where in Maranon's experiments, the development of such full and genuine affect is observed, the mental and somatic components elicited by different paths go forth as if to meet each other so that at the point of intersection, at the moment of their meeting, a true emotional agitation is aroused. Let us recall indications of this intermingling, which we mentioned above but stressed insufficiently, which we meet in the formulations of James and Lange and which comprise just about the only true point of their theory. Thus, Lange, in enumerating all the physical symptoms of fear that must be eliminated so that nothing might remain of fear itself, also enumerates clear thinking and firm speech, together with a steady pulse and confident movements. In this point, Lange sins gravely against the logical harmony of his argument: who would stop to argue with his paradoxical argument if serious attention were paid to that part of it which at first glance seems small, but is actually of paramount importance? In fact, in translation into theoretical language, this implies a radical change in the basic position of Lange: instead of his thesis—eliminate in a frightened person all the physical symptoms of fright, what then will remain of his fright?—in essence, he would have had to say: eliminate in the frightened person all the physical and mental symptoms of fright—and then one could not but agree with him. For what else can be implied by the requirement to make his speech firm and his thoughts clear, if not a change in the whole state of his consciousness?

The same thing slips through, but less distinctly, in James. In the formula given above on the nonrepresentative quality of anger in the absence of its bodily manifestations, together with distension of the nostrils and clenching of the teeth, James also mentions an urge toward energetic acts, that is, a point that not only more likely characterizes a state of the consciousness than a state of the internal organs and muscles of an angry person, but also an experience that differs radically from perception of bodily manifestation of emotion to the extent that a general urge can be distinguished from a simple feeling or perception. If we evaluate this point in all its theoretical significance, we cannot but note, as with respect to the thesis of Lange, that here we are dealing with a certain logical inconsistency in James' reasoning. This inconsistency James probably would willingly have corrected if he had paid attention to it; but actually it is almost the only grain of truth in the whole theory, a grain that contains the idea that emotion is not simply the sum of feeling the organic reaction, but primarily an urge to act in a certain direction.

We shall still have the opportunity to return to this grain of truth in the organic theory of emotions, which we came upon incidentally. Now, however, we cannot but note that it is only in this point in which the theory changes itself, establishing an internal interweaving of experience and organic reaction in the composition of affect and not their cause–effect mechanical dependence, that Maranon's experiments confirm the position of James and Lange; in everything else, these experiments speak against the theory. An injection of adrenaline elicits in man all the typical bodily manifestations that accompany strong emotions, but these manifestations are experienced as sensations and not as emotions. In certain cases, the sensations resemble former emotional experience, but do not arouse and do not actualize it anew, and only in exceptional cases of emotional sensitization prepared in advance can bodily changes lead to the development of genuine affect. Cannon notes that these cases are the exception and not the rule as the James–Lange theory proposes; in ordinary cases, bodily manifestations do not elicit emotional experience as a direct result (W. B. Cannon, 1927).

Maranon's experiments form a natural transition to data of clinical studies since they confront us directly with man, bring into the field of sight of the investigator the subjective psychological plane, and make direct analysis of consciousness

accessible. By the same token, these experiments allow us to speak not only in the language of the authors of the theory themselves, but also to replace the inferences relative to mental states corresponding to one set or another of bodily manifestations with direct factual observation of the states themselves. Practically speaking, the first experimental studies related to confirming the James theory took this path also. What is new in Maranon's experiments is only the possibility of direct and profound experimental influence of purely physical means on the organic changes that accompany emotions. Of the old studies, we remember the work of A. Lehmann[28] (1892), who, on the basis of self-observation, maintained that even the initial idea that elicits emotion is colored with a sensual tone before emotionally colored organic sensations are formed. Consequently he concluded that emotional tone cannot be considered as a sum of organic sensations. In Lehmann's experiments, the sensual tone arose simultaneously or almost immediately after the initial perception. Circulatory disturbance, on the other hand, occurred only one or two seconds after stimulation, therefore after the sensation arose.

We are including Lehmann's data only because objective experimental confirmation was developed in later studies. Summarizing the latter, Cannon, without mentioning Lehmann, presents his conclusions as a new argument against the James theory; visceral changes arise somewhat slowly and cannot for this reason be considered as the source of emotional experience. He compares[29] the data of C. Stewart,[30] E. Sertoli,[31] J. Langley,[32] I. P. Pavlov, and others[33] who established that the latent period of the visceral reaction exceeds significantly the latent period of the affective reaction (W. B. Cannon, 1927, p. 112), which F. Wells[34] (ibid., p. 112) determines as 0.8 sec, thus shortening the time established by Lehmann. According to the James–Lange theory, the affective reaction arises as a result of reflex impulses from internal organs, but this seems to be impossible if we consider the long latent period of the reaction of these organs to which we must also add the time required for the return of nerve impulses to the brain. In this comparison of the old experiments of Lehmann with the new work, we again see how productive the path of investigation is that combines analysis of objective and subjective aspects of the affective reaction.

We find higher forms of such combination in natural experiments in clinical studies of psychopathology of affective life. We can say without exaggeration that without these data, the basic questions connected with the James–Lange theory could not have been resolved, but the main thing is that we could not have approached with a more adequate understanding the nature of affects and their bodily organization. For this reason, data from clinical studies must necessarily be taken into account if we want to reach a definitive judgment in connection with this controversy; in the resolution of this controversy we are always trying to find a solid point of support both for a true understanding of the nature of affects and for a true evaluation of the philosophical teaching on passions, which is of interest to us.

The authors of the organic theory themselves turned to data of pathology hoping to find there a direct confirmation of their teaching. James says: "The best evidence that the direct cause of emotions is the physical effect of external stimulation of the nerves are the pathological cases in which there is no appropriate object for emotions. One of the principal advantages of my point of view of emotions is the fact that with its help, we can unite pathological and normal cases of emotions into one general pattern" (1902, p. 310). Thus, James not only recognized the admissibility of factual verification of the theory with psychopathological data, but saw in them the best evidence for this theory and believed its main advantage to be that it would explain normal and pathological affects equally well. In every

insane asylum, he expected to meet samples of affects motivated by nothing, which in his opinion would be the very best evidence for the validity of his position. For this reason, it is completely natural to turn to a consideration of the extent to which these samples, these pathological cases, actually speak in favor of the theory under consideration (or against it) and to what extent this theory actually is capable of bringing normal and pathological affective life into a single pattern.

C. G. Lange also assumed that the latter point of support for the hypothesis on mental emotion disappears as soon as we turn to abnormal functioning of emotional processes. He even thought that "the vasomotor apparatus is subjected especially severely to the danger of functioning abnormally and for this reason, it forms that part of the nervous system that relies least on respiration and experiences emotional storms more frequently than other parts. When disturbances of this kind happen in any subject, then, according to the circumstances, the subject is depressed, fearful, or irrepressibly cheerful, shy, etc.—and all of this with no reason, although the person expressing these emotions knows that he has no reason to be angry, fearful, or happy. Where in this is the point of support for the hypothesis of 'mental emotion'?" (1896, pp. 62-63). As we see, Lange again remarkably agrees with James not only in the formulation of his general positions, but also in the details of the argumentation that he develops.

In contrast to Lange, however, James clearly understood that the general and overall reference to pathological, unmotivated affects is only indirect and quite shaky evidence in favor of his theory because this kind of reference, practically speaking, presents nothing new in comparison with the observation of a normal course of affects since even in cases of unmotivated affect (if we leave aside for the moment the phenomenon of so-called sincere distress and sincere fright in which, in the opinion of James, emotion is simply a sensation of a bodily state and is due to a purely physiological process), the question that is central to the whole theory remains completely without explanation: in unmotivated affect what should be considered as the cause and what as the effect if the mental state and organic changes are taken together exactly as they are in normal cases? In fact, pathological factors are distinguished from normal only and exclusively in that in them, perception, the cause that elicits the affect, is absent, but, in fact, the whole James–Lange theory is not concerned with this. They attempt to demonstrate that emotion as such, and not the cause of it, is the result of bodily manifestations of affect, but this cardinal position remains as unproved and unprovable as it is in normal emotion.

Obviously, for direct confirmation or refutation of the theory, pathological phenomena of an entirely different character are required. James understood this. He indicated that for his theory, only such pathological cases could serve in which we could observe preservation or loss of emotionality in nonparalyzed subjects characterized at the same time by complete insensibility. James himself indicates certain observations approaching such phenomena, and interprets them in a sense favorable to his theory. Like the data of Revault d'Allones and G. G. Meyerson, we will leave these aside since they, according to the valid comment of C. Landis,[35] are interesting case histories and, consequently, should be considered as such since they are all connected with primary unbalance and disturbance of affective life and for this reason must serve now more from the point of view of psychoanalysis rather than from the point of view of physiological psychology.

W. James himself believed the conditions he advanced for a critical experiment to be incapable of being realized, but they were realized first in the psychophysiological experiment of Sherrington, who, according to the valid observation of Du-

mas, approached the requirements of James, and then also in clinical observations conducted by C. Dana[36] (C. Dana, 1921).

These clinical studies not only allow us to use data of self-observation for the practical study of emotional experiences in pathological cases, but also elucidate still another exceptionally important area of facts that we have thus far left aside, which the organic theory of emotions broaches. Thus far, we have dealt mainly and almost exclusively with the visceral aspect of bodily manifestations of emotions, that is, with the functions of the sympathetic section of the central nervous system. Because of the conditions of the physiological experiment, we left aside motor and mimetic manifestations of emotion, which play a role in the theory of James, although only a secondary role, but nevertheless the role of a significant factor in producing emotion. Moreover, as was the case in the experiments of Cannon and Sherrington, we frequently had to depend on the retention of motor and mimetic aspects of bodily manifestations as evidence of the presence of the mental part of emotions also. Clinical studies, which we will now proceed to consider, also allow us to form an answer regarding this group of facts and, thus, they bring us closer to definitive results, to a definitive resolution of the problem.

6

As we have seen, those who support the organic theory are trying to save it by introducing into it a substantial factual corrective that might reconcile this theory with the unambiguous data of experimental studies. These data indicate that visceral changes cannot be considered as a source of emotions and, consequently, it must be assumed that sensations of tension and movement of the skeletal musculature are the real source of the emotional state and vary correspondingly with different emotions.

S. Wilson[37] described cases of pathological manifestations of laughter and tears in which clearly expressed external manifestations of emotion did not at all correspond to the actual feelings of the patients. Their emotional experiences proceeded completely normally, and they suffered from the fact that their real feelings were contradicted in their expression. The patients could experience sorrow while laughing loudly; with all external manifestations of happiness and joy, including also accompanying reactions of visceral mechanisms, these persons could not only not feel happy, but the corresponding state of their consciousness could be in open conflict with the external expression of their emotions (S. Wilson, 1924, pp. 299-333). It is completely clear that the James–Lange hypothesis must be changed radically if it is to be brought into agreement with observations of this kind in which a full merging of peripheral and cerebral components is absent.

S. Wilson cites opposite cases that also indicate absence of parallelism between mental and somatic elements of emotion. These are cases of emotional paralysis of the face in which patients experience feeling and are keenly aware of their normal emotional states in appropriate situations. They exhibit a mask-like facial expression, but behind the mask there is a completely normal play of emotional reactions. The patients suffer from a complete absence of expressive movement of the face. According to Wilson's evidence, they were very sensitive to this circumstance and saw it as a great misfortune that interfered with their showing others that they were experiencing joy or sorrow. According to the graphic comparison of N. V. Konovalov,[38] in patients of the first and second type described by Wilson, we always see this kind of noncorrespondence of emotional experience and its external

expression, which resembles a mask. But if in patients of the second type, the face resembles a death mask placed on a person who has an amplitude of lively emotions, then in patients of the first type, the face resembles a mask of a Greek actor with exaggerated pathetic emotional expression that can clash sharply with the internal state of the hero or the actor portraying him and with the words of the role that he speaks. Practically speaking, in patients of this type, we see that which Victor Hugo described in the novel *L'Homme Qui Rit.*

S. Wilson cites data from the self-observation of his patients, who protest that their laughter and tears are taken by others as indications of their real affective state. Wilson says that this cannot be reconciled with the conclusion that bodily manifestations, as James calls them, form emotion. Conversely, patients with facial diplegia can retain a mask-like facial expression and experience "internal laughter." Wilson summarizes his observations in the form of a general thesis. From the point of view of clinicians, in his words, he must agree with physiologists when they assume that organic changes have relatively little significance in comparison with the cerebral changes with which mental components of emotional reaction are connected.

But as Bard notes, cases of retention of normal emotional life in patients suffering from complete or almost complete immobility of skeletal musculature have a still greater significance. C. Dana reports that in such patients, normal subjective emotional reactions were retained. Dana is the person who described a remarkable observation which, in the opinion of Bard, gives a direct answer to the objection that is frequently raised with respect to the failure of Sherrington's experiments to prove the presence of emotional experience in animals that were operated on. A highly intelligent female patient, age 40, broke her neck at the third and fourth cervical vertebrae. She suffered complete paralysis of the skeletal musculature, the body and four extremities, with complete loss of superficial and deep sensitivity of the whole body from the neck down. She lived about a year and during that time, Dana observed her emotions of grief, joy, dissatisfaction, and affection. It was impossible to note any changes in her personality or character. She had control only of the musculature of the skull, the upper part of the neck, and the diaphragm. The possibility of emotional discharges of sympathetic impulses was precluded. From the point of view of the peripheral theory, it is difficult to understand how her emotionality suffered no changes while her skeletal system was practically eliminated and the sympathetic system was also wholly excluded.

Dana reaches the following basic conclusion from these observations: emotions are localized centrally and spring from the activity and interaction of the cortex and the thalamus. Centers that control the activity of the vegetative nervous system are found mainly in the brain stem. These centers are excited primarily when the animal perceives something that requires defense, attack, and active striving. In turn, they excite the muscles, internal organs, and glands, and they also communicate with the cortex and excite emotions corresponding to the perceived object or the idea generated. It remains for us to consider the positive part of the theoretical considerations of this clinician. Like the negative conclusions, this part coincides with conclusions that physiologists reached as a result of their experimental studies. Now we shall continue to consider these most important clinical data, which are probably capable of giving a direct answer to the question that is of interest to us, and, in combination with previously considered data of the experiment, can almost definitely untangle the knot of contradictions that grew around this famous theory over the decades.

H. Head described cases of a unilateral affliction of the thalamus opticus: a typical symptom in patients was the tendency to excessive reaction to any affective

stimuli, a somewhat strange change in emotional tone expressed in the fact that a pin prick, painful pressure, heating, or cooling made a much greater emotional impression on the affected part of the body than on the normal part. Pleasant stimuli also were experienced emotionally more intensely in the affected part. A warm touch elicited in the patients an intense feeling of satisfaction exhibited as facial expressions of joy and in the expression of pleasant satisfaction. Complex affective stimuli, for example, perception of music or singing, could elicit emotional experiences of such great power (on the affected side) that they were unbearable for the patient.

One of Head's patients was unable to stay in his place in church because he could not tolerate the effect of the singing on his affected side. In listening to singing, another patient experienced a terrible feeling in the affected side. One of the patients said that after an incident that made him especially sensitive to pleasant and unpleasant feelings on the right side of his body, he became more sensitive. He said that the right hand always required comforting. To the patient, it seems that on his right side, he constantly pines for sympathy. His right hand seems to be more "artificial." Thus, the part of the body with the diseased thalamus opticus reacts more forcefully to affective elements of both external stimuli and internal mental states. There is an increased sensitivity of the affected part of the body to states of satisfaction and dissatisfaction. E. Küppers,[39] who goes further than others in evaluating the role of the thalamus opticus as a source of mental states, formulates the results of observations of patients of this kind and says that a patient with unilateral thalamic disease has a different soul on the right than on the left. On one side, he requires comforting, is more sensitive to pain, is more "artificial," tender, and impatient than on the other.

Putting aside for now the interpretation that James gives these cases, we must derive from them what pertains directly to the problem we are discussing. Two points are of primary interest for us. The first: as Head established, in a patient of this kind, a significant difference is noted in the sensual tone of separate sensations. While some sensations and perceptions have no substantial emotional effect, others intensely affect the diseased side. Specifically, as Cannon correctly notes, sensation arising with different positions of the body and different poses that are completely devoid of emotional tone acquires exceptional significance. From this, it follows that afferent impulses from skeletal muscles in which the followers of James were inclined to see, as was noted above, the principal extravisceral source of emotion, after excluding visceral sensations in critical experiments, cannot be considered as the actual source of emotion since they have no such specific requisite quality (sensual tone) that alone could compel us to see in them the real cause of an emotional state. Consequently, the last resort of those that try to save the organic theory of emotions seems to have been destroyed by Head's clinical studies. Neither reflex impulses from internal organs nor impulses from innervated muscles can serve as the source of the specific quality of emotions.

The second point that is of interest to us: in Head's studies, we encounter facts that are, in general, completely inexplicable from the point of view of James' conception and, consequently, are in irreconcilable contradiction to it. Actually, from this point of view, how could we explain the fact of unilateral change of affective experiences while retaining the basic assumptions that the authors of this theory proposed? As Cannon notes, neither the organs of the chest area nor the abdominal organs can function by halves, and the vasomotor center also is a unit; Head's patients do not, of course, exhibit only right- or left-sided laughter or tears. Thus, impulses sent from disturbed peripheral organs must be the same from both

sides. To explain the unsymmetrical feeling, we must resort to the organ that is capable of functioning unsymmetrically, that is, to the thalamus opticus.

In concluding the review of the clinical data on the problem that is of interest to us, we see that we acquired in these new facts a new and most important point of support for solving the theoretical controversy that we are investigating. As we have noted, in publishing his theory, James himself turned to the clinic, saying that if his theory is to be definitely confirmed or repudiated, this will be done in the clinic because only the clinic has the data required for this. On the basis of various observations, the clinic has accumulated enough facts that were unknown when this theory was formulated and has thus obtained a real means for confirming or repudiating James' hypothesis. This being said, there can scarcely remain any doubt that clinical studies unambiguously and definitely speak for repudiation rather than for confirmation of this hypothesis.

In clinical studies, we find still another point that can take our studies, which have been stuck on one point for so long, further. Studying and interpreting clinical data pertaining to affective life in pathological conditions, we cannot limit ourselves only to drawing from them supplementary evidence that compels us to reject the organic hypothesis as clearly not corresponding to reality. We would have to be theoretically blind not to see the substantial reversal of the whole theory of emotions that is so starkly evident in these clinical data. Should we want to define in one sentence the content of the radical reversal of the theoretical thought that tries to penetrate the nature of emotional life, we would have to say along with Bard: the greatest service that the new theory accords us consists of moving experimental study from the periphery to the brain. This radical shifting of the attention of investigation and theory of emotion by 180° actually entails a complete reversal in scientific conceptions of the nature of affective processes. But in order to elucidate definitively for ourselves the real significance of this reversal and its relation to the basic problem of our studies, we must critically examine the argument that arose in connection with it.

7

If we stop, or more correctly, pick up at the point to which we have brought the consideration of the enormous experimental and factual material that has accumulated over more than the half century that has passed since the formulation of the organic theory (of which material we could bring only an insignificant portion), and try to take in at a single glance the picture as a whole of the situation as it developed at this time in the teaching on emotions, we cannot but note that very substantial changes have occurred in most recent times. Whereas the first decades brought with them specific critical ideas and facts capable of shaking the stability of the reigning theory of emotions, such as the studies of Lehmann, Sherrington, and others, in recent decades, owing to the enormous accumulation of material coming from various parts, we simply cannot go on accumulating such uncoordinated data.

The very course of the development of scientific thought brought about a need to coordinate and—what is most important—it brought about the attempt at a different interpretation and construction of a theory capable of adequately explaining the accumulated factual material. Thus, the task of criticism and verification moved to the background in comparison with the tasks of developing the indicated theory of emotions. Confirming or rejecting the theory of James was not enough. We were

confronted by the need to create a new theory for new facts, to compare it with the old theory, and include in it everything in the hypothesis of James and Lange that was true and had withstood actual testing. In one way, their hypothesis had already proved itself historically in that it engendered a number of studies and in this way nudged scientific thought toward discovering hitherto unknown phenomena of reality which in themselves predetermined the direction for the movement of theoretical thought.

Thus, the change in the situation and the whole state of the problem of emotions that has occurred in the last decades consists primarily of the fact that we seem to have two theories of emotions opposing each other. Earlier studies, each separately, were capable neither of deciding the fate of the old theory nor of developing any kind of theoretical hypotheses to replace it. Investigators such as Sherrington refrained from definitive judgment and limited their work to purely critical tendencies. This specifically is what explains the paradoxical situation in which, in spite of the critical material that accumulated systematically decade after decade, the theory of James–Lange not only continued to exist as generally accepted scientific truth, but became even more fixed in its significance and viability, spreading its basic principle to the whole area of psychology, creating in its own image and likeness whole new directions in our science that originated from the reflex principle in explaining human psychology on the whole.

Not one of the blows inflicted on the organic theory could kill it, but, according to common assumption, what doesn't kill me, makes me stronger. This is wholly applicable to the historical fate of the James–Lange theory: its critics were not able to coordinate it, they were not able to compare it to the other more strongly armed theory, they could not reinforce their attacks with a positive interpretation of new facts. These tasks fell wholly to the last decade.

It—this decade—honorably met the tasks that confronted it, and was able to correlate the uncoordinated work of former decades, enrich it with data of scientific study and new tools previously unavailable, and inflict a crushing and definitive blow to the old theory. With all of this, however, it carried out only the first and most elementary part of the work. As we have seen from the review of studies presented above, and as we shall see even more clearly later in considering the theory that was born in the struggle, in the process of criticism and testing, we still even now—in the criticism of the old and in constructing the new—have not left the small circle of problems to which the theoretical thought of the James–Lange hypothesis drove us. We could not rise above the formulation of the problem that was given in their hypothesis.

Practically all who oppose this hypothesis were, to a lesser degree than its partisans, timid students of James and Lange in the formulation itself of the basic problems of the psychology of affects. For this reason, criticism of the fallacious theory was itself tied to the root of the false formulation of the problem that lay at the base of the theory itself, which predetermined to no small measure its erroneousness. To a significant degree, this affected the character of the new theory that was born in the process of critical testing of the James–Lange theory. The new theory, like the criticism, developed its structure on the same foundation on which the old had been built. One of the founders of the new theory—Cannon—terms it an alternative to the hypothesis of James. Actually, both theories, the old and the new, are alternatives in the sense that they propose two mutually exclusive concrete solutions of one and the same problem. That the new theory could not be anything greater than an alternative to the old and, consequently, that it could not rise above the plane over which psychological thought extended and to which it

was firmly nailed to the ground during the last half century was fixed as firmly as possible by this designation.

If we ask ourselves what, in the final analysis, as a total result, the half century of criticism has given to the old theory and what the new theory, which claims to replace the former, gives us now, we cannot but respond in a contradictory fashion: both very much and very little.

Much—in the sense of concrete refutation of the old positions that in the light of factual verification proved to be false and, consequently, also the theory constructed on it to be unsubstantiated. Much—in the sense of explaining the extremely significant and substantial factual circumstances that cast no small light on the organization and activity of emotions, on their biological significance, their connection with other vital processes, and their place in a series of other forms of nervous-mental activity. Finally, much—in the sense of theoretical correlation of an enormous amount of factual material, predominantly of a psychological and neurological nature, a correlation logically sequential, elegant, and quite convincing for encompassing and explaining most of the facts known to us.

Nevertheless, in the final analysis, both criticism and the new theory produced little. Little—with respect to the fact that criticism did not pull out the philosophical stinger of the old theory, did not expose or destroy the pathological bases on which it was constructed, and did not unmask the psychological error in the formulation of the problem itself, but, on the contrary, adopting it totally, thereby included these errors in the new construction. Little—in the sense that the new theory, like the old, did not in the least approach the solution to the main and basic problem—to constructing a psychology of human affects, not to speak of the high theoretical significance of this chapter of our science, or of solving the essentially philosophical problems of psychological investigation, the psychological theory of passions, without which, it seems, the problem of affect itself cannot be properly placed in human psychology.

In his introduction to the last symposium,[40] which gathered opinions on the nature of emotions of the most outstanding representatives of psychological science, M. Bentley[41] notes correctly the constraint imposed on all of contemporary psychology of emotions by the formulation of the problem as presented in the James–Lange organic hypothesis. In the fateful domination of the old theory, Bentley sees the characteristic trait of all of the contemporary psychology of emotions. The past suppresses the present.

The new constantly wrestles with the old, but it fights with the arms of the old and for this reason, regardless of seeming victories, it is always a slave to the old and vainly defeated fallacy. The dead seizes the living.

The domination of the dead over the living in the contemporary psychology of emotions creates the desert that compels Bentley to place at the threshold of the symposium the basic question: "Is emotion something greater than simply the title of a chapter?" (M. Bentley, 1928, p. 17). Bentley says that for the last half century the teaching on emotions occupied a place as a new and quite important chapter in general courses and treatises on psychology. But what was the content of this chapter? A section on classification of emotions; a section on James–Lange (usually the longest); a section on expression of emotions; sometimes a short description and purely practical discussion regarding the use and difficulties of emotional disturbances. Why, asks Bentley, do we continue even now to whet our knives on broken pieces of this hard fossil formed from exaggerations? Is it because psychology still has theories that command very little respect that it is afraid to allow one of them to disappear or die? (ibid., p. 18).

The position of critics on this paradoxical and everlasting theory is remarkably like the humorous tale cited by V. I. Dal'[42] about the hunter who proudly exaggerated before his comrades that he had got a bear. When his comrades suggested that he bring them the animal, the hunter replied: "But I can't!"—"Go yourself!"—"But he won't let me!" Just as in this story it is never clear who caught whom—the hunter the bear or the bear the hunter—the critics of the notorious theory themselves seem to be under its power and not only can they not bring their catch as they wish to the point where the advancing course of development of the teaching on affects requires them to bring it, but they themselves cannot take even a single step away from what they have caught.

True, problems not resolved by criticism and the new theory, of which we have just spoken, are problems that can be handled probably only over a great number of years and with the help of extensive and profound studies. In their very essence, they cannot be resolved in the process of criticism even of the most productive fallacy. On the contrary, criticism is a necessary precursor for the formulation itself of these problems. It opens the door for them; nevertheless we think that the time has come to make the first attempt to go through this partly opened door and try to note completely freely and without preconceptions at least the most general bases for developing new problems in the psychology of affects, problems about which the ancient sages did not even dream. The present study makes this first attempt, of necessity a quite limited and modest attempt.

It may seem strange that we are trying to take the first step along the new path from the top—from the philosophical heights of the teaching on the passions. An objection might be raised completely reasonably that there is an abyss between this theory of a physiological and neurological order, which promises the development of a new teaching from below, and the heights of theoretical inferences that provide a view of the whole field of future studies and a whole series of new problems that fill this field: it can be filled only by intense and long-term efforts of collectors of new facts and blazers of new trails.

But it seems to us that the path selected is a perfectly legitimate path because the new investigations must themselves be made possible: from below, without which materialistic scientific thought would not be able to move and develop at all on the plane of the more complex and intricate problems pertaining to the psychological nature of human passions; and from above, without which it not only would not be able to overcome the methodological roots of the fallacies of the organic theory of emotions, but would not at all be able to see the direction in which investigation must proceed in order to obtain firm and reliable knowledge as a result.

If we compare the contemporary state of knowledge about affects in this respect with other basic sections of contemporary psychology, we cannot but note that it is a unique and sad exception in a series of other chapters in it. This circumstance can be easily understood as inevitably caused by the whole history of development of scientific psychological thought. Moreover, it places teaching on the passions in a position of sad exclusion due to which—we can state with no vacillation—this almost basic chapter of psychology seems to be much lower than all other chapters. It seems to be paralyzed in forward development. Within, it is a desert, usually filled, as Bentley correctly notes, with dead material, and it raises doubts among astute investigators: in general, does it represent anything more than only a noisy headline above pages filled with nothing?

Casting even a quick glance at contemporary teaching on perception, the contemporary theory of memory, the teaching on thinking so well developed in the last decade, and the psychology of speech that has been developing so vigorously

recently, we cannot but be impressed by the sharp contrast that is disclosed in comparing these chapters of current psychology with the teaching on affects. There are contrasts not only in that the chapters enumerated are exceptionally rich in theoretical thought, extensively developed from the factual aspect, and full of vital and rapidly developing content, whereas teaching on affects is thus far chained, like a convict to a wheelbarrow, to the point at which history tied the famous knot of the organic theory. All of this is more the result of than the basis for the difference. The difference consists mainly of the fact that other chapters of psychology worked out the paths along which they arrived at authentically scientific and authentically psychological study of appropriate problems. For this reason, they face the future directly and boldly. Only the teaching on passions was blind, without a path, in a dead-end, facing backward, toward the distant past. It has not even developed its own problematics and thus far has not questioned the validity or falsity of the old formulation of basic and central problems of its whole teaching.

We believe the cause for the difference to be hidden in the fact that in all sections of psychology with the exception of the section on emotions, we observe one general phenomenon that appears so regularly, so consistently in the most diverse areas, so productively for every area separately and for psychology as a whole that we cannot at all consider it to be accidental. On the contrary, it seems to us to emanate inevitably from the crisis that contemporary psychology is experiencing and to be the only saving way that can lead and is, before our eyes, already partially leading science out of this crisis. This phenomenon consists of a profound philosophical tendency that permeates the most various areas of contemporary psychological investigation.

Essentially, the tendency to bring philosophical and psychological problems together, to resolve philosophical problems on the basis of concrete material of the human mind, to disclose philosophical points immanently contained in the most concrete and empirical problem of human psychology is, on closer consideration, reciprocal. It can be easily traced from two ends. On the one hand, philosophical study, passing from historical analysis of philosophical systems and dogmatic development of advanced old or renovated systems to concrete analysis, of necessity is confronted with the inevitability of studying living reality as it is represented in contemporary science, specifically, in contemporary psychology. We might cite the old studies of H. Bergson[43] on the problem of memory (1896) and the newer studies of E. Cassirer[44] on the psychology of speech (1925) to illustrate this fact, new to philosophy, that to solve his problems, the philosopher immerses himself in concrete experimental and clinical material obtained in modern times, and philosophical thought, almost torn away from concrete analysis of living reality and dependent on scientific systems of the distant past, during the recent period, is trying anew to meet directly, face to face, with this reality, most of all through concrete scientific knowledge, specifically, psychological knowledge.

But even psychological study comes, of necessity, to the point of development when it begins, not noticing this itself, to solve problems of an essentially philosophical character. A situation arises, not unusual in contemporary psychology, which one of the subjects of N. Ach[45] (1921), taking part in experiments on the formation of concepts, defined in words quoted by the author in the introduction to the whole study: but, of course, this is experimental philosophy. The studies by Ach of the formation of concepts, by J. Piaget of the development of children's logic and its basic categories, by M. Wertheimer[46] and W. Köhler of perception, and by E. Jaensch of memory may serve as examples of such experimental philosophy that penetrates into psychological studies. As has been said, for contemporary psychology, this phenomenon is rather the rule than the exception. All of it seethes

with philosophical problems—the authentic ferment of development of the major contemporary psychological theories.

Only the teaching on passions is an exception. True, even here, that of which F. Engels[47] spoke is occurring: whether natural scientists want it or not, philosophers are guiding them. One of the basic tasks of our investigation is to disclose the philosophical thought that directs the old and the contemporary natural scientists in their theories on affective life. But it is understood that there is a substantial difference between unconscious and conscious service of one philosophical idea or another. While other chapters of psychology spontaneously took the path of being included in the general system of philosophy that alone is capable of leading them out of the crisis, the teaching on passions remains thus far at the point of solidifying basic empiricism.

It is obvious that in the teaching on the passions, we are confronted by the task of raising it to the level of other chapters of contemporary psychology. Speaking more simply, we are confronted by the task of creating even if only the initial bases of a psychological theory of affects that is conscious of its philosophical nature, not fearing the greatest generalizations adequate with respect to the psychological nature of passions and worthy of becoming one of the chapters of human psychology, perhaps even the basic chapter. The construction of such a theory cannot, of course, be resolved in one study or one of an abstract character, but, as in any complicated matter, a division of work is indispensable here. No doubt this theory can be created only as a result of a series of studies. And so, it seems to us, in the development of these studies, a time has come that, completely independently of the three-hundred-year jubilee of Spinoza, places before investigators the task of correlating the whole path taken and marking the future path. According to the valid observations of Goethe,[48] for all people together to comprehend nature, in the common comprehension, cooperation based on a division of labor is indispensable.

It seems to me that, owing to this division of labor, to our lot has fallen the task (inevitably arising before our eyes also in all the other sections of psychology) of collecting together and correlating the uncoordinated factual material, disclosing behind the struggle of concrete psychological teachings the struggle of philosophical ideas, noting the philosophical understanding of the psychological problem of affects and, thus, laying a path for future investigations. This task cannot be resolved otherwise than by special study. We included in the subheading of the work the words, "Historical-Psychological Study," because we see in it the indispensable part of the work on creating a new theory of emotions. Within the study itself there is another division of labor: not only the collection of facts, but also their analysis and correlation and the disclosure of the ideas that illuminate them is the primary task of the study; the real work appears to us to be investigation, not because it includes producing with our hands a certain addition of a concrete and factual nature to scientific knowledge in the process of direct experimentation, but because the path itself to authentic correlation, to comprehension of higher theoretical points of teaching on the passions cannot, we are convinced, be anything other than only investigation.

We selected for investigation a strange and naive path—comparing the old philosophical teaching to contemporary scientific knowledge, but now this path seems to us to be historically inevitable. We do not think we will find in the teachings of Spinoza on the passions a ready theory meeting the needs of contemporary scientific knowledge. On the contrary, in the course of our investigation, depending on the truth in the Spinoza teaching, we mean to point out his fallacies. We think that in our hands there is no more reliable and powerful weapon for a criticism of

Spinoza than a testing of his ideas in the light of contemporary scientific knowledge. But we assume that even contemporary scientific teaching on the passions can be led out of the historical dead-end only with the help of a great philosophical idea.

Contrary to the established opinion that sees in the psychology of Spinoza only separate accurate generalizations and comparisons, declaring it on the whole a definitive achievement of the past, we are trying in our investigation to disclose its living part. For this reason, the basic point of view of the present investigation may be expressed most distinctly and clearly specifically by contrasting it with the traditional view as formulated by one of the investigators of Spinoza's *Ethics*, who assumes that his teaching on passions for the psychologist of our time may be of only historical interest.

In contrast to this, we assume that the Spinoza teaching on passions may be of genuine historical interest for contemporary psychology—not in the sense of elucidating the historical past of our science, but in the sense of a turning point of the whole history of psychology and its future development. Purified of fallacy, the truth of this teaching, it seems to us, will pass, hard and sharp, through an array of basic problems advanced by perception of the psychological nature of passions and all of human psychology, and will resolve them as diamond cuts glass. It will help contemporary psychology in what is most basic and major—in the formation of the idea of man, which would serve as a type of human nature for us.

8

But let us return again to the problem of the truth and fallacy of the old and the new theory of emotions.

We have already said that in the protracted critical review of the organic hypothesis, an enormous amount of new data has accumulated which is in urgent need of elucidation and correlation. Criticism inevitably had to move on to the development of a new hypothesis. The movement of theoretical thought met and merged into one flood with studies that came from another area—from neurology and the clinic—and were permeated with the same tendency toward creating a different explanation for the facts discovered. Thus, from the crossing of two series of studies there developed what might now be considered the most widely accepted and dominant theory of emotional reactions which, after its central point, came to be called the thalamic theory. We will first consider in a most general way the second series of investigations, to which we have thus far not given any attention.

The new theory, like the James–Lange theory, arises from the extremely close relation that exists between sensation and emotions. However, it resolves the problem of the interrelation of two basic classes of mental processes differently than does the organic theory. The latter dissolved emotions in sensations, reduced the former to the latter, seeing in them only sensations of a special kind, specifically sensations arising as a result of stimulations of an intraorganic nature. The new theory turns attention primarily not to reducing feeling to sensation, but to the close approach and sometimes complete merging of the one with the other. This circumstance finds a direct expression both in the phenomenological analysis of our experience and in the autonomy and physiology of the brain.

To designate the merging of directly experienced sensation and feeling, K. Stumpf introduced the term, "sensation of feeling." E. Kretschmer[49] says that this might best be explained on the basis of the sensation of pain. Of course, logically we could say: pain is a feeling of sensation "a" that is accompanied by a certain

affect—a feeling of pain "b." Genuine, actual experience, however, is something else completely: "b" does not accompany "a," but "b" and "a" are completely identical in the experience. Purely phenomenologically, pain is sensed to the same degree as the feeling; they are simultaneous in a single indivisible act. This view also has a basic significance for our thinking in the area of the physiology of the brain. The sharp division of sensations and feelings is logically necessary and, in this case, is also a nonphenomenological abstraction. For the first time, only at higher levels of activity, perceptions and representations appear as content and affect in a more independent and variable relation to one another and make it possible then to consider them as actually separated in experience.

The fact of the nondifferentiability of sensations and feelings in primitive consciousness at different levels of development was studied and developed extremely thoroughly and in detail by the Leipzig school of F. Krüger,[50] who made it the point of departure for all of his developmental psychology. Common to most contemporary psychological directions is the idea that at the beginning of development, we meet not separate elements of developed mental life, but whole, undifferentiated formations that only at higher stages of development begin to be differentiated into more or less independent and definitely shaped families, species, and classes of mental processes. H. Volkelt, one of the representatives of the Leipzig school,[51] speaks of such formations, typical for early stages of development: only when we can describe these wholes, which yield to description with great difficulty and are still relatively very diffuse, will we see to what extent these primitive wholes are close to feelings. Actually, no kind of experience of an adult, except feelings, can approach so close to these primitive complexes that are found in a state of diffusion both within themselves and to a certain degree also in relation to the environment. The lower we go into the world of the primitive, the more mental wholes in both their general form and in their structure approach the essence of feeling.

These emotion-like sensations and perceptions were introduced by Krüger into the area of phenomena that he called, "the area of the feeling-image." In his new presentation of the teaching on the nature of feeling, this author sees the essence of feelings, which can become the basis of a systematic theory, in the complex of qualities that characterize experience of any whole mental formation. If in general theory, Krüger ascribes to feeling an exceptional and dominant significance in the whole organization of mental life, and in this way breaks away from many psychological directions, then in the specific statement on the merging of sensation and feeling at early stages of development, he finds support on the part of a great majority of contemporary investigators. As an example, we might point only to the positions being developed by contemporary structural psychology, which, in Koffka's words, claimed that at early stages of development, an object for consciousness is as intense as it is black, and that the first emotional-like perceptions must be considered the real point of departure for all subsequent development. A closer relationship, sometimes approaching complete merging of sensation and feeling, cannot but have anatomical and physiological bases.

Such bases are developed in the teaching of a number of eminent representatives of contemporary neurology. The common conclusion at which these investigators (J. Müller,[52] Herrick, and others) arrived is the position that all sensible and sensory paths that come from the periphery to the brain (with the exception of the olfactory) enter the thalamus opticus and are interrupted in it. Thus, anatomically, the thalamus opticus forms a major distribution center for all paths of sensation; there is in it a broad potential for regrouping of afferent impulses and for their distribution along paths of separate sensations that proceed farther to special projection fields in the cortex of the brain. On the one hand, this area has

developed associative paths that connect it with the cortex; on the other, if we include in it not only sensory centers, but also motor centers and centers of motor coordination, this area is connected with the internal organs and the skeletal musculature. As Herrick says, under ordinary circumstances, no simple sensory impulse can reach the cortex of the brain unless it is first subjected to processing in the subcortical centers that activate complex combinations of reflex acts and various automatic actions corresponding to their preformed structure.

In keeping with this, Müller developed a theory regarding the functions of the thalamus opticus (J. Müller, 1842). According to his theory, this area is considered specifically as the site in the brain where various sensations obtain their unique emotional coloring and sensual tone. Bodily sensations of pain or satisfaction arise in this area, while the brain cortex is important only for localization of sensations and perceptions. This area is also the transmission point in which excitations of sensible neurons are transferred to similar neurons of the autonomic system. From this point of view, the area of the thalamus opticus is the main center of sensory functions and of elementary affective life inseparably connected with them. Together with the centers of the autonomic nervous system and psychomotor centers of the brain stem located near the thalamus opticus, this area forms a center for visceral-affective reactions.

Even before Müller, Head came to similar views; together with G. Holmes,[53] he ascribes to this area the functions of producing conscious states. Based on his observations of cases of unilateral damage to the thalamus opticus, Head reaches the conclusion that this organ is the center for consciousness of certain elements of sensation and responds to all stimuli that are capable of eliciting satisfaction or dissatisfaction or consciousness of change in general state. The emotional tone of somatic or visceral sensations is the product of its activity. Küppers goes further than anyone in this respect; as we have seen, in interpreting cases with unilateral damage to the thalamus opticus, he proposes the idea that such patients have a different soul on one side than on the other. Thus, he is inclined to localize not only essential functions in this area, but almost the very soul as well.

Probably independently of this series of studies and, in any case, depending on investigation of a different kind, Dana and Cannon proposed a complex theory. According to their idea, emotions arise as a result of activity of the thalamus opticus. Cannon formulates the basic position of the theory as follows: "The specific quality of emotions combines with simple sensation when thalamic processes are excited" (W. B. Cannon, 1927, p. 120). What is essentially new in this variant of the thalamic theory of emotions is the idea of interaction of the cortex of the brain and the thalamus opticus as a real physiological substrate of emotional processes. We have already cited above the conclusions that Dana reaches from his observations of retention of emotional experiences in the absence of bodily manifestations of emotions in patients. Let us recall that the basic point of these conclusions is the idea of the central localization of emotions flowing from activity and interaction of the cortex and the thalamus opticus. This theory, which Dana developed independently of Cannon, and which, as we see, was developed with convincing consistency and with remarkable coincidence in separate details simultaneously by certain investigators, again reminds us, like the coincidence of the James–Lange theory, of Goethe's thought about ideas coming to maturity at certain times like fruit falling simultaneously in different orchards. Obviously, the thalamic theory of emotions is actually such a simultaneous maturing of ideas of our time. It reached the greatest degree of maturity and development in the direction that interests us in the works of Cannon, who attempted not only to develop it into a systematic psychoneurological teaching on emotions, but also was able to compare it to the

old James–Lange theory with all consistency and astuteness as the only sufficient explanation for a great number of most various facts known to us from the area of normal and pathological affective life. For this reason, we shall rely in the future on the works of Cannon in presenting this theory in the review of major evidence usually brought to its defense.

We shall begin with an explanation of the radical divergence between the old theory and the new. The plan cited,[54] which we are borrowing from Cannon, presents schematically and with the greatest simplification the nerve mechanisms that are the basis of emotions as they are assumed to be by the organic and the thalamic theories of emotional reactions. As is apparent from the plan, according to the James–Lange theory, any object stimulates the receptor organs and afferent impulses are directed to the cortex, which results in the perception of an object; in the cortex, centrifugal excitations arise directed to the muscles and internal organs which elicit in them complex and various changes. Afferent impulses from the internal organs and muscles return again to the cortex and, owing to this, the object simply perceived is converted into an emotionally experienced object: sensing of bodily changes as they occur is emotion—the aggregate of sensed associative and motor elements accounts for everything.

According to the thalamic theory as it is presented in the plan, the neurological mechanism of emotional reactions differs from what has just been considered in two basic points. First, in the mechanism, paths three and four, which are presented in the first plan, are absent, that is, paths that carry afferent impulses from the skeletal musculature and internal organs back to the cortex—impulses that according to the old theory are the only source of emotional experience. These paths are eliminated in the second plan not because they do not exist, but because, in the opinion of the new theory, their significance for the study of emotions is more debatable. Obviously, the new theory seeks the main source of emotional experience in another place, and this is the second point of its divergence from the first plan; according to the new theory, sensory excitations proceeding from the periphery to the brain are stopped in the area of the thalamus opticus. The thalamus opticus is considered as a coordinating center of emotional reactions and has rich connections with the cortex and with the periphery. Processes arising in it are the sources of affective experience. The whole mechanism of origin and course of an emotion is presented by Cannon as follows.

The external situation stimulates the perceiving organs, which transmit the developing excitation through impulses directed toward the cortex. The impulses in the cortex are associated with conditioned reflex processes which determine the direction of the reaction. Either because the reaction arises in the form of a certain structure and, as a result of this, cortical neurons excite the thalamic processes, or because impulses from the receptors on their centrifugal path themselves excite the thalamic processes, the latter are activated and ready to discharge. The fact that thalamic neurons act in a certain combination with a given emotional expression is evident from the stereotypic quality of the reaction in different affective states. These neurons do not require detailed innervation from higher centers in order to be activated. The first condition for their functioning is release, after which they produce a discharge rapidly and intensively. Neurons within and in close proximity to the thalamus opticus participating in emotional expression are located close to the break of sensory paths from the periphery to the cortex. We must assume that when there is a discharge of these neurons in a certain combination, they not only innervate muscles and internal organs, but also excite afferent paths going to the cortex either through direct connection or through irradiation. According to the

theory, which of itself follows naturally, the specific quality of emotions is joined to simple sensation if thalamic processes are activated.

We shall consider first of all the main and actual principles of the new theory. We must put in the first place the fact that when the whole frontal brain up to the thalamus opticus is removed in lower animals, their behavior, usually described as fury, becomes uninhibited; when the thalamus opticus is removed, however, the reaction disappears. In 1887, V. M. Bekhterev expressed the idea that emotional expression does not depend on the cortex of the brain because sometimes this expression cannot be voluntarily suppressed (laughing because of tickling, screaming from pain), because visceral changes always are a part of this reaction, being independent of cortical control, and, finally, because this reaction appears immediately after birth when the participation of the cortex in organization of behavior is still insignificant. Further, Bekhterev published results of his experiments with removal of cerebral hemispheres in various animals in which, even after the operation, appropriate stimuli continued to elicit reactions of an affective nature. These reactions disappeared only after removal of the thalamus opticus. From this, Bekhterev reached the conclusion that the thalamus opticus plays a preponderant role in emotional manifestations.

Despite the attempts of R. Woodworth[55] (in: W. B. Cannon, 1927, p. 115) and of Sherrington to shake the significance of Bekhterev's position, pointing to the fact that in their experiments, physiological manifestations of strong excitation and so-called pseudoaffective reactions were retained in operated cats with completely removed thalamus, his position was confirmed in a series of new studies, and evidently must be considered as one of the most reliable and solid positions of contemporary teaching on localization of mental functions. The studies of Cannon and Britton, and later the study of Bard, wholly confirm Bekhterev's position and gave the authors a reason for concluding that the thalamus opticus is the area that reacts with impulses that elicit an extreme degree of emotional activity, visceral and muscular, when cortical control is eliminated. The difference between the affective reaction and the pseudoaffective in animals in Sherrington's experiments is primarily that in the latter, the animals displayed very narrow limits of coordination of behavior. In the reactions, they never approached real acts of attack or flight, but when the thalamus opticus was retained, the affective reaction of the external part was fully retained.

Similar phenomena were described repeatedly in clinical studies. In some forms of hemiplegia, the patients were not capable of voluntary movements of the facial muscles on the paralyzed side, but when these patients were overcome by a sorrowful or joyful affect, the muscles that were not subject to voluntary control began to act and to cause an expression of sorrow or joy to appear on both sides of the face. In these cases, the motor paths were broken in the subcortical area, but the thalamus opticus remained undamaged.

Opposite phenomena were observed in unilateral damage to the thalamus opticus. For example, as a result of a unilateral tumor of the thalamus opticus, under appropriate conditions, one-sided laughter or a one-sided grimace of pain can be observed in the patients, regardless of cortical control of these muscles being bilateral. A patient described by S. I. Kiriltsev[56] (in: W. B. Cannon, 1927, p. 117) could voluntarily control movements of both sides of his face symmetrically. But when he laughed or made a grimace of pain, the right side of his face remained immobile. Autopsy disclosed a tumor in the left half of the thalamus opticus.

Such localization of the central nervous apparatus apparent in expression of satisfaction or suffering is connected with emotional manifestations usually observed in pseudobulbar paralysis. In these cases, there is usually bilateral paralysis of the

facial muscles. Facial muscles that cannot be contracted voluntarily function normally, however, in laughter or screams, in frowning or raising the eyebrows. Emotional manifestations occur as if accidentally, without control and are of long duration. This was the description of a patient who started to laugh at ten o'clock in the morning and continued with small pauses till two in the afternoon. F. Tilney[57] and D. Morrison report on 173 cases of this disease (in: W. B. Cannon, 1927, p. 117). Among them, the investigators found such paroxysms of crying and laughing in 17, crying alone in 16, and laughter alone in 15%. These paroxysms occurred without any evident appropriate cause. The patients had the appearance of people shaking with laughter, but were experiencing nothing that would correspond to these bodily manifestations.

S. Wilson described a number of similar cases that allowed him to establish the following: the more serious voluntary paralysis of the facial and motor musculature was, the more intensive was the involuntary innervation of the same mechanism (S. Wilson, 1924). Brisseau ascribes these disturbances to damage to a special part of the corticothalamic paths, as a result of which the thalamus opticus is freed from cortical control. Brisseau assumes that for the manifestation of spasmodic involuntary laughter and crying, the thalamus opticus itself must be preserved. Wilson contradicts Brisseau, indicating that the phenomena described may also occur when the thalamus opticus itself is involved in the disease process. We shall return later to interpreting these cases. Now let us recall a number of cases of Fulton and Bayley, who observed complete emotional negativism in patients suffering from a pathological process of the central part of the thalamus opticus. Thus, some of the patients who had lost all expression of emotion did display an irrational calmness of mind with complete absence of evaluating the seriousness of their physical state. In a case of narcolepsy with damage to the area of the third ventricle, expression and feeling of emotion can also be almost completely absent. Such patients take ridicule and insults with complete indifference and display no emotional manifestations in the most tragic occurrences. In some cases, tumors were found in these patients in the lower part of the thalamus opticus, frequently affecting the whole thalamus opticus.

Finally, the third indicator supporting the basic position of the new theory is the fact of release of inhibition of the involuntary system and frequently prolonged reactions of crying or laughing with a temporary suppression of cortical control of the lower centers by anesthesia or with disturbance of this control by some kind of disease process. The latter indication, as Cannon notes, may be a significant argument in favor of thalamic localization of emotional manifestations if we only consider it in connection with the first two considerations given above. Pharmacological experiments with anesthesia of the brain cortex in which control of the higher centers is eliminated showed that the play of emotional reactions in these cases is expressed extremely sharply.

The described experimental, clinical, and pharmacological data concordantly lead, first, to admitting the localization of emotional manifestation in the area of the thalamus opticus and, second, to the hypothesis that tries to explain all of these phenomena on the basis of the representation of the organization of cerebral activity that J. Jackson[58] developed in his time. According to Jackson, the organization of the nervous system is a complex hierarchy of higher and lower centers; in it, primitive, archaic reactions of the old parts of the brain, which could always have disrupted more differentiated and finer forms of activity of the higher centers, are subject to an inhibiting influence of the higher centers, and because of this, cannot freely exhibit activity and play a dominant role in behavior in normal cases. When, under one set of conditions or another, cortical control over lower centers is weakened or totally eliminated, the lower centers—formerly subject to hierarchical control—become independent and free acting, and this results in the manifestation of their involuntary and extremely intensive activity. The weakest stimuli can elicit extremely excessive reactions under these conditions.

According to the new theory, emotional manifestations are a product of the activity of lower subcortical centers organized according to Jackson's representation. In the opinion of Head, who developed Jackson's teaching, all involuntary emotional manifestations described above must be considered as phenomena of release of inhibition of the lower centers as a result of the weakening or elimination of cortical control. According to this interpretation, there is extreme intensity and easy excitability in animals and people with disturbed cortical control over lower centers. The unusual intensity of reactions indicates that the nervous apparatus that guides emotional manifestations is always ready for energetic discharge and only higher control inhibits a display of its activity.

Perhaps only the presentations of Wilson speak against this hypothesis; he, in contrast to Brisseau, assumes, as we have seen above, that involuntary paroxysms of laughter and tears may arise not only as a result of a break in the corticothalamic paths with preservation of the thalamus opticus, but also with significant disruption of the thalamus itself. However, these objections are refuted convincingly, it seems to us, by Bard, who indicates that when the base of the thalamic area is involved in a disease process, then in the substantial part connected with the reaction of anger, we usually observe an absence of emotional manifestations. Recalling these facts, Wilson interprets them as the result of the break in the cortical path, but the persuasiveness of his arguments is weakened by the fact that not one case has been observed of emotional paralysis as a result of cortical damage. On the contrary, damage that separates the cortex from lower centers usually elicits extraordinary activity of emotional behavior. Thus, facts speak rather for the subcortical localization of emotional manifestations. Also in complete agreement with this idea are the studies of Head and Holmes cited above (in: W. B. Cannon, 1927, p. 118), which show that unilateral damage to the thalamus results in a tendency toward excessive affective reaction to ordinary stimuli. The authors explain this phenomenon by the fact that the thalamus opticus is freed from cortical control. Their conclusion states that the activity of the thalamus is the physiological substrate of the affective aspect of sensation.

Summarizing the factual bases considered in this chapter on which the thalamic theory of emotions is based and adding to them the representations and facts given in previous chapters, we cannot but agree with Cannon that this theory, alternative to the James–Lange theory, is in agreement with all the facts known to us at this time.

9

If it is true that the strength of the provability of any argument is comprehended only in comparison with the strength of counterclaims, then the new theory can be considered to be triumphantly confirmed scientific truth since it is not opposed by any serious factual objections. Recently E. Newman, F. Perkins, and S. Wilson tried to present a systematic code of critical objections to the new theory and to mobilize everything that might serve to defend the organic theory. It is enough to look at this last wave of evidence for the paradoxical James–Lange thesis to see the total hopelessness of the position of the old theory. The evidence turns

on the charmed circle that was delineated by the founders of the theory themselves; the motifs vary and repeat, but the authors have no direct or indirect data capable of corroborating the shaky structure of the organic theory. However, even in this collision of opinions, individual sparks of truth are engendered which no one can by-pass who wishes to weigh objectively the actual right of the new hypothesis to exist and be recognized.

Perhaps the first and central objection from this point of view against the new theory consists in indicating its Achilles heel, its really weak position—specifically, the absence of any psychological analysis of emotions as such. The reader probably already noted the contradiction in the factual basis of the new theory in the course of our previous exposition. Actually, one cannot help but see that the new investigators use emotional manifestations as evidence for the presence or maintenance of emotion and at the same time, as a result of their work, arrive at a complete rejection of visceral and motor factors as sources of emotion. One asks: what then is this illusory thing, emotion? This objection retains its force, in any case, for all experiments with animals, which were cited above.

The response to this objection actually brings us to elucidating the essential point of the new theory on the one hand, and to a more firm consolidation of its factual basis on the other. The new theory wholly accepts the definition of emotion, given by James, as some kind of sensual tone added to simple perception. The argument pertains only to the source of emotion. The old theory sees it in a sensation of bodily manifestations; the new theory assumes that the specific quality is added to perception as a result of activity of the thalamus opticus. Here, however, a branching within the new theory itself occurs. While some, following Head, Küppers, and others, ascribe to the thalamus opticus the functions of consciousness of emotions and consider it as a center of consciousness, others, following Cannon, introduce a substantial supplement into this point of the theory.

W. Cannon does not maintain that consciousness of emotion is immediately and directly connected with the activity of the thalamus opticus. On the contrary, stressing that anesthesia that results in complete elimination of emotional consciousness does not harm emotional manifestation, which is thalamic in origin, Cannon raises an objection against the localization of the center of emotional consciousness in the subcortical area. As he indicates, emotional reaction arising and being organized in the thalamus opticus is directed along paths of its discharge not only toward the periphery, facilitating emotional manifestations, but also toward the cortex, in which the feeling originates that unites to sensation, as is apparent in unilateral thalamic damage. In this variant, the new theory does not maintain that the thalamus opticus is the center of affective experiences, but maintains only that the thalamus opticus must be considered as the source of experiences of this kind similarly to how changes in the retina are the source of visual sensations.

Thus, the new theory differs from the old not in that the old assumed a cortical localization while the new proposes a subcortical localization for affective experiences. The indicated difference may pertain only to the extreme partisans, mentioned above, of the thalamic theory. In the variant of the new theory developed by Cannon, Bard, and others, both theories agree in this point specifically. In both theories, emotional processes are enlisted as a physiological substrate of emotional consciousness, but their specific cause and specific source that could elucidate for us how these cortical processes differ from other cortical processes and act as the substrate for intellectual operations are localized differently in the two theories. One sees this source in peripheral changes, the other, in central processes.

James' thesis, which states that in the brain, there are no special centers for emotions, must be modified in light of new data. The cortex on one side with the

reflex arc and peripheral organs on the other end as a source of afferent impulses are a somewhat simplified organization that does not meet the actual complexity of emotional reactions. The thalamus is located between the cortex and the periphery; it is an integrating organ for emotional processes in which a stereotypic reaction of emotional manifestations arises on the one hand, and specific excitations directed toward the cortex on the other. Thus, in the new theory, the interactions of the cortical and subcortical centers are considered to be the basis of emotion. The alternative proposed by James—either special centers of emotions exist or emotions arise in general motor and sensory centers of the cortex—is unfounded.

In place of the old, "either-or," the new theory proposes the existence of both cortical processes and special centers of emotional reactions. Only the one and the other together are capable of adequately explaining the variety of emotional processes. Dana defends substantially the same point of view. Bard notes that this theory can explain the circumstance that, under normal conditions, emotions always are accompanied by normal bodily manifestations (which also served as the basis for the development of the peripheral theory of emotions) as well as the fact that emotional manifestations and emotional experiences can also exist in special experimental and pathological conditions separately, independent of each other. The assumption at the base of the new theory that emotion is a process central in origin explains a third series of facts very well also—specifically, the disappearance of both the bodily manifestation of emotion and affective experience when the whole thalamus opticus is involved in a disease process, as happens in Fulton and Bayley's cases which were mentioned above.

In the polemics of the partisans of the old and the new theory, this question arose in the form of the problem of the interrelation between emotional behavior and emotional experience, that is, between subjective and objective aspects of emotion. According to the James–Lange theory, both aspects are always inseparable: there can be no emotional behavior without emotional experience, just as there can be no emotional experience without peripheral changes. Finally, the new theory also explains a fourth series of facts—namely, that the presence of bodily manifestations, sometimes even artificially induced, under certain circumstances can facilitate the development or augmentation of emotion itself. Stated more briefly, the new theory, explaining quite convincingly both the presence of a connection as well as the possibility of a separate existence of peripheral and central factors of emotions, actually deals with the task of an unambiguous and logically consistent interpretation of all the wealth of facts known to us, and gives, first of all, a convincing elucidation of the fact that bodily manifestations and emotional expression frequently aid us, under normal conditions, to make a judgment on the presence of corresponding emotional experience as well.

We shall not stop to consider the collision of opposite opinions caused by each point of criticism of the old and basis of the new theory. We touched on them to some extent in the course of our discussion and, to some extent, ignored them since they can scarcely play any kind of significant role in the definitive acceptance of the one theory or the other. We will only point out that all the objections pertain to secondary arguments like the position of Cannon on the extremely small sensitivity of internal organs, the result of the small number of afferent fibers in the autonomic nervous system. In the extremely low sensitivity of internal organs (sensory fibers in them are 1/10 those of motor fibers), Cannon saw more than enough evidence against considering changes that occur in these organs as a source of emotional experience. His opponents indicate the sensitivity of the thorax, the throat, and in vessels of the pancreas area. As Cannon correctly notes, what is concerned here is not the visceral organs in the true sense of the word, but sensations that

arise outside these organs in the areas supplied by numerous sensory nerves that act only as a result of visceral changes.

If we leave aside secondary objections, the polemics will be left with attempts to save, one way or another, the old theory, introducing into it one set of correctives or another corresponding to new data. Above we considered one such attempt to reject visceral sensations as the significant factor in emotions and to transfer the whole central weight of the old theory to the motor or kinetic sensations. Another attempt consists of making the two theories identical since authors are inclined to localize in the thalamus opticus the center of the motor and organic reactions which James indicated as the true and only source of emotions. But even this attempt, as Cannon explains, is essentially unfounded since the authors do not see the principal difference between peripheral and central theories of emotions—differences that contain the whole essence of the argument.

We shall consider only three points that partisans of the new theory propose as its essential merits. For us, these points may be of primary interest both from the point of view of evaluating the new theory and from the point of view that we especially considered in this study.

The first pertains to explaining the so-called higher, or finer, emotions. Both the old theory and the new have as their object of study the unrefined emotions directly connected with instincts, to a large degree common to animals and man, that evidently arose at very early stages of development—in a word, the lower emotions. With respect to higher emotions specific to man, James notes that bodily manifestations and intensity of sensations connected with them may be weak in these. True, James had to admit that such calm emotions, passing with no bodily excitation, may be ascertained in man. Thus, James does not deny that there may be fine pleasures, in other words, that there may be emotions due exclusively to excitation of centers wholly independent of centripetal currents. To such sensations, together with esthetic emotions, he refers the feeling of moral satisfaction, gratefulness, and satisfaction following the solving of a problem.

James, however, tries immediately to take back his admissions that contradict his whole theory and to save it by indicating that, together with these central emotions, works of art may elicit extremely strong emotions in which experience harmonizes completely with the theoretical positions he presents. In esthetic perceptions (musical, for example) centripetal currents play the main role, regardless of whether or not internal organic excitations arise together with them. The esthetic excitation itself is the object of sensation and to the extent that the esthetic perception is the object of direct, total, vividly experienced sensation, to that extent esthetic pleasure is totally and clearly connected with it.

Even more openly, James tries to take revenge for the momentary forced admission of the existence of purely central emotions with respect to the other feelings named above. He admits that they may be of a purely central origin. "But the weakness and paleness of these feelings when they are not connected with bodily excitations presents a very sharp contrast to the deeper emotions. In all persons gifted with sensitivity and impressionability, fine emotions always are connected with bodily excitation: moral truth is reflected in the sound of the voice or expression of the eyes and so forth . . ." (1902, p. 317). If there is no bodily excitation, then according to James, there is simply intellectual perception of phenomena, which should be classified as a cognitive rather than emotional, mental process (ibid.).

It is sufficient to cite this reasoning of James on higher emotions to make obvious the internal contradiction into which he falls in explaining them. On the one hand, he admits them as emotions that differ essentially from lower emotions, as emotions arising through a purely central, but not a centripetal path, as emotions

not accompanied by bodily excitation, and in this way, he admits that the theory he developed cannot serve as an adequate explanation for higher emotions, but covers only the area of unrefined or lower emotions not specific to the human mental capacity for feelings. On the other hand, he denies them, classifying them as an intellectual and not an emotional state of consciousness and assuming that they become emotions only when they exhibit the required traits of unrefined emotions, that is, bodily excitation and peripheral origin; consequently, James also extends to them his basic theory, refusing to see the essential difference between the lower and the higher emotions. Thus, two mutually exclusive paths opened before James: either open dualism in the interpretation of the nature of higher and lower emotions or complete identity of the one type and the other.

As is apparent, James always vacillated as to which of the two paths to take. In later formulations of his theory he admitted its inadequacies and introduced into it substantial changes. These pertained to two main points which are emphasized with particular insistence by the Russian investigator N. N. Lange.[59] First, in the new formulation, James admits "that a feeling of satisfaction or suffering itself precedes its bodily manifestations and elicits them and is not their result, although in their turn these bodily manifestations have a reciprocal effect and give emotion brilliance and intensity" (N. N. Lange, 1914, p. 280).

The second change pertains to the nature of bodily manifestations of emotions. If formerly James considered them as a combination of simple reflexes, then in the new formulation, he is inclined to see in them more complex forms of centripetal reactions. They arise not directly from a specific character of external stimulation acting on innate nervous mechanisms, but always assume in the individual a consciousness of that particular significance or sense that he contributes to this external impression. The emotional reaction depends on how the individual understands the external impression and whether it is for him an object of fear or anger. "These two corrections introduced by James himself in his new formulation signify an essentially complete rejection of the narrow radicalism of his former theory" (ibid.).

We can now consider James' vacillation in the definitive formulation of his theory exclusively as evidence of the internal limitations and inconsistency of the classical formulation of his hypothesis and its inadequacy for explaining higher emotions. As Cannon correctly notes, the problem of higher emotions, which presents insurmountable difficulties for James' theory, can find a satisfactory physiological explanation if it admits the thalamic hypothesis. Let us recall that in patients described by Head, emotions that arise from memory or imagination were experienced more intensely on the affected side on which the thalamus was freed from motor control of the cortex. This shows that cortical processes can elicit activity of the thalamus, which in turn reciprocally sends affective impulses to the cortex (W. B. Cannon, 1927, p. 121). From this fact, Cannon reaches conclusions relative to the problem of higher emotions as it appears in the light of the new theory. He maintains that every object or situation can in this way add an affective color to any experience. Thus, we can understand the whole exceptional complexity, wealth, and variety of our emotional life.

But apart from this advantage that the new theory has for explaining higher emotions, which presented a critical point for the old theory where it was forced either to change or, because of whatever pressures, to reduce lower and higher emotions to one denominator, the new theory proposes still another position which opens the possibility of a more adequate explanation for a number of phenomena of primary importance in the area of emotional life. This position pertains to the complex interrelation that was established between the cortex and the subcortical centers in the formation of emotional processes.

From the point of view of the old theory, emotional discharge occurred automatically, by reflex, just as emotion arises automatically and by reflex. An affective storm is played out between two poles: arising in the brain, it shakes the body with agitation in order to agitate the brain with a reciprocal flow. The most ordinary phenomena of emotional life, well known from everyday experience, are not included in any way in this simple scheme. As an example, we will cite only two such phenomena. McDougall called attention to the first, which reproaches the James–Lange theory for putting the sensory aspect of emotions at the center. It does not pay attention to the constantly present and sometimes dominating impulsive character of emotional experience. The reproach is entirely valid. Considering emotion as consciousness of organic and peripheral changes, the James–Lange theory thus reduces feeling to sensation and, as a result of this, reaches a conclusion that is exactly opposite to the one it strives toward: the basic goal of its striving is to overcome intellectualism in the teaching on affects and to find the specific trait that distinguishes an emotional state from a purely cognitive, intellectual state of consciousness. But as a result of logical development of the original thesis, the theory comes to a complete dissolving of emotional states in a general aggregate of sensory processes of sensation and perception. In order to save the situation, it assumes that the object itself of these sensations is specifically distinct compared with the object of all other sensations. But different objects still do not make sensations themselves different in their psychological nature and for this reason, the old theory was persuaded to consider emotion essentially as a passive process, sensory in psychological nature, as sensation of a special kind, and to not pay attention to all the factors in the emotional process that closely involve in it striving, excitation to action, and impulse, which make our emotions stronger and more influential motives of behavior.

W. B. Cannon (1927, p. 123) assumes that the new theory avoids this difficulty very easily. The localization of the standard reaction of emotional manifestations in the area of the thalamus opticus—in the area which, like the brain stem, acts directly through simple automatism if it is not inhibited by higher centers—explains not only the sensory aspect of emotional experience, but also the dynamic aspect, the tendency of the thalamic neurons to discharge. The presence of powerful impulses arising in the area of the brain and not connected with cognitive consciousness and, owing to this, exciting strong emotion blindly and autonomically, explains that this kind of emotion does not consist of sensation. Experiencing emotion, we find ourselves as if in the power of some outside force that compels us to act without weighing the consequences.

Cannon derives this explanation from the teaching on double control that makes up a significant part of the new theory. From the same root, he also derives an explanation for the second phenomenon which was not understandable from the point of view of the James theory: the appearance of conflict or struggle between conscious intention and emotional tendency, or, to put it more simply, the interrelation between voluntary functions and emotions. And actually, just like the problem of the impulsive nature of emotions, this problem was an insurmountable obstacle for the old theory. The absolutely unique psychological relations that exist between consciously acting will, which is apparent in decision and intention, and affect, which controls our consciousness, which, as we shall see later, is the true psychological and philosophical center of the whole teaching on the passions, not only left the problem unexplained from the point of view of the old theory, but simply did not note it and treated it with silence.

Regardless of the concealment, no one had any doubt that these phenomena can by no means be put into an extremely simplified pattern of the organic hypothesis and be understood with the help of the reflex mechanism that was proposed as an all-explaining principle of all of emotional life in all its variety and wealth of manifestation. According to the James–Lange theory, important processes that are the basis of emotions were generally considered to be beyond the limits of the brain—that principal organ of thought and conscious will—and placed at the periphery, and the brain itself was turned into a passive receiver of peripheral changes in which all other basic brain processes not only could not change anything, but in which they did not participate at all actively. Vital processes occurring every day in the consciousness of every person, processes of interaction between consciousness as a whole and its emotional part, were boldly crossed out, considered to be nonexistent.

Specifically because it reduced emotions to peripheral processes reflected in the brain, the peripheral theory created a chasm between emotions and the rest of consciousness: emotions were removed to the periphery, the rest of consciousness was concentrated in the brain.

The new theory, which establishes an extremely complex interaction of subcortical and cortical centers in the processes of emotion, comes significantly closer to the possibility of explaining the whole complexity of the real relations of affect and consciousness that comprise an indisputable psychological fact. It assumes an anatomic and dynamic organization of emotional processes in which the lower centers, being the true source of emotional excitations proceeding to the cortex and emotional discharges proceeding to the periphery, are themselves in a complex dependence on higher centers, forming their subordinate and controlled stage that acts under their guidance as an independent, but connected force. Only when the higher centers are weak or are removed from the stage subordinate to them does the latter become independent and begin to act in the autonomic fashion proper to it. In this case, the general neurobiological law formulated by E. Kretschmer[60] with respect to hysteria is manifested in the following form: if within the psychomotor sphere, the action of the higher stage becomes functionally weak, then the next lower stage with its own primitive laws becomes independent.

This complex hierarchical organization of the anatomic and physiological substrate of affect actually, as we shall see, can easily be brought into agreement at least with the basic psychological facts that are central, as we have indicated, to the whole teaching on passions. Now we shall consider only one point characterizing this organization, specifically, the teaching on double control.

As is known, James himself tried to consider and refute two possible objections. The first consists of the fact that, "in the words of many actors, who splendidly reproduce, with their voices, facial mimicry, and body movements, external manifestations of emotion, they do not exactly experience any emotions. Other actors, according to the testimony of W. Archer,[61] maintain that in cases where they were able to play a role very well, they experienced all the emotions of the role" (W. James, 1902, p. 315). Here James touches on a well-known problem with a long history, the problem of specific reproduction of emotions to which we will return in the course of our study. In explaining James, we are now only interested in his admission that "in the expression of every emotion, internal organic excitation may be completely suppressed in some persons as well as the emotion itself to a significant degree, while others do not have this ability" (ibid., p. 315). Thus, James admits in his own words "that some persons can completely dissociate emotions from their expression" (ibid.).

Another objection is as if the opposite to that which was just presented. It consists of the fact that "sometimes, inhibiting manifestations of emotion, we reinforce it. Acutely painful is the state of the spirit that you experience when circum-

stances compel you to keep from laughing; anger suppressed by fear turns into stronger hatred. Conversely, free manifestation of emotion provides relief" (ibid.).

James admits the possibility of increasing internal excitation "in cases where expression in facial mimicry is suppressed, or with the possibility of conversion of an emotion, when its manifestation is voluntarily inhibited, into a completely different emotion which is, perhaps, accompanied by different and stronger organic excitation" (ibid.). In the opinion of James, conversion of an emotion that is the result of a combination of the object eliciting it with an inhibition of its influence occurs through purely physiological means: excitation that cannot flow out through normal channels begins to be carried out through other channels; as a result of this, a new organic state and a new emotion corresponding to it arise. "If I had the desire to kill my enemy, but did not dare to do this, my emotion would be completely different compared with that which would seize me if I were to carry out my desire" (ibid., p. 316).

We cannot but agree with Cannon that James gives a contradictory, ambiguous, and altogether unsatisfactory response to the possible objections. On the one hand, he denies emotions altogether. "Refuse to express passion and it dies. Count to ten before you show your anger and the reason for it will seem laughable to you." On the other hand, he believes that organic excitation with its voluntary suppression cannot be destroyed and must prepare a new path for itself, resulting in the conversion of one emotion into another.

The new theory proposes the presence of double control—cortical and thalamic—over bodily processes. Such control leads to a very complex relation between both controlling points. It is clear that skeletal muscles control two points—the cortical and the thalamic. For example, we can laugh spontaneously depending on a funny situation (thalamic laughter), but we can laugh as a result of a voluntary act (cortical laughter). It is very clear that internal organs are under only thalamic control. We cannot by direct act of the will elicit an increase of sugar in the blood, an increase in heart rate, or cessation of digestion. With double control, cortical neurons under normal conditions evidently dominate and may keep from action excited neurons of the thalamus opticus (although we sometimes laugh or cry against our wishes). Because of this, a conflict is possible between the higher and lower control of bodily functions. But the cortex can inhibit only those bodily functions that are under voluntary control under normal conditions; just as the cortex cannot elicit, neither can it stop such intense processes as increasing the content of sugar in the blood, increasing heart rate, or cessation of digestion, characteristic for great excitation.

When emotion is suppressed, it is, consequently, suppressed only in external manifestations. There are facts that lead us to think that with maximal manifestations, there is also maximal internal excitation. For this reason, it is probable that cortical suppression of external manifestation of excitation results in a weakening of internal disturbances which would be stronger if they accompanied free expression of emotions. Nevertheless, with conflict between cortical control and activity of thalamic centers that are not subordinate to the cortex, internal manifestations of emotions may attain significant force. True, as far as functions not subject to the cortex are concerned, the situation is more complex than may be apparent on the basis of the representations given here. As Cannon notes in another place, if the cortex does not have direct control over internal organs and cannot direct their functions, it can exert an indirect control over them. For example, we can go out to meet danger and elicit a tremor in ourselves, although we cannot elicit a tremor by simple willful decision. In a similar way, we can frequently avoid circumstances

that elicit fear, anger, or repulsion and the visceral disturbances that accompany them. To do this, we need only avoid going near the point that agitates us.

We developed the teaching on double control in order to show to what extent the new theory admits more complex conditions of interaction between affective and conscious voluntary processes in comparison with the old. In the application of the advantage of the thalamic theory of emotions over the visceral to the last criterion which interests us, this teaching has the deciding voice. What presented insurmountable difficulties for the visceral theory can be explained from the point of view of double control.

Cannon says: "If there is double control over behavior, then it becomes easy to explain how internal conflict with its sharp emotional accompaniment and the subsequent partial weakening of feeling in a situation in which we experience intensive fright simultaneously with a very strong feeling of helplessness before some act of external behavior occurs and when corresponding behavior scarcely begins to be manifested, internal agitation begins to decline and bodily forces are directed energetically and effectively to achieving a positive result. Normal thalamic processes are established in the nervous organization itself. They are similar to reflexes in the sense of constant readiness for excitation of motor reactions, and when they can act, they do so with great force. However, they are subject to control by the cortical processes, processes that result from preceding impressions of every kind. Thus, the cortex can control all peripheral organs with the exception of the internal organs" (Cannon, 1927, p. 123).

The inhibited processes in the thalamus opticus cannot activate the organism except for the parts that are not under voluntary control, but excitation of thalamic centers themselves may be elicited by emotions in the usual manner and, possibly, with great force specifically owing to inhibition. When cortical inhibition is removed, conflict immediately seems to be resolved. The two controlling factors that were formerly in opposition now begin to cooperate. The thalamic neurons, continuing to be activated energetically, create conditions necessary for continuation of emotion, as James requires, even as it is manifested. Thus, the new theory not only overcomes the difficulties that confronted the James–Lange theory, but also explains satisfactorily the fact of sharp emotional experience during inaction seemingly induced by paralysis.

We have concluded the tedious and long path of investigating the theoretical controversy that during the last half century stood in the center of psychological teaching on affects and, to a significant degree, determined the whole development of scientific thought and scientific knowledge in this area. Conclusions that we reach as a result of the investigation are lucid and clear. There is no ambiguity in them. We have seen that the old peripheral theory of affects not only cannot withstand the crushing pressure of critical investigations that have inflicted fatal blows from all sides, but has fallen long ago.

If we collect all the arguments brought forth against this theory over the course of half a century, then, united in the force of their persuasiveness and conclusiveness, they actually make defending the James–Lange theory with complex ceremonies an unnecessary and ridiculous enterprise, as Bentley ingeniously noted. To fight with it is to fight with the dead. And we would never think to undertake an investigation if its only result would be to certify the historical death of this paradoxical and brilliant teaching. We see the justification for our tedious investigations in something else.

Studying and testing the old and dying teaching point by point, we could trace, step by step, both the birth of the new theory and that which was viable in its predecessor, and adequately explain the enormous wealth of new facts accumulated

by the tireless half-century exertions of thought. In itself, criticism of any obsolete teaching, no matter how productive the criticism might have been, can never be taken to mean the conclusion of a whole historical epoch in the development of scientific thought. Only when sprouts of new growth appear on cuttings of the old does one epoch in the history of scientific thought end and another begin. Finding a historical boundary that divides two epochs in the teaching on the passions was the direct and immediate purpose of our investigation.

But together with this, without noticing it, we came to still another conclusion that is clearly contrary to our expectations. We undertook the investigation of the James–Lange theory exclusively because the accepted view was to see in it a vital scientific realization of Spinoza's ideas. If it is true that the teaching of Spinoza on passions is inseparably connected with the names of James and Lange and with their renowned paradoxical theory on emotions, then since that teaching remains a vital part of contemporary scientific psychology, it must share the fate of the ideas that dominated more than a half century and are dying before our eyes. The position, with which we did not want to agree, which maintains that the part of Ethics that deals with passions may perhaps be only of historical interest for the psychologist of our time, is proving to be correct.

10

But should there be some doubt perhaps about the position itself on the internal spiritual similarity that exists between the great philosophical teaching on passions and the psychophysiological paradox that represents a half century of scientific thought on the nature of human emotions? Perhaps they are connected not with a mark of similarity, but with a mark of oppositeness? Perhaps they are united not so much by historical succession as by the necessary and inevitable wave-like alternations of thesis and antithesis in the history of thought? Then perhaps it may develop that relegating the celebrated hypothesis to the past not only does not mean the same thing for the fate of the Spinoza teaching, but, on the contrary, opens a way for its future development in the sphere of psychological science. We are investigating whether this is so.

If an attentive study is made of its genesis and its philosophical nature, the James–Lange theory actually is not at all connected with Spinoza's teaching on the passions, but with ideas of Descartes and Malebranche. The opinion that the roots of the James–Lange theory date back to *Ethics* is based on a fallacy. It is actually nothing more than an opinion in the sense in which Spinozian gnosiology uses this word to name the first and lower kind of cognition because the latter is subject to error and has no place where we are convinced, but only where we speak of surmise or assumption. This error owes its origin, on the one hand, to the philosophical carelessness of Lange himself and in part to that of James; they were little concerned with the idea of the philosophical nature of the theory they created. Lange expressed a surmise, which was based on essential ignorance of the Spinoza teaching, that the famous Spinoza definition of affect should be considered as almost the only anticipation of his theory, in any case, more than others that approached his outlook. Everyone believed this surmise, it became rooted and acquired the character of scientific truth when it entered textbooks and became the property of school wisdom.

On the other hand, this mistaken opinion may have been adopted by all as truth—without criticism, investigation, and confirmation—only because of the fact

that partly in the history of philosophy, but mainly in the history of psychology, an error, extensive in kind, has been dominant thus far: the opinion that internal kinship and historical continuity exist between the teaching on passions of Descartes and Spinoza. While in the area of metaphysics, the oppositeness between the ideas of Descartes and Spinoza was well recognized, in the area of psychology, mainly in the area of the teaching on passions, certain external similarity and formal closeness of both teachings hide from the eyes of investigators even now that most important oppositeness, based on the very essence of both teachings, that in reality exists between these teachings.

Of course, it is a fact that the worldview of Spinoza developed historically in direct dependence on the philosophy of Descartes. However, with respect to the general spirit of the Spinozian worldview, no one doubts that the two systems are connected since the confirmation and refutation of the thesis and the antithesis are connected. H. Heine[62] has said that great genius develops with the help of another great genius not so much by assimilation as by clashing. One diamond polishes another. Thus, the philosophy of Descartes did not to any extent at all engender the philosophy of Spinoza; more likely, it needed it in order to appear. In accordance with this, Heine finds that the method used by both student and teacher is the factor common to both thinkers. The content of worldview itself and its internal sense and the spirit that animates it are more opposite than similar.

But as far as the teaching on passions is concerned, most investigators are inclined to see in Spinoza only a student developing and partially transforming the ideas of the teacher. Investigators are inclined to see simple evolution and reform where there was actually one of the greatest revolutions of the spirit and a catastrophic overturn of the former system of thought. K. Fischer[63] develops this point of view most radically and consistently.

He says: "There was a time when Spinoza was a Cartesian in the sense of a student thirsting for knowledge. We must add: from a certain point of view, Spinoza always remained a Cartesian and can never stop being one for us. The oppositeness between thought and space expressed in such precise form with complete certainty, as an object of most clear and most distinct knowledge forms the nucleus of Cartesian teaching. . . . Whoever maintains this oppositeness in this form is and will remain a Cartesian in one of the most essential traits of his worldview. Whoever rejects this opposition is not a Cartesian" (K. Fischer, 1906, Vol. 2, p. 274).

Moving to the definitive resolution of the problem of the origin and sources of Spinoza's teaching, Fischer again confronts the question as to whether Spinoza was ever a Cartesian. As an answer, the investigator proposes to distinguish the narrow and the broader formulation of the question. Otherwise, the question itself will remain indeterminate and shaky. That Spinoza was a Cartesian in the narrow sense of the word cannot be proven on the basis of literary documents, but it is most natural to assume that in his development, there was a stage when his point of departure did comprise his worldview. If, on the other hand, we take the Cartesian form of thought in the broader sense, the meaning and tendency of which we have already considered, then our answer would be: Spinoza not only was a Cartesian, but (in this sense) he never stopped being one.

There can scarcely arise any doubt that the statement on the Cartesian form of thought of Spinoza pertains primarily to the teaching on passions because, for Fischer, the criterion for this qualification of Spinozian worldview consisted in the idea of oppositeness of thought and space, that is, in the idea of psychophysical parallelism. Where can this idea manifest itself more clearly and directly if not in Spinoza's psychological teaching, if not in his study of the nature of affects? If, in reality, in the teaching on the origin and nature of affects, in the teaching on human

slavery or on the force of affects, in the teaching on the power of the mind (over affects), or on human freedom, Spinoza consistently developed the idea of psychophysical parallelism, then we cannot but agree with Fischer that Spinoza never stopped being a Cartesian. If, on the other hand, investigation brought us to the firm conclusion that in this teaching, Spinoza developed the antithesis to parallelism and, consequently to the dualism of Descartes, we would inevitably have to consider Fischer's opinion wrong. This is the basic nucleus of the whole problem of the present investigation.

True, Fischer, evidently having in mind not so much the main content of the teaching on passions as its concrete expression, calls this teaching Spinoza's masterpiece and the most original part of his whole system. He says: "The teaching on human passions is Spinoza's masterpiece. We know to what extent Descartes in his work on passions laid the path for our philosopher and how much the latter depended on his predecessor in his first treatment of this subject, although even then he denied the teaching on freedom. In *Ethics*, one can still note traces of this copious, preliminary work, but the methodological basis of affects is so independent and unique that here the philosopher discloses his full originality" (K. Fischer, 1906, Vol. 2, pp. 432-435).

Even from this, it follows that Fischer recognizes Spinoza's originality only with respect to methodological basis of affects, obviously not extending this affirmation to the essence itself of his principal views. With respect to the main content of the teaching on passions, as distinct from the methodological basis of affects, Fischer evidently continues to maintain his general point of view, according to which Spinoza consistently develops the main thought of the teaching of Descartes and transforms his principles accordingly. Fischer understands the historical dependence of Spinoza on Descartes specifically in this evolutionistic and reformist spirit: "To the very reliable and precise biographical evidence which indicates that the work of Descartes enchanted Spinoza and illuminated his thought, internal principles are united that clearly and distinctly show how Spinozism arises from Cartesian teaching. For this, it would only be necessary to recognize the problems that Descartes posed for philosophy, to recognize the method for solving these problems and explaining the contradictions in which the system of the teacher was caught in solving them. These contradictions were not hidden, but were obvious, and the way to solve them was indicated by Descartes himself so clearly that it remained only to proceed along it without vacillation" (ibid., p. 276).

Thus, from Fischer's point of view, even where there is a clear and irreconcilable disagreement between the teaching of Spinoza and that of Descartes, Spinoza nevertheless remains first and last a student of his teacher, a pure Cartesian, who resolves the contradiction in the same way that Descartes himself indicated. It would be difficult to express more clearly the idea that even denying Descartes, Spinoza continues to remain a Cartesian.

Since we are concerned here not with a secondary, but with a central point of our investigation, we must try to elucidate with all precision the opinion, the denial of which we see as our main task, the opinion according to which Spinoza in his teaching on the passions is a consistent Cartesian. Elucidating this presents no great difficulty; we need only to turn to the history of Spinoza's teaching on affects. In this history, Fischer notes two periods. In the period of the *Short Treatise* . . .,[64] Spinoza was directly dependent on Descartes. In *Ethics*, he independently developed a methodological basis of affects and displayed full originality in this way. Thus, the *Short Treatise* . . . is opposite *Ethics* as, respectively, Cartesian and original periods in the history of the development of Spinoza's teaching on passions. We will turn to these works.

In the *Short Treatise* . . ., as Fischer correctly notes, "in enumerating and defining passions, Spinoza follows Descartes completely; the work of Descartes on the passions evidently guided him. First of all, we find the same six primary passions[65] that Descartes recognized as the basic forms of passions . . . Then the same groups and types of individual passions follow in almost completely the same order as determined by Descartes" (ibid., p. 232). From this, Fischer reaches the conclusion that Spinoza, in developing the theme on passions, follows Descartes and depends on him. According to Fischer, "We might have been surprised that Spinoza does not mention his predecessor, from whom he had borrowed so much. However, we must take into account also to what extent Spinoza differs from Descartes in his evaluation of the passions. He does not explain them, as his predecessor does, by the union of the soul with the body, but considers them simply as mental phenomena that are due exclusively to the nature of our cognition. Spinoza denies freedom of the human will, which Descartes maintained and which he opposed to the passions so that, in his opinion, the passions can and must be subordinate to freedom and made its weapons. For this reason, a judgment on the usefulness and value of passions as a whole or in details must come out differently in Spinoza than in Descartes" (ibid., p. 234).

We think that what we had in mind above when we spoke of the criterion that Fischer uses in qualifying Spinoza's teaching as Cartesian cannot be said more clearly than this was done in the quoted excerpt. Spinoza's originality is limited to the methodological basis of affects and a number of particular differences which, as a whole, give a different form to the whole teaching on affects even in the *Short Treatise* . . . . The whole argument consists exactly of what is to be considered the principal content and what, the methodological basis of affects. We think—and our investigation is basically concerned with the evidence for this—that the matter is in a completely opposite form as compared to how it is envisioned by Fischer. We think that even with respect to the *Short Treatise* . . ., the fact that Spinoza follows Descartes in the primary and individual passions enumerated is more a matter of methodological basis of affects than the theoretical essence of his teaching, but the fact that Spinoza enters into an open contradiction with Descartes in denying freedom of will in the teaching on the influence and fate of passions, on their dynamics in the total life of consciousness, in the teaching on the relation of passions to cognition and will, and, finally, in considering their psychophysical nature is a problem specifically of the theoretical essence of the Spinoza teaching.

We shall try in the future to show that regardless of the fact that the *Short Treatise* . . . does not yet contain the main elements of the teaching on passions as it is developed in *Ethics*, in the main content of the teaching, it is, nevertheless, already a true antithesis of the teaching of Descartes. But this flows, really and truly, directly from the words of Fischer himself if we compare them with his words quoted above. Let us repeat, Fischer sees the difference between the *Short Treatise* . . . and the teaching of Descartes primarily in the fact that Spinoza does not explain passions as does his predecessor by the union of soul and body, but considers them simply as mental phenomena that are due exclusively to the nature of our cognition.

No matter how we interpret these words, there is no doubt that Fischer sees the divergence between Spinoza and Descartes primarily in understanding the psychophysical nature of passions, that is, in the relation of thought and space in the human being, since we are considering his affects. The problem of uniting the soul with the body, and thought and space in the psychological nature of passions comprises the basic point of the divergence between the *Short Treatise* . . . and the teaching of Descartes. But, of course, as was indicated above, specifically in solving

this problem, Fischer saw the basis according to which Spinoza, in our view, always remained a Cartesian (but only in this sense). Fischer said that whoever solves the problem of the relation between space and thought in the spirit of Descartes, that person is and will remain a Cartesian. But Fischer himself maintained that in the *Short Treatise* . . ., Spinoza diverged from Descartes specifically as a result of the fact that he rejects the solution of the psychophysical problem as applied to the nature of passions that Descartes gave. Consequently, to be logical and consistent to the end, we must admit that in developing his teaching on the passions, Spinoza was not a Cartesian as early as in the *Short Treatise* . . ..

True, here Fischer falls into the same interpretation of the divergence between Spinoza and Descartes that, at root, perverts the very sense of Spinoza's solution to the problem of the relation between the soul and the body to a problem of affect. We will encounter this interpretation again in the course of our investigation. Fischer sees the difference between the thinking of Spinoza and that of Descartes in the fact that Spinoza rejects the explanation of passions by a union of soul and body and considers them simply as mental phenomena that are due exclusively to the nature of our cognition. Fischer maintains that, in comparison with the tendency of Descartes toward spiritualism, Spinoza takes a step forward and converts the psychology of the passions into pure phenomenology of cognition.

A similar interpretation of the ideas of Spinoza can be found in the work of many investigators not only with respect to the *Short Treatise* . . . but also with respect to *Ethics*. J. Petzoldt[66] (1909), as V. F. Asmus[67] noted, fell into the same error. The idealistic interpreters of Spinoza usually satisfy themselves with establishing parallelism. Many representatives of the theory of psychophysical monism popular among contemporary positivists do the same. But this understanding is inadequate. To stop at parallelism means not to understand Spinoza in the end. Under the cover of the theory of parallelism, Spinoza develops an essentially materialistic view. If Spinoza had limited himself to parallelism, then for him there would be no basic obstacles to placing cognition of the soul with all its states exclusively under the mode of thinking, considering the connection of states of the soul as completely independent of connection with bodily states. Then Spinoza could have constructed his psychology as phenomenology of pure connections of cognition without even resorting to an analysis of bodily processes. It is scarcely possible to imagine anything more foreign to the spirit of Spinozism.

But it is specifically this phenomenological interpretation of the *Short Treatise* . . ., foreign to the spirit of Spinozism, that Fischer gives. In this, he agrees with Petzoldt, who sees only parallelism in the psychology of Spinoza. As Asmus notes, "everyone who does not go beyond parallelism in explaining Spinoza must necessarily agree with Petzoldt" (1929, p. 54). Asmus sees the merit of Petzoldt in the fact that "in honing his conclusions, he showed the absurdity of all ideological interpretations of Spinozism (ibid.).

Perhaps the significance of the interpretations of Fischer and Petzoldt has another positive aspect. The possibility itself of such an interpretation of Spinoza compels us to turn our attention to the remarkable fact that has not yet been given due study: even in the first draft of Spinoza's teaching on the passions in the *Short Treatise* . . ., there is nothing of Descartes' *Treatise on the Passions* . . .[68] in its basic content, but there is something completely new. Spinoza turns the problem itself to quite another side. If in Descartes, the problem of passions appears primarily as a physiological problem and a problem of the interaction of soul and body, then in Spinoza, the same problem appears from the very beginning as a problem of the relation of thought and affect, understanding and passion. This is, in the full sense of the word, the other side of the moon which remains unseen over the whole

course of the teaching of Descartes. This alone compels us to admit that the theoretical content even of Spinoza's initial draft and the *Treatise on Passions* . . . of his teacher do not coincide, but display the most profound differences, which can only be possible in approaching one problem from two opposite ends.

In this respect, the teachings of Descartes and Spinoza are polar. They actually represent two opposite poles of one problem which, as we shall see later, have always stood opposite each other over the whole course of the history of psychological thought. This polarization of scientific ideas comprises the basic content of the contemporary clash of psychological directions in the teaching on the passions. To express this position in concepts and terms of the contemporary historical period of psychology, we might say that in the divergence between the *Short Treatise* . . . and the *Treatise on Passions* . . ., there was noted completely definitively the divergence between naturalistic and antinaturalistic directions in the teaching on affects, between explanatory and descriptive psychology of emotions, that represents the basic and central divergence that now divides psychological thought into two irreconcilable parts. In this divergence, Descartes stood on the naturalistic and explanatory side, and Spinoza, on the side of antinaturalistic and descriptive psychology.

Disclosure of the concrete sense and meaning of the position we have developed will be given in the future course of our investigation. We might even say that this will comprise its basic pivot because without explaining the real opposition between the Cartesian and Spinozist psychology of affects, there can be neither an accurate understanding of Spinoza's teaching in its relation to contemporary psychoneurology nor a correct idea of immediate paths for the development of the science itself of human consciousness.

But even now we must say that in the position we have noted, there is something that cannot but seem at first glance to be extremely paradoxical. In fact, the paradox consists in the objective position of things and not in the formulation of our ideas. Actually, there is something paradoxical in the fact that Descartes' name is connected with natural science and causal, explanatory directions of psychological thought, most materialistic in their elemental tendencies, and Spinoza's name, with the phenomenological, descriptive, idealistic trend of contemporary psychology. But this is actually so. In certain respects, what has been said corresponds to the objective situation of things which we must establish, and in this lies that particle of truth that is contained in the interpretation of Fischer and Petzoldt. We shall try to find an explanation for the paradox later, but now we shall note the fact that Spinoza's teaching on the passions started not with a continuation and development of Cartesian ideas, but with the development of the same problem from the opposite end. The fact that clarifies the origin and general evaluation of Spinoza's teaching is of no small importance in itself. No less remarkable is the fact that from the very beginning, Spinoza puts at the center of the problem that aspect of it that, like the far side of the moon, was invisible to all naturalistic teachings in psychology and that, because of this, was developed most often from the idealistic point of view over almost the whole course of its historical path.

Perhaps specifically because from the very beginning the center of the Spinoza teaching became a problem that more sharply than others divided the idealistic and materialistic tendencies in psychology, the teaching retained till now not just a historical but a vital significance so that in discussing it, we must always pivot on the sphere of the sharpest and most urgent problem of contemporary psychology. Of course, the task of genuine materialism is not to circumvent problems developed by idealistic thought and hide one's head in the sand from them like an ostrich, declaring them to be nonexistent. The task is to solve these same problems materialistically. This was the direct historical task of Spinoza. And here once more the

well-known observation that intelligent idealism is much closer to true materialism than stupid materialism is confirmed.

We can even now reach a firm and, evidently, reliable conclusion opposite that of Fischer as to what kind of solution of this problem we would come to in the future and what kind of explanation we would find for the paradox indicated above. We can state that from the very first appearance of the Spinoza teaching, it completely follows Descartes, whose work on passions obviously guided him exclusively in the methodological basis of affects, in the external disposition of their description, and in the order of classification. His independence and originality were displayed from the very beginning in the basic opposition of his idea to the Cartesian. As early as in the *Short Treatise . . .*, Spinoza not only was not a Cartesian, developing and transforming the system of the teacher and untangling its contradiction, but immediately appeared as an anti-Cartesian. The sharp Spinozist teaching appears even more markedly anti-Cartesian in *Ethics.*

In the foreword to *The Teaching on the Origin and Nature of Affects,*[69] Spinoza contrasts his point of view not only to that which "was written about affects and the form of human life and was said, evidently, not about natural things that follow general natural laws, but about things that lie beyond the bounds of nature, and presented man in nature like a state within a state, believing that man more likely disturbs the natural order than follows it, that he has absolute power over his actions and is defined not otherwise than by himself. Although among all who write about affects, there were eminent persons who wrote much that was beautiful, nonetheless, no one, as far as I know, determined the nature and force of affects and the extent to which the soul is able to restrain them. True, the very famous Descartes, although he thought that the soul has absolute power over its actions, tried, however, to explain human affects from their first causes and to indicate as well the path the soul could take to gain absolute power over affects. But in my opinion at least, he expressed nothing except his great ingenuity, as I shall demonstrate at the proper time" (Spinoza, 1933, p. 81).

Thus, Spinoza himself understood the relation of his teaching to Descartes' system. In his teaching on the passions, Spinoza consciously tried to develop an opposite and exclusive point of view that would show that in Descartes' famous *Treatise* nothing was expressed except the great ingenuity of its author. After this, there can remain scarcely even a shadow of a doubt that the originality of Spinoza's teaching was effective not in the methodological basis of affects, but in its theoretical content.

In the foreword to *The Teaching of the Power of the Mind or on Human Freedom,*[70] Spinoza most acutely contrasts his thought with that of Descartes. Spinoza claims that Descartes, by his teaching on the interaction of the soul and the body through the pineal gland, significantly promotes the false opinion that affects depend absolutely on our will and that we can control them infinitely. Spinoza says that he cannot "be surprised enough that a philosopher, having strictly held to reaching conclusions only on the basis of sources that are certain of themselves, and claiming only what he recognizes clearly and definitely, and so frequently reproving the scholastics for thinking to explain dark things by hidden properties, how this philosopher accepts a hypothesis that is darker than any dark property" (ibid., p. 194). Objecting to this teaching of Descartes, Spinoza concludes: "Finally, I am not speaking now about what Descartes maintained regarding the will and its freedom since I adequately demonstrated above that all of that is false" (ibid.)

As we see, here Spinoza opposes his point of view to the Cartesian specifically at the point that Fischer cites as a criterion for making a judgment that Spinoza was and remained a Cartesian: in the teaching on the psychophysical nature of

affect. Here we see a case, frequently repeated in the history of psychology, that H. Høffding[71] discusses in relation to the study of feelings of J. W. Nahlowsky[72] (1862), a psychologist of the Herbart school.[73] Høffding writes: "It is apparent here how the spiritualistic theory on the relation between the body and the soul can interfere in a special psychological problem" (1904, p. 186). These words are fully and completely applicable to the argument between Spinoza and Descartes that we are now considering, which seems to be a prototype of all arguments on the psychology of emotions in which the spiritualistic theory on the relation between the body and the soul interferes in resolving a special psychological problem.

We think that what has been said is fully sufficient to explain the first question of interest to us concerning the seeming Cartesianism of Spinoza that interests us. In disclosing their internal contrast, we found a valid relation of both teachings. Just as Hegel later developed the metaphysical and rationalistic bases of the Spinoza philosophy giving the only possible refutation to Spinozism, that is, by converting the substance of Spinoza into an absolute idea, into absolute soul, and in this way, presented an antithesis to Spinozist teaching, so in his time, Spinoza presented an antithesis with respect to Descartes, but a materialistic antithesis. Behind the relations that we disclosed of the two philosophical teachings stands a thousand-year-old struggle of two basic trends in philosophical thought, idealism, and materialism, a struggle that in this case found a full and concrete expression in the solution, it seems, of the special psychological problem that has, however, a most important basic significance.

Regardless of the lack of explanation of a number of very important points in the genesis of Spinoza's teaching on passions, regardless of the serious internal contradictions of that teaching, nonetheless from the main and basic aspect, it appears before us as a teaching that is wholly opposite the Cartesian teaching on passions. This must serve as the first and last points—the alpha and omega—of our whole investigation. The two teachings oppose each other as only truth and fallacy and light and dark can be opposites: this also requires proof. A different impression can arise, it is true, owing to the fact that both thinkers worked on one and the same problem and seemingly had one and the same ultimate purpose—to resolve the problem of human freedom. But, as we have seen, Spinoza himself objects in the first place to the Cartesian teaching on freedom of the will. He says in one of his letters: you see that I perceive freedom not in free decision, but in free necessity. And actually, it remains only to disclose the concept of freedom in Descartes and Spinoza to see that they are completely different from each other and, speaking in the language of Spinoza, they could agree only in name just as Canis, the heavenly constellation, and *Canis familiaris*, the howling animal, are similar to each other.[74]

Moreover, many historians of psychology are still little aware of this opposite-ness, particularly historians who analyze the theory of James and Lange. These historians proceed from opinion, which, according to the gnosiology of Spinoza, is susceptible to error and does not pertain to points that are certain, but only to those that involve surmise and opinion; they frequently name Descartes and Spinoza together and jointly with each other as true progenitors of the theory of affects. Like everyone who uses this first and inadequate kind of knowledge, in Spinoza's expression, they know about the subject as much as a blind person knows about colors.

Yet there is some sense in comparing the two names when we speak of the historical fate of contemporary knowledge of affects; however it is not that which is usually introduced into this comparison. Least of all, as indicated above, could Spinoza together with Descartes have been the progenitors of the scientific view

of the nature of human emotions that has been dominant over the last half century. This view can be recognized as either Cartesian or Spinozist. By the very nature of things, it cannot be one and the other simultaneously. If in this chapter we developed the thesis that we must prove that the James–Lange theory is connected not at all with the teaching of Spinoza on the passions, but with the ideas of Descartes and Malebranche, then, by the same token, we defend the idea that this theory is anti-Spinozist. But it would be completely unproductive and would make no sense to give so much attention in the study of the fate of Spinozist teaching in the contemporary scientific knowledge of this theory as we have given it if as result we could establish only that it has nothing in common with the teaching we are considering.

Specifically because of the fact that the James–Lange theory can be considered as a living realization of Cartesian teaching, studying its truth and historical fate cannot but be placed at the beginning of the study of Spinozist teaching on the passions. As we have seen, at the very beginning of the development of this teaching and at its center is the struggle against the Cartesian idea. What occurred in the psychology of emotions in the last half century and what we have tried to consider in the preceding chapters is nothing other than the historical continuation of this struggle, the prototype of which we perceive in the oppositeness of the two teachings, the Cartesian and the Spinozist. And exactly as it is impossible without explaining this oppositeness to properly understand the Spinozist teaching without elucidating the fate of anti-Spinozist ideas in the psychology of affects, it is also impossible to determine correctly the historical significance of Spinozist thought for the present and future of all of psychology.

Just as Spinoza did not think that he found the best philosophy, but knew that he recognized truth, so in the struggle of contemporary psychological theory, we are trying to find not the one that best meets our tastes, best satisfies us and for this reason seems to be the best, but the one that best meets its objective and thus must be recognized as truer because the goal of science, like the goal of philosophy, is truth. Truth, however, is in itself evidence of fallacy. Illuminating historical errors in psychological thought, we thus lay the path to recognizing the truth about the psychological nature of human passions.

11

It now remains for us to elucidate whether the James–Lange theory has as its source the teaching of Descartes on the passions. In other words, it remains for us to disclose the Cartesian essence of this theory. Thus, we hope to disclose behind the struggle of concrete and special psychological hypotheses the basic struggle of various philosophical views of the nature of human consciousness, particularly the struggle of Cartesian and Spinozist ideas in living contemporary scientific knowledge.

The thought that not Spinoza but Descartes is the real progenitor of the visceral theory of emotions is beginning to penetrate more and more deeply into contemporary psychology although it is not recognized in its true significance. Usually only the significance of a factual corrective is ascribed to it, a correction to the thesis on the historical connection that exists between the James–Lange hypothesis and Spinoza's teaching on the passions, but not the significance proper to it in reality that consists of changing the whole basic evaluation of the philosophical essence of our theory. The idea that this theory is Cartesian just because of its

origin and methodological basis, and because of this cannot be admitted to be Spinozist, is wholly foreign to contemporary psychology.

Thus, if psychology recognized the fallacy of this traditional opinion, with the presentation of which we began our investigation and according to which the predecessor of James and Lange is Spinoza, then this recognition must be acknowledged as only partial and inadequate. The fallacy of this opinion is usually seen in the fact that alongside Spinoza and together with him among the predecessors of our theory, we must also name Descartes. As far as we know, no one has yet expressed the idea that the peripheral theory of emotions, being Cartesian in essence, is by reason of this fact anti-Spinozist. As has been said above, specifically for this reason, a number of investigators name Descartes together with Spinoza as founders of the teaching under consideration.

Thus, in listing predecessors of the peripheral theory of emotions, Titchener says that there are in Descartes and Spinoza definitions along the same lines. He cites the studies of D. Irons (1895) that elucidate the dependence on Descartes of new theories of emotions. Irons is not the first to arrive at establishing an objectively correct conclusion on the fact that in contemporary scientific knowledge, the James theory represents the same idea that Descartes defended more than 200 years prior to the appearance of the new hypothesis. Whatever might be said in our time about contemporary science, in the words of Irons, the *Treatise on Passions* . . . makes it possible to compare the teaching it presents with everything that has been done in recent years. It would be difficult to find a treatise on emotions that would surpass this in originality, depth, and impressiveness. Descartes takes the same position as James, but he is not satisfied with supporting in general terms the opinion that emotion is elicited by physical change. Coming to the conclusion on the existence of six primary passions, he tries to demonstrate that there is a special whole of organic states that accompanies the formation of each of them.

Following Irons,[75] J. Larguier des Bancels[76] maintains that the James–Lange theory is fully contained in the teaching of Descartes. As T. Ribot[77] notes, since the time of the development of the theory of Lange and James, some unjust attacks on the thought of Descartes, which he expressed in the treatise, *Passions of the Soul,* have been retracted (Ribot, 1897, pp. 106-107). Thus, Ribot correctly notes that the visceral theory of emotions not only was a scientific embodiment of Cartesian teaching, but also led to the resurrection and rehabilitation of this teaching before the court of scientific thought. The James–Lange theory resurrected in the contemporary scientific consciousness the old and erroneously judged Cartesian teaching, converting it into an empirically proven position and thus placing it in the center of the scientific psychology of emotions. This is how the thinking of Ribot might be formulated. In his words, the advantage of James and Lange consists of the fact that they clearly presented the teaching of Descartes and attempted to corroborate it with experimental evidence.

More precise historical studies showed that in the sense of ideational genesis, in addition to a direct connection to the teaching of Descartes, the James–Lange theory also displays a connection through later representatives of Cartesianism who developed the ideas of the teacher and brought them to a logical conclusion. Here the name of Malebranche comes first; his theory actually displays an undoubted correspondence with the James–Lange theory in basic and essential traits. Literally, in this respect, the name of Malebranche as a predecessor of the organic theory of emotions cannot at all be compared with Descartes. On the contrary, the correspondence of the empirical scientific James–Lange theory with the theory of emotions of Malebranche makes its connection with Descartes even less doubtful and more clear and once more discloses its Cartesian essence.

As we have seen, in correctly elucidating the anti-English, anti-evolutionist tendency of the Lange theory, G. Dumas calls him the latest student of the French followers of the mechanistic worldview. Separating joy and sorrow into motor and mental phenomena, eliminating illusory essences and indeterminate forces—all of this was done according to the tradition of Malebranche and Spinoza. In the composition of the former, *On the Investigation of Truth,* Lange located his vasomotor theory and cites this place with obvious surprise. He might have found other places there as well that would just as clearly confirm his analysis of mental and motor elements of emotion.

Malebranche terms as passions all emotions that the soul naturally experiences during unusual movements of vital spirits and the blood.

Remove the theological expression about the relation between the body and the soul—and you will get, essentially, the Lange theory: emotion is only consciousness of nervous-vascular changes.

This comparison might have been carried much further even without special difficulty to prove that, regardless of the difference in language, this same spirit was characteristic of both the Cartesian philosopher and the Danish physiologist. Dumas notes further that even in his errors, Lange resembles the Cartesians. His somewhat severe criticism of Darwin and evolutionist psychology is nothing other than conscious or unconscious aversion which every follower of the mechanistic worldview, including Descartes, naturally has toward historical explanations.

It seems to us that in this position of Dumas, something significantly greater than a simple correspondence of concrete empirical content of the theory of Lange and the theory of Malebranche is established. The correspondence itself in the description of the psychophysiological mechanism of the emotional reaction is not the primary fact, but is dependent and derivative. It flows as a necessary consequence of the fact that the very same mechanistic and antihistorical worldview in science animates the Cartesian philosopher and the Danish physiologist. Both the attempt to explain the psychology of passions in a purely mechanistic way and the conscious or unconscious aversion toward a historical explanation, both—the Cartesian philosopher and the Danish physiologist—identically inherited from Descartes, that true father of the mechanistic worldview in contemporary science, and especially in psychology.

Thus, Dumas is scarcely the first to reduce the problem of the connection between the James–Lange theory and Cartesian teaching on the passions not to elucidating how the two teachings coincide in concrete definitions and descriptions of the psychophysiological mechanism of emotions itself and of the factual representation of its structure and activity, but to disclosing the common methodological base, the common scientific worldview, the common philosophical nature of these teachings separated from each other by more than two centuries. The correspondence itself of concrete definitions and factual descriptions of the emotional mechanism is only the result, only the necessary consequence, of that which is common to both theories of the philosophical spirit.

We believe that this kind of formulation of the problem should be accepted wholly. Regardless of what kind of concrete, historical, and biographical paths this connection between the progenitors of the mechanistic worldview and the creators of the scientific theory may have actually taken, regardless of the extent to which the creators of the theory were conscious of and accepted the spiritual and ideational kinship of their offspring with the treatises of Descartes and Malebranche, their theory is objectively the scientific embodiment of the Cartesian spirit and must be considered as such. Only by following this course can we come to a correct formulation of the problem of the relation of this philosophical system to a concrete

scientific conception and find the common denominator that would make it possible to trace their internal relationship. The common denominator between any philosophical system and a concrete empirical hypothesis is always found to be, as in the given case, a scientific worldview, formulated in any more or less common generalization that rises somewhat above the level of a simple establishment and description of facts. In the well-known expression of Engels (see: K. Marx and F. Engels, *Works*, Vol. 20, p. 366), whether the natural scientists want it or not, philosophers always guide them. To disclose the philosophical idea that guides the whole construction of the James–Lange theory means to find the true way to explain its connection with one of two internally opposite philosophical systems.

In the conclusions of Dumas, there is still another position of primary importance. In opposition to the first, it establishes a point of divergence between the old teaching of the philosopher and his later scientific version. In the first place, Dumas establishes the difference in the languages that Malebranche and Lange speak. In itself, the difference pertains exactly to the area of factual description of the emotional mechanism. As we have already said, the description must be considered as the result of coincidence in methodological premises of the one author and the other. It is entirely natural that if one and the same idea directed both the Cartesian philosopher and the Danish physiologist, it would bring both investigators to a similar and almost identical description of the mechanism of the emotional reaction in the language of physiology that is contemporary to every scientist. But there is more to this than only the difference in language—there is a difference in concrete physiological concepts. In this case, it would be possible to limit oneself, as Dumas does, to a simple translation from one language to the other and to replace the movement of vital forces of Malebranche with the nervous-vascular changes of Lange. But, in producing such a translation, we not only replace the old physiological concepts of the seventeenth century with the views of the nineteenth century contemporaneous with Lange, but assume certain major changes in the spirit itself of the old teaching. To make the translation possible, it is necessary, in the expression of Dumas, to eliminate the theological expression of the relation between the body and the soul. Only by having carried out this operation on the position of Malebranche will we obtain the theory of Lange. But to do this means not only to replace one set of words with another, but also to introduce substantial changes into the thought itself that is expressed in the old words.

Thus, in noting the difference between the old teaching and the new, Dumas indicates, together with factual divergences, divergences of a theoretical nature, as he did in explaining points of correspondence between the two teachings. In this sense, Dumas preserves in all purity the only possible and the only correct formulation of the problem. In addition, he notes fully the series of problems that confront investigators who wish to discover the actual relation between Cartesian teaching on passions and the organic theory of emotions. Both positions developed by Dumas—the correspondence and the divergence of the theories under consideration—were developed in the most recent literature. Both have their factual aspects and their theoretical aspects. The first cannot be considered otherwise than as the result of the second. If there is correspondence or divergence between the two teachings in any factual position that is essential for each of them, then behind this, we must seek correspondence or divergence of the same teaching in some of the theoretical bases if, of course, we are not dealing with a definite individual error in thought or with an error of a logical or factual nature.

In considering the further development of the position of Dumas, we shall limit ourselves to only the major concepts of these historical studies since their conclusions can interest us only to the extent that they serve to explain the problems

of our investigation. The great majority of investigators come to conclusions that agree with the position of Dumas on the concordance of the philosophical spirit of both teachings. Here it is extremely important that the connection between the teachings always appears as a connection through a common mechanistic worldview. Specifically, it is just this connection that G. Brett[78] identifies as basic in his study of the historical development of the theory on emotions.

This author says: "Descartes, wanting passionately to develop his physiology, revived the method of Aristotle that compared animals to machines that are moved by internal forces the way marionettes are moved with the help of a wire. This was an easy way to avoid many difficult problems and to open up the possibility of reducing emotions to laws of mechanics. The dynamics of extension and contraction seemed to be enough to explain affective or passive states. This point of view began to spread rapidly because the whole theory was connected in time with the lucidity and precision of ideas formulated by Galileo. This was a deceptive simplification of a kind that is frequently accepted with great success. It could be easily combined with formulas that survived in the Aristotelian tradition. Hobbes, inspired by Galileo, tried to reduce all mental phenomena to various kinds of movements and produced word for word his own translation of Aristotle's *Rhetoric*. Malebranche, intoxicated by Cartesian wine, emphasized the role of contraction and extension with such insistence that he was declared the predecessor of James and Lange—a disclosure not very remarkable if we recall that Lange himself referred to Malebranche as a man who actually anticipated his theory. It remains a nonproductive theory, evidence of the futility of all attempts to reduce mental experience to artificial mechanical constructions" (G. S. Brett, 1928, p. 392).

Thus, Brett comes to essentially the same conclusion as Dumas both with respect to the direct connection that exists between Cartesian wine and the half-century intoxication of psychological thought—a remarkable paradox also with respect to what lies at the base of this connection: the grandiose all-encompassing idea of explaining everything that exists, including human passions, with the help of mechanical laws. Another aspect of the conclusions of Dumas is being developed by Høffding, among older authors, and Dunlap, among contemporary authors. Høffding explains mainly the theoretical aspect of the divergence between the old and the new theory; Dunlap, the factual conflict that results from that divergence.

Høffding indicates the inverse relation that exists between the quality of feeling and the force that accompanies its organic changes. With strong mental agitation, the qualitative distinctness of a feeling frequently falls away and is replaced by a general excitement. The state that at first was caused mainly by the nature of the stimulus, event, or idea now depends exclusively on the organic actions on the brain. It begins with an idea, but ends with a feeling. In many cases, self-observation makes it possible to distinguish two stages of the development of a feeling: the first, when the effect of cognitive elements are clearly apparent and there is a special quality of feeling, and the second, which corresponds to the organic effect on the brain. Moreover, there is no basis for sharply dividing, as some authors of the spiritualistic camp have done, these two stages, proposing that only the latter, but not the former, is connected with physiological states. Thus, Descartes and Malebranche described this circuit as an interaction of soul and body. In more recent times, in complete opposition to the spiritualistic view, it is maintained that in every emotional agitation only sensations are actually present corresponding to the action of organs on the brain (Høffding, 1904, p. 227).

Here Høffding has in mind the James–Lange theory, which he considers improbable on the basis of the fact that in some cases, a development of feeling over several stages can be observed. He also objects to the argument of Lange that emotional agitations may be elicited not only by ideas, but also through purely physical means. But, in fact, Høffding believes that it is not indifferent whether or not some ideas affect feeling. In the first case, feeling assumes a distinct character and direction, and in the second, it is only an indefinite process of stimulation. This difference has great significance for self-observation, although this is not obvious to a bystander.

Thus, Høffding himself proceeds from the position that is rather more opposite to the James–Lange hypothesis than similar to it. While this hypothesis reduces all feeling to perceptible sensations, Høffding establishes the reverse relation between them: "the stronger the element of feeling, the more the characteristically sensually perceiving or recognizing element fades away . . . In its most elementary forms, feeling is determined mainly by the strength of the stimulation and the degree to which it interferes with the course of organic life. This is especially so with stimuli that elicit instinctive movements. Their special quality is overshadowed by the sensual stimulation and the ardor which they arouse. But where the special quality of sensation can appear with such strength that it becomes something of an organ of feeling, then, like sensation, feeling assumes a certain form and character. What it loses in strength, it gains in wealth and variety of nuance as well as in independence from the direct struggle for existence. The same sum of energy that in the feeling of life is concentrated on its one question, 'to be or not to be,' on organic well-being, is diffused by qualitative feelings and dispersed by various currents. For this reason, winning or losing with respect to feeling due to qualitative differentiation depends on whether the energy of life of the feeling grows as a whole together with its qualitative nuancing" (Høffding, 1904, p. 196).

Emphasizing the mentally cognitive moment as playing the main role in the development of feeling from elementary to higher forms and noting the diminishing significance of the purely organic moment, Høffding became one of the people who from the very beginning took up a definite position as its opponent in the struggle around the new theory. We shall return in the future to these concepts of his. Also, Høffding cannot but establish that the James–Lange theory is a complete contrast to the spiritualistic view of Descartes and Malebranche, who described the circuit of passion as an interaction of soul and body. It is easy to see that Høffding has in mind the same divergence between the two teachings spoken of by Dumas, who understood the need to remove the theological view of the relation between soul and body in order to move from the formula of Malebranche to the formula of Lange. Thus, the second principle of the scientific worldview that divides the two theories is identified: the spiritualistic view of the interaction between soul and body in the mechanism of passions and the theological conception of the psychophysical problem of emotions. Together with the mechanistic principle identified earlier, it forms the whole methodological basis for the Cartesian teaching on the passions.

But just as correspondence of Cartesian teaching to the organic theory in the factual description of the psychophysical mechanism of emotional reaction inevitably flows from the general tendency toward a mechanistic explanation for passions, so a divergence also in the concrete factual description of the structure and course of the emotional process inevitably flows from the basic divergence of their views of the psychophysical nature of emotion. As we have already said, the aspect of the matter just described was especially emphasized recently by Dunlap, who sees in this most essential point the oppositeness of the teaching of Descartes to that of James and is inclined to accuse the new central theory of emotions of returning to the Cartesian point of view.

"James thought that H. Münsterberg[79] was finished with the old theory proposed by Descartes according to which afferent currents stimulate the intellectual processes and efferent currents elicit passions of the soul. Evidently James was mistaken" (Dunlap, 1928, p. 154). In Dunlap's opinion, the old theory is revived in the new teaching that contrasts the peripheral hypothesis of the origin of emotions with the central hypothesis. Dunlap says that this problem is the watershed that divides the Cartesian theory (which proposes that emotion arises due to a discharge process that begins in the brain, that is, due to an innervation sensation in the old sense) on the one hand, and the James–Lange theory (which considers emotion, like perception, as the result of peripheral sensations) on the other (ibid., pp. 159-160).

K. Dunlap belongs to those followers of the organic theory who try to transform it in such a way as to bring it into agreement with new facts. He proposes that with a correct interpretation of new facts, usually developed as an argument against this theory, we can see in them its confirmation rather than refutation. Dunlap admits that James never fully accepted his own theory and not only adhered to psychophysical parallelism, but retained much of spiritual feeling that he did not want to subject to crude bodily dependence. Like other followers of the organic theory, Dunlap properly stresses the factual divergence between the Cartesian and the peripheral theories, and what C. Spearman[80] said concerning the theory of McDougall, the second attempt to resurrect the James theory, is fully applicable to him. Spearman names not only the direct predecessors of this theory, Ward, James, and others, but also its direct progenitor, Malebranche (C. E. Spearman, 1928, p. 40).

Considering emotion as the dynamic background of all mental processes, Dunlap actually tries to preserve the James–Lange theory. The problem regarding visceral changes does not seem to him to be important for psychology and for this reason, he is inclined to consider the new theory as a further anatomical development of the James–Lange theory. Dunlap considers it his achievement that on the basis of this theory he predicted the sameness of visceral changes in certain emotional states, later confirmed in laboratory experiments. All emotions with which Cannon dealt are stimulating emotions and for this reason, they must of necessity be more similar to each other than different from each other (K. Dunlap, 1928, p. 159).

However that may be, the results of Dunlap's studies cannot be considered in resolving the problem that interests us. These results seem to us to be ambiguous. On the one hand, since he basically retains the position of the peripheral hypothesis, Dunlap himself is, in the expression of Brett, intoxicated by Cartesian wine, although he is not conscious of this; on the other hand, he indicates the essential point in which the hypothesis he is defending is vehemently opposed to the Cartesian teaching. We must again return to this point, to the problem of innervating sensations, in the course of our investigation, but now I would like only to note that this undoubtedly existing objective divergence between the hypothesis of James and the teaching of Descartes is the direct result of the theoretical divergence of the two theories, which Høffding pointed out. Actually, we cannot but see that the assumption Descartes made on the possibility of the origin of emotions through the centrifugal path depends directly on his whole conception of the psychophysical circuit of passion, a conception based on the spiritualistic view of the relation between the soul and the body.

For us, this is now enough of this conclusion since it finishes the series of problems this part of our investigation faced. We might have collected the whole series into one. It encompasses two basic problems of which each can be split into two—a factual part and a part that deals with theory. On the whole, these four problems that we derived from the study of sources exhaust the whole circle of problems connected with explaining the true relation between the Cartesian teaching and the psychological theory that is dying before our eyes. This is the series: the mechanistic principle for explaining emotions and the factual description of the psychophysical mechanism of emotional reactions; the spiritualistic conception of the psychophysiological nature of emotions and the problem of the centrifugal origin of emotion. The first two elements of our series are common to both teachings, the second two divide them.

We might have concluded this chapter of our investigation with this, the sole task of which is a concrete formulation of the problem of the ideational connection between Cartesian teaching and the James–Lange theory. We found everything that we were looking for. But before concluding this chapter, we thought it necessary to consider the opinions of the authors of this theory themselves on its spiritual ancestors.

As we have seen before, James did not recognize them at all. Although he does not say this directly anywhere, we might say that, first, he thought little about the philosophical essence of his hypothesis, and, second, he was inclined to contrast it as an empirical scientific conception with all metaphysical philosophical conceptions that existed previously. In this respect, he did not differentiate even between the opposite philosophical teachings on the passions. He rejected them equally and had no thought that they might have at least some kind of meaning for the fate of the hypothesis he was developing. He says that purely descriptive literature on the problem he was interested in, beginning with Descartes and to our time, is the most boring section of psychology. James contrasted his hypothesis with all the old theories taken together, in which he saw no guiding beginning, no basic point of view, and no logical generalizations. He charges the old literature with considering every emotion as some kind of eternal, immune, spiritual essence similar to species that biology at one time considered to be unchangeable.

If we add to this that James objected to the materialistic interpretation of his hypothesis and that, not without vacillation, he agreed to admit a basic difference in the psychological nature of fine emotions and lower emotions, we get almost everything James said about the methodological bases of his hypothesis. As we can see, all of this does not amount to very much. James' methodological carelessness is directly connected with the general trend to which he adhered in psychology, and which can be designated as radical empiricism. In his eyes, psychology represents nothing other than "a heap of raw factual material, an honest difference of opinion, a number of weak attempts at classification and empirical generalizations of a purely descriptive character . . . But not one law in the sense in which we use this word in the area of physical phenomena, not one thesis from which consequences could be deduced . . . In short, psychology is still not a science, it is something promising to become a science in the future" (W. James, 1902, pp. 412-413).

Thus James treated psychological investigation as the accumulation of a heap of raw factual material and empirical generalizations of a descriptive nature. In this respect, he evidently did not make an exception for his own theory of emotions. For this reason, he remained blind to its philosophical essence and ideational origin. Nowhere does he indicate that he knew about the correspondence between his hypothesis and the Cartesian hypothesis or any other philosophical teaching—neither in the sense of identity of principles in its basis nor in the sense of factual establishment of the emotional mechanism.

In this respect, Lange, an anatomist and physiologist, appeared to be more discerning than James, a philosopher by profession and in name. However, even

the discernment of Lange did not make it possible for him finally to recognize his dependence on the philosophical teaching of the past. But his attention did not miss the fact that these teachings contained a description of an emotional mechanism that corresponded to his own. He writes: "It is remarkable that 200 years ago it was possible to create a complete vasomotor theory on bodily manifestations of emotions. Malebranche did this. With the right-mindedness of a genius, he discovered the true connection between phenomena at a time when physiological knowledge was just being conceived, when there was no knowledge of vascular muscles nor of vascular nerves" (C. Lange, 1896, p. 86).

Citing the explanation of emotions in which Malebranche follows Descartes, Lange concludes: "Translated into the language of contemporary physiology, the theory of Malebranche means that every strong emotional impression increases vasomotor innervation, and in this way causes constriction of the arteries. If this constriction pertains to the arteries of the brain, then the brain gets somewhat little blood and the rest of the body somewhat much; anemia of the brain leads to general paralytic phenomena. But if, on the contrary, as happens in other kinds of emotion, the arteries of the head remain free while all the other arteries of the body constrict, then the head and the face are filled with blood. While physiology knew nothing about the active change in the caliber form of the vessels, the theory of Malebranche seemed to be an unfounded hypothesis and for this reason, was not accorded any attention. Regardless of the unavoidable incompleteness and errors in its details, it is, however, extremely remarkable in the author's brilliant view of the disturbances of blood circulation as a primary phenomenon on which all other physical manifestations that accompany emotion depend" (ibid., pp. 87-88).

In contrast to James, C. G. Lange clearly saw that a complete vasomotor theory of bodily manifestations of emotions was devised 200 years before his time. But he was only half seeing. He turned his attention to the correspondence of his theory and the theory of Malebranche from their factual aspect. The theoretical aspect of the matter remained dark and unclear for him. In one of the first chapters, we already cited Lange's remark about Spinoza; Lange believed that Spinoza was closer than all others to the view he developed, since Spinoza not only did not consider bodily manifestations of emotions as dependent on mental movements, but placed them alongside or almost in the foreground. Lange, like James, did not even suspect his actual kinship to Cartesian teaching on passions and his complete oppositeness to the teaching of Spinoza. In the graphic expression of Brett, as in the case of Malebranche, intoxication with Cartesian wine was working here.

12

Let us begin with a thorough consideration of a more specific problem: of the same thing that was clear to Lange, regardless of his intoxication with the Cartesian wine and the triumph of the mechanistic worldview in his own theory, of the same thing that more than anything else struck the eye of the investigators and critics and led to the establishment of a relation between the mechanistic-spiritualistic theory and the theory of passions of the seventeenth century and its later embodiment in the nineteenth century. Identity of facts always strikes the eye sooner than identity of theories. Behind the dissimilar physiological languages of the seventeenth and nineteenth centuries, it was comparatively easy to see and distinguish the mechanism of emotional reaction that was basically identical. We have the support of a number of studies that, with surprising agreement, bring us to one and the

same conclusion. Unfortunately, we will find neither similar support nor similar unanimity of opinions in resolving the problem of the theoretical correspondence of the two conceptions. Here we shall have to pave our own road. For this reason, we shall arm ourselves at the outset with a clear understanding of the factual aspect of the matter.

G. Sergi, to whom we are indebted for the most solid and perhaps most definitive study of this problem, is appropriately indignant with James and Lange for not knowing or ignoring the true founder of the physiological theory of emotions—Descartes. While in his studies of the reflex, C. Sherrington recalls in detail the premonitions of Descartes, James does not cite him at all and Lange openly ignores him. He cites Spinoza because being oblivious of him would scandalize the readers. In Descartes, however, he finds the most antiphysiological, most intellectualistic sentence of the whole *Treatise on Emotions . . .*, which contains the roots of his teaching.[81]

In this respect, Lange was openly, clearly, and obviously wrong. Even Descartes' general definition of passions leaves no doubt that his teaching to a much greater degree than that of Spinoza must be considered as coming closest to the vasomotor theory. Descartes refers passions to the group of mental processes that he unites in his classification under the title of sensing or perceptions, and which are distinguished primarily by their passive nature. Together with perceptions pertaining only to the body—whether it be to our own body or another's—such as sensations, feelings (color, tone), bodily affects such as satisfaction or pain, and bodily urges such as hunger or thirst, as well as with perceptions that refer only to the spirit like involuntary perceptions of our thinking or desiring, Descartes also distinguishes perceptions of a third type. These are characterized primarily by the fact that they belong simultaneously to the spirit and to the body; with these perceptions, as a result of the influence and cooperation of the body, the soul itself suffers.

Descartes terms this type of passive psychophysical processes passions. Consequently, for him, passion is a direct expression of the dual spirit-body human nature. It pertains to man just as movement pertains to the body. Passion for Descartes is distinguished by duality, by its spirit-body nature. With the exception of passions, Descartes finds no other factual data that would make it possible for us to recognize the common life of soul and body. In this respect, passions are a third basic phenomenon of human nature together with thinking and movement. The mind and the will are possible only in spiritual nature, movement, only in the bodily, and passions, only in the human, uniting in itself spirit and body. The dual nature of man is the only real basis of passions, and these in turn are the only basis for comprehending human nature.

If we recall that for Descartes, in all of nature there exists only one body that is united with a spirit, specifically the human body, that all other bodies are without spirit and soul, that all of them, even the bodies of animals, are simply machines, then it becomes clear that human passions are for Descartes not only the only manifestations of the joint life of spirit and body in human nature, but also an altogether unique object—the only phenomenon in all of the universe, in all that actually exists, in which two substances are united that are not united anywhere else. It is understandable that because of this, the teaching on passions occupies a completely exceptional place in Descartes' system: first, passions are the only phenomenon in which we can find the dual nature in all its fullness, the joint life of the spirit and the body; second, in the whole system, this teaching is the only point of intersection of the spiritualistic teaching of Descartes on the spirit and on his mechanistic teaching on bodies. Also understandable is the fact that, owing to such

a formulation of the problem, human passions in the system of Descartes appear not only as something completely incomparable to all other manifestations of human life, but also as something that has no similarity to anything else, something absolutely unique in all the universe.

In accordance with this understanding, Descartes defines passions as perceptions, as sensations, or as movements of the soul that are its property and are evoked by the activity of vital spirits and that sustain and reinforce it. If we recall that for Descartes, vital spirits are not mediators between matter and spirit, but are, according to his own definition, only bodies, finer than a particle of blood, most mobile and hottest, produced in the heart, a kind of distillation, then for us, the closeness of this classical definition of passions to the formulas of Lange and James becomes clear at once. Descartes compares vital spirits to a light breeze, a pure and living flame, continuously rising in a large mass from the heart to the brain and from there entering the muscles through the nerves and transmitting movement to all the members. These most mobile and lightest particles of blood, always material, move according to mechanical laws, producing in the organs sensations and movements and directing authentic vital functions. In the physiology of Descartes, they are a general and quite vague concept in which blood circulation and transmission of nervous excitation are still undifferentiated. But, in any case, there is no doubt that as vital spirits, Descartes understood a very fine bodily mechanism brought into action by warmth of the heart and moving according to pure laws of mechanics, which are identical to laws of nature, a mechanism that together with the organization of our organs determines all actions and functions common to man and animals just as the movement of clocks is produced only by the power of their springs and the shape of their wheels.

We shall not try to present in detail the physiological conception of Descartes. It is actually of no more than historical interest. For us, more important is the general structure, the general idea of the structure of this spirit–body mechanism on which Descartes bases his explanation of human passions. According to the valid observation of Sergi, the physiological representations of Descartes must be replaced by new representations, and his vital spirits must give way to motor nerves. The very small and only nerve center of Descartes, the pineal gland, must be replaced by an immeasurably great hierarchy of many centers in order for us to see that as a result of such translation into contemporary physiological language, the teaching of Descartes remains the doctrine by which we live even now. In order to be convinced of this, it is enough to remember that the basic spirit of all of Lange's argumentation consists in exposing the insupportability of the hypothesis on the mental nature of emotions, the uselessness of this hypothesis, and in the proof of the fact that emotions can arise in a purely physical way just from the mechanics of disturbances of our vasomotor apparatus alone.

Lange's assertion that we owe to the vasomotor system the whole emotional part of our mental life, our joys and sorrows, our happy and unhappy days, is essentially a translation into contemporary psychological language of the Descartes formulas which state that passions are nothing other than perceptions of the soul that are elicited, sustained, and reinforced by the activity of vital spirits, that is, the lightest and most mobile particles of the blood. As Sergi notes, the same wholly pertains also to another point of this teaching. Descartes differentiates between passions and two other kinds of perceptions since we refer passions not to external objects nor to our body, but exclusively only to our soul.

This position agrees completely with the idea that is established in contemporary psychology and which has the James–Lange theory as its source. Lange cites Bard's thesis that affective phenomena are purely subjective and cannot in any way

be used for realizing external reality, that they always are experienced as an actual state of our "I," but not as a property of certain objects.

From 1650 to 1923, when these words were written, Sergi notes, the "I" and purely subjective phenomena have replaced the soul. In other respects, the difference between the old and the new teachings is more significant. Here it has a purely verbal character and Descartes' idea remains our idea.

There are two more points in this general definition of passions that deserve our attention: the passive perceptive character of emotions and the distinction and uniqueness of the movement of vital spirits that arouses emotion in the soul.

There can be scarcely any doubt that Lange and James reduce emotion to sensation or perception of organic changes. If we consider it from a purely phenomenological aspect, this is the weakest aspect of the whole theory. Actually, according to this theory, it is difficult to understand how feeling can be identified with bodily sensations, with sensations of shivering, accelerated heart rate, or shedding tears; in these cases, we have before us completely distinct or more vague sensations as such. In what secret way the aggregate of sensations, remaining sensations the whole time according to the strict sense of the theory, is converted into feeling, is absolutely unknown and scarcely allows a rational and understandable explanation from the phenomenal point of view. Quite recently, E. Claparède indicated this difficulty: "If emotion is only consciousness of peripheral changes in the organism, why is it perceived as emotion and not as an organic sensation? If I am frightened, why do I experience fright instead of simply being conscious of certain organic impressions: shivering, heart rate, etc.? I do not recall that anyone has attempted to respond to this objection." "However," according to Claparède, "such a response presents no great difficulties. Emotion is nothing other than being conscious of the form or structure of these varied organic impressions. In other words, emotion is consciousness of a global attitude of the organism" (E. Claparède. 1928, p. 28). This kind of general and vague perception of a whole representing the most primitive form of perception, Claparède terms syncretic perception. But specifically this response discloses the whole insupportability of the perceptive theory of emotions considered from the phenomenal aspect. The whole matter consists of the fact that, according to the James–Lange theory, emotion is, from the psychological point of view, a completely structureless formation consisting of an aggregate of sensations, mentally extremely various, made up according to laws of physiological mechanics.

We are inclined to maintain that the James–Lange theory is a theoretically structureless theory of emotions. Actually, how can fear arise as a unique, mental messenger structure, as an integral experience, from a sensation of stopping the breath, beating of the heart, cold sweat, raising of the hair, shivering, dryness of the mouth, yawning, and other bodily manifestations which James, following Darwin, lists as examples of the best descriptions of emotions? Of course, the very sense of this theory consists of the fact that fear, anger, and other emotions as whole, indivisible structures are a simple illusion, that, if we subtract elements of bodily sensations step by step from these structures, the structures will cease existing. Thus, constructing emotions from separate atoms, from elements of bodily sensations, is typical for this theory and makes it like the anti-structural atomistic theories that treated perceptions as sums of sensations. This theory could be called structural only if it was based on an admission of phenomenal and objective preeminence of fear and anger as such and if it found its place and meaning for separate organic sensations only within the composition of the whole experience. It recognizes phenomenal and objective reality and primariness only of elements and tries to construct from them a completely structureless whole that arises actually

by a syncretic path, that is, a path of arbitrary combination of everything with everything else.

Of course, James considered most emotional reactions as random, neither biological nor especially psychologically united by an internal, essential connection. He said that in such a complex organism as the nervous system is, there must exist many random reactions. Thus, Claparède's appeal to an all-powerful uniting principle as widespread in contemporary psychology as the structural principle is fatal for a theory that he is inclined to defend if only partially.

The equals sign placed between emotions and perceptions in turn equates the James–Lange theory with Cartesian teaching. Since this point is of central significance for the whole James–Lange theory, the similarity of the two teachings cannot be a simple accident: of course, scientific theories, in contrast to emotion in the representation of James, cannot arise purely by chance, as chaotic uniting of alien elements; and if the two teachings coincide in any point central to both, that must be evidence of structural similarity if not of structural identity of the two. James insists that there are no special centers in which emotional processes might be localized, that they occur in general motor and sensory centers of the cortex, and that, consequently, in principle, they are identical with ordinary sensory processes that elicit sensations or perceptions. Dunlap, following James, insists on the possibility of explaining emotions on the basis of the mechanism that is the basis for ordinary perception. Directly dependent on this is the feature of this theory to which McDougall called attention, reproaching the creators of the theory with the fact that they consider only the sensory aspect of emotion and pay no attention to its impulsive character. And for Descartes, this point has a central significance. For him, emotions are the essence of perception or sensation, that is, states passive in nature, and he calls them passions for this reason.

Descartes teaches that passions arise in the soul in the same way as the objects of external organs of feelings and are sensed by it in exactly the same way. As long as agitation of the heart, blood, and vital spirits does not stop, passions are represented in our thinking in the same way as sensed objects acting on organs of our external feelings. Because of this, Sergi notes: we will find nothing more definite, nothing more clear in unintentional imitators of Descartes. He laid down the bases of the visceral theory of emotions with full consciousness of what he was doing.

If Descartes, thus, is the true founder of the visceral theory since he reduced emotion to sensation of visceral changes, then he deserves equal recognition as the real founder of the theory also from the point of view of understanding the visceral aspect itself of emotion. Sergi calls attention to the fact that Descartes ascribes the appearance, maintenance, and reinforcement of emotion to the special movement of vital spirits. The organic theory of passions is hidden behind these puzzling words. The uniqueness of emotion obviously has as its source the uniqueness of corresponding vital processes. We are able to perceive objects owing to a certain movement of spirits. In exactly the same way, we owe the genesis of recollection to a special movement of spirits. Of what does the uniqueness of this movement of spirits that determines the genesis of passions consist? For Descartes, uniqueness consists of the fact that this movement has a visceral origin and visceral dependence.

The uniqueness of Descartes' method of studying passions consists, as is known, in the fact that from the beginning he tries to consider the mechanism of passions as it would have acted in a robot or in a soulless machine. Passions, it is understood, would be reduced exclusively to movements characteristic for them, would not contain anything mental, and would have to be called by some other name. Only after explaining the automatic, emotional mechanism does Descartes join a soul capable of experiencing passions to the imagined soulless robot.

This method of investigation is something much more important for the whole conception than the simply methodical device of analysis and segmentation of the complex problem. It has methodological and theoretical significance. For this reason, it is of primary significance for evaluating the Cartesian teaching on passions as a whole. But what is most instructive for our purposes, what we learn from the consideration of the unique analysis that separates the dual nature of passions into an automatic mechanism and into mental perceptions of the functions of this mechanism is the following: we see for ourselves how intimately and inseparably the theoretical aspect of the teaching is connected with its factual physical aspect. Physiological analysis of the passions of a soulless robot thus acquires a deeper theoretical meaning.

Fischer says: "Such an explanation of passions of a soul-body nature of man is most typical of the teaching of Descartes both in the assumption he makes and in his theoretical tendency. With the help of vital spirits and organs of the soul, of which the cerebral gland is one, the philosopher tries to establish a purely mechanical base for the genesis of passions. This is the center of the burden and the innovation of his endeavor" (K. Fischer, 1906, Vol. 1, p. 381).

In order to study this point of the problem, the point central to the whole teaching, we must briefly recall the more important of Descartes' psychophysical assumptions. He considers the human body as a complex machine, parts of which are found in a complex interaction with each other and for this reason, form a single and indivisible whole in a certain sense. For this reason, for Descartes, the organism is nothing other than a segmented machine, a special kind of complex mechanism. In this complex machine, there is one part that has a completely exceptional significance. It is the habitat of the soul, that is, that organ which is preeminently connected with the soul and through which the soul communicates with the whole organism. Descartes believes the organ of the soul to be the cerebral gland located in the middle of the central organs of nerves, which is the place in which the actual interaction between the soul and the body occurs. Here, the movements of the vital spirits are converted into the soul's sensations and perceptions. The reverse conversion of the movements of the spirit into bodily movements of the gland occurs here also, and the movements spread from here to all organs. The vital spirits are factors of sensation and movement mediating communication between the soul and the body.

Descartes explains the natural mechanical genesis of passions with the help of this psychophysiological mechanism localized in the cerebral gland, on the strength of its central position and uniqueness as an unpaired part of the brain. Imagine that a robot perceives some kind of frightening figure and the vital spirits activate the gland; in turn, it determines the direction of their reverse flow, which results in the well-known picture of movements characteristic of fright and flight. Simultaneously with the movements, the flow of vital spirits causes a series of movements in the internal organs which in the aggregate characterize a robot in a state of being threatened and fleeing. Such is the passion of a machine—such is the visceral state.

For each passion, there is a corresponding special and definite picture of changes in internal organs—in the heart, stomach, lungs, etc. Sergi summarizes this position of Descartes in the following words: such is passion—such is the visceral formula—such is the formula of the blood—such is the tendency of the vital spirits; or, translated into our language: such is emotion—such is the formula of the blood—such is the cortical formula.

Descartes, however, was not satisfied with such a significant conclusion. Before uniting a soul to his machine and considering passions from the psychological as-

pect, he had to develop still another stage in his physiological conception. He said: such is passion, such is the tendency of the spirits. He should have said: such is the tendency of spirits, such is passion. Descartes actually took this further and decisive step. The dependence between a certain kind of passion and a certain organic state is reversible. A complete circuit of passion seems possible. In an example considered earlier, the cerebral gland was activated from outside; an external object acted on the spirits when they exited from the gland. Now when the spirits enter the gland, not when they leave it, they push it now here now there. The cause of its movement is no longer the object that acts on the spirits, but blood which determines these movements and—even earlier—the general state of the organism. Perceptions of danger created an organic state of fright in the machine, and the spirits resulting from this state maintain and reinforce it. If we translate this into language of more contemporary physiology and replace spirits and the gland with corresponding terms, we obtain the following picture: the image of a threatening object on the retina calls forth reflexes of flight and certain visceral reflexes. This kind of Cartesian idea, Sergi concludes, has lost its obsolete external expression. In the presence of emotion, through visceral sensory paths, a certain visceral state activates reflexes which prolong and sustain this state.

Yet this is how the mechanism of passion considered exclusively from the physical aspect appears. It is still passion played out in a completely soulless robot according to purely mechanical laws. Following Descartes, we must consider what will become of the activity of this mechanism if a soul is united with it capable of experiencing sensations of visceral changes and emotions. Here, at the decisive point of Cartesian analysis, we are confronted by an unheard of thing, unexpected and capable of confusing any teacher ready to reverse all teaching. It seems that, having considered the physical aspect of passion, we exhausted by this almost all of its content. Adding the soul does not introduce anything substantially new, as might have been expected, into the circuit of passions, into the activity of the emotional mechanism.

It is surprising, but the investigator must ascertain that the difference between the passions of the machine without a soul and the passions of the soul itself is not always adequately clear in Descartes. Descartes, it seems, remains true to his initial intention, which he states in the foreword to the treatise: "My intention is to treat passions not like the orator and not like the moral philosopher, but like the physicist" (Descartes, 1914, p. XIV). This physicalistic, mechanical approach to passions obviously constituted from the very beginning the dominant idea of Descartes, which he maintained over almost the whole course of his study. Specifically this idea compelled him to write about his subject as if no one before him had touched it, and to contrast his study with the teachings of the ancients on the passions. Human passions were considered earlier from the psychological aspect. Their bodily, mechanical nature remained unrecognized. Descartes concentrated all attention specifically on this aspect of the problem, but in a strange way, it almost entirely exhausted the whole problem.

If we analyze the example Descartes gives of how passions are aroused in the soul, we will see that in the picture of fright and flight that we considered above, little changes. In speaking of the equation between emotion and perception, we have already virtually touched upon what is new that appears in this case. The new consists only in that the soul senses and perceives the changes that are occurring in the body. In this case, vital spirits activating the cerebral gland, being an organ of the soul, activate not only certain motor and visceral changes, of which we spoke earlier, but also certain sensations of the soul. His own position that passions arise in the soul in the same way as objects are perceived by external feelings and are

recognized by the soul through exactly the same process remains basic for Descartes.

In analyzing his own example, Descartes reaches the conclusion that vital spirits in a situation of fear activate a certain movement in the gland that by its nature is assigned to move the soul to feeling this passion. Something similar happens with all other passions caused by movement of vital spirits which alone are capable of eliciting bodily and mental aspects of emotion. The tendency of the spirits flowing toward the nerves of the heart is sufficient to communicate movement to the gland through which fear arises in the soul.

Actually, it would be hard to expect a greater correspondence with the visceral theory of emotions. Descartes sees the source of psychical passion in the same movement of the vital spirits that elicit certain changes in the internal organs for each passion. Thus, we return to the original point of the whole teaching—to defining passions as sensations or perceptions of the soul elicited by the activity of vital spirits that simultaneously elicit a series of changes of a visceral character represented by the soul exactly the same way it represents objects perceived through external organs of feeling. Passion appears to be nothing other than perception of visceral changes.

Thus, if we find a striking correspondence between the theoretical positions of the Cartesian theory and the peripheral theory of emotions, we must expect that even the difficulties which confronted the latter, those irreconcilable contradictions in which it is entangled, those incongruities in it carried to the absurd, which dominate it from its very beginning, will be extremely close also to the teaching of Descartes. And this actually appears to be so. Dumas correctly showed that Lange's theory, with all its strong and weak aspects, is indebted to Cartesian teaching. Even in his mistakes, in the words of Dumas, Lange resembles the Cartesians. Dumas connects the anti-evolutionist tendency of this theory with the aversion that every follower of the mechanistic worldview, including Descartes, naturally feels toward historical explanations.

We shall briefly consider explanations of the errors, contradictions, and incongruities in which both theories are involved in a remarkably similar way. First, we will refer to the factual sterility of both theories with respect to any real elucidation and description of the passions using this method of their investigation, which we can obviously describe as mainly mechanistic. Actually both theories exhibit completely identical and total impotence if it is necessary to bring forward concrete scientific knowledge of human passions and enrich it from the factual aspect.

C. G. Lange, as we know, analyzed seven basic emotions. However, he assumed that this was only a brilliant beginning which must be followed by scientific investigation of the whole enormous variety of emotional reactions. It seemed that, taking step after step along the path he had marked, with the key he provided, we would be able to disclose the whole area of human feelings. The possibilities of the new theory seemed to Lange to be boundless and inexhaustible. His argument is that the old theory, completely arbitrarily classifying emotions, violates facts, establishing certain forms where there is an infinite number of imperceptible transitions. Using the old hypothesis, we frequently find it difficult to determine under which ordinary rubric to place a given momentary attitude.

We frequently are satisfied with completely indefinite statements that some emotion is experienced in the soul without being able to classify what we feel as any of the emotions for which we have a name. Lange hoped to lead investigation out of this sterile state, placing before it the real scientific task for this series of phenomena which consists in a precise determination of emotional reactions of the vasomotor system to various kinds of influences. He understood that achieving this

goal is still far in the future and saw his problem only in indicating where its solution is to be found.

More than a half century has passed since that time. Investigators of human emotions looked to solve the problem mainly in the direction indicated by Lange. The result of the search was provided in experiments of Sherrington and Cannon and in clinical observations of Wilson, Dana, and Head. Cannon formulated the result thus: it may be thought that bodily conditions which can make it possible to distinguish some emotions from others, as some psychologists proposed, are not suitable for this purpose, that these conditions must be found somewhere, but not in the internal organs (W. B. Cannon, 1927).

The variety of bodily changes with various emotions seemed to Lange to be truly enormous. He assumed that a number of different combinations represented by various emotions would be derived from this. "Since we are dealing with three different muscle systems of which each can probably be excited in various ways, and sometimes only one or two of these can represent innervation disturbances, evidently we can count 127 different combinations for physical expression of emotion if we take into consideration even just innervation disturbances alone" (C. Lange, 1896, p. 46).

As we have seen, expectations were not fated to be realized. Continuous 60-year efforts directed toward finding various combinations not only did not disclose the 127 whose existence Lange assumed, but showed that for the basic lower emotions he described, there was evidently a uniform, standard, stereotypic formula of bodily emotional manifestations. Emotions most opposite from the psychological aspect have strikingly similar bodily manifestations. As recent investigators of the old theory, for example, Dunlap, have said, it seems that this might have been expected from the very beginning. Uniformity of organic changes could have been predicted on the basis of the James–Lange theory itself with the help of purely analytical scrutiny. The difference between emotions would have to be less significant than the similarity. According to the new variant of the organic theory, emotion does not at all display the infinite variety of form and transitions of which the creators of the theory spoke. It seems to be no more and no less than a simple, dynamic background, a uniform background, against which mental processes are played out.

Precisely the same fate overtook the James theory: the same great hopes and the same complete sterility. James was not modest in his expectations. He assumed that he had caught the firebird with the golden feathers or, in the language of the English fairy tale, the goose that laid the golden egg. None of his predecessors had grasped what was most important: the fruitful guiding beginning, the basic point of view, the logical generalization. The new theory yielded this in one formula. The recipe for the appearance of emotion was the same in all cases and simple to the same degree. It seemed that the factual discoveries in the area of emotions had to follow one after the other, and of what was found, had to make the key to an ultimately fruitful guiding beginning. But the productive beginning developed to be as unproductive as the biblical fig tree.

James did not ascribe great significance to establishing the difference between emotions and their classification. In his eyes, this was a simple auxiliary means that must become clear in itself once the common principle was discovered. He even laughed over the respectable compilation of catalogues of various features of emotions, their degrees, and the actions they elicited: all of this was necessary before we had at hand the common recipe for all emotions. James, let us repeat, was not modest in his expectations. He assumed that in the teaching on emotions, his theory would play a role like the role played by the idea of evolution in biology since both

considered difference in species as a product of more general principles. For him, his own hypothesis seemed to be of Darwinian scale. For this reason, it is natural that concrete analysis of emotions and factual description of their features could not interest him. This was a matter for the future. The main thing was the principle. "If we already have the goose that lays the golden eggs, then describing separately each egg that is laid is a matter of secondary importance" (W. James, 1902, p. 303).

About the gold-bearing principle of James, we might repeat literally what we have said about expectations connected with the theory of Lange. Continuous 60-year efforts led to nothing. To describe each separately laid egg was an impossible task. We would find it difficult to name another hypothesis equally fruitless factually which was sustained in science for so many years. Without speaking of the higher, complex, fine specifically human affects, or even in recognizing such more obvious forms of emotion as anger, fear, love, envy, joy, sorrow, shame, and pride (if only to present the list compiled by James himself), we would not have taken even a step forward with the help of the new gold-bearing principle. Thus far, everything turns on consideration of the principle itself. The path from the goose that lays the golden eggs to describing each egg laid was impossible. Actually, there were no eggs. Thus far, the merits and advantages of this most unusual goose are described by various methods.

James promised that with the help of his hypothesis, we would be able to rise above the level of concrete descriptions in analyzing emotions. He assumed that the point of view he developed would explain the remarkable variety of emotions and that it would make it possible to find a way out of the area of simple description and classification. Instead of describing external traits, scientific investigation would be able to take on explaining the causes of emotions. He said: "from a superficial analysis of emotions, we will thus pass on to a more profound study, to a study of a higher order. Classification and description are the lower steps in the development of science. As soon as the question of the causal connections in a given scientific area of investigation appears on the stage, classification and description move to a secondary plane and retain their significance only to the extent that they help us in the study of the causal connection" (ibid., p. 314).

Probably now there is not one follower of the theory who would defend the idea that over the course of the 60 years since the day this theory was published, we advanced at all significantly in the analysis of causal connections in the sphere of emotional life, that we actually passed on to investigation of a higher order and were able to explain even a little of the infinite variety of emotions, discovering the nature of which James expected,—more briefly, the proverbial goose had not laid even one golden egg. Worse still, even in the area of investigation of a lower order, in the area, so scorned by James, of concrete description and explanation of special features and specific action of each emotion, in the area of classification and nomenclature, there was no possibility of movement in the development of scientific knowledge with the help of the new principle.

This cannot but have a common cause. We think that it should be sought in the theoretical lack of structure and the inadequacy of the gold-bearing principle. Actually, from the very beginning, it proposes as an explanation something so foreign with respect to the mental nature of emotions, something that lies on a completely different methodological plane and, consequently, something incapable under any circumstances of serving as an answer to the question of the causal connection of emotional processes. The principle developed by Lange and James is not capable in its essence of discovering any kind of sensible connection between the mental nature of a given emotion and the organic sensations that it elicits. The basic spirit of the teaching consists of acknowledging the complete and basic mean-

inglessness of human emotions, the basic impossibility not only of capturing and understanding the structure corresponding to its experience, its functional connection with all the rest of the life of consciousness, its mental nature, but even of formulating the question of what a given emotion represents as a certain mental state.

Here we have touched on the most essential basic question in all the criticism of the James–Lange theory, and thus, also of Cartesian teaching, the question that thus far has been left without attention. This is also the fundamental question of our investigation and the fundamental question in all of the teaching of Spinoza on the passions. For this reason, we must take time to explain it.

James said: "If we do not experience bodily excitation at the sight of a fair or generous deed, then our mental state can scarcely be termed an emotion. De facto here we have simply an intellectual perception of a phenomenon that we classify as the fair and the generous, etc. Similar states involving a simple judgment should be referred to cognitive rather than to emotional, mental processes" (ibid., p. 317). It would be difficult to present in a clearer form the idea of the complete meaninglessness of all feeling. Of course, according to the theory of James, peripheral bodily excitation perceived by our consciousness does constitute the essence of emotion. Without it, feeling stops being feeling and is converted into a simple judgment. One might ask: what does it mean to maintain that since a feeling of fairness and generosity is specifically a feeling and not a simple judgment, it is apparently nothing other than a sensation of peripheral bodily excitation of a certain type and in a certain combination of elements if not to make a feeling of fairness and generosity essentially meaningless? In a feeling of moral fairness, what can explain for us the fact that it, in the words of James, is reflected in the sound of the voice or in the expression of the eyes?

James promised that his hypothesis would bring us to an investigation of a higher order. From the old point of view, the only possible problems in the analysis of emotions were classification (to what family or species does a given emotion belong) or description (what kind of external manifestations characterize a given emotion). Now, however, we are concerned with explaining the causes of emotions: specifically what kind of modification does one object or another elicit in us and why does it elicit specifically those and not other modifications in us. Leaving aside the finer emotions such as fairness and generosity, we will consider those lower forms of which James is speaking all the time. We will ask ourselves what can be the psychological value of a causal explanation which we construct from James' own words that corresponds to the completely precise meaning of his example: "Why do we experience a feeling of horror at the thought of the death of a being dear to us?"—"Because we sense a feeling connected with an increased heart rate, shortness of breath, trembling of the lips, weakness of the extremities, goose bumps, and with the excitation of our internal organs."

No one has yet gone into the matter of how this leads to the philosophical nature of the renowned formula of James, which presents a classical prototype of every causal explanation of human feelings. Otherwise its enormous incongruity would have been noted long ago. Actually, what does the following position mean from the point of view of a causal explanation: we cry because we are sad; we fight because we become furious; we tremble because we experience fright? Is it not completely clear that from the point of view of a real explanation of psychological facts, this formula has the same cognitive value as the statement: Socrates sat in prison because the muscles of his legs contracted and extended and thus brought him there?

E. Spranger,[82] an eminent representative of contemporary descriptive psychology, cites this famous Platonic example of the enormous incongruity of the causal explanation in order to disclose the untenability of the so-called natural-science, causal, explanatory psychology. Like the whole psychological tendency that he represents, he proceeds from the point that explanatory psychology itself, better than any of its opponents, showed the impossibility of causal explanations in psychological investigation since it forgot the basic position: psychology must be developed with a psychological method.

No matter how obvious the complete untenability of the purely idealistic conclusion made by descriptive psychology on the basis of more fundamental fallacies of explanatory psychological analysis is, it cannot minimize in our eyes the significance and correctness of the basic critical objection of Spranger addressed to explanatory psychology of the type presented in the James theory, an objection relative to the logical impossibility of causal explanations, examples of which are presented above.

We shall return again to the problem of explanatory and descriptive psychology of feelings—the problem, central in a certain sense, to all of our investigation—and we shall consider what kind of basic solution to this problem we find in the teaching of Spinoza on the passions. But even now we cannot but reach certain substantial conclusions. We cannot but agree with the fact that a causal explanation of psychological facts, as it was usually developed in psychology, as it is represented in the James theory, as it flows directly from the very sense of Cartesian teaching on the passions, can be brought to nothing other than to the admission of the complete untenability and impossibility of such explanatory psychology. If a causal explanation different from the explanation given above is impossible in psychology, then explanatory psychology as a science is itself impossible.

W. Dilthey,[83] one of the first to recognize the enormous absurdity of this kind of explanatory psychology and one of the first to take a stand on the path of purely idealistic psychology as a science of self-originated phenomena, correctly said: "By this, however, the bankruptcy of independent explanatory psychology is proclaimed. Its concerns pass into the hands of physiology" (1924, p. 34). But to the same extent that Dilthey, Spranger, and other partisans of descriptive teleological psychology are undoubtedly right in criticizing explanatory psychology of this kind as the psychology of emotions of James, they expose by not an iota less the whole shakiness and untenability of the idea they are defending of a purely descriptive psychology devoid of any causal explanations.

They show not only with full clarity, but even with some ideational cynicism and shamelessness, that descriptive psychology lives only through the failures of explanatory psychology. Teleological consideration of psychological facts arises as a logical conclusion from errors of causal analysis. Idealistic psychology is indispensable primarily because materialistic psychology was not equal to the tasks confronting it, went bankrupt, and yielded its concerns to physiology. Thus, the partisans of descriptive psychology, seemingly standing at a diametrically opposite point of view and justifiably ridiculing the inconsistencies of causal analysis of the essentially explanatory Cartesian psychology, themselves not only have not moved very far from those theoretical assumptions that inevitably lead to these absurdities, but wholly and completely share and adopt the same assumptions.

Essentially, in its explanatory assumptions, descriptive psychology is much more similar to the old explanatory psychology than is apparent at first glance and more than Dilthey and Spranger would probably have wanted. Moreover, their psychology is wholly based on the same theoretical positions as is the causal psychology they rejected. They are not in the least opponents, but rather, twins. Of course, descrip-

tive psychology also proceeds from the idea that in psychology, the only possible explanation is an explanation that sees the cause for Socrates sitting in prison to be the muscular contractions of his legs. True, representatives of descriptive psychology even admit to a certain degree the normality of this kind of explanation for a more limited area of elementary mental phenomena. They only require a natural amplification of this kind of explanation, specifically a teleological, descriptive analysis of higher manifestations of the human spirit. They not only do not reject the right to existence of this kind of explanatory psychology, but even admit that it is necessary together with descriptive psychology. "Nature we explain; mental life we understand" (W. Dilthey, 1924, p. 8)—this position of Dilthey, basic for all cognitive psychology, determines the necessary delimitation of the spheres of influence and the area of mutual cooperation of causal and teleological, explanatory and descriptive psychology.[84]

Mental life has a natural aspect and is subject to natural-science study and causal analysis. This is the task of explanatory or physiological psychology. But not one explanatory psychology that exists at present can form the basis for sciences of the spirit. It is not in a state to give either a sufficient explanation or even a description of complex higher mental processes specific to man. For this reason, together with it, there must be cognitive, structural, teleological, and descriptive psychology. Explanatory psychology as a system cannot now nor in the future lead to an objective knowledge of the connections of mental phenomena. Specifically the absence of any intelligent, understood connection between feeling, reduced to sensing goose bumps and extended nostrils, and all the rest of mental life comprises the most distinctive trait of the explanatory psychology of emotions developed by James, as we have seen. For this reason, recognizing the connections of these phenomena must be the subject of a special science. But this special science not only implies eliminating the old explanatory psychology, but even, according to Dilthey's idea, providing for it the possibility of further productive development. Thus, a close cooperation on the basis of division of labor and sphere of knowledge between explanatory and descriptive psychology is established.

The internal relationship of the two seemingly opposite conceptions is far from accidental. Of necessity, the one infers the other. The one cannot exist without the other. Only together do they form a complete whole. Who said "a" must say "b" as well. Who admits only the one possibility of an anecdotal, causal explanation of psychology inevitably must come to rejecting causal psychology and to creating teleological psychology. The one and the other grow from the same root: from the philosophy of Descartes. It is constructed with complete symmetry, with complete ideational equilibrium of mechanistic and spiritualistic principles. Nowhere is this duality disclosed as distinctly as in the teaching on the passions considered as the only manifestation of the joint life of the spirit and the body, consequently, as phenomena that are subject to explanation from the point of view of laws of mechanics and principles of teleology. The body is nothing other than a complex machine, and since passions reflect the bodily nature of man, they must be explained according to laws of mechanics. The soul, however, is a divine thing and for this reason, its life must be treated teleologically: to Caesar what is Caesar's, and to God what is God's.

Thus, the idea of explanatory and descriptive psychology is already contained a priori in the teachings of Descartes on passions. Admitting complete lack of structure and absolute meaninglessness of passion considered purely mechanically, as we have seen, inevitably brought the James–Lange theory to a series of insurmountable difficulties and incongruities, but they are in essence also contained in Cartesian teaching. Naturally, if the new and the old theories correspond in the

most important theoretical point, they inevitably must be confronted by completely identical difficulties to the extent that their development is logical. Actually, it is most instructive to recognize that history repeated itself after two centuries and, in this respect, with surprising precision.

The *Treatise on Passions* . . . is full of descriptions of various movements of spirits and organs: expansion and contraction of the heart, differences in size, number, and velocity of blood particles and spirits, change in the stomach and lungs—in the expression of Sergi, Descartes juggles all of this precisely as James juggles the description of goose bumps and extension of the nostrils. True, Descartes recognizes the difficulty of the task. He shares his doubts with Princess Elizabeth.[85] He says it is not easy to study organic phenomena that correspond to every passion because they are usually mixed.

We must separate facts and look for precise results based on statistics, comparisons, and elimination. For example, if we turn to cases in which love is coupled with joy, we can recognize neither the one nor the other of these passions. But if we compare love–joy with love–sorrow, the differences appear distinctly. Thus, the treatise directly proposes an experimental continuation that Descartes himself tried and could not accomplish because of the lack of laboratory equipment and workers. He was forced to use facts accessible to his observation. As Sergi delicately notes, regardless of the fact that Descartes introduced a number of refinements into our knowledge of the pulse that were somewhat enriched by the contemporary sphygmogram, it would be better to remain silent about what Descartes says with respect to the visceral picture corresponding to every emotion.

But the point is not in these pictures. Descartes plows more deeply. The point is the theoretical direction of the investigation. He had to discover the cause of the movements of the spirits that he described for the basic passions. This cause turns out to be very simple. With love and sorrow, the stomach exhibits significant activity in digestion. With hatred and joy, on the contrary, this activity decreases. Why? Because our first passions have an alimentary origin. They are passions connected with feeding and they were formed around the digestive tract. Their further sublimation and their history is only an added structure over this immobile physiological base of the first days of our existence: the mechanism of the passions of the adult person has its prototype in the structure and functioning of the machine of the fetus. This is, perhaps, the only place in the teaching on passions where Descartes appears on the path that leads to a historical explanation. As naive as they might seem to the contemporary view, the theoretical significance of this turning to the history of development as the source of an explanation, together with physiological mechanics, deserves concentrated attention. We shall consider this aspect of the matter later, but we must note at the very outset that Descartes formulates the problem of causality with respect to passions in completely the same way as does James. James says that we must involve ourselves in explaining how one expression of fear or anger or another could appear and what constitutes, on the one hand, the problem of physiological mechanics, and on the other, the problem of the history of the human mind. We might have thought that James, like Sergi, simply states the solution of the problem of causality he found ready in Descartes.

But as with the laws of physiological mechanics, so with the history of the human mind, the matter appears to be identically hopeless. Now, however, randomness, lack of structure, and meaninglessness of connections between emotions and organic changes appear in the foreground and call attention to themselves whenever we are concerned with the methodological possibility itself of a factual investigation arising from these principles. Descartes connects hunger with sadness

and anorexia with joy. Elizabeth protests. Descartes yields and agrees to a completely opposite grouping: a full stomach produces sadness, an empty stomach, joy.

The pity is not that the factual representations of Descartes were devoid of any empirical basis and for this reason could, at the first whim of the princess, be replaced with the opposite, the pity is that methodologically, with the admission of complete meaninglessness of the connection between emotion and its organic expression, any connection becomes identically possible. The one is no more understandable than the other. The second is just as probable as the first. Sergi understands this. He notes pensively that if joy is connected with either anorexia or with hunger, we can no longer say: this kind of visceral state means this kind of passion. The whole structure appears compromised. It is not our intention to study the strong and weak aspects of the visceral theory of passions. We shall note only that James, Lange, and Cannon are also confronted by difficulties of this kind, difficulties that are met only along the path of very well-developed theories and not of intuitions of forecasters.

Thus, the laws of mechanics seem to serve the new theory. They betray it at the first attempt to entrust them with guiding the course of factual investigation. They do not even make it possible to construct any kind of factual hypothesis. They can with equal ease and arbitrariness explain the one thing and the other. The laws of physiological mechanics, to which both Descartes and James appeal identically, seem to be completely the same as the rules of law about which the saying is, roughly: the law is like a tow bar, wherever you turn it, there it will go. But in this sterility of mechanistic laws in explaining human passions, it is not difficult to foresee the sterility that will, after more than 200 years, overtake the goose that promises to lay golden eggs and has laid not even one. But, perhaps, the laws of the history of the human mind will prove to be kinder with respect to the visceral theory? Perhaps here we shall find a more firmly based causal explanation that will not be turning, like the tow bar, in opposite directions?

From the words of Dumas, we already know that Lange was developing his theory as a counterweight to evolutionary psychology and that he, like Descartes, had an aversion to historical explanations; nevertheless, we find in him a most instructive attempt to answer at least theoretically one of the basic problems of the whole teaching on the passions—the problem of development. Once again we have before us a question of greatest importance.

C. G. Lange begins and ends the investigation with reference to I. Kant, thus putting the whole treatise in a seemingly philosophical frame. And actually, in this beginning and end, we find a distinct expression of the second philosophical idea of the visceral theory, which together with the first—with the principles of the mechanical scientific worldview—defines the philosophical basis of the whole theory. In a strange way, Lange begins with a sharp objection to Kant and closes with complete agreement with him (C. Lange, 1896, p. 80). It is indeed striking how Lange himself did not notice the screaming contradiction between the beginning and the end of his discussion. As if he himself did not notice it, he comes to rejecting what he affirmed when he began. The theory that he develops seemingly has its own logic independent of the logic of its author. It leads him in a direction exactly opposite the one he set out for. The story of the bear who leads the hunter who caught him where he, the bear, wants to go is repeated. The history of Descartes and the princess repeats itself. But this time, what must yield is not in the area of facts, flexible and pliable, obedient and subject more to laws of worldly courtesy than to the true laws of mechanics, but in the area of philosophical realization of these facts, in their basic interpretation.

Lange begins his psychophysiological study *On Movements of the Spirit* with: "Kant, at one point in his *Anthropology*,[86] defines affects as diseases of the soul" (ibid., p. 13). "It seems that to the great thinker, the soul is well only as long as it is under the unconditional and undisputed control of the power of the mind; everything that can shake that power is, in his eyes, something abnormal, harmful for man.

"A more real psychology which does not know the abstract, ideal man but 'takes him as he is' must consider such science of the soul as strange, and as pitiful the representation of man that considers joy and grief, compassion and anger, humility and pride as mental states foreign to the sound man, abnormal states, to which attention should not be given when the goal is to become familiar with the true essence of human nature" (ibid.).

C. G. Lange assumes that to agree with Kant means to limit the sphere of the life of our spirit, if the talent for bowing to the great, being moved by the beautiful, feeling compassion for the unfortunate is to be considered a symptom of illness, then for us, the healthy, normal person would be only a passionless accounting clerk for whom every new impression provides only a reason for a conclusion. To Lange astonishingly strange is a view of the mutual relationship of mental powers that wants to see something random in a phenomenon that plays a much more significant role in the mental life of people than sound judgment and guides the fate not only of individuals, but also of nations and all of humanity to a greater degree than does sound judgment.

If, as Kant assumed, affects actually are only diseases of the soul, who would want to cure his sick soul, asks Lange, if a cure would deprive man of all his emotions that make him capable of sympathizing with his neighbors, sharing their joy and grief, being elated by them or hating them? Lange presents as unquestionable that "we cannot consider a person as healthy, whole, and real if he knows only how to think, recognize, and judge, but cannot suffer, be joyful, and fight, although, perhaps, these passions in some way interfere with his ability to investigate and judge.

"Emotions not only play the role of most important factors in the life of an individual, but are, in general, the most powerful of the natural forces known to us. Every page of history—of whole nations as well as of individuals—accords them invincible power. The storms of passions ruined more human lives and destroyed more countries than hurricanes. More cities were demolished by their torrents than by floods" (ibid., p. 14). For this reason, Lange refuses to see simply an abnormality and a sickness, as Kant does, in affects, those greatest of all forces that have at the same time an enormous significance for our internal life (ibid.).

It would seem that after these clear, transparent, emotional, and, strictly speaking, beautiful words, we might expect that in his study, Lange would disclose for us the essence of these most powerful of all natural forces known to us that have such an enormous significance in the history of whole nations and personalties, guiding not only the fate of separate individuals, but of all of humanity, and thereby would show, first, by virtue of what and how specifically passions can have such a paramount significance in the life of man, and, second, how in a sound and real man, not only is the capacity to suffer, be joyful, and fight not eliminated as a random and abnormal phenomenon, but how it grows and develops together with the history of humanity and the development of the internal life of man. But Lange disappoints our expectations and hopes as unambiguously and as ardently as he aroused them earlier.

As we know, the basic result of Lange's investigation is the position that all emotional moments of our mental life, our joys and sorrows, our happy and un-

happy days, we owe to the vasomotor system, more precisely, to its peripheral changes. This basic idea is accompanied by two secondary ideas that disclose its methodological content. It seems that from the point of view of laws of physiological mechanics and from the point of view of the development of the human mind, there is an antagonism between the intellectual and the affective life of man. This antagonism allows us to explain in greater detail the fate of affect in the life and development of the personality. Intellectual life itself also is dependent on vasomotor functions, although in a somewhat different way than the life of feelings. Intellectual activity presupposes an increased supply of blood to the brain and is facilitated by it, and in this case, of course, blood enters parts of the brain other than those that are aroused mainly by emotions.

In a certain sense, the nature of the connections between vasomotor activity and intellectual life on the one hand and affects on the other is opposite. The first affects the second in a literal sense of the word in a derivative, blood-diverting way, and when Herman von Bremen counts to 20, by this insignificant mental work, he takes so much blood away from the motor part of his brain that all desire to fight with his wife is lost. Such is the first idea, which amplifies the basic position of Lange (ibid., p. 79). The second establishes the same antagonism between intellectual and affective life in the course of development.

Lange says: "Education acts in the same direction. The purpose of rearing, which must not be confused with education, is to train the personality to control, overcome, and eliminate those motives that are the result of direct action of our physical organization, but that are not in accord with accepted social relations. From the physiological point of view, education can be considered as the development of the capability of suppressing the simpler initial reflexes or of replacing them with the higher. Thus, we are trained from earliest childhood to control the other reflexes that are not acceptable in proper society" (ibid., p. 79). From this point of view, Lange compares the fate of emotional reaction to the fate of reflexes of the urinary bladder: the rod trains a child not to cry from disappointment as a result of emotional spasm of the vessels in the same way that it trains him not to behave sloppily as a result of involuntary functions of reflexes (ibid.).

In the opposition between the intellect and affect and in the gradual displacement of feelings as intellectual development progresses, Lange sees the basic law that is confirmed not only in ontogenesis, but also in the development of humanity as a whole. "History itself condemns the life of feeling to gradual fading away and to almost complete demise. Emotions are a dying breed that is gradually being displaced on the stage of history as civilization and culture grow."

Excitability of the vasomotor apparatus differs greatly in different people. In this respect, there are not only individual, frequently hereditary differences. Conditions of a more general character not infrequently play an extremely important role here. Women have much readier emotions than the stronger gender owing to a strong excitability of the nervous system, particularly its vasomotor section. The same thing is noted in children compared to adults. The general rule is that, like individuals, whole nations are more subject to emotions the lower their level of education.

The so-called wild peoples are more irascible and indomitable, more unbridled in their joy, more depressed by their grief than civilized peoples. The same kind of difference is noted between different generations of one and the same tribe. We are more peaceful and gentle as compared to our barbaric predecessors who got greater pleasure in yielding to reckless outbursts and bellicose fury, but who fell so easily into dejection at any failure that they killed themselves because of trifles (ibid., pp. 77-78).

Among people of a single generation, Lange finds the same law manifested: the most obvious trait of being educated is the calm self-control with which blows of fate are borne that in uneducated people evoke unbridled outbursts of passion. And as if to leave not the slightest doubt that historical development of the human mind leads to extinction of emotion, Lange formulates the law of causal relation between the one and the other: "This suppression of the affective aspect of life under the influence of increasing education, both in individual personalities and in whole generations, not only goes hand in hand with increasing development of the intellectual aspect of life, but is, for the most part, the result of this development" (ibid., p. 78).

In addition to establishing this position, Lange finds himself unexpectedly confronted by a definitive result that is in irreconcilable contradiction to his original point. In truth, he started with being for health and ends by being for burial. He began with sharp objections to the thesis of Kant, whose views of affects as a sickness of the soul Lange called a pitiful representation of man; he ends with a full capitulation to this thesis, to the view of mutual relations of mental forces that wants to see something random in the phenomenon which plays a much more significant role than sound judgment in the mental life of the basic mass of people, and which guides the fate not only of individual persons, but also of whole nations and all of humanity to a much greater degree than does sound judgment.

The logic of the investigation was stronger than the logic of the investigator. The bear stubbornly leads the hunter. For Lange, it remains only to admit this and to proceed to full capitulation to Kant, which he does in the concluding lines of his study. He says: "With the passage of time, as a result of constant restraint and inadequate harnessing, the vasomotor centers continuously lose the energy of their emotional activity. This result of training the intellectual life is conveyed through heredity to subsequent generations. New generations appear in the world with an ever more slack emotional innervation of vessels and with a stronger innervation of organs of intellectual activity.

"If our development will continue along the direction adopted, in the final analysis, we will attain Kant's ideal: a purely rational man will appear for whom all emotions: joy and sorrow, anxiety and fear—should he be subject to such enticements—will become only illnesses or mental disturbances equally unseemly for him" (ibid., pp. 77-80). The whole investigation of Lange concludes on this note of hopelessness.

The result to which we have come is of no small importance in our eyes. Now we realize very clearly how the problem of development of affects is solved in the theory we have been considering. Lange had the courage to follow to the end the logic of the development of his basic idea, taking it to the limit and disclosing in this way its true philosophical essence. James, more careful in this regard, leaves a great lack of clarity at this point. However, as we have seen, even he appeals to the history of the human mind together with laws of physiological mechanics. Consequently, he not only cannot avoid the problem of development, but regards as a merit of his theory the fact that this problem is brought to the forefront there. As we recall, James equates the basic principle of his theory, that celebrated goose that lays golden eggs, with the evolutionary idea of Darwin. For this reason, the answer that James gives to the question of the origin of emotional reactions cannot be neutral for us.

Considering this question, James cites the "surmises of Spencer . . . that found confirmation on the part of other scientists." James writes, "He was also, as far as I know, the first scientist to formulate the hypothesis that many movements in fear and anger can be considered as rudimentary vestiges of movements that were in-

itially positive" (W. James, 1902 p. 336). Explanations given by Darwin, P. Mantegazza,[87] and W. Wundt, which James cites, take the same tack (ibid., pp. 337-338). To the same extent, James cites another principle developed by Wundt and T. Piderit[88] (1886), a principle to which Darwin, perhaps, did not do full justice. It consists of similar reaction to similar perceptible stimuli (W. James, 1902, p. 338). According to the latter principle, we may, as Wundt does, for example, consider "many of the most expressive reactions to moral motives as symbolically used expressions of gustatory impressions. These are all the mental states that language metaphorically designates as bitter, sour, or sweet and that are characterized by mimetic movements of the mouth that represent a similarity to expressions corresponding to gustatory impressions" (ibid., p. 338).

But both principles, even taken together, cannot satisfy James. From a somewhat different aspect, but in a surprising way, his own response to the question of the origin of emotional reactions coincides with the solution of the problem of development that we found in Lange.

James says that if some of our emotional reactions "can be explained by the two principles we indicated (the reader has probably already had the opportunity to be convinced how problematical and artificial the explanation of very many cases is in this case), there are still, nevertheless, many emotional reactions that cannot at all be explained and must be considered by us at present as purely idiopathic reactions to external stimulations . . . It is the opinion of Spencer and Mantegazza that shivering observed not only in fear but also with many other excitations is a purely pathological phenomenon. These and other strong symptoms of fear are harmful to the life of those experiencing them. In a complex organism like the nervous system, there must be many random reactions. These reactions could not have developed completely independently due to only one usefulness they might provide for the organism. Seasickness, sensitivity to tickling, embarrassment, love of music, and tendency toward various intoxicating drinks must have arisen by chance. It would be absurd to maintain that not one of the emotional reactions could have arisen by chance" (ibid., p. 339).

No matter how the explanation of James differs from the theory of Lange on the antagonism between intellectual and affective life according to concrete content, the theories coincide with each other fully in two basic and decisive points like two equal geometric figures when superimposed on one another.

The first coincidence consists of the contradiction between the basic assumption and the definitive conclusion to which both authors come in the same way and to the same extent. We have just taken the opportunity to explain the appearance of this contradiction in Lange. In James, it is disclosed and appears in the same unmasked form since it requires no effort to see it. On the contrary, a great deal of optimistic trust in this theory is required for the flagrant contradiction not to be noticed.

As we recall, with his theory, James promised to raise scientific investigation of emotions to the level of profound investigation, investigation of the highest order. He disdainfully rejects classification and description as lower steps in the development of science. With his productive guiding principle, he promises to discover the way to explaining the causal dependence of emotional reactions. He believes physiological mechanics to be the source of this causal explanation. In this respect, he was seriously misled and was confronted by the full factual sterility of explaining emotions causally and distinguishing them from this aspect. Another source remains—the history of the human mind. James considers the problem of a historical causal explanation of emotions to be essentially solvable, but finding its solution to be difficult. However, we have just had the opportunity to see that as soon as

the matter reaches factual realization of this hope, it bursts like a soap bubble. Explanations derived from the principles of Spencer, Darwin, and Wundt are problematical and artificial. But, the main thing is that there are many emotional reactions that simply cannot be explained. These are literally the words of James himself.

Thus, the problem of a historical explanation of emotions, despite optimistic expectations, seems to be unsolvable, as was already clear to James. The 60 years that have passed since his pessimistic conclusion wholly confirmed this. Scarcely at any other point did the James theory prove itself as it did specifically here. Emotional reactions must be considered, James says, as purely idiopathic reactions, that is, inexplicable as reactions to external stimulation. Their biological significance is not only problematical, but very frequently must be absolutely rejected. These are random reactions that generally do not yield to causal, historical explanation. One may ask: what then remains of the illusion of an investigation of a higher order? What remains except classification and description besides a superficial analysis of emotions, besides describing their external traits? The most clever theory, evidently, cannot yield more than it contains.

The second coincidence of the two independently developed variants of a single theory pertains to the essence of solving the problem of development. Lange had to surrender to the mercy of his victor, Kant, and admit after him that affects are nothing other than sicknesses of the soul. James also is inclined to consider affects as pathological phenomena, harmful to the beings experiencing them. Lange gloomily tells of the fate of passions' dying breed. James is also forced to consider them as rudimentary vestiges that were initially useful, but deteriorated in the course of development and were converted into useless, meaningless adjuncts of our mental apparatus connected in no way with the rest of its activity. Whoever begins with theoretical meaninglessness of emotions will inevitably come to recognizing the absurdity of the only right they have to exist. But from beginning to end of the investigation, the absurdity of all emotional life grows and gradually increases with each new step in the development of the theory, reaching a truly bombastic force by the end—in admitting emotions to be rudimentary, pathological, random, and inexplicable phenomena. Whoever sows wind will inevitably reap a storm.

It remains for us to explain the last circumstance connected with the problem of development of emotions as it is formulated and resolved by the James–Lange theory: it remains for us to explain only the internal necessity, the logical inevitability of specifically such a formulation and specifically such a solution.

Of course, the point is not in the aversion to historical explanations which, in the words of Dumas, every representative of the mechanistic worldview must try, following the steps of Descartes. At the end of the nineteenth century, after Darwin, aversion could scarcely explain for us the inability of any kind of empirical theory to solve the problem of development. As we have seen, Lange and James wanted very much to find the key to a historical explanation of emotions. However, they could not do this just as the great Descartes, the founder of the visceral theory of emotions, wanted to answer this question and could not. Obviously, the anti-historical tendency that paralyzed all attempts of investigators moving in that direction was established in the logic of the theory itself. Their good intentions were shattered every time on the internal, impenetrable nucleus of their own theory.

This nucleus is actually absolutely anti-historical. In its very essence, it excludes completely any possibility of the history of human emotions. As we know, the nucleus of the whole theory consists of the idea that the source and actual cause of emotions are reflexive, peripheral changes in internal organs and the muscle system. Thus, the nucleus of the theory is immediately overgrown by two dense and im-

penetrable ideational envelopes inseparable from it. The first rises of itself from the immutable fact that bodily manifestations taken for the true cause, for the actual essence of the emotional reaction, are more perceptible the lower the emotion with which we are dealing. Consequently, the more primitive, the lower the stage of development at which the emotion is, the more archaic it is, the more it will exhibit traits of true passion.

Thus, according to the sense of the basic position of the theory, emotions must be referred to the most remote, prehistorical, prehuman period of mental evolution. In man, they appear only in the role of rudiments, meaningless vestiges of a dark legacy of animal ancestors. In the history of the human mind, not only is any prospect of the development of emotions impossible, but, on the contrary, they are condemned to a gradual regression and, in the final analysis, to dying.

Bodily manifestations that form the essence of emotions are immeasurably richer, brighter, and more palpable in animals than in man; in primitive man—than in cultured man; in a child—than in an adult. Of what kind of development but of reverse development, of reduction, can we be speaking with respect to emotions? Their evolution is nothing other than involution. Their history is a history of their atrophy and loss. Thus, the very understanding of development is not applicable to emotions and is impossible in the area of their investigation if we accept the basic assumption of the visceral hypothesis. As we have seen, following the logic of their own theory, both Lange and James are forced to come to this in the same way.

The second envelope that covers the nucleus of their theory arises from the separation of emotion from all of our consciousness; this is part of the very nucleus of the theory. By separating emotions from the brain, taking them out to the periphery, reducing them to peripheral changes in the internal organs and muscles, the theory thereby hypothetically creates for them a substrate of residual consciousness. Of course, the internal organs—the heart, stomach, lungs—are that part of the human organism that cannot in any way, from the point of view of its participation in the historical development of man, be compared with the central nervous system, particularly with the cortex of the brain.

The historical development of human consciousness is connected primarily with the development of the cortex of the brain. It is understood that this does not in any way mean that the organism as a whole and all its separate parts did not participate at all in evolution. However, there can scarcely be any doubt that when we speak of the historical development of human consciousness, we have in mind, primarily and mainly, specifically the cortex of the brain as the material basis of development, which in this respect qualitatively stands apart from all the other parts of the organism, being in the closest and most direct way connected with the mental development of man. In any case, this position is universally accepted for all higher, specifically human functions of consciousness.

The peripheral theory of emotions, seeing their source in the activity of internal organs—those parts of the organism historically most immutable, unchanging, most removed from the direct organic basis of the historical development of consciousness—thus tears emotions away from the general context of the mental development of man and places them in an isolated position. They appear to be an island separated from the basic continent and surrounded on all sides by a sea of purely vegetative and animal, purely organic processes in the context of which they attain their true significance. Is it surprising after this that bodily manifestations comprising, according to the visceral theory, the very essence of emotional reactions, seem to be more similar to vegetative disturbances such as we observe in cold, fever, or asphyxia than to emotional states such as fear and anger? The localization itself of

the source of emotions, from which the specific quality of feeling originates, outside the brain at the periphery, already assumes excluding affects from all of that complex of connections, from all of that system of relations, from all of that functional structure that comprise the true subject of the mental development of man.

Thus, this position, contained in the nucleus itself of the theory, is covered by a new envelope to the same extent as the first, separating the theory from the problem of development. It is most strange that very little attention is given to this circumstance. The biological semblance of the theory gave rise to the illusion that it not only does not contradict the evolutionary idea in psychology, but directly suggests it. In contemporary psychology, only isolated voices are heard criticizing the theory from this aspect.

Thus, Brett correctly states that "in all of literature about emotions, the most attention is paid to the endosomatic reactions and, thus, obviously, only one aspect of emotion as a whole is detected.

"When we turn from experimental investigation to clinical, it seems to us that we have fallen into an entirely different world. We get the impression that a strict distinction must be drawn between emotions as they are usually portrayed and the kind of experiences that clinical psychology describes. The influence of zoopsychology and physiological schools intensely clouds the question of the possibility of development of emotions. There are no a priori data that would explain for us why emotions must not develop. This assumption seems to be a simple misunderstanding. If emotions develop, then the most obvious error consists in not differentiating separate levels of development. And this is the worst result of the interpretation that is usually given in theories like the James–Lange theory. Specifically because they are indisputably right to a certain point, they fall into error as soon as they go beyond this point. Many authors use the word *biological* incorrectly. It is completely true that instincts and their visceral accompaniment are what they are due to their biological meaning. But strictly speaking, this meaning is known only to the theoretician. Of course, an animal does not exhibit fright or fury for the same reason that self-preservation is the first law of life. The word *biological*, if we want to use it in its special meaning, signifies the relation between any act and its consequences for the individual or the genus. This relation does not yet make up a part of behavior until we accept that the behavior is controlled by memory or drive. Behavior is biological only for a trained observer. For the acting animal itself, it is psychological.

"From this point of view, it would be necessary to try to develop a comparative study of emotions. Possibly all theories are correct, but they must be taken from the point of view of the evolutionary principle. At one end of this comparative scale, the type of reaction will approach the type of a complex reflex response. Instinct and emotion will still be undifferentiated to the extent that the argument about these terms will drop away. A general diffuse excitation will be identically characteristic for all forms of behavior at this stage of development. Emotion as a differentiated factor appears only at the point of this scale of development where it is possible to establish that the situation has some sense, if we use this word for signifying any form of connection between a given situation and other situations, regardless of whether they are remembered or anticipated. At a higher level, defined in the last analysis by development of the brain, there must be modified forms of a primitive reaction. Here bodily manifestations and mental stress must be emotional in the true sense of the word. The relation between ideas must come to the forefront and the nature of emotions must change because of this . . .

"A historical review of theories of emotions concludes with a confused picture that urgently requires a full reconstruction of the psychology of emotions. All the

latest efforts in this direction lead us to the path indicated by the evolutionary method. Man attained the contemporary state of development by the slow process of growth and integration in which we see the explanation of special cognitive functions. There is no basis for separating these functions from general organic states, but neither is there any sense in ignoring the possibility of great differences that depend on the degree of brain development and integration. In this, evidently, is contained the true element of the theory of James that captures the differences between lower and finer emotions. But in this form, this difference does not fully respond to the spirit of scientific psychology. In addition, in order to compare one class of emotions to another, we must assume that every emotion can have different forms as, for example, the fury of an animal differs from legitimate indignation. Since one form develops from another, depending on the general development of man, it can easily preserve a connection with a more primitive type of emotions or with other reactions connected with it.

"In any case, the relation between emotion and its expression becomes less fixed and immobile to the extent that the organism develops and moves away from instinctive and stereotypic forms of reactions. More complex (finer) emotions that do not have a specific reaction connected with them (typical for the behavior of an animal) allow various expressions, and expression loses its direct connections with the conscious element of emotion—a circumstance that may help theory explain why we cry in the same way from joy as well as from grief" (D. S. Brett, 1928, pp. 393-396).

We deliberately quoted the somewhat long conclusion of the historical outline of the development of the psychological ideas on the nature of emotions in order to lean on the objective evidence of a historian of science concerning the state of the problem of development in contemporary psychology of emotions. A brief idea of this long statement is that the psychology of emotions does not now have available even the most elementary rudiments of a theory of development, that it is a confused picture in which a distinction was made between higher and lower, animal and human, instincts and conscious emotions, a picture that takes us, in Brett's expression, in one sweep from one world to another.

From the first, timid attempts at genetic investigation of emotions in their ontogenesis, we learn something more than the simple establishment of the fact that the old theory excluded a priori the possibility of emotional development. From these attempts, we also learn the content of the a priori anti-historical nucleus of the theory. In the light of the investigation cited, it can be characterized by two basic traits: the assumption of the sensory-reflex nature of the emotional reaction and rejection of its connection with intellectual states. The first assumption excludes development because reflex reactions are the most stable, the most unchangeable elements of all of behavior and because reducing emotions to simple sensations within organic changes deprives emotion of any real, active role in human consciousness.

If the essence of fear consists of sensing trembling and goose bumps, there is no basis for assuming that these phenomena will be substantially different in a child than in an adult. In the same way, rejection of a connection between emotional and intellectual states excluded in advance all participation of emotions in the general development of consciousness in which changes in intellect occupy the central and most significant place. This rejection assumed in advance a formulation of the problem of the nature of emotions that would wholly and completely exclude the possibility itself of the problem of human emotion as distinct from emotion of the animal. Animal and man, the animal and the human in man himself, were torn apart; the lower and finer emotions, in Brett's expression, proved to be two different

worlds (ibid., p. 393), and only the blind would not see in this the most immediate, the most direct, the most open realization of the old ideas that form the basis of Cartesian teaching.

Descartes appears as if invisibly on every page of the psychological works on emotions that were written in the last 60 years. If it is true that we are now witnesses of a radical turn in the 60-year course of the psychology of emotions, full of bankrupt ideas that determined its direction and outcome, then the current crisis in the teaching on emotions and the radical turn toward a scientific investigation that we have noted and the very understanding of the nature of emotions cannot have a sense other than anti-Cartesian. This conclusion follows of necessity from each step of scientific thought taken in the new direction. Every concrete problem of the new theory of emotions is based on the need to overcome Cartesian principles weighing heavily over this whole area of psychology. We will limit ourselves to only one example of this kind.

In the new psychology of emotions, the problem of the dynamic nature of affect moves more and more to the forefront. In the investigations of K. Lewin and M. Prince,[89] the dynamic, active, energetic aspect of emotion is advanced as the only method of understanding affect that allows a truly scientific, deterministic, and truly causal explanation of the whole system of mental processes. Of logical necessity, such an understanding assumes overcoming the dualistic approach to affective life and advances the understanding of affect as an integral psychophysiological reaction that includes in itself experience and behavior of a certain type and represents a unity of phenomenal and objective aspects.

A study of the dynamic aspect of emotions could not help but come to a confrontation with the James–Lange theory, which, in its essence, excludes a monistic understanding of emotions as energetic and motivational stimulation that determines experience and behavior. "Considering emotions as dynamic processes in itself excludes understanding their role as 'simple sensory perceptions' of visceral functions . . . as proposed by the James–Lange theory, according to which their discharges must in themselves determine behavior of a certain type. For this reason, emotion cannot be considered as an epiphenomenon connected with reflexes as has been done by behaviorists, but must itself be understood as an indispensable moment participating in nervous discharges that determine in one way or another the character of reactions.

"Consequently, emotion cannot play the passive role of an epiphenomenon. It must do something. From this point of view, the function of emotion with respect to the organism becomes more understandable than if emotion represents nothing other than consciousness of a nervous discharge of energy or a passive sensory realization of visceral activity. From the latter point of view, we might completely do without emotion, without anger or fear, or any other feeling, since we would act like robots" (M. Prince, 1928, pp. 161-162).

As evidence for this position, Prince gives several reasons. "First, everyday observation convinces us that emotion is internally connected with the discharge of energy directed to the internal organs and to the voluntary musculature. But how is it connected? There is a basis for assuming that emotion occurs synchronically with the discharge which lasts as long as the emotion itself lasts in the consciousness. From the point of view of the James–Lange theory, which considered emotion as a passive sensory perception, emotion must follow visceral reaction. If emotion is such a superfluous, pure epiphenomenon incapable of determining anything in our reaction to a situation, the fact of synchronicity, which is an important problem that requires its own solution, becomes incomprehensible. This is the second argument.

"The third consists of the fact that emotion as an epiphenomenon would be a completely useless effect in the biological sense, an effect that evolution also would not tolerate as 'nature a vacuum.' Finally, the last argument is evidence of direct experience that convinces us that passion moves us, that it provides energy for our thoughts and our actions. We realize that emotion and feeling activate us. This realization is an immediate fact that does not depend on a further interpretation. All of these ideas taken together compel the author to consider emotion in an internal, unbreakable connection with energy processes occurring in the organism for without the concept of energy, behavior in general cannot be explained" (ibid., pp. 162-164).

As we might have expected, Prince in this connection mentions the name of Descartes and refers to the Cartesian teaching on the passions because the problem actually passes from the area of specific study to the plane of a philosophical problem of the psychophysical nature of emotions. But actually, what is unexpected is Prince's statement that the concept he defends against the James–Lange theory is essentially Cartesian. For the second time, we encounter an attempt to consider the James–Lange theory as an antithesis of the Cartesian teaching. We met this idea for the first time in Dunlap, who contrasted the centripetal hypothesis of the peripheral theory with the centrifugal theory of the emergence of emotions developed by Descartes. Thus, the comparison of the two theories pertained to the concrete problem of the physiological mechanism that is the substrate of emotion. We shall return to this problem again.

Now we are dealing with something greater. The Cartesian teaching is compared with the James–Lange theory from the point of view of a theoretical understanding of the relation that exists in emotion between the bodily and the mental processes. Thus, both theories appear to be in contradiction not just from the point of view of the specific practical description, but from the point of view of their theoretical basis. This problem deserves the most fundamental explanation. For this reason, we will follow Prince further.

In his conception, which considers emotion as energy, contrasting this point of view with the James–Lange theory and connecting it with the Cartesian teaching, Prince uses the point of view of emergent evolution[90]—a new idealistic teaching that tries to find an escape from the dead-end of the alternatives—mechanism or vitalism—into which all of contemporary natural science is thrust. Emergent evolution is based on the assumption of sudden, seemingly dialectical leaps in development, sudden appearance of new qualities and an inexplicable conversion of some qualities into others. From this point of view, Prince explains two possibilities that exist for his conception. On the one hand, we must assume that emotional discharges of energy are connected with electrons in the most complex atomic structure of the nervous system. These discharges emerge as emotions since of themselves they contain energy not established objectively, but being the result of a most complex organization of an enormous number of units of nervous energy. On the other hand, we must assume that the kinetic centripetal nervous energy, being immaterial, is converted into the same kind of immaterial, mental energy that, with reverse flow, as a link in the chain of the whole process, is again converted into immaterial, centrifugal energy similarly to the physical law of conversion of energy. What is unknowable with objective methods emerges as accessible to psychological perception as a state of consciousness (ibid., p. 166).

It is enough to cite these positions for the idea to become clear that a connection exists between the theory of Prince and Cartesian teaching. Assuming immaterial, mental energy that nevertheless acts completely like material, physical energy and is found in it in a simple mechanical interrelation is, as we shall consider

in detail subsequently, an essential component of Cartesian teaching on the passions, dual in its very basis. Thus, Prince contrasts one principle of the Cartesian teaching—the spiritualistic—with another principle of the same teaching—the mechanistic. We have seen this earlier. Noting the accumulation of problems that contemporary investigation has brought forth on the relation of the James–Lange theory and Cartesian teaching, we mentioned this problem also, citing Dumas. Dumas called it the theological principle taken by Malebranche from Descartes that divides the old teaching from the new. In Prince's battle against James, we thus have as if two irreconcilable, internal, contradicting parts of Cartesian teaching that were polarized by contemporary psychology and stood one against the other, in turn spiritualistic and in turn mechanistic conceptions of emotion.

This is indisputable. We cannot but agree with this. The spirit of the Cartesian teaching shows itself not only in mechanistic theories similar to the James theory, but also in new theories that try to overcome the imperfection of previous hypotheses with the aid of another aspect of the same teaching that gave rise to the ideas of their opponents. They do not suspect in this case that they are ignoring the devil Beelzebub and not only are not going beyond the limits of that closed circle in which all of contemporary psychology of emotions is turning, but close even more firmly the circle that tries to fully realize the old-fashioned Cartesian teaching. Their merit consists in that they, fully consciously, struggle for the triumph of the Cartesian principles of contemporary psychology. They just supplement the somewhat old-fashioned Descartes with the most contemporary theory of emergent evolution. But, as we shall see subsequently, it is not only not foreign to the spirit of Cartesian teaching, but is directly connected with it, something, moreover, that Prince himself admits.

With the establishment of this, the whole picture of the ideational struggle in contemporary psychology of emotion is definitively cleared up. It is, of course, monism, says Prince of his conception; the only alternative hypothesis is dualism and parallelism, that is, epiphenomenalism and human automatism (ibid., pp. 166-167). We cannot but agree with this. The whole error consists only in that both hypotheses are considered as alternatives. Actually, in the teaching of Descartes, they mutually anticipate each other and only jointly form the true nucleus of his theory of passions. Of course, there is a certain logical inconsistency here, but only of a type that inevitably confronts all idealistic teaching that attempts to turn into a scientific explanation of real facts that occur in material reality and does not want to break with those facts. Such monism (spiritualistic) and such dualism (parallelistic) not only do not represent true alternatives, but more likely mutually presuppose each other in the teaching of Descartes and his followers, James and Prince, in any case.

We recall that precisely such was the method of investigation applied by Descartes in studying the nature of passions. At first, he considers man as a soulless robot and studies the mechanism of passions as it acts in this complex machine, completely irrespective of its consciousness. In this, Descartes anticipated the theory of James. Next, he joins a soul to the robot, previously predetermining that its perceptions arising from the automatic activity of the soulless mechanism cannot be anything other than epiphenomena, and introducing the spiritualistic principle of reverse action of the soul on the bodily robot, thus establishing a mechanistic interaction between the soul and the body; in this way, he anticipated the theory of Prince. It is not difficult to see that what Prince proposed, the emergence of the mental from the physical and the reverse instant conversion of mental energy into bodily energy, is accomplished in the unnatural aggregate made up of pure spirit and the complex machine that Descartes constructed in his theory. Only he

did not call this instantly occurring miracle emergence and frankly recognized that it is the most dark, unclear, and difficult point of his teaching.

Everything develops sequentially and logically in this dualistic theory as long as spirit and body are considered separately. For Descartes, they are two substances that exclude each other. But as soon as the problem arises of uniting both substances in a human being and at the same point at which duality of human nature has a direct effect—in passion—the darkness of inexplicability encompasses the elegant, rationalistic teaching that had been permeated by light. As we recall, the first to attack this point in the teaching of Descartes was Spinoza, calling the hypothesis of uniting soul and body in a pine-cone-like, dark gland, "darker than any dark attribute . . . It would be most desirable," Spinoza said, "if he would explain this connection through its immediate cause. But Descartes admitted that the soul was so different from the body that he could not show any single cause for either this connection or for the soul itself, and he had to turn to the cause of the whole universe, that is, to God" (1933, p. 199). In this is contained the theological principle in explaining passions, of which Dumas spoke.

Descartes himself, in responding to the question of Princess Elizabeth as to how the combination of soul and body can be explained, referred to the unknowability of this combination. But is this not the very same thing that emergent evolution has in view? Descartes referred to an unknowable miracle. The new theory refers to inexplicable emergence. In 300 years, only the word has changed, but not the idea. But what is a word? Empty sound.

In response to the fateful question, Descartes says that the human spirit is incapable of comprehending clearly the difference in the substance of the soul and the body or their combination since the human spirit would have to understand them as a single substance as well as two different substances, and this is self-contradictory. For this reason, we may assert that the problem of passions was the only stumbling block for the whole system of Descartes. If it were not for this cursed problem, if man did not exist in nature with his passions (for Descartes animals were just robots), the teaching on two mutually exclusive substances — the spiritual and the material—would develop sequentially, elegantly, and logically. But passions, this basic phenomenon of the human soul, are the primary manifestations of the dual human nature combining the spirit and the body in one being. Moreover, passions are the only phenomenon of joint life of spirit and body in the whole universe. For this reason, for their explanation, they necessarily require a combination of spiritualistic and mechanistic, theological and naturalistic principles. Descartes, despite his own words, had to refer to passions not only as a physicist, but also as a theologian. But specifically in this point of the system, a mixing of two opposed principles had to occur and the whole system not only had to lose its purity, but had to move along the path of further mutual penetration of two of its polar bases. In the graphic expression of K. Fischer, space was obtrusive. Figuratively speaking, if the soul gives it a finger, it takes the whole hand. If the thinking substance has its habitat anywhere, then its independence and distinctness from the bodily substance are already lost and not in only one respect, but in all respects. If the soul is localized, then it becomes materialistic and mechanistic in this way. The spiritualistic principle itself begins to require the addition of a mechanistic principle since the soul is involved in the mechanistic circuit of the passions and since it cannot participate in activity of this mechanism without entering as a mechanical force (K. Fischer, 1906, Vol. 1, p. 446).

But at the same time, the opposite must occur. Not only space is obtrusive, but so is the spirit. If only the most insignificant bodily organ alone—the pineal gland—is capable of being activated by purely spiritual forces, then the human robot

is inevitably a simple weapon of the thinking substance, a plaything of spiritualistic energy.

Thus, the Cartesian teaching is not inadvertently, but basically dualistic, and the dualism in the teaching on passions is only a manifestation of Descartes' general ontological and gnosiological dualism. As Fischer correctly notes, in Descartes' teaching, the theological and naturalistic systems are united (1906, Vol. 1, p. 439). Skipping ahead, we will say that the duality of the Cartesian teaching already contains, wholly and completely, the dualism of explanatory and descriptive psychology. Here we cannot take up the question of the extent to which both parts of the system are firmly and elegantly united logically; we shall consider this union only in the teaching on the passions. Here it is manifested with greatest force and fully discloses its nature.

On the one hand, Descartes transfers in full to human passions his own general position that thought and space differ substantially. He says that this is specifically the essence of the matter, that they exclude each other. Fischer says: "In reality, the spirit and the body are completely separate from each other, there is no contact between them: I know that in the light of reason" (ibid., p. 443). The body acts as a soulless robot wholly subject to laws of mechanics. The soul has absolute and unlimited freedom of will that forms our being god-like. The will, or freedom of the will, says Descartes, is the only one of all capabilities that, according to my experience, is so great that I cannot imagine a greater. This capability is also mainly why I consider myself god-like. Fischer's words, in which he spoke about the ontological conception of Descartes, are wholly applicable to both of these positions. The first statement expresses the naturalistic character of the system; the second, the theological. The dualistic character of the system arises from theory and then appears to be fundamental.

Everything is successful in proceeding with this dualistic principle as long as Descartes is not confronted by the indisputable fact of the union of both mutually exclusive substances in one phenomenon, human passions. As we have seen, they undoubtedly reveal the indisputable fact of unity of spirit and body in one phenomenon, in one being. Here the logic of the dualistic system must of necessity suffer definitive collapse.

Descartes says: "Nature teaches me nothing as clearly as the fact that I have a body that suffers when I feel pain and that requires food and water when I experience hunger or thirst. I cannot doubt that there is something real in these sensations. My affects and instincts make it clear to me that I am in my own body, not like a swimmer in a boat, but connected with it in the closest way and as if mixed in so that in a certain way we form as if one being. Otherwise, due to my spiritual nature, I would not feel pain when my body was harmed, but would only realize this harm as an object of cognition the way a shipbuilder sees when something in the ship breaks. When the body needs food and water, I would know about these states without having indefinite sensations of hunger and thirst. These sensations are actually vague representations originating from the union and seeming mixing of the spirit and the body" (ibid., p. 371).[91]

According to the perfect and transparent clarity and energy of the positions expressed here by Descartes, they could truly agree with his famous *cogito, ergo sum* and have pretensions to becoming the Archimedean point, the only firm point of support of all philosophical knowledge. As we know, Descartes' philosophy begins from the doubt principle and from searching for the certainty principle. He says: "Archimedes required only one immovable point of support to move the earth. We can also hope for much if only even the smallest, firmly established, and immovable could be found" (ibid., p. 305).[92] As we know, Descartes finds this im-

movable point of support in the position: "I think, therefore I am," in the position that at the moment when I say it or think it, it is of necessity true. Why should I create other fantasies, Descartes asks himself, I am not that organism that is called a human body, neither am I that fine, ethereal substance that permeates my members, neither wind nor fire, neither vapor nor breath, nothing of any of that which I am in my imagination.[93]

But, as we have seen, Descartes himself is forced to admit that nature teaches us nothing as clearly as that we have a body. We cannot have any doubt as to the reality of the pain, hunger, or thirst we experience. Our affects make it clear to us that we, together with our body, are one being. It is specifically passions that form the basic phenomenon of human nature.

In them, man appears most fully since thinking is possible only in the spiritual nature, and movement, only in the bodily nature. Evidently, if the teaching on passions stood at the end and not at the beginning of Cartesian philosophy, its Archimedes point would have to consist in direct evidence and certainty manifested in affects of unity of the bodily and spiritual nature. Thus, in itself, the indisputable truth contained in Descartes' words quoted above illuminates better than any apologia and better than any critical objections the radical fallacy of his system.

Thus, for Descartes, passions are not only the basic phenomenon of human nature, but also are completely impossible, meaningless, from the point of view of his system, and for this reason, an inexplicable phenomenon—a uniting of mutually exclusive, opposite substances in one being. Human passions are impossible from the point of view of Descartes' system: this is the fact, radical and central in significance, from which inevitably follows the position that no psychology of passions as a science is possible.

But if the oppositeness or separation between spirit and body in the teaching of Descartes is clearly and distinctly conceivable, then uniting both must seem inconceivable and impossible in the natural light of reason, and if this factually exists, then it contradicts the principles of the system and its explanation imposes the most difficult test for the teaching of Descartes. A study must be made to determine whether the philosopher can withstand this test without rejecting his principles. The result of such study shows that the test is fatal for Descartes' whole system and that its dualism breaks down on the concept and fact of the existence of man. The contradiction is so obvious that the philosopher himself admits it.

We shall not quote the statements of Descartes in which the contradiction of his views appears, statements in which he at one time admits this union of soul and body in man as a substantial unity and transfers the basic property of the one to the other, once considering the soul extended, another time, considering the body indivisible, maintaining that the soul and body considered in themselves also do not constitute the whole just as the hand does not constitute the whole human body, and for this reason, being incomplete substances, they need each other to be complete; then again, he denies that their uniting forms a unit of nature, seeing in it only a unity of composition and preserving wholly the dualism of his system.

Something else is of interest to us: the necessary and forced mutual penetration of theological and naturalistic principles in the teaching on the passions, principles that infer each other just as the left infers the right and that also cannot exist one without the other, like the top without the bottom. It is important that we show that the separation of both principles that contemporary scientific psychology tries to implement in the independent existence of explanatory and descriptive psychology, in the opposition of the emergent theory of emotions of Prince and in the mechanistic hypothesis of James, is nothing more than an illusion. Both principles appear to be indivisible in Cartesian teaching and in psychological science.

As we have seen, human passions are impossible in the world Descartes constructed in his system. For them to appear, he would have to change his own principles and admit a mixing of thought and space. This is where the fall of his philosophy begins, here is where a mixing of theology and naturalism begins. Descartes was forced to admit that the soul must engage with the body; he finds the place for this contact in the cerebral glands through which the body acts on the soul and the soul on the body. The point at which it engages with the body or enters with it into a connection must be spatial, local, bodily: now the soul is localized and becomes in this respect spatial. It is not clear in what respect it remains nonspatial or nonmaterial. The Cartesian position that only bodies are capable of moving and, independently of the first moving cause, can be set in motion only by bodies takes on a different meaning. Judging by this position (moving and brought into motion by a body), the soul must itself be bodily, and it shares the material entity regardless of all assertions that it is a thinking substance completely different from the body. The mechanical influence and connection that occur only between bodies now extend over both the soul and the body.

As Princess Elizabeth correctly noted, adding the two substances cannot be conceivable without space and materiality of the soul. Cartesian anthropology contradicts not only dualistic principles of metaphysics, but also mechanical principles of natural philosophy that the amount of movement in the world is constant, that action and reaction, action and counteraction are equal. These fundamental positions of teaching on movement lose validity as soon as movements in bodies can be generated by other than material causes. Whatever we might think about combining both substances in human nature, as a unity or as a compound, in the one understanding and in the other, it contradicts theoretical dualism and inevitably leads to its polarity.

It is impossible to say to which side the basic positions of the system are more inclined: toward pure theology or toward pure naturalism. Assuming a pure interaction of soul and body in a small segment of the cerebral gland, Descartes involves the soul in the mechanistic circuit of the passions and subjects the body to spiritualistic influence of immaterial energy equally. Just as in ontological teaching, it sometimes seems that in Descartes' teaching on the passions, the theological element reaches such an exclusive, dominant significance that here Augustinianism conquers naturalism; sometimes, conversely, it appears that there is no doubt that naturalistic principles wholly permeate the area of teaching on the soul. The one and the other are implemented in equal measure because the one and the other represent only two consequences of one and the same position on the possibility of mechanical interaction of the soul and the body in human passions.

For this reason, we must admit as an error of investigators, especially Fischer, that they overestimate the victory of the naturalistic principle over the theological in the teaching of Descartes. Considering the struggle of these principles in the ontological teaching of Descartes, Fischer says: the more the naturalistic element yields and diminishes before the theological, "the more the independence of things is dissolved in the independence of God, the more the naturalistic appears anew in the theological element, the more the Cartesian God ceases being a supernatural being, and the more this conception of God is naturalized and moves away from the Augustinian, even being converted into its complete opposite. The dualistic formula, God and nature, becomes the monistic: God or nature. Descartes only touches on it, Spinoza gives it a preponderant significance. Evidently, approaching Augustine,[94] Descartes actually approaches Spinoza. He goes out to meet him and goes so far as to express the formula that includes Spinozism in itself.

"Feeling himself drawn by his personal inclination toward the church father and the Augustinian harmony constructed by the theologian, and rejoicing that agreement with Augustinianism was noted in his teaching, Descartes, with the spirit of his teaching, prepares trends that naturalism completes and contrasts it in the most extreme form to the theological system. The fortunes of philosophy are stronger than persons who are its bearers and weapons. Descartes stands on the path leading to Spinoza, thinking, moreover, that he substantiated the religious teaching of the church. The basic position of his system is the naturalistic trend" (K. Fischer, Vol. 1, pp. 439-440).

The indisputable correctness of these positions of Fischer consists of the fact that the naturalistic and Augustinian principles in Descartes' system are so mutually connected into the single contradiction which they form that they continuously and uninterruptedly compel all basic concepts of the system to swing before our eyes like the well-known images that are presented to us from a direct and reverse perspective. The fallacy of Fischer's positions consists in a one-sided emphasis on the triumphs of the naturalistic principle and in underestimation of the force and viability of the theological system in Descartes' teaching. The error arises from the fact that Fischer limits consideration of this problem to a very short historical perspective. It is true that the objective development of philosophical thought brought to the forefront not the theological system of Descartes turned toward the middle ages, but his naturalistic system, and brought to life a direction that completes naturalism and contrasts it in the most extreme form to a theological system. But it is completely incorrect that further development of philosophical thought is predetermined by Descartes' teaching itself. The historical victory of the naturalistic direction occurred not only independently of Descartes, but despite him. Within his system, this victory is not noted at all. Within his system, the naturalistic tendency does not penetrate at all and does not subordinate itself to the theological system. In the Cartesian system, the latter is not a simple theological appendage as it is in Spinoza's system. In this respect, between Spinoza and Descartes there is not so much succession as a break. The direction that naturalism realizes and contrasts most sharply with the theological system simultaneously contrasts just as sharply with the theological system of Descartes himself. But here we return again to a point we have already investigated, where our path separated markedly from investigators who, like Fischer, wished to see in Spinoza a thinker who was and would always be Cartesian. Depending on this basic error, Fischer unilaterally evaluates the results of the struggle of mechanistic and theological principles in the Cartesian teaching on the passions. He points to the fact that, owing to the mixing of spirit and body in human passion, the soul is localized and becomes mechanized. But as we recall, Spinoza did not direct his basic objection against this point in Cartesian teaching. He tried to overcome the spiritualistic principle in the Cartesian teaching on the passions.

True, Descartes tries to soften the sharpness of this contradiction into which he falls with the principles of his natural philosophy, maintaining that movements of the cerebral gland, and through them also the movement of the whole body, may be elicited by direct action of the will on this privileged and unique organ of our body. He tries to reduce to almost zero the action of the spirit on the automatic activity of the body, to weaken, soften, qualitatively diminish it. It seems to him that in this way, the basic significance of his hypothesis of interaction will be solidified. He begins with what limits territorially the mixing of spiritual and bodily substance in man. Thus, it seems to him that he changes his own principles only in a limited segment, retaining their significance for all the rest of the enormous

territory of the human body. In the graphic expression of Fischer, he gives the body only the little finger of the soul, forgetting at the same time that if the anatomical territory where this mixing takes place is a spatially extremely insignificant and limited point, the principal significance of his assumption preserves all of its universal and absolute size (ibid., p. 446). In the expression of Høffding, if we assume that thought as such is capable of shifting even one brain atom by one millionth of a millimeter, all laws of nature will already be broken.

Descartes tries to present the matter in such a way that in that insignificant spatial point, the soul communicates to the body movements that are also insignificant in strength. In his opinion, the cerebral gland, as Spinoza says, "is suspended in the middle of the brain in such a way that it can be activated with the slightest movement of vital spirits" (Spinoza, 1933, p. 197). The gland can rotate easily and variously since it is in a hanging position. Moreover, Descartes assumes that the soul changes only the direction of physical movement, but does not elicit the movement itself. This idea of Descartes, known to physicists and adopted recently by Maxwell,[95] allows coordination of the idea of mechanical action of the soul on the body with the law of conservation of energy, which "teaches that when a force acts perpendicularly to the direction of movement of a body, it does not do work, but only changes the direction of movement, but not the velocity. For this reason, the real energy, measured by the square of velocity, remains as before. But Høffding says that only those can use this conclusion who can find meaning in the statement that the soul acts in a direction perpendicular to the movement of the brain particles and, in any case, we cannot avoid the difficulty caused by the law of inertia, if we understand by it that for every change in direction of movement, there must be an external, that is, a bodily reason. In the final analysis, the whole task is reduced to the question of whether the law of inertia, in the sense in which we understand it here, has meaning also for the processes in the brain with which the phenomena of consciousness are connected. Accepting one hypothesis or the other depends on the solution of this problem. And when people think that it is possible to avoid this problem, then by the same token, they will also reject the whole problem of soul and body" (1904, p. 60).

Finally, going in the same direction, Descartes tries to soften the contradiction arising from his placing the soul in the middle of the brain into the conarium, where it both perceives and moves vital spirits and from where it activates the body and is itself activated by them. The soul and the body are not mixed in reality, but only in a certain way. They are simply put together, but not united in the true sense of the word. Their difference is much greater than their connection. It is not difficult to see that all of these attempts to keep in the background the true significance of the position on the mechanical interaction of the soul and the body speak only of the profound anxiety that this point of his own teaching impressed upon Descartes and of his complete inability to deal with it in any satisfactory way, of the inexcusable naiveté of this great thinker with which he tries by quantitative modification of his statements to reduce to zero their principal meaning and of the complete impossibility of reconciling this point with the basic principles of his whole system. For Descartes, it remains only to admit (as he did in his answer to Elizabeth's question on how the union of soul and body can be explained) that we cannot grasp distinctly the difference in the substance of soul and body nor their combination since the one contradicts the other.

13

We can now consider as answered two of the four questions we noted relative to the connections between Cartesian teaching on the passions and the peripheral theory of emotions: (1) the question of the almost complete identity of the factual description of the plan of the mechanism itself of emotional reaction in both teachings, and (2) the question of the common mechanistic principle as the basic explanatory principle of both theories. But in the course of answering these questions, we inevitably had to touch upon a third question directly connected with the second question, specifically, the question of the extent to which the spiritualistic principle, directly connected in the Cartesian teaching with the mechanistic, unites or divides the two theories. To answer this question, we must explain more precisely the relation presented in the one teaching and the other between emotion and other mental processes.

We will begin with the teaching of Descartes, in which the problem of the relation between passions and the will occupies a central place. Descartes assumes the existence of absolute and unlimited freedom of the will as a purely spiritual force that serves our being god-like. Descartes formulates this basic position in the form of a thesis stating that, for this reason, the will is greater than the mind; this basic position is, as we shall see subsequently, the point of opposition of Spinozist teaching to Cartesian teaching. For Descartes, the mind seems to be limited since much is inaccessible to its understanding, and it comprehends much vaguely and unclearly. But there is nothing to which the will could not turn affirmatively or negatively or indifferently. Therefore, the sphere of its action is not limited by anything. It covers both what is known and what is not known, determining by its decisions the whole fate of the spiritual and corporal life of man. It represents an absolute value absolutely without natural limits, forming the final and real cause of everything that is accomplished in our soul.

From the idea of the will being primordial, absolute, unlimited, and subordinate to no natural laws, follows its relation to the passions. As we have seen, Descartes bases the genesis of passions purely mechanically. He contrasts his teaching to the old fallacies that considered passions as mental phenomena and could not see any corporal nature in them. Only with the establishment of a dual, spiritual–corporal nature of passions does it become understandable why passions can control the spirit and subjugate its freedom. Thus, passions contradict the very essence of our spirit. Usually to explain this fact, the soul itself was divided into two parts: "into the intelligent part and the unintelligent part, into the higher and the lower, and passions were ascribed only to the latter. Here, the unity of the soul, its indivisibility, was lost and the soul seemingly split into different parts and was made up of various personalities or souls, and its very essence was denied by this" (K. Fischer, 1906, Vol. 1, p. 381).

Descartes poses the question of the struggle of the mind or will with the passions in a different way. He admits the central significance of this fact, but assumes, according to Fischer, that this struggle does not take place in the spiritual nature of man, which seemingly rises against itself. Actually, the struggle occurs between two movements going in opposite directions that communicate to the cerebral gland, the organ of the soul: the one, by the body through the vital spirits, and the other, through the will; the first movement is involuntary and is determined exclusively by bodily impressions, and the second movement is voluntary and is motivated by intention established by the will. Bodily impressions stimulated by vital spirits in the organ of the soul, and through it in the soul itself, are converted in it into representations of feelings. If they pertain to a class of ordinary perceptions, they

leave the will in peace and, therefore, the soul has no reason to struggle with them. If, however, they disturb and excite our will with their direct relation to our mode of life, they are passions that impinge upon the will and evoke counteraction on its part.

Action flows from bodily causes. It originates with a naturally essential force and is accomplished according to mechanical laws; its intensity contains the force of passions; counteraction is free; it acts with a force that is spiritual and passionless in itself. For this reason, it can struggle with and overcome passions: the strength of this force is due to its power over the passions. A soul beleaguered by impressions of vital spirits can begin to experience fear, but reassured by its own will, it can remain courageous and overcome fear instilled initially by passion. It can reverse the organ of the soul and with it also the vital spirits, so that the members are stimulated to fight, whereas fear stimulated them to flee. Now it is clear what kind of forces struggle with each other in the passions. That which was taken to be a struggle between the lower and the higher nature of the soul is actually a conflict between the body and the soul, between passion and will, between natural necessity and rational freedom, between nature (material) and spirit. Through action on the organ of the soul, even the weakest souls can master the movement of the vital spirits, and in doing this, can direct the passions in such a way as to attain full control over them. The dual nature of man stipulates the dual nature of passions. They arise and act on the will as mechanical forces, but they may be overcome by the spiritual energy of the will pointed in the opposite direction. Now the foundation on which the theory of passions in the Cartesian system is based is completely understandable (ibid., pp. 282-283).

It is completely clear that the naturalistic and theological principles for explaining passions in Descartes are not in contradiction, that they supplement each other, and that only when taken together can they serve as a basis for his theory of interaction between the soul and the body, in which passions are the mediating link that translates mechanical energy to spiritual and spiritual energy to mechanical. In this respect, in Descartes' teaching, passion plays the same role in the system of mental forces as the cerebral gland does in the system of organs. As the gland is a representative of the soul in the body, precisely so passion is a representative of the body in the soul.

Descartes' basic idea that provides the tone of all the music of his teaching on the passions thus consists in recognizing the absolute power of our will over the passions. This alone is quite enough for rejecting forever the idea defended by Fischer that the naturalistic principle in Descartes's system subordinates to itself the theological system. The position on the unconditional and absolute rule of the will over the passions speaks for exactly the opposite, for the fact that the naturalistic principle in explaining the passions is wholly subordinate to the absolute god-like arbitrariness of the soul. According to this alone, the laws of nature prove to be broken once and for all in the life of the human being. The supernatural is in charge of the natural, and the principle of naturalism proves to be definitively compromised.

Specifically against this point, Spinoza directs all the force of his criticism and, what is most remarkable for a correct understanding of his teaching, begins with a refutation of the idea of the absolute power of the will over the passions by referring to experience. "Although the Stoics thought that affects depend absolutely on our will and that we can have unlimited control of them, experience, glaringly opposed to this, compelled them to confess, despite their principles, that considerable habit and effort is required for limiting and restraining affects" (Spinoza, 1933, p. 197). Descartes' opinion agrees completely with this teaching of the Stoics. He

admits that because of joining with the pineal gland, the soul perceives through it all the movements that arise in the body and can activate the body only with the help of the will. "Finally, Descartes maintains that although each movement of this gland is by nature evidently connected from the very beginning of our life with separate acts of our thinking, habit may connect them with other acts . . . . From this, Descartes reaches the conclusion that there is no soul so weak that with proper direction it would not be in a state to acquire absolute power over its passions. For in his definition, these passions consist in perceptions, sensations, or movements of the soul, referring especially to it and produced, preserved, and augmented by some kind of movement of vital spirits. And since we can join any kind of movement of the gland with any desire, and consequently that of vital spirits also, the determination of the will depends on our power alone; determining our will with certain firm judgments according to which we want to direct the actions of our life and combining with these judgments the movements of the desired passions, we acquire absolute power over our passions" (ibid., pp. 197-198).

Spinoza objects to Descartes' example relative to the will over passions given above. He says: "Further, I would like very much to know how many degrees of movement the soul can communicate to this cerebral gland and with what force the soul can maintain it in its suspended position since I do not know if this gland moves more slowly or more rapidly than do the vital spirits; and may not the movements of the passions, closely united with firm judgments, be separated from them anew by bodily causes? It would follow from this that although the soul firmly intends to move against dangers and to unite with this decision the movements of courage, at the sight of danger, the gland comes to a position where the soul will be in a state of thinking only of flight. Actually, if there is no relation of the will to movement, then neither is there any correlation between power or forces of the soul and the body, and, consequently, forces of the body can in no way be determined by forces of the soul" (ibid., p. 193).

The force of Spinoza's objection seems to be indisputable. If we assume that the will, acting as a mechanical force, overcomes passions, naturally the question arises as to this force being able to overcome the force of vital spirits and to communicate to the gland movement in the opposite direction only if—specifically as mechanical force—it proves to be greater than the force of the vital spirits. There is nothing to be done: if the soul is involved in the mechanical circuit of passions and acts as a mechanical force, it must be subject to the basic laws of mechanics. Consequently we must assume that, always and under all circumstances, the will of even the weakest soul will act energetically, exceeding the force of the vital spirits. But here another objection arises that is just as incontrovertible as the first. Of course, the will itself is roused to struggle with the passions by the vital spirits and, consequently, at the sight of danger, the gland may reach a position where the soul will be able to think only of flight. Again nothing can be done: if passions arise in the soul purely mechanically, they must, consequently, determine the action of the soul itself and deprive it of its absolute freedom to make one set of determinations and decisions or another of the will.

But no matter how irrefutable these objections may be, they really miss the target. They remain valid only as long as we, retaining the Spinozist formulation of the question, remain within the framework of natural and logical explanation. But as soon as we, like Descartes, base explanations of passions on the supernatural and irrational, then the enormous incongruity of his explanation becomes a natural attribute of the god-like miracle that our soul exhibits whenever it overcomes passions.

That Descartes consciously resorts to miracle in explaining the absolute power of the will over the passions, that he consciously avoids all natural and rational explanation of this question, that, in this way, he consciously subjects the naturalistic principle to the theological, is obvious from the distinction that he made between a possible natural explanation and the supernatural explanation he accepted of the power of the will over passions. The remote and vague possibility of a natural explanation glimmers in different parts of Cartesian teaching. Undoubtedly it occurred to Descartes repeatedly, but he rejected it each time.

A vague possibility of such a natural explanation is really contained in the example we gave in which the will, aroused by fear to flee, moves the organ of the soul in the opposite direction, rousing the body to fight, whereas fear roused it to flee.

Let us recall the point in the teaching on passions in which Descartes leaves consideration of the passions as they would occur in a soulless robot and goes on to consider real passions of man, adding to the complex machine that produces passions a soul capable of experiencing sensations or perceptions of movement of vital spirits. As we recall, movements of vital spirits in perception of danger act in a dual way: on the one hand, they cause a turn of the spine and movement of the legs that serve flight, and on the other hand, they cause changes in the heart that, in their turn with the help of the vital spirits, evoke in the gland the emotion of fear and cause movement corresponding to this emotion intended by its very nature to produce this passion in the soul. Thus, in rousing any emotion, the soul seems to be involved in its circuit. In perception of danger, simultaneously with a representation of the object, a representation of danger arises. Involuntarily, the will strives to protect the body by flight or by fight; for this reason, involuntarily the organ of the soul is activated and the impulse is conveyed to the flow of the vital spirits that incites the members to either fight or flee. The will to fight is bravery; the wish to flee is cowardice. Bravery and cowardice are not simple sensations but arousals of the will. They are not simply a representation, but a movement of the soul or passion (K. Fischer, 1906, Vol. 1, pp. 380-381). Thus, the will participates in all emotion. It is natural, therefore, to assume that in the case being examined, when the will overcomes fear brought on by passion and incites the body to fight, whereas fear incited it to flee, we are dealing simply with a struggle of two passions: of course, bravery and cowardice are identically passions that can be identically aroused by perception of danger. The will seemingly encounters two passions, bravery and cowardice, together, the one overcoming the other by force.

In another part of the teaching, Descartes comes even closer to the possibility of a natural explanation. As we know, he distinguishes six primary or primitive passions from which all the other special or particular passions can be produced as derivative or combined forms. The six primitive passions that are the base of all other passions are: astonishment, love, hatred, desire, joy, and sorrow. In this list of primordial passions, one passion, specifically astonishment, occupies a completely exclusive place. All primary passions are positive or negative since, according to Descartes' teaching, passion is aroused not by an object in itself, but by its value, that is, by the good or the harm that it does us. But there are objects that irrepressibly attract our soul by the power and novelty of their impression without in the least arousing our desire. These objects arouse astonishment, which is thus the only passion that is neither positive nor negative. "Of all our passions not one is as theoretical and as easy to recognize as astonishment. Descartes agrees with Aristotle[96] that philosophy begins with astonishment, which directs our will toward cognition. Astonishment involuntarily gives the will a theoretical direction and inclines it to cognition. For this reason, in the eyes of our philosopher, it is not only the

first among the primitive passions, but the most important of all" (ibid., pp. 394-395).

Descartes says: "Other passions may serve to compel us to turn our attention to useful or harmful objects, but only astonishment turns our attention to rare objects."[97] Thus, Descartes comes extremely close to a natural explanation of the higher, not mechanical, aspect in the life of the passions. He not only admits that the will itself is directed initially to cognition by astonishment, that is, by passion, and, consequently, is determined to act not of itself, not by virtue of its absolute freedom, but according to indispensable laws of the spirit–body nature of man to which all passions, including astonishment, are subject. Moreover, in explaining the higher nature of man, he admits the vague and unclear possibility of a path that Spinoza will follow later.

Some investigators more perspicacious than Fischer note specifically this point in the Cartesian teaching on the passions as a real internal uniting link between the theory of Descartes and that of Spinoza, which to a much greater degree than external classification of passions draws the two teachings together. These investigators go to another extreme, erroneously assuming that at this point, both teachings fully agree, losing sight of the fact, first, that, according to Descartes, the idea itself of a natural explanation of the action of the will on passions still is one of a number of vague and unclear ideas, and, second, that Descartes himself resolutely avoided the possibility of a natural explanation and openly took the side of the theological principle.

Thus, S. F. Kechek'yan[98] sees direct continuity between Descartes and Spinoza specifically at the point where the teaching on passions naturally approaches explaining the higher aspect of the life of our feelings and where psychology meets ethics directly. Studying the solution to the problem in Cartesian teaching that we are considering, the investigator says: "To study the mechanism of human passions and to explain their significance for liberating the spirit means to carry out the task of ethics. Specifically at the point where ethics meets psychology, the task arises of finding the mental property, the passion, that would in itself determine a moral form of life. Just as Spinoza will subsequently teach that affects can be suppressed only by other affects, so Descartes maintains that in the mechanism itself of passions it is possible to find a passion that will result in a greater good—freedom of the human will. It is important to note that in Descartes, morals have the meaning of science, and like all science, follow the only right method, the method of deduction, which is recognized as the method of natural cognition" (S. F. Kechek'an, 1914, pp. 8-9).

True, this author cannot but see that in the teaching on freedom of the will, Spinoza's position is opposite that of Descartes, but in his opinion, this is only an inconsistency of Descartes, nothing more. "Spinoza necessarily comes to rejecting free will, and here again Spinoza is more consistent than Descartes. The idea of identity of the will with accepting and rejecting belongs to Descartes. But he did not reach any conclusions from it that are dangerous to freedom of the will and retained for the will its independence of cognition and limitless arbitrariness of its determinations. Spinoza, on the contrary, interpreting Descartes' idea, found it necessary to merge will and cognition into one and saw in this a new argument for defense of the determinism that he was vindicating.

So there can be no question of the freedom of the will in Spinoza's system. Freedom, as the opposite of nature, cannot find a place in it. Freedom may be only an element of that nature, not an opposite to natural necessity but only one of the forms of this necessity. "Freedom does not destroy necessity, but assumes it," said Spinoza[99] (ibid., p. 111).

Thus, the agreement of the two teachings seems more than doubtful because they differ radically at the central point as only determinism and indeterminism, spiritualism and materialism, a natural and a supernatural explanation of the control of affect by will can differ. In the final analysis, the question is: does what is higher in man, his free and rational will and his control over his own passions, allow a natural explanation that does not reduce the higher to the lower, the rational to the automatic, the free to the mechanical, but preserves all the meaning of this higher aspect of our mental life in all its fullness, or to explain the higher, do we inevitably have to resort to rejecting the laws of nature, to introducing a theological and spiritualistic principle of an absolutely free will not subject to natural necessity? In other words, the question is: is scientific knowledge of higher forms of conscious activity possible or impossible, is human psychology as a science, not as applied metaphysics as it is in all consistent idealists, beginning with Descartes, continuing with Lotze, and ending with Bergson, possible or impossible?

It is indisputable that Descartes thought such a possibility of a scientific, natural explanation of the higher nature of man at least very vague and unclear, but on the whole, he did not reject it and finally adopted the second part of our alternative. Spinoza developed the first. Thus, while coming close to a certain degree at one point of the path, the two thinkers drew farther apart in opposite directions, making up in classical form two poles of human thought, striving to know their own nature. For this reason, we must consider the further development of the thesis on the continuity between the teaching of Spinoza and Descartes an error. Considering the solution of the problem of freedom in Spinoza's teaching, Kechek'yan comes to the conclusion that "the path marked out by Spinoza is a path not from slavery to freedom, but from his point of view, from one kind of slavery to another" (ibid., p. 146). Here, in a surprising way, our investigator repeats almost word for word the thought of Descartes himself, identifying all natural necessity with slavery and permitting only a metaphysical solution of the problem in the sense of recognizing the absolutely opposite natural necessity of freedom of the will.

"In this respect, Spinoza repeats the error of Descartes. According to Descartes, the higher good must, in a certain sense, become the subject of our desire and for this reason, a passion must exist that in itself determines a moral form of life. This is the point at which psychology and morals are closely intertwined with each other. As we have seen, it is the same thing in Spinoza. The mind must act as affect in order to ensure a moral life. According to Descartes, magnanimity is the passion that holds in its hands the reins of moral life. As long as the soul submits to desire, it is the plaything of the passions and can overcome some passions in no other way than by submitting to others. Thus, of necessity, any passion dominates in the soul. Magnanimity builds freedom. Descartes seems to forget that perhaps magnanimity is a passion, of a different kind, it is true, than the other passions, but nevertheless, a passion. For this reason, instead of freedom, in essence, we fall into a new slavery, from the frying pan into the fire: we do not free ourselves definitively, but only replace the master" (ibid., pp. 146-147).

We shall return again to the attempt to compromise Spinoza's teaching on freedom and demonstrate that, in this thinker, freedom is nothing other than slavery of a different kind, and to the attempt based on admitting the psychophysical parallelism of the basic point of view of the Spinoza teaching and on a purely Cartesian definition of the concept of freedom and slavery. For the time being, we shall put it aside. Something else must be our concern now: Descartes himself developed his idea in precisely the same way as contemporary Cartesian critics of Spinoza. For Descartes, this attempt to approach the natural explanation of human passions was

no more than a simple error that he immediately tried to correct, remaining faithful to the spirit of his teaching.

The basis of moral life, according to Descartes, consists of controlling our desires. Since passions nudge us toward action by means of the desire they arouse, we must control our desires—this is the main use of morals. Let us recall that Descartes admits two means against our vain desires, of which the first consists in a high and true self-regard, and the second, in reasoning about the everlasting determinacy of the course of things by divine Providence. The first of these means pertains to the area of passions, the second, to cognition. Thus, the illusory possibility arises of a natural explanation of freedom of the will as a product of higher development of the mind and passion. Descartes closes his work on the passions of the soul by pointing to the means for curbing our passions and for converting them into a source of the joy of life. This single means is wisdom. But the path to wisdom lies through the dark and dangerous valley of the passions. As we remember, among all the primitive passions, Descartes noted astonishment as the very first passion, superior to the others. This emotion, theoretical in nature, is the natural impulse that compels us to follow the path whose goal is wisdom.[100]

"As long as we are aroused by the force of a new and unusual impression, we are completely unaware of the usefulness or harmfulness of an object, which is the basic theme of all other passions. For this reason, astonishment precedes them; it is the first of passions and has nothing in common with the nature of the others, a nature that allows the opposite" (K. Fischer, 1906, Vol. 1, p. 389). Among the derivative or particular forms of passion, Descartes distinguishes different kinds of astonishment depending on the object, whose rarity strikes us, determining whether its character is outstanding as to greatness or nothingness, depending on whether through this object we or others will be free beings. Thus, astonishment leads to an evaluation of others, resulting in respect or contempt, and to self-evaluation exhibited as magnanimity and pride or pusillanimity and submissiveness.

Descartes ascribes a very special significance to personal self-valuation. "Nothing is so evident in a man's behavior, in the expression of his face, in gestures and in his gait as an unusually elated or depressed feeling of his personality. Elation or depression may be true and false. True self-respect is magnanimity, false self-respect, the opposite, pride. Descartes calls true humility, faint-heartedness, false humility, submissiveness. The criterion that makes separation of the true from the false in our self-valuation is laid down exclusively in the object of these passions. Only free beings can serve as objects of respect or contempt, and there is only one object genuinely worthy of respect: it is our free will due to which reason is dominant in our nature and passions are subordinate. Whoever has attained this freedom of will and in this way mastered himself, has magnanimity of the soul, and from this follows the truly great and only sure self-regard—an attitude of magnanimity. . . . Every respect for oneself that does not follow from a feeling of magnanimity and freedom is false as is every submissiveness that is based on other sensations and not on a feeling of the impotence of one's own will" (ibid., pp. 389-390).

Thus, freedom of the will, resulting in control of the passions, is the only object that can evoke in us that exalted passion of magnanimity that is a derivative form of astonishment and a special case of our self-valuation. But Descartes also admits the reverse dependence. If only freedom of the will were recognized as the only source and cause of the most exalted passion, then immediately after this, Descartes is ready to admit that this exalted passion itself is the source and cause of our freedom. The vicious logical circle that circumscribes his idea here is resolved in a completely unexpected way through a sudden abandonment of a natural explanation of the relation between the will and passions and the return to a supernatural explanation with the aid of the theological principle.

We remember that astonishment, according to Descartes, is a purely theoretical passion that compels us to take the path that ends at wisdom. This passion frees the instinct of cognition from bonds and compels it proceed to true self-knowledge and to true self-valuation. Thus, from the instinct of astonishment is born an attraction toward knowledge, from this, doubt of self-trust, and from this in the light of reason—that astonishment whose object is the greatest and most exalted of all properties: freedom of the will. From this springs the movement of the soul that Descartes called magnanimity of the soul, which holds in its hands the reins of moral life.

The vicious logical circle is perfectly obvious: on the one hand, from astonishment springs attraction toward knowledge, self-knowledge, and self-valuation, which lays the path to freedom of the will; on the other hand, from freedom of the will springs magnanimity, that most exalted of the passions. Astonishment lays the path for freedom of the will and freedom of the will calls forth the special form of astonishment that is called magnanimity. In other words, at one time, passion lays the path toward freedom of the will; at another time, freedom of the will engenders passion.

It remains only to break this vicious circle with a single stroke to get out of it. Descartes does this in the teaching on the weapons of the soul itself with which it overcomes passions. So long as the soul gives itself up to passions, it is their plaything; it can overcome some passions by giving in to others and in this way, it changes one master for another. This illusory triumph is celebrated not by the soul, but by one of its passions; the soul itself remains captive. On the other hand, if by the force of its will and freedom, with the mediation of clear and definite cognition, the soul has risen above the level of these desires, it will conquer with its own weapons and then its victory will be a true victory. Such victory is a triumph of the freedom of the spirit. "What I call its own weapons, Descartes explains, are the unshakable and reliable judgments of good and evil according to which the soul decides how to act. Only the very weakest souls pay no dues to cognition and allow their will to follow various passions in one direction, then in the opposite direction. These passions turn the will against itself and lead the soul to the poorest state in which it can possibly be. Thus, on the one hand, to us, fear presents death as the greatest evil, which we can avoid only by flight, while, on the other hand, ambition compels us to regard such cowardly flight as an even greater evil than death. The two passions draw the will along different paths and it falls under the influence first of one and then the other and constantly struggles with itself, and, in this way, makes the position of the soul servile and disastrous" (ibid., pp. 397-398; cf. R. Descartes, *Passions of the Soul*, Vol. 1, §48).

In this philosophical principle, which affirms that the will overcomes passions with its own weapons without pitting them one against the other, without the help of the passion of magnanimity, which Descartes called a kind of key to all other virtues and the principal means against intoxication by the passions, Descartes, as correctly noted by Fischer, "returns to his most profound basic principles" (1906, Vol. 1, p. 398), that is, to the teaching on the complete oppositeness of the spiritual and corporal nature of man and to the idea of an absolutely independent will. The victory over passions Descartes again considers to be a victory of the spirit over nature; he could repeat again the thesis that Spinoza attacked: there is no soul so weak that it would not be in a state, with proper direction, to acquire absolute power over its passions; even the weakest souls can master the movement of the

vital spirits by action on the organ of the soul and, in this way, control passions so as to be in a position to attain full control over them.

The possibility of a natural explanation of the higher in man, human freedom, was actually illusory. Like the finest spider web, like an incorporeal shadow of his naturalistic principle, it shines through the firm, basic threads of his system and is broken before coming to the end. This is why Descartes, as we have seen, cannot always make a clear distinction between passions of the soul and passions of a soulless machine. For this reason, as Fischer has correctly noted, the victory of the will over passions appears to be not a victory of a higher nature of the soul over a lower, of exalted passions over base, but a victory of the will over passion, of freedom over necessity, of the spirit over nature (ibid., pp. 398-399).

14

The relation between passions and the will as it is sketched in Cartesian teaching now appears to us in its true and real light. To explain the whole problem, we still have to consider the relation between passions and thinking and between cognitive and emotional elements of our mental life.

For a long time, the most various investigators saw the Cartesian teaching on passions as the greatest triumph of intellectualism, reducing feelings to a purely cognitive process. In the teaching on passions, Descartes actually assigns such a place to the role of the intellectual elements; according to Sergi's correct observation, an investigator like Lange might notice nothing except these elements in the *Treatise on the Passions* . . . and might completely conscientiously consider himself the inventor of the visceral theory. In an effort to present Descartes as the true founder of this theory, Sergi is ready even to regret slightly that Descartes in his *Treatise* scatters, a little here and there, ideas that perceptions, recollections, opinions, the idea of some kind of loved, hated, or frightening object, are the reasons for love, hatred, anger, or fear. Thus, according to Descartes, joy is derived from the opinion that we possess some kind of good.

G. Sergi tries to calm his anxiety and notes: a reader mature in physiological thinking can have nothing against Descartes' statement that opinion is a cause of emotion. But Sergi must admit that everything was simple and direct as long as we saw in man, consisting of a body and a soul, only a machine capable of experiencing passions due only to the play of the internal organs. The path of the visceral theory becomes burdensome and difficult as soon as it must take into account all the other parts of the machine and all the other aspects of the soul, especially when, together with passions, it must consider the relation of passions to other psychological phenomena. Actually, here our theory encounters unprecedented difficulties.

The theory clearly begins to swing between two possible causal explanations of emotions. On the one hand, the cause of emotion is considered in a unique organic state which, through vital spirits and the cerebral gland, is perceived by the soul as passion. On the other hand, sensation, perception, opinion, and idea are perceived as causes of emotion. The visceral and intellectual interpretation of emotion seemingly balance each other on the pans of the Cartesian scales. But this is only a seeming equilibrium. Actually, the pan with the visceral explanation is clearly preponderant.

Descartes introduces the distinction between proximate or final causes and remote or first causes. The final (proximate) cause of passions of the soul, Descartes says, is exclusively the movement that the spirits produce in the small gland located

in the center of the brain. The sources of passions must be studied and their first causes considered. First causes seem to be sensations and ideas. As Sergi discovers, in this distinction, the visceral theory does not yield even an inch of its territory to intellectualism. He sees evidence for this in that the theory is capable of managing completely without remote causes, which might be absent in cases due only to proximate causes: the play of spirits determined by the general state of the organism. When we are completely well, we experience a feeling of happiness which is not evoked by any function, but exclusively by impressions produced in the brain by movement of the spirits. In precisely the same way, we feel sad when we are not well, although we may not yet know completely what is wrong.

Thus, Descartes preserves the purity of his initial explanation and marks a sharp boundary between sensory and intellectual states that precede emotions on the one hand and passions on the other. Sensation and feeling seem to him to be separable to the extent that even where they are so indivisibly merged that, as we have seen, they cause many investigators, following Stumpf, to see a special class of experiences of sensations of feeling (for example, the feeling of pain), Descartes finds no internal connection between the one element of consciousness and the other.

True to his principle that ascribes complete meaninglessness to emotional experience, Descartes finds no understandable, explicable, in general possible and psychologically survivable connection between emotion as such and a sensory or intellectual state that would phenomenally be experienced by us as moments merging directly with the feeling that accompanies them. Working with lifeless, formal-logical delimited abstractions, Descartes considers any mathematical combination of sensations and feelings, any transposition in one experience of combinations of sensation and feeling that we know from direct experience, as equally possible and equally understandable to consciousness.

Thus, Descartes makes precise distinctions between joy and sadness on the one hand and satisfaction and pain on the other. As passions, the first differ from the second not only as sensations, but may be completely separate from them. It is easy to imagine that the most vivid pain would be experienced with the same emotional indifference as the most banal sensation. If, in thought, we follow the Cartesian method to the end, we might even be surprised that pain is so often accompanied by sadness, and satisfaction, by joy, that a sensation of hunger and desire, apparent in appetite, also represents accompanying internal phenomena connected with each other.

It would be impossible to express more clearly and strongly the idea of the complete meaninglessness, absolute chance, complete lack of structure and unconnectedness that rule in the area of relations between passions and the cognitive processes. Any combination is equally meaningless and for this reason, equally possible. Even the connection between hunger and appetite seems incomprehensible and meaningless, evoking our astonishment just like every connection between sensation and desire, between perception and feeling. Here, where confirmation of the nonsense of passions reaches apogee, where any uniting of everything with everything becomes the only guiding principle of psychological explanation, where an algebraic combination of dead abstractions celebrates a great triumph, where the last breath of living mental life has been extinguished, where the music of the passions, speaking in the language of Pushkin's Salieri, has been dissected like a corpse[101]—here, strictly speaking, Descartes brings to a logical end the basic idea of the mechanical origin of passions.

True, as we have noted, he does not succeed in this case in avoiding what he fears most of all—an explanation of emotions that is essentially sensualistic. Here,

we must agree with Sergi, who strives as hard as he can to show the triumph of the visceral theory in Cartesian teaching on the passions. He even assumes that at this critical point of the path, Descartes and James go opposite ways. This critical point of the whole teaching is disclosed for us at the moment when, having distinguished passions from perception and sensation of external objects in the sharpest way, whether we want to or not, we must admit that in the final analysis, passion is nothing other than a vague, undifferentiated, global sensation of the general state of the organism. Then it seems that passions or emotions no longer exist, but only sensations alone exist. In his discussion, Sergi maintains that James, fearing this result, falls into the Spinozist theory and deviates from the path marked out by Descartes. We have seen earlier that this is not so when we established, following Claparède, that the theory of James also inevitably brings us to the same dissolution of emotions in sensations. Trying to save his position, Claparède brings forth the concept he created of syncretic perception. If emotion is only consciousness of peripheral organic changes, why is it perceived as emotion and not as organic sensation? When I am frightened, why do I experience a feeling of fear and not a simple organic sensation of heart beat, trembling, etc.?

Thus, against this sensualistic, submerged rock, the theories of both James and Descartes break up. Claparède tries to save the position with the help of the now fashionable structural principle—this new goose that lays golden eggs. Emotion is a structure that unites various organic sensations. It is nothing other than a vague and general perception of a series of united sensations, which the author designates as syncretic perception. In other words, emotion is consciousness of the general state of the organism. As we see, the interpretations of Descartes and James differ in only one thing: in the admission of a structural or a structureless character of these sensations, to which both thinkers are forced, against their wills, to bring emotion. If we recall that James himself managed splendidly without the structural corrective that Claparède added to his theory and that in all the rest, Sergi and Claparède, interpreting every theory of their predecessor, agree completely right up to the literal and word-for-word coincidence of the resulting formula that reduces emotion to a global sensation of the general organic state, we can consider the agreement between James and Descartes, which Sergi tried to shake at this point, reestablished once again. They follow the same path and there is nothing surprising in their being confronted by exactly the same difficulties.

There is actually a disagreement between James and Descartes, but it does not occur where Sergi wants to see it: not with respect to the sensualistic explanation of emotions, but in a certain detail, a substantial detail, in the factual description of the emotional mechanism itself. At this point of the theory, Lange maintains a more strict and sequential line of Cartesian teaching than the James hypothesis does. As we know, James ascribes motor changes together with visceral changes to bodily manifestations of emotion that serve as its source and true cause: mimic, pantomimic, and exhibiting emotion in actions and behavior. As Sergi correctly notes, Descartes in this respect is close to James. In movements in which emotion is exhibited, Descartes always distinguishes internal movement (it causes the most emotional experience) and external movement (it is an expression of emotion or serves the interests of the machine that experiences passions). For Descartes, as for the ordinary view, flight is not the cause of fear, and aggressiveness is not the cause of anger.

We can continue to experience fear and anger having voluntarily stopped the movement of flight or aggression. Passions continue to be represented in the soul until the organic state that evokes them ceases, and the only thing that the will can do is to disagree with the actions that emanate from these passions. As we recall, the will can give the organ of the soul direction opposite to that which is determined by fear and, because of this, the body is incited to fight, whereas fear incited it to flee.

According to Descartes, mimicry that accompanies our emotions arises by chance due to the connection between the nerves that control it and the alimentary and respiratory apparatus because the facial nerve and the sixth pair of nerves have their origin in adjacent parts of the brain and are activated simultaneously by the vital spirits. Sergi notes with satisfaction that in explaining mimicry, Descartes remains true to his basic idea to the end, finding in it neither expression, nor cause, nor positive accompaniment to emotion, not finding any sense in it at all, and seeing in it only an accidental and neutral accompaniment to the play of emotional reactions. He sees merit in Descartes in that he remains more true to the point of view of the physiologist and physicist than Darwin, Wundt, or Spencer.

15

James and Lange radically differ with Cartesian teaching in only one point evidently. The question of the possibility of emotion with complete absence of peripheral changes, specifically visceral, separates the two theories. This question is directly connected with the possibility of the existence of centrifugal sensations. As we know, James spoke sharply against the theory of Wundt that allows such a possibility in the form of the presence of innervation sensations.

Descartes also allows this possibility. As Sergi says, in Descartes' teaching, the physiological direction intersects with other directions at each step and presents no difficulty in extracting from his *Treatise* an intellectualistic or finalistic theory, that is, a teleological theory of emotions. If these departures from the basic path cannot shake the general conception of Descartes on the whole, then in one point, the intersection of the visceral theory with the intellectualistic appears so distinctly that it cannot be avoided in any way. Both theories intersect exactly in the question of the possibility of emotional states that do not arise along the visceral path. Is it possible for intellectual emotions free of any mixing with the bodily state to exist together with emotions-feelings? Can passions be experienced with complete silence of the internal organs?

Descartes gives a positive answer to this question. He assumes that all perception, including emotions, may arise not just centripetally, but also centrifugally. He repeats many times that the final material cause of perception is specific movement of the spirits with their exit from the gland in the direction from the center to the nerves. The proximate material cause of perception is not the centripetal, but the centrifugal movement. Thus, in the Cartesian teaching there is the most general form of the centrifugal theory of mental phenomena. Usually, in order to move the spirits to exit the gland, as is necessary for perception, a change in the retina, in the ear, in the skin, or in the internal organs is needed. But hallucinations, dreams, and illusions of amputees show that this can occur in another way and that spirits may evoke sensations that are not aroused by any object. Descartes sometimes indicates this and compels us to think that movement of the spirits, which evoke all perceptions, may have causes other than those that facilitate them under normal conditions.

The ideas of the movement of our members, says Descartes, consist only of the fact that the spirits exit the gland, being directed outward in a certain way. Movements of the members and ideas of the movements may mutually cause each

other. It is enough for the spirits to exit the gland and be directed toward the optic nerve for us to perceive some object. It is enough for the spirits to be directed to a motor nerve for us to sense movement. It is enough for the spirits to be directed toward the cardiac nerve and to be capable of taking hold of it for us to experience a feeling of sadness. Passions are caused by spirits to the extent that they are directed toward the sixth pair.

In order for a movement of the members to occur, it is necessary for the spirits to reach the muscles, but for the development of a perception of this movement, it is enough for the spirits to exit from the gland in an appropriate manner. For this reason, for the development of emotion, it is not necessary for the spirits to induce a corresponding visceral storm at the periphery, in the thorax, and in the abdominal cavity. It is enough for the spirits to leave the gland as they are supposed to. The result of this is the possibility of passions with complete silence of the visceral organs.

However, Descartes himself did not realize the whole significance and the whole importance of the centrifugal theory of emotions. He did not reach the necessary conclusions from it. According to the observation of Sergi, Descartes' own harsh words spoken about Aristotle might be applied to him: he manages to say something close to the truth only by accident. The most substantial consequence of the centrifugal theory—the possibility of emotions with absence of visceral changes—was noted only by Descartes' successors. He himself bypassed this conclusion. Nevertheless, he seems to have sensed it at one time. We meet as if in passing this note of Descartes: when an object of love, desire, hatred, or joy occupies the soul to the extent that all spirits that are in the gland participate in the process of representing it in the soul and cannot therefore serve any motor manifestation, the body remains inert. This is ecstasy, these are the greatest emotions with no internal or external manifestations.

This one note is enough to explode the whole previous construction. It acts like a spark on the powder locked in the centrifugal theory of emotions. It creates a catastrophe. "What does it mean?" Sergi asks in dismay. We have before us emotion that is unfolding in all its splendor not only without participation of the visceral organs, but even without intervention of the motor neurons, without the possibility even of resorting to the centrifugal theory. This is a complete disruption of the visceral theory that casts us into pure sensualism or intellectualism. We are returning to the classical distinction between passions as feelings and intellectual emotions that do not depend on the body. Here new horizons open, new points of view, and the road becomes more tortuous and difficult.

The centrifugal theory of emotions, opening the possibility of a complete rejection of the opposite centripetal theory which constitutes the nucleus of Cartesian teaching on the passions, also found its heirs and successors in contemporary experimental psychology, which has thus far been so permeated with the ideas of Descartes and so kept alive by them that it can fully and justifiably be considered his own offspring. It is possible to show—and this is the task of the present section of our investigation—that all the principal contradictions of contemporary psychology, both those lying at the base of its crisis and those pertaining to its separate and particular problems, are contradictions embedded in the Cartesian teaching on the passions. In this sense, we do not know another book the study of which would be as central in its significance to understanding the real historical sense of the whole past of psychological science and its contemporary crisis as the last, concluding work of Descartes—his *Treatise on the Passions* . . . . We are justified in asserting that Descartes' *Treatise,* little known today and far from central among all his works,

stands at the very beginning of all contemporary psychology and all the contradictions that tear it apart.

All the contradictions of the Cartesian system, collected as if into a focal point, in his teaching on the passions are—to use a musical term—the basic theme with respect to which all contemporary psychology is nothing other than a variation that carries and develops this basic theme. In the course of the development of psychological science, Cartesian teaching disintegrated into a series of separate conceptions and directions that, as they are developed by separate investigators or in separate psychological systems, are, in external form, seemingly independent, logically complete, isolated streams of scientific thought, sharply contrasted with other streams that have their beginning in the same Cartesian source and are often engaged in an irreconcilable struggle. Internally contradictory in its own base, the Cartesian system of Descartes' psychological ideas could not but fall apart in the course of scientific development into separate, independent, and mutually inimical theoretical directions of psychological thought. This is why we do not find in any of the contemporary psychological systems a complete and entire embodiment of Cartesian teaching. Everywhere there are pieces, everywhere, only parts of the internally split, grandiose construction of this teaching.

But if we go beyond the separate psychological trends and separate scientists, if we rise above them and study the sources and roots of conflicting systems on the plane of historical investigation, if, with the help of theoretical, essentially philosophical study of the basic problems of contemporary psychology, we discover their internal unity and connection and show that behind the conflict of opinions there are contradictions embedded in the Cartesian teaching itself, then theories that are frequently polar will be not so much enemies as twins, not so much opposite positions that exclude each other on the plane of empirical knowledge as correlative concepts that presuppose each other and cannot exist one without the other just as the right cannot exist without the left. We have already seen this in the example of basic contradiction of the whole contemporary psychological crisis—in the problem of explanatory and descriptive psychology. Now we shall have the opportunity to once again be convinced of this in connection with the analysis of the teaching of Descartes on the first and last, proximate and remote causes of passions cited above, because the problem of a causal explanation is the basic problem of the possibility of psychology as a science engendering the historical division into explanatory and descriptive psychology. In this respect, the problem of causality is the cornerstone of the whole psychological crisis.

True knowledge is possible only as causal knowledge. Is psychology as a causal science possible, and is it possible generally in principle to apply to the world of the higher mental life of man a causal explanation that is the basis itself of scientific knowledge of the patterns and determinacy of everything that happens? Therefore, is scientific knowledge of the higher in man possible? In general, is human psychology as a science possible, or is it possible only as applied metaphysics? This question, and exclusively this question, is the subject of the argument between explanatory and descriptive psychology. In this sense, we may say that the apparent oppositeness of the twins of contemporary psychological knowledge is already present in the seed, in the unity of the contradictory teaching of Descartes on the first cause and proximate causes of passions.

But just as behind this general theoretical problem, on which the whole existence and the whole fate of psychology as a science depend, there are unresolved contradictions in the Cartesian teaching, advancing, on the one hand, a strictly consistent, absolute, mathematical principle of explanation and, on the other hand, overturning the same principle at only one insignificant point of endless extent—in

the cerebral gland of man—exactly like the unresolved contradictions of the Cartesian teaching on the passions, this time, contradictions of a factual character, such as the contradiction between centripetal and centrifugal theories of passions that we just discussed, stand behind the concrete and particular psychological controversy between teachings that allow only a peripheral origin of sensations arising from effects of the external world on our organs of feeling, and teachings that allow a central origin of sensations together with the peripheral, teachings that allow the spirit to know directly what kind of activity originates in its main organ, in the brain of man.

In this respect, we believe that in the historical investigation of the theoretical aspect of psychology, Dunlap reaches a conclusion that is incontrovertible and fundamental in significance. This investigator says that Descartes, who is recognized by everyone as the first among the founders of modern psychological theory, creates with his right hand an object of psychology while with his left hand, perhaps inadvertently, he destroys its bases and gives the whole structure of that science a decided list to the right which has been retained over the long course of subsequent development. In the *Treatise on Passions of the Soul*, he lays the cornerstone of physiological psychology and all of contemporary reactological theory, although his personal, reactological theory was discarded. In a discussion of method, however, as in his *Principles* . . ., he is inclined toward basing the objective in psychology in accordance with common sense and so prepares in advance the way for the pernicious teachings of psychophysical parallelism and epistemological dualism that were directly developed by Malebranche and passed on from him to J. Locke, and became the architectural plan for the development of psychology for the next three centuries.

We have a surprising coincidence of two investigations coming from two opposite ends that lead to establishing the fact that the whole argument about the fate of the peripheral theory of emotions is really generated by the contradiction between the peripheral and central theories of passions that, by no means only through an oversight of the great author, are peacefully united in the Cartesian teaching. We have already had the opportunity to cite one of these investigations. As we have seen, it shows convincingly that in a certain respect, the old and contemporary argument between the peripheral and central theories of origin of sensations and emotions, that is, the old argument between James and Wundt and the new argument between followers of James and the founders of the modern central theory of emotions, like Cannon, Dana, Head, and others, is actually a revival in a new form and at a new stage of development of the psychological science of the same controversy that is contained in the teachings of Descartes on the passions.

G. Sergi came close to establishing this fact by tracing the fate of Cartesian teaching in contemporary psychology of emotions. Speaking on the centrifugal theory of passions contained in the Cartesian teaching together with the centripetal theory, Sergi correctly cites Wundt and his remarkable theory of innervational sensations. According to this theory, in addition to peripheral motor sensations, also recognized is the existence of motor sensations of central origin that arise due to interaction of motor and sensory centers and allow consciousness to sense motor impulses directly at the moment of their generation. This direct knowledge of the generation of motor impulses is the sensation of innervation. In cases of paralysis and in the absence of any arousal of sensitive nerves of our musculature, consequently with complete absence and even the impossibility of any bodily movement, we can nevertheless retain a sensation of our motor impulses, our motor intentions. Because of this, a hemiplegic can have a motor hallucination.

The theoretical significance of the theory of innervational sensations was not definitively understood by Wundt himself nor by his opponents. It only aroused consciousness of a completely new principle in the author who introduced it into physiological psychology, a principle that stands in sharp contradiction to generally accepted teaching on the peripheral origin of all sensation that found incontrovertible factual confirmation, and finally the principle that allowed presentation in a more complex form of the relation between mental and physiological processes in the act of volitional intention.

This theory opened new, although quite obscure horizons. It allowed a vague hope that, with its help, complex volitional processes would be given a natural, causal, psychophysiological explanation, that they would not be reduced, on the one hand, to a simple mechanism of habit constructed on the circuit of central and peripheral moments of some motor act, and on the other hand, would not be given over wholly to the discretion of spiritualistic theories that would exclude any possibility of a natural explanation. Even its opponents felt this. For this reason, on their part, the theory met a criticism so fierce that it could not be compared to the criticism addressed to the peripheral theory of emotions of James. The opponents were no more conscious than was the author of the theory of its theoretical significance and joined the battle with arguments more of a factual than of a philosophical order.

Only later did it become completely clear that the theory of innervational sensations, nowhere visibly and openly opposed to the peripheral theory of emotions, is essentially its principal antagonist since it expresses an opposite philosophical trend that is manifested in it. Behind Wundt and his theory of innervational sensations stood Descartes with his centrifugal theory of passions just exactly as behind James and his peripheral theory of emotions stood the same Descartes with his centripetal theory of the mechanical origin of movements of the soul as sensations and perceptions of visceral changes.

Here, something that we have spoken of earlier occurred: the contradictory system of the Cartesian teaching broke into component elements and to each of the opponents was apportioned the honor of developing and defending one part against another. James fought against Wundt and, what seemed to him, the fantastic theory of central sensations. Wundt repudiated the peripheral theory of emotions of James. In both cases, one part of Cartesian teaching rose against another and the Cartesian system was developed from contradictions that tore it apart, but in neither case did physiological psychology emerge from the vicious circle of the system that seemed to be the fateful limit set to the development of psychological thought; it still has not been crossed.

G. Sergi always tries to prove that the James–Lange theory in its theoretical and factual content is contained wholly in the teaching of Descartes. This succeeds as long as Sergi considers only one side of the teaching. As soon as he approaches the other side, which contains the theory of centrifugal origin of emotions, by his own admission, he has to forget James and Lange for a certain time and turn to the thesis that is the opposite of the whole spirit of their theory (a thesis that James did not like and against which he fought) in order to find traces of the half-forgotten part of Cartesian teaching lost in contemporary psychology. Sergi says that this thesis was subjected to severe criticism, but the author developed it in an improved form and it could be revived. As we shall see later, the prediction was actually realized. But before we speak of this, we must look more closely at the connection of the Wundt theory and Cartesian teaching.

Sergi says that what we find in Descartes concerning the theory of innervational sensations has a much more general significance and includes the whole class of

perceptions that also encompass passions together with motor sensations. Descartes repeats that the latter material cause of perception is always a special movement of spirits when they exit, as they flow out of the gland, as they leave it and move from the center to the nerves. He admits that the proximate material cause of all perception is not centripetal movement, but centrifugal, and the centrifugal theory of psychological phenomena is thus contained wholly in his teaching on the passions and, moreover, in the most general form.

In striving for a full justification of Cartesian teaching, so typical for a certain direction of contemporary psychology that wants to see in this teaching the possibility of applying naturalistic and theological approaches to the human soul, Sergi defends the following idea. Where James appears as an opponent of Descartes, where he differs with the centrifugal theory of passions, there truth seems to be on the side of the great philosopher, those continuing his work, that is, the creators of the innervational theory of sensations—this later augmentation of Cartesian ideas. Sergi even finds factual confirmation for this. It seems to him that a natural consequence of the idea of the central origin of sensations is admitting the fact that the existence of passion is possible with absolute silence of the internal organs, since spirits evoke passion even without reaching these organs in some cases and do not cause any changes in them. This assertion leads us directly and immediately to the experiments of Sherrington: when a dog was separated in a certain way from visceral organs, it retained the ability to experience and exhibit emotion nevertheless.

The theory of James cannot avoid the objections raised by Sherrington in any other way than to refer to the possibility of affective hallucinations. Just as hallucinatory perception that is absolutely not peripheral in origin is possible, so hallucinatory emotion is possible, that is, hallucinatory perception of bodily changes in which emotion is usually exhibited when in reality such changes are absent. Descartes decidedly rejects such a possibility, although it seems that his centrifugal theory of emotions leads us directly to the necessity of admitting affective hallucinations. Without referring to them, remaining faithful to the internal logic of its system, the theory of the seventeenth century adjusts less painfully to contemporary experimental knowledge than do its younger brothers-in-progress.

It would, however, be a great fallacy to consider that in this case, James is at the pole opposite the Cartesian teaching. It is easy to be convinced of exactly the opposite: of the fact that in disagreeing with a certain part of that teaching, he remains wholly within the limits of its system. As evidence, we would like to refer to two circumstances. The first is connected with James' teaching on affective hallucinations, which we mentioned, which is seemingly a theoretical equivalent of the centrifugal theory of passions, seemingly another variant of solving the same problem that compelled Descartes himself to give up consistent pursuit of the mechanistic peripheral theory of the origin of emotions. The second is connected with the methodological significance of the centrifugal theory of Descartes. We shall consider both circumstances.

G. Dumas, studying the history of the development of the teaching on affective hallucinations, says that the physiological experiment only fails to confirm the James–Lange theory, but does not serve as its direct refutation; however, psychological and clinical observation is a basis for taking a more negative position with respect to this theory, since it has at its disposal a number of facts that the peripheral theory cannot explain at all. Here we must give the first place to the problem of higher, or finer, emotions from which James tried to separate himself with the unsubstantiated statement that they can be reduced either to physical satisfaction

or suffering or to judgments, while, because of the absence or insignificance of peripheral manifestations, they appear to us as emotions of central origin.

In the second place, we must put pathological manifestations of joy, which are not like either a joyful excitement or even like a calm experience of a joyful feeling, because the first are completely passive: it is an ecstatic joy, the bliss of saints. From these facts, we can draw a serious argument against the peripheral theory of joy. Self-delusion is usually noted in these cases of a seemingly catalytic state. Saint Teresa[102] describes her state thus: "Even at moments of greatest rapture, the body frequently seems to be dead and completely impotent: it remains in the position in which this state finds it, standing or sitting with hands open or folded. Sometimes in these cases, I almost completely lost my pulse. At least the sisters who were around me at these times assure me of this."

P. Janet[103] described in great detail the pathological state of ecstasy in which mental experience of joy was accompanied by a slowing of all vital functions. Movements are absent, respiration is attenuated, blood circulation is slowed, and the body is absolutely immobile. Mignard investigated clinically the state of passive joy that he observed even in idiots, patients suffering from senile dementia, and in progressive paralytics. As a result of the investigation, he concluded that in terms of mental changes, joy can be accompanied by an attenuation of all cognitive functions, intellectual, affective, and active, sometimes with complete inertia, and in terms of physical changes, joy can be combined with all the symptoms that are usually considered as characteristic signs of depression: with attenuated breathing and blood circulation, a drop in arterial pressure and temperature, and an inhibition of digestion. Finally, in an even more general form, joy can combine with distinctly manifested states of cachexia and dementia, that is, states of physical and moral decline.

Mignard presents a very probable explanation for these states that connects them, just like active joy, with absence of inhibition and full realization of a tendency. There are drives toward peacefulness just as there is drive toward activity, and sleep is a need, the realization of which never stops being pleasant. Passive bliss described and explained by Mignard comes very close to the goals of epicureans.

Seeing all the difficulties with which his theory was confronted, James could not bypass with silence the objection based on the presence of ecstatic joy. He himself cites other states of joy, evidently even richer though less characteristic from the organic point of view. He says: "If there is actually a purely spiritual emotion, I would be inclined to limit it to a cerebral sensation of the fullness and lightness of the spirit, a sensation of activity of thought confronted by no impediments. If there is a case of independent emotions, I would assume that the place to look for them would be in these raptures of pure thought" (1902, p. 317).

This position of James contains the same explanation of independent emotions aided by a full realization of tendencies, but in addition, it also contains the conception of cerebral synesthesia, which essentially speaks against a purely peripheral theory of emotions. We may confidently assume that in these kinds of cases, we are dealing with hallucinatory phenomena. James advances this hypothesis in order to explain the exception that, from the point of view of his theory, represents a state of ecstasy, but since this hypothesis has no basis other than defending a preconceived theoretical opinion, it may have only the significance of a simple reference.

It is not difficult to see that in the teaching on independent emotions, on purely spiritual affects, whether we consider them as affective hallucinations or as completely real affects in the fullness of their psychological nature, James really comes

to literally the same thing that Descartes came to: specifically, to admitting a purely central origin for emotions. Obviously, the logic of the well-known system, the logic of the facts that survived the system itself, has its own internal development. Whoever accepts one of its parts must unavoidably accept the other no matter how much effort he might make to destroy any trace of it in scientific psychology and no matter how brilliant a psychologist he might be.

Now we are fully justified in asserting that consistent carrying through of the mechanical principle in the peripheral theory of passions compelled Descartes to develop the opposite spiritualistic principle in the teaching on the central origin of emotions. Similarly, in the theory of James, if we take it in all its fullness, the laws of physiological mechanics, to which he appeals as to the ultimate source for explaining the nature of human feelings, necessitate assuming, as a complement to the idea of independent emotions, the idea of cerebral, that is, central, sensations, the idea of the purely spiritual innervational sensations of Wundt. Mechanism and spiritualism once again seem to be reunited into one teaching as they were once united in the teaching of Descartes on the passions of the soul.

For this reason, it seems to us that Dunlap was not right when, in discussing the controversy among contemporary psychologists relative to the central or peripheral conception of the origin of the sensation of emotions, he connects only one part of this alternative with Descartes. Dunlap, the faithful follower of James, says: I consider emotion as process, and when I try to learn how it arises, the only thing I can find is a change in the visceral organs. Probably James never adopted his own theory fully and to its end. He not only was a partisan of psychological parallelism, but also retained many spiritualistic feelings that he could not subordinate to crude, bodily dependence. You know, we usually perceive our stomach and bowels as something base and vulgar. It is curious that we do not assume that the brain, which is biologically not very significantly above them, is something base in relation to our feelings. The old theory proposed by Descartes according to which afferent currents cause an intellectual state and efferent currents, passions of the soul, seemed to James to be definitively refuted by Münsterberg. Obviously, James was mistaken (K. Dunlap, 1928, p. 159).

Dunlap sees the refutation of the old theory of Descartes in the contemporary thalamic hypothesis on the origin of emotions. Thus, he believes that the current controversy between the visceral and the thalamic theories goes back in only one of its parts to Cartesian teaching. The criterion that allows Dunlap to separate Cartesian theory, which allows innervational feeling on the one hand, from the James–Lange theory on the other, is the question of the mechanism of the origin of emotions—centrifugal or centripetal.

The mistake of such a representation arises for two reasons. First, Dunlap ignores the circumstance that Descartes' theory contains not only a centrifugal, but also a centripetal origin of emotions. Of this, we could be adequately convinced through the course of all the preceding consideration of the problem. Thus, the alternatives—central or peripheral origin of emotions—are already wholly included in Cartesian teaching. Some investigators, like Sergi, place the peripheral theory of emotions in the forefront in Cartesian teaching. Others, like Dunlap and Prince, give the first place in this teaching to the central hypothesis. Finally, a third group, like Spearman, see Malebranche as a direct successor in the Cartesian line, a general forefather of all contemporary theories of emotional life: McDougall, A. Bain,[104] and Wundt (C. E. Spearman, 1928, p. 40). Actually, as we have seen, in the eyes of Lange himself, Malebranche was the only person in 200 years who succeeded in creating a vasomotor theory with bodily manifestations of emotions because, with the astuteness of a genius, he discovered the true connection between

phenomena. Then, in his second investigation, with complete justification, Dunlap sees in Malebranche the real father of all of contemporary introspective psychology. We already know that Malebranche inherited this duality from Descartes. Thus, a necessary correction to the analysis of Dunlap presented above must be the position that both members of the antithesis—the central and peripheral theory of emotions—are equally indebted to Descartes for parentage; in his teaching they are not at all presented as alternatives, as antithesis, as opposite conceptions that exclude each other.

The second correction was actually made by Dunlap himself. As we have seen, he must agree with the fact that James never fully accepted his own theory, that together with the peripheral theory of emotions, he retained fully and purely the spiritualistic conception with respect to spiritual feelings, admitting their central origin, as well as the possibility of central sensations. Thus, James, so decisively rejecting the theory of innervational sensations, not knowing how to reconcile them, actually united the two opposite parts of Cartesian teaching. The agreement of James with Descartes is remarkable not only where Sergi so brilliantly proved and substantiated it, that is, not only in the visceral hypothesis of the origin of emotions, but also where Sergi sees—this time, together with Dunlap—the opposition between the two investigations. As we recall, Descartes tries to reconcile the opposite views on the origin of emotions contained in his teaching with the help of the difference between passions-feelings, which arise as a result of changes in the internal organs, and intellectual emotions, which are completely independent of the body. In almost the same words, James speaks of independent emotions that arise from the sensation of the activity of pure, unimpeded thought.

With these two essential corrections, we may admit that the picture drawn by Dunlap and his historical analysis are basically correct. His achievement consists in that, proceeding from a point opposite that from which Sergi started his investigation, he was able to reach the same results. Sergi proceeded from Descartes and came to contemporary psychology with the contradictions between opposite conceptions of emotions that split it. Dunlap proceeded from the contemporary scientific controversy and came to Descartes with his contradictory theory of the passions. Thus, both investigations, proceeding from opposite ends, meet at one point and coincide in their definitive results and conclusions. This may serve as yet another proof of how much the main Cartesian problems are not incidental and peripheral reminiscences in contemporary psychology of emotions, but its only genuine and real bases, how much all of contemporary psychology of emotions with all of its achievements and contradictions is Cartesian in the true sense of the word, not only because of a historical connection with the teaching of Descartes, but also because of the fact that it lives and breathes, struggles and suffers thus far in the vicious circle of this teaching. For contemporary psychology of emotions, Descartes is not the distant past, but the very living reality of today. As Molière's well-known hero, without suspecting it himself, spoke in real prose, contemporary psychology of emotions, without itself realizing it, speaks in the classical and pure prose of the Cartesian *Treatise on the Passions of the Soul.*

But both investigations—that of Sergi and that of Dunlap—agree in still another point of paramount importance. As we have seen, Dunlap was forced to admit that James, in assuming the existence of purely spiritual and independent emotions and supplementing his peripheral theory with spiritualistic conceptions, actually held to psychophysical parallelism. Irrespective of James, Sergi establishes the same connection between the centrifugal theory of emotions in the teachings of Descartes and parallelism. Thus, the factual coincidence of Descartes and James grows into a most profound philosophical kinship of the two thinkers. Sergi says that the cen-

trifugal theory of perceptions occupies a most definite place in the history of Cartesian parallelism. The Cartesian teaching on the passions and the theory of James are united not only by the presence of the peripheral and central hypotheses on the origin of emotions, but also by something much more important, specifically, the common solution of the psychophysical problem, the common answer that they give to the question on the relation of thought and space, the soul and the body in human feeling. Without this point, our analysis of the two teachings would be incomplete. For this reason, in the conclusion of the chapter, we shall consider this last point of the present part of our investigation.

Thus far in the course of our investigation, we stressed unilaterally only one aspect of the Cartesian solution of the psychophysical problem as applied to the theory of passions. We tried to study the hypothesis of the interaction between the spirit and the body originating in the cerebral gland and the consequences following from that hypothesis. But, as we have said, assuming a direct action of the spirit on the body and the body on the spirit is the exception rather than the rule in Descartes' system. It is in irreconcilable contradiction to the basic thesis of his whole system, according to which thought and space represent opposite substances that exclude each other. The true basis of Cartesian psychology for this reason is not the hypothesis of interaction, but the theory of psychophysical parallelism.

The oppositeness of the spirit and the body are for Descartes the basic point of his whole system. Nothing that thinks is spatial. Nothing spatial thinks. Thought and space are different as Descartes expresses himself in the argument with Hobbes.[105]

But if oppositeness or separation between spirit and body is clearly and distinctly conceivable, then, in the natural light of reason, uniting the two must seem inconceivable and impossible; and if such a union actually exists, it contradicts the bases of the system and its explanation subjects Descartes' teaching to the most difficult test. We must investigate whether the philosopher will stand this test without denying his principles.

We have already seen that Descartes' system does not stand the test and is forced to change itself in the hypothesis of interactions and to resort to denying its own bases. We shall not repeat everything here that was said in this connection above. Let us recall only this: specifically because of the fact that the psychophysical problem was not at all resolved from the point of view of the absolute dualism of the Cartesian system, Descartes was forced to admit an interaction, trying in every way possible to limit it to only one point in the universe, the insignificant territory of the cerebral gland, and keeping the principle of dualism in full force for all the rest of the infinite universe.

Thus, the hypothesis of interaction is not just a basic principle of the system, but its stumbling block, not its basis, but the place of its complete downfall and demise. There are no stronger objections to this system than the incontrovertible facts of nature itself. Man is the negative instance of complete dualism of a spiritual and bodily nature since he is the one and the other together. The philosopher explains: in reality, the spirit and the body are completely separate from each other, there is no communication between them; I see this in the light of reason. Human nature is convinced of the opposite because it represents such communication. According to the concepts of the dualist, natural things are either spirits or bodies. Man is living proof of the opposite: he is a natural being that is simultaneously the one and the other. The voice of his self-confidence says to man: you are spirit. The voice of his natural inclinations and needs says just as clearly: you are body. The substantiality of the spiritual and bodily nature and, at the same time, their dualism

break down on the concept and the fact of man's existence. The contradiction is so obvious that the philosopher himself admits it.

We have seen that the hypothesis of interaction is found in sharp contradiction with all the bases of the Cartesian system. Correctly understood, it leads to their complete denial. The soul is localized and, thus, it is materialized and mechanized. Moving and activated by the body, the soul must itself be bodily; it is made of material substance regardless of all protestations that it is a thinking substance completely different from the body.

Cartesian anthropology contradicts not only the dualistic principles of metaphysics, but also the mechanistic principles of natural philosophy. That the amount of movement in the world remains constant, that action and reaction, act and counteract are equal—these fundamental positions of the teaching on movement become invalid as soon as movements in a body are generated by nonmaterial causes. No matter how we thought of the union of the two substances in human nature—as a unity or as a compound—in the one concept and in the other, it contradicts theoretical dualism and leads unavoidably to its opposite.

We recalled these positions, which we considered before, only to show the extent to which the hypothesis of interaction contradicts the whole Cartesian system, and consequently cannot be considered as a basic solution of the psychophysical problem for this system. We repeat, this is nothing more than a unique object, the only exception in the world to the general law on relations between thought and space.

What is the general law? The answer can leave no doubt at all. This general law is the law of parallel and independent existence of absolutely opposite, mutually exclusive substances of thought and space that do not meet anywhere and do not communicate one with other. Actually, what else is parallelism if not the assertion contained in the formula of Descartes that, in reality, the spirit and the body are completely separate from each other and that there is no communication between them? What else can the parallelistic hypothesis mean if not absolute dualism of mental and physical processes?

Now we are interested in two points directly connected with the teaching on passions. It might have been thought that Descartes keeps the hypothesis of parallelism for the whole system with the exception of the psychological part in which he rejects parallelism and remains wholly committed to the hypothesis of interaction. But to think that would mean to fall into serious fallacy. As has already been said, to prove this, we shall limit ourselves to considering two points connected with applying the hypothesis of parallelism to an explanation of human passions. The first was already noted by Sergi and is connected with the centrifugal theory of the origin of emotions. The second is directly connected with the problem of sensations in Descartes' teaching and with determining their nature. We shall consider these.

If, as the Cartesian centrifugal theory admits, passions of a purely spiritual nature that have no relation to bodily states are possible, if there are intellectual emotions, pure ecstasies of the spirit, sublime feelings without any external or internal manifestations on the one hand, and on the other, sensual passions are possible that arise purely mechanically just as they would arise in a soulless robot, passions of a purely bodily nature that, as we have seen, Descartes himself could not consistently and precisely distinguish from passions of the soul, we can reach no other conclusion from this except a conclusion on absolute independence and parallelism of the spiritual and bodily aspects of human passions. In sensual passions, played out according to mechanical laws completely identically in a soulless robot gifted with the consciousness of man and in intellectual emotions absolutely

independent of the body, speaking in the words of the Cartesian formula, the spirit and the body would in reality be completely separated from each other and there would be no communication between them. This is what pure parallelism is.

But in the Cartesian teaching, parallelism stretches much further. The interaction between the spirit and the body allowed by this teaching is only an instantaneous infraction of the law of parallelism at the moment when vital spirits compel the soul to experience passion, an instantaneous Fall of the soul entering into a bond with the body. Before this insignificant instant and after it, the body and the spirit, experiencing passion, live completely self-sufficient, independent lives subject to opposite laws. In order to be convinced of this, it is necessary to recall three concrete examples considered above, which Descartes uses to develop his idea.

The first pertains to emotional reaction as it is played out in a soulless machine. As we recall, Descartes considers a frightening figure acting on a soulless robot and evoking in him a number of motor changes in the muscles and in the internal organs. A picture is created of a frightened living machine preparing to flee. Thus, passion does not yet have anything mental in it. It is played out according to purely mechanical laws and is explained exclusively by the naturalistic principle. Everything occurs as if the soul were completely unnecessary and the body, a perfectly acting robot.

This example leads us directly to the second example, in which Descartes returns the soul previously taken away from him to the living robot. Joining mental activity to bodily activity does not essentially change anything in the automatism of passion. To the series of phenomena occurring in the body, another series occurring in the soul is simply joined, which consists of bodily sensations arising in precisely the same way as sensations of external objects. Reducing passions to sensations and perceptions converts them into passive states of the soul that change nothing in the course of automatic passion. With all clarity, Descartes develops the idea of dual effects, maintaining that the movement of vital spirits evoked by perception of the frightening figure results in two mutually independent effects: on the one hand, it activates bodily automatism of passion, and on the other, it evokes, maintains, and reinforces emotion in the soul. Here parallelism reaches its full and definitive form.

Finally, from these two examples in which epiphenomenalism of mental emotion appears with maximal distinctness, in which spiritual and bodily effects are so separated from each other that they can be considered completely apart, we move to the third example: to the struggle of the will with passions. We already know that spiritual and bodily passions arise at the sight of a frightening figure as two self-sufficient, independent, and parallel series of phenomena. Two parallel lines meet, intersect at one point in a completely inexplicable way, and continue to develop completely independently, each according to its own laws. If a living robot were completely without a soul and capable of experiencing passions, nothing would change in the appearance and fate of emotion. This is why Descartes, it seems, is not able to make a precise delimitation between the passions of a robot and the passions of the soul.

In the third example, Descartes joins to the robot not only the passive aspect of our soul capable of experiencing perceptions and emotions, but also its active aspect, the will. Here we have the same situation, only in reverse form. The soul, spurred by movement of vital spirits, experiences fear, but the will can induce it to overcome fear and make the organ of the soul reverse direction and, together with it and the vital spirits that prompt movements of the body, cause actions opposite to those that were initially suggested by passion. Instead of flight, the body is incited to fight. Again parallel lines intersect for one instant only to take a parallel course

again and develop according their own laws. In the teaching on the power of the will over passions, the bodily array, which characterizes passion, is itself converted into an epiphenomenon.

As we recall, for Descartes, the struggle of the will with passions occurs not in the spiritual nature of man—no struggle occurs in the soul, but exclusively between the spiritual and bodily aspects of human nature. Actually, there is a conflict between two opposite directions of movements which are communicated to the organ of the soul: one by the body through vital spirits, the other by the soul through the will. The first movement is involuntary and determined exclusively by bodily impressions, the second voluntary and motivated by intention established by the will. The soul overcomes passions with its own weapons and, according to its determination, directs the movement of the body.

All three examples culminate in the teaching on purely spiritual emotions that can arise and take their course independently of the body. So, according to Descartes, in the two extreme cases, we can consider passions as either the pure product of bodily automatism or as the pure result of spiritual activity. In the two middle cases, the one and the other meet for an instant only to return once again to the original, independent position. It is enough just to glance at these examples taken together to be convinced that parallelism is the basis not only of the whole system of Descartes, but also of that part of it that comprises the teaching on passions. And in passion, as in the whole universe, space and thought are completely independent of each other and there is no communication between them except for an instantaneous intersection of parallel lines. And in passion, nothing spatial thinks, and nothing that thinks is spatial. The parallels intersected for an instant and again became parallel until the next instantaneous intersection. The hypothesis of interaction is introduced only for explaining this instant; it is nothing other than a forced concession with respect to the incontrovertible fact of combining space and thought in man. But this concession is a momentary weakness of the system itself that is a considerable embarrassment to its author as a betrayal of itself and not at all as its base. Parallelism remains the true base.

In Descartes' teaching on the relation between passions and sensations, we find even more serious evidence of the parallelism that is the basis of the teaching on passions. A consideration of this problem is the last task of the present part of our investigation.

Two points in Descartes' teaching on the passions are of paramount importance in this respect: first, reducing passion to sensation and perception of intraorganic changes, and, second, recognizing passions as the exclusive property of human nature and rejecting it in animals. As we recall, Descartes refers passions of the soul to a passive state of our consciousness, considering them as a special case of perception. He speaks of passions as of perceptions and sensations of the soul evoked by sensation of vital spirits; in other places of the *Treatise*, he returns many times to this idea, maintaining that passions arise in the soul precisely as they do in the sensing of objects represented by external organs of feelings and are perceived by the soul in precisely the same way. Passions are sensations, but sensations of a special type that represent changes to consciousness occurring not in the external world, but changes of one's own organism.

According to Descartes, animals are also living robots. Descartes strictly separates the concept of life and the concept of animateness. A living body is not an animated body, the soul is not a physical principle. The body lives not because the soul moves and warms it, and dies not because the soul leaves it. Life does not consist of the connection of soul and body; death is not their separation. Life and death is an inevitable result of physical causes. Life is a simple mechanism; death

a destruction of that mechanism. As Descartes himself says, death never follows as a consequence of one of the body's main organs being destroyed. For this reason, we can say that the body of a living man differs from the body of the dead just as a clock (or a robot of a different kind, that is, any kind of self-moving machine), having in it the bodily principle of the movements that it must make, together with all conditions necessary for their working, differs from the complex clock mechanism in which the moving principle has stopped working.

Animals are living, but not animated bodies. They are pure robots. However, they possess sensual sensations and instincts that must be considered as bodily movements that originate and can be explained according to mechanical laws. For this reason, everything that is common to man and to animals must inevitably be considered as a phenomenon of a purely bodily nature. For this reason, sensations, attractions in general (so also with respect to man) must be considered as mechanical phenomena that do not have anything in common with mental activity.

Dualism between animals and man moves Descartes toward the inevitable conclusion that animals are devoid of passions, since he considers passions as movements of the soul. Here arises one of the most insoluble contradictions of the whole system which encompasses the problem of sensation. Descartes' teaching vacillates with respect to sensations and, because of dualistic and anthropological principles, goes in three completely different directions. Initial reflections treat sensations and sensual perceptions as mental facts and refer them only to the spirit. The next reflections consider them to be anthropological facts and refer them to the connections of spirit and body, and the work on the passions ascribes to them the significance only of bodily mental facts and refers sensations and instincts exclusively to the body.

The attempt to explain the problem tangles us in snares of antinomy and dilemma. Sensation is once recognized as a purely bodily fact subject to mechanical explanation, and again as purely spiritual requiring spiritualistic consideration. Remaining within the system, it is just as impossible to accept sensation as it is impossible to deny it. More briefly stated, from the point of Descartes' teaching, the fact of sensation is not explained and is inexplicable. We are now interested in the contradiction exclusively in connection with the teaching on the passions. Here the contradiction is even more monstrous. On the one hand, as we have seen, the soulless robot is fully capable of experiencing passions, and on the other, animals are devoid of passions. On the one hand, passion is nothing other than a sensation arising in the soul, and on the other, sensation is nothing other than a purely bodily phenomenon. The only conclusion that can be reached is the following: since he is guided in his teaching on the passions by the naturalistic principle, Descartes inevitably comes to admitting a pure epiphenomenalism and human automatism in the rise and development of passions because, defining passion as sensation, and sensation as a bodily phenomenon, without noticing it himself, he maintains that passion cannot exist as a basic phenomenon of human, that is, dual, spirit–body nature. On the one hand, all passions that refer to the body remain purely bodily phenomena because even sensation, which passion is essentially, considered from the mental aspect, is inherent in the animal and is a mechanical phenomenon arising in a moving machine. On the other hand, there are purely spiritual passions independent of the body. The dualism of thought and space, pure and consistent parallelism, spoke its final and decisive word at this point. There are bodily passions and there are spiritual passions. No passion is possible that would be simultaneously bodily and spiritual, in which an actual communication, an actual connection between spirit and body would be possible, just as it is impossible that anything spatial would think and anything thinking would be spatial.

Thus, we approach the last point of the whole Cartesian teaching on the passions, the point that finished with a grandiose catastrophe, a complete destruction, all of this heroic attempt to explain the nature of human passions proceeding from the dualistic principles of the system. The end of the teaching is a full and entire negation of its beginning. Passions seem to be divided between the spiritual and the bodily nature of man, and each nature acts completely independently of the other. Where in this teaching is there a place for passion as a basic phenomenon of a dual, spirit–body nature of man that would be the only real basis of passions? In the teaching on passions, spiritualism and naturalism are two opposite poles. Dualism and parallelism appear as the actual base of the teaching on passions. Epiphenomenalism and human automatism are the beginning and the end, the first and the last words of all the psychology of passions.

16

We can be convinced from the last work of Descartes on this problem—his letter on love—that parallelism was actually the final thought of all his reflection on the nature of human passions. In this letter, he tells the Swedish queen[106] what the essence of love is and which is worse: excessive love or excessive hatred. The letter is a short exposition of the last thoughts of Descartes on the essence of love as well as on the essence of all human passion. "This letter is a small masterpiece in which every expert in philosophy, not knowing about the author and the reasons for the letter, but paying attention only to the course of the study, to the nature of the ideas, the selection of expressions, would say immediately: this is real Descartes. There is no other work this short (it stays within the framework of a letter) that would make it possible to know this thinker better" (K. Fischer, 1906, Vol. 1, p. 258).

In the letter, Descartes begins directly to distinguish intellectual and affective love, thus making the point of departure the distinction of spiritual and corporal passions that in the *Treatise on the Passions* . . . was only the concluding point. There is love as spiritual passion and there is love as sensual passion. The first arises from the fact that we know an object, the presence and possession of which gives us joy and the absence or loss of which causes suffering. For this reason, we strive toward this object with the full energy of our will. We want to unite with it or form a single whole with it and be only a part of that whole. Love is necessarily connected with joy, with sorrow, and with desire. These four tendencies of the will have their roots in the nature of the spirit and are inherent in the mental bond with the body. They are contained in the cognitive need of the thinking being. The joy and suffering of intellectual love are for this reason not passions, but clear ideas.

Even if an analysis of the *Treatise on the Passions* . . . did not bring us to the conclusion on the presence in Descartes' teaching of admitting purely spiritual passions, the letter would convince us of this. Developing the idea of the purely spiritual nature of intellectual passion sequentially, Descartes establishes that only by obscuring it can affective and sensual love appear based on the union of the soul with the body. These are the corporal states and changes to which that certain striving in our soul corresponds, but here the similarity and connection between them are not obvious to us. In this way, vague, sensual affective desires arise that have certain objectives that bring joy from possession of some objects and painful suffering from the presence of others, that cause loving the objects of striving and hating the objects of aversion: joy and sorrow, love and hatred—such are the basic

forms of sensual desires, the elementary and principal passions from the mixing and changing of which all the others are created; they are the only ones that we had even before birth because they are already manifested during feeding in embryonal life.

Intellectual love coincides with the need for cognition in our thinking nature; sensual love is rooted in the needs for nourishment of the organic nature. There are representations of objects worthy of striving (intellectual love) without sensual arousal and sensual desire, just as the latter may occur without cognition. There is love without passion and there is passion without love. In the ordinary sense, in human love, the two elements are united. The body and the soul are united in such a way that certain states of representation will accompany certain states of bodily organs and elicit each other mutually, like thought and word. In the same way, love finds its involuntary bodily expression in the excitation of the heart with accelerated movement of the blood. This spiritual-sensual love, this union of comprehension and striving, forms the sensation about whose essence the queen was asking.

Thus, the initial independence of intellectual and sensual, of spiritual and corporal passion, incomprehensible and inexplicable, the parallel accompanying development of the one and the other, the full possibility of their separate existence, the accidental quality of their uniting, which leads only to obscuring intellectual love, in short, all of the basic theses of Cartesian parallelism in the teaching on the passions, of the parallelism that leads to a complete separation of spiritualistic and naturalistic principles that the philosopher carefully tried to unite in his *Treatise*, appear here with a clarity that leaves no doubt about the true nature of Descartes' teaching on the passions.

But whoever takes the Cartesian path must inevitably come to his end point, the Cartesian conclusions. We have already seen that James not only started on this path, but inevitably had to supplement his automatic theory of emotions with the teaching on intellectual feelings independent of the body. In order to explain ecstatic joy, he had to admit the presence of emotions and sensations of a purely central origin from the beginning. But, as Dumas correctly notes, the problem must be formulated in relation not only to passive joy, but also to active joy. If once we admit the possibility of cerebral synesthesia to explain ecstasy, it is impossible for us to maintain that it does not play any role in any other emotions. Dumas says that if we follow to the end the theory of Lange and James, we can assert that active joy is reduced to consciousness of muscular tonus and all peripheral reactions. But we have just seen that the presence of cerebral synesthesia that elicits joy was admitted to explain ecstasy, and for this reason, we must distinguish in active joy the consciousness of organic excitation and the consciousness of this cerebral synesthesia. This pertains also to passive and active sorrow.

Continuing in essence the idea of James, depending on Sherrington's experiments and on facts of passive joy and melancholic stupor, Dumas assumes the concept of cerebral feelings of satisfaction and suffering that are not subject to peripheral explanation. The fact of absence of conscious sensitivity during electrical and traumatic stimulation of the brain, firmly established in physiology, speaks against this assumption. But there is a great difference between these rough and nonspecific and specific functional excitations, and, without falling into a contradiction with physiology, we can postulate a synesthesia of the brain. As we have seen, this conclusion is also reached in the contemporary thalamic theory of emotions, which sees the thalamus as the real source for the origin of specific emotional tone. The same point of view is supported by a number of other investigators with

data of chronaxie, who construct a hypothetical mechanism for this central synesthesia.

Dumas himself believes that in postulating emotions of a purely central origin, he only develops and supplements the theory of James. Challenging the place of the James–Lange theory in the difficult problem of the nature of emotions, we are trying to introduce more precise definitions into this theory that might make it more complex and more flexible, and in this way, reject the paradoxical and oversimplified formulae with which James wanted to startle our imagination.

It remains for us only to show that, according to the reliable note of Dunlap, James, remaining a consistent parallelist, not accepting to its end his own peripheral theory and assuming the existence of purely spiritualistic feelings, at the same time, preserved in his second spiritualistic theory all the theoretical bases of his main hypothesis. We recall that in this hypothesis, James considers exclusively the sensory, passive aspect of emotional reactions and arrives at epiphenomenalism and automatism. In his eyes, emotions represent unnecessary rudiments of long extinct animal adaptations or random reactions of a pathological or idiopathic character that do not admit any kind of sensible explanation. In his teaching on purely spiritual emotions, James not only openly takes the point of view of pure spiritualism, but even brings to unnatural proportions the thesis of epiphenomenalism of the mental aspect of our emotions.

Developing the basic hypothesis, James maintained that human emotion, devoid of any corporal backing, is empty sound. In his opinion, all higher feelings which he cannot finally subject to the laws of physiological mechanics must naturally be such an empty sound. To a still greater degree, the most spiritual emotions which arise from the activity of pure thought, and which James considers as not depending on the body, must also be such an empty sound. Defending his basic hypothesis, James does not maintain that such emotion is something that contradicts the nature of things and that pure spirits are sentenced to a passionless and intellectual existence. He wants only to say that emotion estranged from all corporal feelings is something unimaginable. The more we analyze our spiritual state, the more we are convinced that base passions and inclinations that we experience are essentially created and elicited by the bodily changes that we usually call their manifestations or results; all the more, it seems probable to us that if our organism becomes anesthetic, the life of affects, both pleasant and unpleasant, would become completely foreign to us and we would have to eke out an existence of a purely cognitive or intellectual character. Although such existence might seem ideal to ancient sages, for us who are several generations removed from the philosophical epoch that brought sensitivity to the forefront, it must seem somewhat apathetic and spiritless for us to strive toward it so stubbornly (W. James, 1902, pp. 316-317).

Three points may interest us as definitive results of comparing these two theories of James—the mechanistic and the spiritualistic. The first consists of the fact that the basic hypothesis of James assumes the existence of emotions, devoid of any corporal backing, only in the passionless intellectual existence of pure spirits, and excludes it from human existence. But if in the second theory, James considers higher emotions of the soul as arising from activity of pure, unimpeded thought, as independent of the body, by the same token, he takes the position of pure spiritualism, accepting the presence in human consciousness of emotions inherent exclusively absolutely in spiritual existence.

The second point pertains to evaluating the role that the spiritual aspect of our emotions plays. If in the basic hypothesis of James, it appears as an unnecessary adjunct, as a secondary phenomenon, which does not in any way participate in the real life of man, as a simple consciousness of peripheral changes, it must be de-

preciated to such an absolute degree that all human feeling, representing nothing other than simple consciousness of trembling and the sensation of distension of the nostrils, must seem an empty sound, the apathetic and spiritless activity of consciousness sentenced to eking out a wretched existence of a purely cognitive nature. This epiphenomenalism in the teaching on emotions reaches Homeric proportions in the hypothesis of James according to which all higher, purely spiritual feelings of central origin must be considered simply as affective hallucinations. To declare the higher life of feeling a simple merging of hallucinatory experiences, to declare higher emotion a hallucination, means to bring to an extreme the epiphenomenalism that is already contained in the James hypothesis. If higher joy accessible to man is nothing other than hallucination, then this is the last word in making human feeling meaningless.

Finally, the third point that appears from the method of examination we have adopted, in which one theory of James illuminates another, is the surprising coincidence between him and Lange in determining the definitive fate of feeling in the history of human development.

We have already tried to show that the theory of James excludes any possibility of development of emotions. Now we might supplement that position by showing that, in reality, it assumes their full demise as the only real outcome of the historical development of man. James, like Lange, begins with a hymn in honor of sensual emotions. An individual without feelings seems to him to be apathetic and spiritless and existence without feelings to be pathetic and impossible for man. But if we ask what these feelings are that are satiating our lives with sense and animating them, it develops that they are only pathetic rudiments of animal life, pale metaphors of our sensual reactions, problematic and artificial, idiopathic and pathological habits of the human species, simply accidental reactions of the organism, passively reflected in consciousness, like seasickness and ticklishness, shyness and love.

Like someone drowning, James grasps at the straw of the first bodily experience that comes to hand, as if it were genuine, vital, and indubitable. It was he who generated in all later psychology the increased attention to the least, scarcely noticeable, insignificant bodily manifestations. He is the one who inspired the idea that in the tension of the vocal chords and language we should see the true basis of human thought. As G. Stout[107] correctly notes, James equates spiritual activity with certain muscular sensations. Trying to show what is the central nucleus of activity that we call ours, James again, as in the teaching on emotions, tries to grasp at the straw that might have saved him from ruin. This nucleus, in his words, he found in certain intracephalic movements, which we usually contrast, as subjective, to the activity of the supercorporeal world.

As justification, James says that he raised only the question of what kind of activity deserves to be called *ours*. Since we are personalities, as opposed to the environment, movements that originate in our bodies figure as our activity, and James cannot point to any other activities that would be ours in the strict facial (*Russian Edition Editor:* personal) sense of the word. James proposes the completely correct position: since thoughts and feelings in themselves cannot be active, they become such only by inciting activity of the body. The body is the center of the cyclone, the origin of the coordinates. Everything turns on the body, everything is felt from its point of view.

All of this is incontrovertible. All of this is indisputably true. The tragic element of James' position, and with his, that of all of contemporary psychology, consists only in that they cannot find any way to understanding a truly sensible connection between our thoughts and feelings on the one hand, and the activity of our body

on the other. In the end, speaking in the language of James, the whole question might have been contained in a nutshell: how are our consciousness and our real vital life connected? Unless we understand this connection, consciousness will inevitably seem to be an epiphenomenon, a pathetic and useless adjunct to the automatic activity of our body, a passive reflection of changes occurring in it, and, in the best case, a chain of hallucinations of a dreaming spirit. But the misfortune is that the question of consciousness, and especially of emotions, is posed and resolved by James and all of contemporary psychology in such a way that the complete impossibility of finding any sensible connection between passions of the soul and real life of man is predetermined. This is why James cannot find the path from our thoughts and feelings, from our spiritual activity, to our real human life in all the inexhaustible richness of its actual content. Like a drowning man clutching at a straw, he must clutch at evidence of internal experience of the fact that spiritual activity consists of movements occurring in the head.

Actually, in the interpretation of James, no sensible and intelligent path leads us from emotions—with the sensations of excitation in internal organs, weakness of the limbs, shallow breathing lying at their base—to acts and actions of man, to his internal and external struggle, to his lively love and hatred, to his suffering and celebration. If, as James says, the essence of the emotion of fear actually consists of a sensation of accelerated heart rate, shallow breathing, trembling of the lips, weakness of the limbs, goose bumps and internal agitation, then no psychology except one believing in miracles will ever be able to explain for us the terrible weakness of the human spirit that we call repudiation and treachery from fright. If, as James says, the feeling of moral rectitude consists of changes in the sound of the voice and expression of the eyes, etc., then psychology will never be able to explain why Socrates sat in the dungeon and did not flee as his friends advised him to, and did not experience a feeling of fright with weakness of the limbs and shallow breathing.

The terrible result to which contemporary psychology of emotions brings us is to completely deprive the passions of the soul of meaning and to completely eliminate any hope of our ever understanding the vital significance of passion and with it, all of human consciousness. In reality, this result is already wholly and fully contained in Cartesian teaching, which we have just considered.

Basic and most terrible in this teaching is the fact that the soul from beginning to end is assumed to be outside of life. It does not at all participate in the life of the body. Life—common to us and to animals—belongs wholly to space and in this way excludes any possibility of the intimacy of which James speaks, the possibility of any interest and participation of the soul in real existence and in the real fate of the robot that our body is. Although, according to Descartes' statement, affects make it clear to us that we are in our own body not like a swimmer in a boat, but connected with it in the closest way, as if mixed in so that we form a single being,[108] with all his teaching on the passions, he maintains the opposite. His will controls passions similarly to the way a sea captain navigates when something in the ship breaks.

Using the example of intellectual and sensual love, Descartes shows the whole meaninglessness, unnaturalness, incomprehensibility, and inexplicability of the connection between the one form of passion and the other. What can there be that is common between the basic forms of sensual passions, which we had even before birth and which are rooted in the needs for nourishment during the period of embryonal life, and the sublime passions of the spirit, the source of which are the needs of cognition rooted in our thinking nature? We understand the statement of Descartes that they can and must exist separately, but we absolutely cannot under-

stand how they can exist together. Descartes himself states that the similarity and connection between them cannot be obvious to us.

Thus, the parallelistic solution of the psychophysical problem—dualism of the body and spirit, dualism between animals and man—inevitably leads to the same terrible idea of Descartes, to the complete separation of consciousness and life. Life, according to Descartes, not only does not include the possibility and necessity of consciousness, but completely excludes this possibility. From the very beginning, the soul is placed outside life. This fact leads to the situation that the psychophysical problem in Descartes' solution, that most abstract of all problems, it would seem, turns here into a problem of the role and meaning of passions of the soul in the life of man, a problem that gets the most hopeless solution of all the problems that confront humanity at any time: life seems to be absolutely meaningless, passions, absolutely lifeless.

But does not the contemporary psychology of emotions bring us to the same thing? On the one hand, there is the theory of innate emotions that exist even before birth, rooted in the animal nature of man, of archaic, rudimentary, random, absolutely meaningless and unnecessary organic sensations, and on the other hand, the theory of independent emotions, those lifeless hallucinations of the spirit. M. Prince is right when he says that contemporary psychology is confronted by a dilemma: either to break through to some kind of understanding, even the most remote and vague, of the unity of emotional consciousness and life, or to adopt an alternative hypothesis of dualism and parallelism, that is, epiphenomenalism and human automatism (M. Prince, 1928, p. 167). Contemporary psychology, like Buridan's ass, stands between these hypotheses incapable of selecting one of them, incapable of solving the most basic question, the problem of problems that McDougall formulates in two words: man or robot.

All contemporary psychology of emotions, without exaggeration and to the same extent as the Cartesian, is either a psychology of passions of a soulless robot or a psychology of independent emotions of lifeless spirits. All contemporary psychology of emotions can, for this reason, be recognized as whatever one wants, but not as a psychology of man. What has occurred in contemporary psychology of emotions might best be expressed by the hopeless cry of one of the heroes of a Chekhov drama, a senile old man left in an abandoned house in which the windows are being boarded up: "Man they killed!"[109] The pathos of the absolute meaninglessness of organic feeling and the absolute lifelessness of independent, hallucinatory emotions may nourish only the psychology of soulless robots or the psychology of purely rational man, who was the ideal of Kant and whose advent Lange predicted on the basis of his theory, the psychology of those pure spirits sentenced to passionless, intellectual existence, who seem to be, in the words of James, the ideal of the ancient sages.

Death is the last word of all contemporary psychology of emotions that, following Descartes, from the very beginning assumes a soul outside of life. It remains only to board up more firmly the windows of the empty house in which, according to the assertion of all real experts of the human spirit, there was always the sound of lively and passionate life and which is now only the last habitat of slain man.

But in this final act of the drama, with the spectacle of such a hopeless finale of the classical psychology of emotions, we are enveloped by a feeling of astonishment from which, according to the assertion of Aristotle and, following him, Descartes, philosophy begins. This feeling of astonishment, fraught with philosophical reflection, was demonstrated by one of the Russian poets. He caught sight of a leper eating grains of henbane, poisoned by their venom and experiencing the same state of great bliss that Mignard observed in idiots, in the feeble-minded, in

patients suffering from cachexia and dementia, in paralytics and the insane in a state of complete mental and moral decrepitude. If a fate of sublime joy is to be the lot of idiots and the insane, then involuntarily the idea arises of the complete meaninglessness of human passions as well as of all the life of consciousness.

17

It remains for us to sum up this protracted examination of the philosophical nature of contemporary psychology of emotions and, in concise conclusions, to define the fate of the Cartesian teaching on the passions in the development of psychological knowledge and the basic problems that confront the psychology of the future in connection with the final disintegration of the Cartesian thought dominant in this area of scientific experimental knowledge. We think that the whole course of the preceding investigation has demonstrated the correctness of our principal thesis with sufficient clarity: the James–Lange theory and the whole system of critical studies developed around it, which led before our eyes to the construction of a new theory of emotions, is directly connected, if we explain its ideological genesis and methodological basis, not with the teaching of Spinoza on the passions, but with the ideas of Descartes and Malebranche. It remains for us only to reach conclusions from this position and to evaluate theoretically the significance of this fact for further development of psychology as a science. We will evaluate primarily the theoretical metaphysics of all of that philosophical and scientific trend of thought that unites and combines into one current the theories of Descartes and James.

We have already had the opportunity to explain in detail that the theory of James and the theory of Lange, no matter how they seem at first glance to be strictly and consistently biological theories, even in a certain sense, a great triumph of the biological idea in psychology, actually are essentially antibiological theories since they are characterized by two basic traits: (1) the complete absence and basic impossibility of applying the idea of development to the sphere of activity that they study; (2) the epiphenomenalistic representation of the meaning of emotions that is the basis of this. We have only to trace the roots of this metaphysical conception that excludes any possibility of development in the area of emotions and any rational and comprehensible connection between emotions and consciousness as a whole, between emotions and the real life of man. It is easy to see that these roots are fixed in the Cartesian teaching on passions of the soul.

As we know, the idea of development was not at all foreign to Descartes. Regardless of the fact that the cosmology and physics of Descartes, as V. F. Asmus correctly notes, were immutably mechanistic, that Descartes understood interaction not as a dynamic counteraction, but as a mechanistic transmission of movement from body to body, nevertheless Descartes introduced the idea of development into cosmology and his cosmology is still cosmology. "He actually was the first in a new time to construct a cosmological theory grandiose in the extent of its synthetic scope" (V. F. Asmus, 1929, p. 35). However, even in the area of the cosmological problem, Descartes remains to a much greater degree a consistent adherent of the theological and mechanistic principles of his system than of the principle of development. He remains in complete agreement with the church teaching on the creation of the world, which for him was unshakable truth. He says: "There is no doubt that the world from the beginning was created in all its perfection in such a way that the sun, the earth, the moon, and the stars existed in it. On the earth there were not only embryos of plants, but plants themselves. Adam and Eve were created

not as children, but as adults. Christian faith and natural intellect convince us of this" (Descartes, 1914, p. 7). Just as precisely, Descartes preserves complete faith for the principle of explaining the world which he represents as an infinite aggregate of bodies mechanically acting on each other. For him, the basic law of nature remains the law of inertia. All bodies are infinitely divisible. As Fischer correctly notes, Descartes' explanation of nature rests wholly on mathematical-mechanical principles.

The explanation of life and consciousness in Descartes' philosophy is even more metaphysical, even more subject to mechanistic and theological principles. True, here we also find timid hints of the problem of development, which was itself knocking at the door but against which the doors of the Cartesian teaching seemed to be tightly shut. For a better understanding of the nature of plants or animals, says Descartes, it is much preferable to reason as if they were gradually generated from seeds and not created by God at the beginning of the world. In this way, we can discover certain simply and easily understood principles. From these principles, as from a seed, we can demonstrate the origin of stars, the earth, and everything that we can grasp in the visible world.

As we know, Descartes was concerned with the problem of embryonal development. For him, the solution of the anthropological problem encompassed physiological, psychological, and ethical problems. For him, the physiological problem pertaining to organs and functions of the human body was closely connected with the zoological. The organization of the human body must be learned from its beginning, from the history of the development of the embryo, but the latter, however, from the history of the formation of animal organisms. The philosopher constantly and zealously strives to penetrate into this area with the aid of anatomical studies of a comparative nature. Here, he draws directly from the spring of nature. He dissected animals and tried in this way to find a solution to the physiological problem experimentally. That Descartes sought a resolution of the secrets of life with the aid of comparative anatomy and embryology is remarkable evidence of his methodical thinking, which, in opinions of his biological work, must be placed above the great or small value of the results of this work.

He was interested very early in the beginning of animals and wrote a work on the human body. This is his treatise on man, considering digestion, blood circulation, respiration, muscle movement, actions of organs of feeling and sensation, internal movements and functions of the brain. In a reworking of the treatise, a new work covering animals and man appeared: a description of the functions of the human organism and an explanation of the formation of the animal, or, as the title states, a *Treatise on the Formation of the Embryo*.[110]

That the idea of the origin of animals and embryonal development was important to Descartes is clear from his letter to Elizabeth in which he touches on the question of the reworking of the *Treatise* that was just mentioned. He writes that in describing animal and human functions, he even dared to introduce and develop the history of the formation of the animal from its very beginning. He speaks about the animal in general since, as far as man in particular is concerned, he cannot elaborate because of lack of appropriate experience. In the letter, Descartes notes with complete clarity the limits of his idea of development. There can be no doubt that the problem of the development of animals and the embryo was vaguely present in his consciousness. However, he worked on this problem with respect to animals in general and not with respect to man in particular. Not only lack of experience thwarted this, as Descartes explains, but also something much more basic and essential. The foundation itself of Cartesian psychology completely excludes the possibility of the origin of even a vague idea of development. The

animal is another matter. We know that Descartes considers the organism as a self-moving mechanism, wholly subject to laws of nature and, for this reason, requiring a naturalistic explanation. In the psychological problem, on the other hand, Descartes is bound to the theological principle.

From the fact that from the very beginning, Descartes assumes a soul outside of life and considers the problem of life on an exclusively mechanistic plane, from the fact that he establishes absolute dualism of man and animal, and finally, from the fact that he considers thought and space in man as completely separate and mutually exclusive substances, it follows that he is faced not only with the basic impossibility of introducing a soul into his teaching on the passions and even the most vague rudiments and premonitions of a historical explanation, but he is forced to develop this teaching on a plane of basic anithistoricism, as a purely metaphysical teaching.

As we have seen, Descartes teaches that our primitive passions are rooted in the history of embryonal development. These are passions that originate from the embryo's vital need of nourishment. They develop around the digestive tract. No matter how complex they become subsequently, their whole history is only a superstructure over an unchangeable physiological base of the first days. The mechanism of passions of the adult person has its source in the structure and functioning of the embryonal machine. As we recall, specifically this circumstance caused Descartes to solve the problem of the causal explanation of the visceral nature of our passions. In this respect, Descartes was simply more consistent than his later pupils. If passion is nothing other than a change in the internal organs (the stomach, intestines, the heart), then the problem arises of making the connection between them rational and comprehensible, of finding its proximate cause. Descartes solves the problem by finding the cause and sense of this connection in the embryonal origin of passions. As distinct from later investigators, he is not satisfied with a simple description of the mechanism of passions, but wants to explain why in love and sorrow, the stomach exhibits great visceral activity, and in hatred and joy, this activity decreases.

It is immaterial that Descartes was so ready to admit an opposite connection between digestion and the passions also. Now the limitless pliancy of thought allows the assumption that the embryo experiences sorrow because it obtains inappropriate nourishment and is overjoyed because his stomach is being prepared for the intake of good food. No matter how firm the explanation and its factual certainty is, the basic status of the matter does not change by even an iota. It is important, and actually most important, that Descartes tries to give a causal explanation of the gastric origin of love and hatred, joy and sorrow, and that he finds this cause of basic passions of the soul in embryonal life.

In this position, full of theoretical significance, the visceral theory of passions finds completion and discloses the deepest and final bases. We cannot agree with Sergi, who believes that the shakiness of Descartes' factual explanations, his easy compliance, his readiness to change established connections between passions and the nourishment needs of the embryo compromise his whole structure. On the contrary, only at this point does the system acquire its true significance and sense. Specifically here Descartes appears as the physicist he wanted to be in the *Treatise on the Passions of the Soul*.

Only by taking into account the teaching on the embryonal origin of our basic passions of the soul can we accurately evaluate the whole conception of Descartes and understand its true relation to contemporary visceral theories of emotions. The basic passions of the soul are already established in the embryonal life of man, that is, they exist before birth. All later, complex, and derivative passions are nothing

other than variations or modifications of the embryonal states. In the letter on love, Descartes says directly that the basic forms of sensual desires, the elementary and principal passions from whose mixing and changing all the rest are created, appear during the periods of nourishment in embryonal life and are rooted in the nourishment needs of the organism. For this reason, these passions are a simple reflection in the consciousness of complex organic states.

It is impossible to develop more fully and clearly the theory of innate passions than does Descartes. Discussions pertaining to this question are a direct analogy to his teaching on innate ideas. As we know, the idea of God is presented in Descartes' teaching as a primordial given, not mediated by feelings nor in any other way, that is, as an innate idea that God imprinted in us, as an artist imprints his work. The basic passions are innate features of the corporal nature of man to the same extent that basic ideas are innate features of his spiritual nature. Descartes says: I do not maintain that the spirit of the infant in the mother's womb reflects on metaphysical problems, but he has an idea of God, of himself, and of all the truths that are known of themselves as they are in adults when they do not think at all about these truths.

Just as Descartes admits basic ideas that are known of themselves as innate and already present in the spirit of the infant in the womb of its mother, he admits that the spirit of the infant in the womb of its mother already experiences the basic passions of the soul—love and hatred, joy and sorrow—as adults do.

The teaching on the fact that basic passions of the soul are rooted in needs for nourishment in embryonal life and, as a result of this, are innate not only does not divert Descartes from his original path, not only does not represent a change in his whole basic conception, but, on the contrary, forms the concluding point of his investigation. He came to the point toward which he directed his steps. The idea of innate passions at first gives the whole teaching the significance of a basic conception, or a complete philosophical construction true to the basic principles of Descartes' whole system, and raises it above the level of simple physiological representations and surmises that inevitably become obsolete in time. No matter how vague Descartes' ideas on the real physiology of the human organism were, his philosophical idea on the nature of passions was for him transparent and clear to the end and remains so for us also. Only for this reason could it survive the centuries and be preserved as a living part of all of recent psychology. As we have said, this idea gives the only possible meaning to the whole visceral theory of emotions. Only it makes understanding the rational connection that exists between passions of the soul and the reality of the internal organs possible. For this reason, it is the last word of the visceral theory without which, as we shall see, all other variants of this hypothesis remain incomplete. The innateness of passions is the final base of the visceral theory.

Here we disagree decisively with Sergi, who bypasses this idea without understanding its theoretical significance and, for this reason, is inclined to see in it rather a deviation from the general conception than its completion. He calls Descartes the true founder of the visceral theory of emotions, depending exclusively on the purely physiological ideas of the philosopher. Moreover, only the teaching on innate passions, crowning the whole construction, gives us the right to consider Descartes as the real father of all of contemporary psychology of emotions since it revolves around the organic hypothesis on the nature of human feeling as around its axis.

According to Sergi's recapitulation of the content of Cartesian teaching, behind the finalistic appearance, behind the teaching on the intellectual emotions, almost foreign to man, behind sensations, recollections, and judgments, operates a mechanism that might be schematically portrayed in several words. External stimulation

and psychological and intellectual phenomena cannot arise without a very high degree of various centrifugal nerve currents; some of these provide more or less successful adaptation of the human machine to external circumstances, others are directed toward deep organs, and changes elicited there are transmitted in consciousness or into the language of visceral sensations or into the language of original emotions that are not reducible to anything else, Sergi says, completely bypassing the problem of innate passions. Sergi continues, the road Descartes chose, which he continued and made passable over such a great expanse, was later followed by numerous investigators and remains up-to-date now more than ever. It is frequently said condescendingly that he was the precursor, but if his archaisms are translated into our language, if the idea that animated him is freed from factual errors that now seem completely harmless, he would have to be accorded his real title as the founder of the theory, Sergi maintains.

We cannot but agree with this if we keep in mind not only what Sergi says over the course of his investigation, but also the philosophical significance of the theory founded by Descartes culminating in the teaching on innate passions. Specifically that part of the teaching survived the rest of the theory and formed the base of contemporary variants of the visceral hypothesis.

Strange as it may seem, thus far the fact has not been noted that the James–Lange theory is a theory of innate emotions. Bodily manifestations—that source and essence of emotional experience—arise purely reflexively. Like all other reflexes, they are innate reactions of the organism pre-established and prepared in advance by the whole course of zoological and embryonal development. They are inherent in man due to the organization of his organism and, strictly speaking, they exclude any possibility of development.

As we know, James saw a special advantage of his theory in the fact that it makes possible a causal explanation of emotions (which he finds in reflex acts), and in the fact that this explanation makes the amazing variety of emotions comprehensible for us.

We know that James, if he were living now, would be deeply disappointed with the expectations connected with the possibility of explaining the amazing variability of emotions on the basis of his theory. He would have to admit that the bodily manifestations of emotions are extremely uniform and stereotypic, and because of this alone, they cannot serve as a source of an explanation of all the variety of emotional reactions. But this is not of interest to us now. It is much more important for us to establish that James, seeing the cause of emotions in innumerable reflex acts, affirmed in contemporary psychology the Cartesian teaching on innate passions. It is true that the most various reflex actions are possible and that these actions vary endlessly. But it is even more true that the reflex act is an innate reaction of the organism, the most common in all the individuals of a given species, that it is the most changeless and absolute of all other forms of human behavior.

If reflex acts are the causes of emotions, we have no other possibility of explaining emotions except for admitting that they are innate passions. With all changes, emotions remain eternal, inviolable essences, like species that were at one time considered changeless in biology. As we see, James comes to rejecting what he started with. As species were at one time considered changeless essences due to the absence of the idea of development of a theory of evolution, so a theory of emotions that excludes the possibility of development inevitably leads us to admitting emotions to be eternal, inviolable, changeless essences. We have tried to show above that in a radical way this theory excludes all possibility of development. Not evolution, but involution; not development, but convolution; not a complication and a conversion into higher forms, but a dying off and conversion into rudimentary

vestiges; not progenetic functions with a future, but degenerating, archaic functions, survivors of a long past function—this is what the James theory represents. Its final word announces that emotion is a chance pathological reaction, a useless and unnecessary survivor of antiquity incapable of any development. This is even more distinct in the theory of Lange, who settles on the fact that the emotions are elicited mainly not by a simple impression from some organ of feeling, but by mental causes, recollection, and association of ideas, even if association itself is evoked by a sensual impression. To explain this, Lange develops the theory completely in the spirit of the teaching on conditioned reflexes, showing that the reflex act is initially connected with direct sensual impression and later is connected with other stimuli due to combination of the impression with new conditioned stimuli that become capable of eliciting it because of this.

Lange writes: "As an example of the simplest case, I want to present a fact, the truth of which every mother will confirm. The child cries when he sees a spoon from which he was several times compelled to take a medicine he did not like. How does this happen? Similar cases were quite frequently analyzed from the psychological point of view and we can find very different answers to our question. Some say: he cries because he believes the spoon is the cause of his previous suffering; but the matter is not at all explained in this way. Others say: because the spoon stimulates recollection of past suffering; this may be completely correct, but it does not transfer the problem to the realm of physiology. And yet another answer may be given: because the spoon elicits fear of a future unpleasant feeling; the problem consists specifically of how the sight of the spoon, because of its previous use, is capable of producing fear, that is, of eliciting a certain kind of activity in the vasomotor center" (1896, p. 70).

Lange's explanation consists in that "each time the child takes the medication, his feelings, gustatory and visual, are simultaneously impressed—the first impression from the medication and the second, from the spoon. The two impressions are connected, linked, and due to this, recollections can elicit emotions . . . If the child is shown a spoon that is not suspect for him, with which he did not previously experience the bitterness of medication it might contain, then instead of crying, he will try to grab the spoon. However, if the child has seen the spoon with the medication several times and noticed that this involves a sensation of a repulsive taste each time, then seeing only the spoon (in itself) will compel the child to cry; in other words, it activates his vasomotor center" (ibid., pp. 70-71).

C. G. Lange develops a hypothesis on the establishment of a new, functional connection between two centers, a connection that did not previously exist, by creating a new brain pathway. Pavlov's best student could not have explained more logically the origin of mental emotions through the conditioned reflex path. But Lange is more logical than contemporary physiologists and is bold enough to understand definitively that admitting a conditioned reflex emotional reaction changes nothing essentially in the nature of emotion itself. The whole matter consists only in "a much longer, circuitous path which the impulse generated externally must take before it reaches the vasomotor center. But as far as I can judge," Lange says, "the basic traits of the physiological process remain constantly the same: moving the stimulation from central organs of feeling to the cells of the cortical substance, and from the latter to the vasomotor cells of the medulla oblongata" (ibid., p. 74). In other words, the conditioned reflex remains a reflex in full and absolute measure, although it is elicited by new stimuli.

"Therefore I was justified in saying that the difference between emotions of physical origin and emotions elicited by mental causes do not, from the physiological point of view, contain anything favorable, anything substantial. The main thing is

that the determining factor in the origin of both emotions is one and the same thing: excitation of the vasomotor center. The difference is only in the path along which the impulse reaches this center. Another circumstance is added to this: in indirect mental emotions, the force of the impulse is increased over previously aroused and not yet extinguished brain activity which is combined with the impulse of the external impression" (ibid., pp. 74-75).

Actually, if we accept emotion as an innate, reflex reaction of the organism, the possibility for its development or increased complexity has a purely illusory character. Of what does development of a conditioned reflex consist? Exclusively of the fact that stimuli that elicit it and activate the reflex mechanism change. In Pavlov's experiments, the dog secretes saliva in a specific amount and of a specific quality when food is introduced. Then, when the conditioned reflex is established, it begins to respond with the same reaction to a new, previously neutral and indifferent stimulus, blue light, for example. But the salivation reaction itself remains completely unchanged in this case. The dog continues to secrete saliva in the same amount and of the same quality, but only for a different reason. The same thing is wholly applicable to all other reflex acts, particularly to emotional reactions.

The emotional reaction of fear is elicited initially by the direct action of a frightening cause. Later, it can be elicited by some other stimulus that is combined several times with the initial cause. The child initially reacts with crying and fear when he is given the bitter medicine. Later just the sight of the spoon will elicit the same reaction in him. The direct cause of the reaction has undoubtedly changed, but the reaction as such remained unchanged. In a general form, we might express this idea as follows: if, according to James, numerous reflex acts are the essence of emotion, then the only possible change in emotions is that the stimuli eliciting them can change, replacing one another as conditioned stimuli, but the emotion itself, the feeling experienced by the person remains always the same, always equal to itself, so that in the history of the development of emotions, the concrete causes for their appearance may change, but emotions themselves cannot change.

For this reason, Lange maintains with complete justification: ". . . actually, the difference between the fury of those poisoned by amanita mushrooms or maniacs and the anger of those dealt a deadly injury consists only in a difference in causes and in the presence of consciousness of the corresponding causes or in the absence of such consciousness" (1896, p. 65).

Thus, for Descartes, its founder, and for his involuntary followers, the visceral theory not only bypasses the problem of development, but factually resolves the problem in the sense of a full and complete denial of any possibility of emotional development in man. This is the inevitable conclusion from the teaching on innate passions.

18

Directly connected with the problem of development of emotions and central to our investigation is the problem of the uniqueness of human emotions in comparison with the emotions of animals. It is a question of the extent to which teaching on emotions can become a chapter in human psychology. In solving this problem, the involuntary followers of Descartes evidently differ sharply with their teacher. Descartes establishes a sharp impassable difference between animals and man. He separates by an abyss the human organism capable of experiencing emotions from the animal organism absolutely devoid of passions. All passion is the distinctive

privilege of man. In animal nature there is nothing at all like the passions of the soul because in it the soul itself does not exist. Thus, the Cartesian teaching on passions refers wholly and completely to man and to him alone. At first glance, the teaching on the passions appears to us to be developed from the point of view of human psychology.

With James and Lange, the theory of emotions refers to man only to the extent to which he represents a higher animal. Their theory is essentially a zoopsychological theory of emotions pertaining to man only to the extent that he himself is a biological being. This is undoubtedly apparent from the teaching on the animal origin of human passions, from the assertion of commonality of basic emotions in animals and man, and, finally, from the basic ideas of the whole theory on the innate, reflex, animal nature of emotions.

Little attention has been given to this aspect of the problem because the problem of man did not at all arise before contemporary psychology. But from the very beginning, even the authors of the theory and their critics understood that in the visceral hypothesis, they were speaking in essence of the animal nature of human emotions. We will cite Chabrier, who advanced this idea in the most complete form. Chabrier says that with this problem, we penetrate into the heart of the problem and touch on the major objection that rises against the peripheral theory. When we are speaking about instincts, we have before us an absolutely and invariably established mechanism, which is activated automatically as soon as an appropriate stimulation appears. It is possible that this is true also with respect to the primitive emotions of the child, but it cannot be the same with respect to the usual emotions of adults.

We are not concerned here with the fact that in themselves, organic states that elicit one emotion or another depend directly on the organization of consciousness, on the number and systematization of ideas by means of which external impressions are processed. It is not just that our emotions express states of the body, and the states of the body themselves are an expression of the order of our perceptions. In the first place, and primarily, the matter pertains to the problem of emotions specific to man. James himself was inclined toward limiting his hypothesis to the sphere of lower emotions and not toward extending it to the finer and higher feelings. It seems, however, that all human emotions must be classified as finer emotions because, if we disregard idiots, the most limited man is always bound by some kind of more or less vague ideal, some kind of more or less perceptible consciousness. The basest feelings arose under the influence of tradition, creeds, or religious presumptions. They are not of the sort that might be considered instinctive reactions to stimulation, reactions that do not depend on an established system of ideas. For this reason, if we put some pressure on the formula of our author, we could compel him to admit that his theory cannot explain anything in the feelings of man. At least he himself was not concerned with vindicating the differences he noted and overturns them with his own examples.

James refers in the same way to the fear of a man confronted by a bear and the grief of a mother learning of the death of a son as examples to which his theory can apply. But if the first case pertains to a group of lower emotions, the same cannot be said of the second case, and we cannot but be surprised that the author does not refer it to the class of finer feelings. If James does not draw a demarcation line, perhaps it is because for him it does not exist. It seems that he accepts the classical, traditional differentiation between higher moral feelings pertaining to such ideal objects as good and beauty, arising from purely spiritual activity, and lower, physical feelings, whose beginning and end is connected with the body and which, for this reason, are subject to physiological explanation.

Chabrier completely justifiably refers to the fact that a feeling of hunger, usually considered in the group of lower bodily feelings in civilized man, is already a fine feeling from the point of view of the nomenclature of James, that the simple need of food can acquire a religious sense when it leads to the appearance of a symbolic rite of mystical communication between man and God. And conversely, a religious feeling, usually considered as a purely spiritual emotion, in pious cannibals bringing human sacrifices to the gods, can scarcely be referred to the group of higher emotions. Consequently, there is no emotion that by nature would be independent of the body and not connected with it. James' book, *The Varieties of Religious Experience*, shows incontrovertibly the extent to which higher feelings are closely connected with all the fibers of our body.

For this reason, we must not cut the enormous sphere of emotions into two parts, one to which the peripheral hypothesis would apply and another, to which it would not apply. No feelings exist which, because of privilege of origin, would belong to a higher class while others, by their nature, would be placed in the lower class. The natural difference is a difference in richness and complexity, and all of our emotions are capable of rising along all the degrees of sentimental evolution. Every emotion can be qualified not otherwise than from the point of view of the degree of its development. For this reason, only that theory of emotions can be considered satisfactory which can be applied to all degrees of development of feeling.

Separating emotions from the development of a system of ideas and establishing their dependence exclusively on organic structures, James inevitably comes to the fatalistic conception of emotions which encompasses animals and man equally. The serious differences that human emotions display depending on the era, the degree of civilization, the difference between mystical adoration of a knight for his lady and the noble gallantry of the seventeenth century, remain unexplained from the point of view of this theory. Chabrier says, if we imagine the infinitely rich nature of the poorest emotion, if we pay less attention to the imaginary psychology of single-celled organisms than to the remarkable analysis of novelists and writers, if we simply make use of valuable data supplied by observations of people around us, we cannot but admit the complete failure of the peripheral theory. Actually, it is impossible to admit that simple perception of a female silhouette automatically evoked an endless series of organic reactions of which could be born love such as the love of Dante for Beatrice if we do not previously assume the whole ensemble of theological, political, esthetic, and scientific ideas that comprised the consciousness of the genius, Alighieri.

Partisans of the organic theory have forgotten in their hypothesis nothing more than the human spirit. All emotion is a function of personality: this is specifically what the peripheral theory loses sight of. Thus, a purely naturalistic theory of emotions requires as a supplement a real and adequate theory of human emotions. Thus arises the problem of a descriptive human psychology that contrasts itself with an explanatory, physiological psychology of emotions. It seeks a scientific path to those problems of the human spirit that are solved by great artists in novels and tragedies. It wants to make accessible to a study in concepts what these writers made the subject of an artistic representation.

The problem of higher feelings, connected with the teaching on values, is usually considered as an area completely inaccessible to a psychology occupied with a psychophysical and psychophysiological investigation of elementary processes of consciousness and their bodily substrate. Thus arises a teleological, descriptive psychology of higher feelings directly generated by the complete failure of the contemporary explanatory psychology of emotions. If it is true, as one of the more

prominent investigators in contemporary comparative psychology maintains, that in man, emotions attain a higher development in complexity, fineness, and variability of manifestation, but that their genesis, their evolution, and psychological nature remain the same as that of higher animals, then the need for some kind of different, *non*explanatory psychology is really inevitable. Even from the point of view of the most complex affect of a human-like simian closest to man, it is impossible to explain the most elementary human passions. For this reason, great psychology must break sharply with natural-science, causal psychology and seek its own path somewhere outside it and apart from it. As S. Freud[111] says, a completely different approach to the problem of feelings is needed than that which was formed in the official school of psychology, particularly in medical psychology.

Freud says that there they are evidently interested most of all in the anatomical paths along which the state of fear develops. Speaking of the fact that he devoted much time and effort to the study of fear, Freud notes that he knows of nothing that would be more indifferent for the psychological understanding of fear than knowing the nerve path along which its excitation travels.

He continues: what is affect with respect to dynamics? First, affect includes certain motor innervations or outflows of energy, and, second, a certain sensation of a dual type: perception of motor effects that are occurring and a direct sensation of delight or dissatisfaction that give the affect its basic tone, so to speak. But it does not follow from this that all that was listed comprised the essence of affect. With other affects it seems that we might look deeper and discover a nucleus that unites the specified ensemble.

In this way a "deep" psychology of affects arises that tries to disclose the internal nucleus and to make a heroic attempt to preserve a strictly deterministic, causal psychology of affects through a complete self-containment in the sphere of pure mental causality. This special and unique branch of pure psychology, which goes into the depths, arises as a necessary reaction of scientific thought to the failure of academic psychology that treats only the surface of phenomena. Naturally, it does not find a common language with physiological psychology. Freud says, do not think that what has just been said about affect is a generally recognized property of normal psychology. On the contrary, these are views that have grown in the soil of psychoanalysis and are recognized only there. What you can know about affects in psychology, for example, the James–Lange theory, is for us psychoanalysts something simply incomprehensible and not subject to discussion. Thus, the attempt to preserve a strictly causal consideration of psychological facts, and, at the same time, not to bring psychology as an independent science to bankruptcy and not to turn its work over into the hands of physiology, will make depth psychology admit the full substantial independence of mental processes and autonomy of mental causality.

Another trend in contemporary psychology of emotions that developed as a reaction to the failed reflex theory of emotions solves the same problem of adequate psychological knowledge of affects in a different way. Mainly, it rejects a causal consideration of feelings and develops as a purely descriptive phenomenology of emotional life. In the words of M. Scheler[112] (M. Scheler, 1923), one of the conspicuous representatives of this trend, long forgotten was the fact that together with causal laws and psychophysical dependence of emotional life on bodily processes, there are also independent laws of meaning of the so-called higher emotional acts and functions distinct from the sensation of feeling. The intentional and value-cognitive nature of the life of our higher feelings was established anew first by Lotze, who did not develop it, since he maintained only in the most general form this logic of the heart and did not consider it in detail. It was his idea and dictum that

in feeling, our mind holds the values of things and their relations in as serious and significant a manner of revelation as there is in the bases of rational investigation using the irreplaceable weapons of an experiment.

Even in his first works, Scheler himself perceived, developed, and made the old and great idea of B. Pascal on the order of the heart, the logic of the heart, and the mind of the heart the foundation of his own ethics. From this point of view, he understood an analysis of ethical, social, and religious feelings in which, in his opinion, the true and deep thought of Pascal found strong evidence for itself. Going further in the same direction, he believes it necessary to undertake the same kind of phenomenological analysis of the essence and form of the feeling of shame, fear, and horror, feelings of honor, etc. He anticipates in his system a study of the more important derivatives of the generic feelings indicated above so that together with psychological and value-theoretical consideration of them, there would also be a place for the problem of the order of development of these feelings on the individual and species planes and an explanation of their significance for the construction and preservation, shaping and formation of various forms of contemporary human life.

Thus, together with the mechanistic theory of lower emotions, constructed according to laws of physiological mechanics, contemporary psychology creates a purely descriptive teaching on the higher, specifically human, historically developed feelings, teaching that is developing into a completely independent branch of knowledge constructed on a foundation opposite the physiological theory. As Scheler also notes, this teaching is connected through its latest roots with metaphysics and is itself being converted into a certain metaphysical system that places at its base the admission of the genetic indelibility of the truly spiritual manifestations of feeling theoretically distinct from its vital manifestations. Since Scheler applies this teaching to the theory of human love, he returns in essence to the Cartesian division of spiritual and sensual passion.

Such are the two basic answers that contemporary psychology gives to the problem of the nature of human feelings not resolved from the point of view of the reflex theory. Contemporary psychology seeks elucidation of the mystery either in the metaphysical depths of the human psyche, in the Schopenhauer will,[113] or at the metaphysical heights on which passion seems to be completely separated from vital functions and finds its real basis in supra-terrestrial spheres.

But whether metaphysics looks for the final basis of passions in underground or supra-terrestrial spheres, whether, with Freud, it will willingly use images of the underground kingdom, of hell and the extreme depths of the human spirit, or, with Scheler, turn its eyes toward the music of the stars in the heavenly spheres, it will, nevertheless, remain metaphysics, which in its theistic form and in its pandemonistic form seems to be the inevitable supplement to the superficial psychology of emotions that reduces them to sensation of visceral and motor reactions. The intentionality of higher feelings, the understandable connection of feeling with an object, without which, according to Froebes, higher feeling no longer deserves the name, the sense of human feeling, accessible to our understanding just as is the development of conclusions from premises, the voice of human feeling, all require explanation and find it in teleological, descriptive psychology.

Thus, if we take contemporary psychology of feelings in all its fullness, if we understand the necessity with which the mechanistic theory of lower feelings assumes the teleological theory of higher feelings, and how inevitably the teaching on the animal nature of emotions requires as its supplement the teaching on extra-vital feelings, feelings outside life in man, it becomes clear that contemporary

psychology of feelings, taken as a whole, cannot in any way be accused of divergence from Cartesian teaching. On the contrary, it is its living embodiment, the continuation and development in a science-like form. It doesn't matter that it fell to James–Lange to develop only one of two principles of this teaching, that their theory was limited to applying the naturalistic point of view to explaining emotions. Just as in the system of Descartes himself, the naturalistic explanation for passions of the soul leads to the spiritualistic teaching on intellectual feelings, so the most consistent and naturalistic theory of emotions in contemporary psychology creates at the other pole, as a counterweight, the teleological teaching on the logic of the revelation of higher feelings.

The equilibrium to which the Cartesian system holds is again reestablished in contemporary psychology of emotions, in which the naturalistic and teleological principles balance each other. If we add that James not only was not hostile to the second method of considering human feelings, but came very close to it in the teaching on emotions not dependent on the body and in investigating the variety of religious experience, it is easy to be convinced of the fact that the author of the physiological theory of emotions himself essentially accepted the Cartesian teaching in all its fullness, although he did develop one of its aspects predominantly. Thus, if we speak of the theoretical aspect of the matter, then this divergence of James from Descartes also becomes illusory.

Returning again to the Cartesian teaching, we can be definitively convinced of this. As we established earlier, its seeming divergence with the theory of James begins with the problem of man. Descartes ascribes passions only to man and denies them in animals. James, on the other hand, considers human emotions as a manifestation of man's purely animal life. The real, and not imaginary divergence consists only in the fact that James, together with all of contemporary science, rejects the Cartesian view of the absolute separateness of man and animals. But if we recall of what the essence of Descartes' teaching on passions consists, it is easy to see that he solves the problem of human passions completely in the same spirit and on the same theoretical plane as James does.

Illusory also is the idea that Descartes, accepting passions as a basic phenomenon of human nature belonging exclusively to it alone, does not solve the problem of human feelings in all their specificity to any extent, but only poses it. The dualism between higher and lower feelings, as we tried to establish above, inevitably leads to man, with his living and intelligent passions, forgetting himself and firmly locking himself into a lifeless psychology of incorporeal spirits and into a senseless psychology of soulless robots.

Thus, the words of Chabrier, which he said about the theory of James, are fully applicable to Descartes: if we put some pressure on the formula of the author, it might compel him to admit that his theory can explain nothing in human feelings. The dualistic solution of the problem of human passions in Cartesian teaching, the insolubility, from the point of this teaching, of the problem of development, problems of man and his life, already contains in itself in essence the break-up of contemporary psychology of emotions into explanatory and descriptive theories of human feeling. Behind the James–Lange theory, which resorts to the laws of physiological mechanics as to a final explanatory instance, and behind the theory of Scheler, which resorts to the metaphysics of teleological intentional bonds as this instance, again arises in all its magnitude the grandiose contradiction that the great philosopher introduced at the base of his teaching on the passions of the soul.

19

The second most common problem from the point of view of which we must sum up our investigation of the ultimate bases of the old and the contemporary Cartesian psychology of passions is the problem of connections, dependencies, and relations between passions and the rest of the bodily and spiritual life of man. This problem is connected directly with the problem we have just considered, the problem of development and specific features of human feelings. As we have seen, in it, the question of a causal explanation of emotions is brought to the forefront.

Real knowledge is possible only as causal knowledge. Without it, no science is possible. As James notes, explaining causes belongs to investigation of a higher order and forms a higher degree in the development of science. It is natural for this reason that in the psychology of passions, beginning with Descartes and ending with James and contemporary investigators, the problem of causal explanation of human feelings is considered the central and basic problem of the teaching on the passions. How can a causal consideration of facts of the emotional life of man be possible?

We have already mentioned the caustic remark of Spranger, one of the more prominent representatives of descriptive psychology, that causal explanation given by explanatory psychology is extremely suggestive of the celebrated parody of Socrates on inadequate explanation.[114] This example may serve as a paradigm in our consideration of the problem of causality in Cartesian and Spinozist psychology of passions and in their contemporary branches.

As we have tried to show above, the possibility of a causal explanation of emotions is purchased by James and Lange at a very high price—the price of complete rejection of any intelligible connections of emotions with the rest of the mental life of man. In the opinion of its authors, what the theory wins in this way in establishing a real causal connection between physiological manifestations and emotional experience, it loses in the possibility of establishing any kind of understandable and intelligible connection between feeling as a function of personality and all the rest of the life of consciousness. For this reason, it is not surprising that the causal explanation cited by this theory sharply contradicts our direct experience and the actual connection of emotions with all the internal content of our personality. The directly experienced connection advanced by the founders of descriptive psychology as a basis for all comprehension of the facts of a spiritual, historical, and social order actually inevitably must become the subject of a completely special science if a causal explanation of a type contained in the James–Lange theory is the only one possible in explanatory psychology.

Dilthey states: "We can be delivered from all the difficulties cited above only by the development of the science which I propose to call descriptive and analytical psychology in contrast to explanatory and constructive psychology. As descriptive psychology, I understand a representation of the component parts and connections uniformly manifested in all developed human emotional life that is neither devised nor derived, but experienced. Thus, psychology of this kind would be a description and analysis of the connection that we are given at the outset and always in the form of life itself. An important consequence follows from this. The subject of this kind of psychology is the systematic development of the connection of developed emotional life. It represents the connection of internal life in a certain kind of typical man" (1924, pp. 17-18).

"The uniformity comprising the main subject of psychology of our time pertains to formulas of the internal process. The reality of emotional life, powerful in content, is beyond the limits of this psychology. The works of poets, the reflections on

life expressed by great writers like Seneca, Marcus Aurelius, Saint Augustine, Machiavelli, Montaigne, and Pascal, include an understanding of man in all his reality that leaves all of explanatory psychology far behind" (ibid., p. 18).

In its essence, the possibility of causal explanation of emotions discovered by explanatory psychology excludes the possibility of investigating the internal spiritual connection of emotions and thus closes the door to investigating their content and leaves only the possibility of admitting direct evidence of internal experience, which every man experiences incessantly, as illusion without any scientific meaning, or developing another psychology constructed on completely opposite principles, which, at the cost of rejecting a causal explanation, would be able to comprehend the internal connection between the "powerful in content" reality of our feelings and all the rest of the internal life of the personality.

The authors themselves, proud of the possibility of causal explanation that they discovered, could not help noting this circumstance. Lange said: "I have no doubt that the mother mourning the death of her child will be disturbed, perhaps even be indignant, if she is told that that which she is experiencing is fatigue and muscular weakness, the chill of blood-deprived skin, lack of brain power for clear and quick thinking—but all of this is explained by remembering the cause of the indicated manifestations. But the grieving mother has no basis for being disturbed: her feeling is just as strong, deep and pure, no matter from what its source is" (1896, p. 57).

These words are, perhaps, the simplest, the most human, the deepest of all that is contained in this small study. Regardless of the fact that they deal with a banal example from schoolbooks of psychology, they contain a most profound problem. At its base is a fact, which Lange himself did not doubt, that requires a scientific explanation. The mother's being indignant and disturbed is due to the most undoubted, the most obvious consciousness of her sorrowful experience. Is it possible that this direct experience of grief must be recognized as wholly and completely false? In this case, why does the mother crying over the death of the child feel grief and not "fatigue and muscular weakness and the chill of blood-deprived skin?"

We have considered this banal example in such detail because, in our view, it has a major significance, the equal of which we could not detect in any other example of the theory under consideration. Practically speaking, all of descriptive psychology is already continuing the hypothetical suit against the mechanistic psychology of the mother who lost her son. Its beginning and end points, the whole sense of its existence, the only basis for its legitimacy, which not one psychologist, perhaps not even one man can dispute who has ever experienced real grief, are comprised of a fact which Lange bypasses so easily and with such a feeling of superiority. Here, indeed, if facts do not agree with theory, so much the worse for the facts.

The experience of grief is a fact, living and sensible. Lange himself understands that it must not be counted as a really nonexistent trait, as a delusion of a disturbed imagination. Of course, he has no doubt that the mother, learning what kind of interpretation her grief is given in light of the peripheral theory, will be disturbed and indignant, that is, will react emotionally. The disturbed state and indignation are the same kind of undoubted emotions as grief, although they are manifested in completely different muscle and skin sensations. Emotions arising from mental causes, according to Lange, do not differ in anything substantial from real emotions elicited by physical influence. Consequently, the experience of grief, capable of eliciting in the mother real emotions of anger and indignation, is the most authentic, the most real, the most indisputable fact of psychological life.

The scientific task consists of giving a causal explanation of this directly experienced connection. Apparent here specifically is the bankruptcy of the contemporary psychology of emotions, which disintegrates at the first confrontation with the most banal, simple case of human feeling into two parts, completely oblivious of each other, of which one finds nothing better than to repeat the Socratic parody for causal explanation. Before the grief of the mother, the other helplessly spreads its hands, not being able to understand scientifically the directly experienced connection of feeling with the rest of the life of consciousness that gives it sense and meaning, and revealing that this connection is beyond the limits of scientific knowledge.

In the first case, following explanatory psychology, we would have to tear all evidence of direct internal experience out by the roots and—"contrary to reason, counter to the elements"—consider the weeping being, according to Cartesian rule, as a soulless robot, measuring the force, depth, and purity of its muscle and skin sensations and, comforting ourselves on the ruins of a living psychological life with doubtful consolation that these sensations may be as strong, deep, and pure as the most limitless sorrow. In the second case, following descriptive psychology, we have no possibility other than to reject the proud desire for scientific knowledge and explanation and directly merge with the weeping mother, and fully transferring into her mental state, empathize with her sorrow and explain this as the simple sympathy of a passerby with the help of the new psychology, which is finally able to convert our knowledge of mental life into a science of the spirit.

In the first case, in order to preserve the life of feeling, we must abandon its sense. In the second case, in order to preserve the experience and its sense, we must similarly abandon life. In both cases, we have to abandon in the same way all hope of ever scientifically comprehending man and the real meaning of his internal life.

We have already studied, carefully and in detail, the path of explanatory psychology of emotions that brings us to the blind alley of a meaningless causal explanation. We know it in all its points, and we no longer need to return to it. We shall briefly trace the path that leads to the other blind alley—to the rejection of all causal explanation and admission of absolute lifelessness of feeling, that is, to the descriptive psychology of emotions. Descriptive psychology of emotions begins with the question of the nature of higher feelings. Do higher emotions represent complex combinations and modifications of elementary emotions or something new that requires a completely separate scientific approach? Descriptive psychology takes as a basic premise the second part of the dilemma, advancing intentionality of higher feelings, their tendency, their considered, understood connection with their object as the principal distinguishing property. Without the understood connection with the object, which we experience directly, higher feeling ceases being itself. In one of his early works, Scheler bases the distinction he makes between higher and lower feelings specifically on this. The connection of lower feelings with objects is always mediated, established by successive acts of referral. Sometimes we even have to try to find the subject of our sadness. Higher feeling, on the other hand, is always directed toward something just exactly as an idea. This is an intelligible process mainly available only to comprehension, while elementary, sensual states allow only their establishment and a causal explanation.

When I am happy or sad, experiences with a value elicit certain feelings. As F. Brentano[115] has shown, love and hatred are intentional, in the strict sense of the word. We love not about something, but something.

Thus, higher feelings require not establishment and causal-explanatory investigation, but only comprehending psychology that has no other purpose except to

comprehend directly experienced connections. The experience with a value does not elicit certain higher feelings according to logical connection between the one and the other like connections uniting premises and conclusions in a syllogism. Here the connection is teleological. The nature of conscious life is organized in such a way that I respond with joy to all that I experience as having a certain value, thereby my will is aroused to appropriate inclinations. This connection permits only understanding coupled with the experience of its expediency; On the other hand, incomprehensible for us still is the connection according to which something sweet elicits satisfaction and something bitter, dissatisfaction. I can only accept these connections as facts that in themselves remain incomprehensible to me.

The principal incomprehensibility of basic or primitive feelings, as we have said, comprises one of the cornerstones of Cartesian teaching on the passions. Descartes maintains that sorrow and joy as passions are not only different from pain and satisfaction as sensations, but can be completely separate from them. We can imagine that pain can be experienced with the same emotional indifference as the most usual sensation. We can even be surprised that pain is so frequently accompanied by sadness, and satisfaction, by joy. We can be surprised that hunger, that simple sensation, and appetite, that desire, are so intimately connected with each other that they always accompany each other. Thus, contemporary descriptive psychology of emotions only repeats through Scheler's lips the old Cartesian thesis on the complete lack of meaning of elementary emotions, principally excluding any possibility of understanding them, maintaining the privilege only with respect to higher feelings.

The teaching on the intentional nature of higher feelings, developed by Brentano, Scheler, A. Pfänder,[116] M. Geiger,[117] and others, laid the bases for contemporary psychology of emotions. With this teaching, descriptive psychology of emotions attempts to overcome the dead-ended naturalistic theory of feeling that is inclined to consider higher feelings as a complex or product of the development of simpler mental elements. Scheler sees the error not in that it incorrectly explains facts of the life of higher feelings, but in that it simply does not see these phenomena and is blind with respect to them. If the naturalistic theory were simply to see the phenomena of holy or spiritual love, it would at the same time see from any facts pertaining to the sphere of vital love, that it could not in any way fail to understand them nor could it escape them. But this is the basic inadequacy of this and other opinions of the naturalistic theory: its whole system blinds it to the fact that in the course of the development of the life of man, completely new acts and qualities develop, that these can constantly develop, that these qualities seem to us to have arisen spasmodically in essential content, and can never be considered as simple, gradual branching of old forms, as is assumed with respect to the bodily organization of a living being. The system of the naturalistic theory blinds it with respect to the fact that in the course of life development, basically new and deeper degrees of existence and values may appear and new areas of objects and values for self-evolving life may develop on their base, and that only as life develops do these new areas of existence and values begin to disclose and include in themselves all the fullness of the qualities that determine them. For this theory, every new quality signifies a new illusion. It, like all naturalistic philosophy, is a major speculation betting on diminishment.

In the life of feelings, descriptive psychology finds the deepest and most vital object. "Here we see before us the genuine center of spiritual life. The poetry of all time finds its subject matter here. The interests of humanity constantly turn toward the life of feelings. The fortune and misfortune of human existence depends on it, the psychology of the seventeenth century, seriously turning its attention to

the content of the life of the spirit, concentrated on the teaching on sensual states—because these were its affects" (W. Dilthey, 1924, p. 56).

Dilthey proceeds from the fact that sensual states are as firmly resistant to analysis as they are important and central. For the most part, our feelings merge into general states in which separate component parts are no longer distinct. Our feelings, like motives, cannot be voluntarily reproduced or made conscious. We can only regenerate states the way we experimentally bring into consciousness conditions in which corresponding states arise. "From this it follows that our determinations of mental states do not break up their content, but only indicate the conditions under which given mental states occur. Such is the nature of all definitions of mental states in Spinoza and Hobbes. For this reason, we must first of all improve on the methods of these thinkers. Definition, precise nomenclature, and classification are the first task of descriptive psychology in this area. True, in the study of expressive movements and symbols of ideas for the mental states, new, auxiliary means are being discovered: specifically, the comparative method which introduces simpler relations into feelings and motives of animals and primitive peoples and frees us to go beyond the limits of anthropology of the seventeenth century. But even using these auxiliary means does not provide firm points of support for the explanatory method which strives to deduce phenomena in the given area from a limited number of unequivocally determined elements" (ibid., p. 57).

Here Dilthey allows a logically totally unjustifiable mixture of three positions, which coincide in practical conclusions, but which, from the theoretical aspect, not only cannot be united, but, on the contrary, are the sharpest example of internally contradictory anecdotal logic. He establishes that factual attempts to explain the life of our feelings are in a state of conflict with each other from which there is definitely no escape. Even the basic problems of the relations of feelings to motives and will and of the relations of qualitative sensual states to the ideas that merge with them do not admit a convincing solution. Thus, the explanatory psychology of feelings seems to be factually unfounded and not attainable in practice.

Dilthey immediately makes the factual failure of explanatory psychology of feelings the basis for the conclusion that it is unnecessary and impossible to explain feeling. He says that if we glance at the literature, remarkably rich among all nations, that pertains to mental states and human passions, we cannot but see that none of the positions that are fruitful and illuminate this area require explanatory assumptions of this kind. That literature describes only complex and prominent forms of processes in which various aspects connected with each other are mentioned, and it is necessary only to penetrate deeply enough into the apparent facts in this area to be convinced of the uselessness of such explanatory hypotheses here. Dilthey cites as evidence of this idea the example of aesthetic pleasure elicited by an artistic work, which is characterized by most psychologists as a state of satisfaction. He says that the aesthete studying work of various kinds of styles in different artistic works will, nevertheless, be forced to admit the inadequacy of this understanding. The style of any Michelangelo fresco or Bach fugue flows from the frame of mind of a great soul, and understanding these works of art communicates to the soul an enjoyable specific form of mood in which it expands, is ennobled, and is as if amplified (ibid., pp. 57-58).

If Dilthey confounds the factual failure of explanatory psychology of emotions with the theoretical uselessness of explanatory hypotheses in this area and with the theoretical impossibility of a causal explanation of higher forms of mood in which the soul is extended, ennobled, and as if amplified, then immediately after this, he returns again to the factual position of things and is ready to admit that explanatory psychology still simply has not matured enough to solve the problem of feelings

and, consequently, descriptive psychology must prepare and clear a way for it. This is his third position. Dilthey says that for this reason the area of mental life actually has not matured enough for full analytical treatment. First it is necessary for descriptive and analytical psychology to conclude their work on the details.

Thus, the mixing of three claims different in content resembles remarkably the logic of the anecdote cited by Freud on his studies of wit. A woman whose neighbor accuses her of breaking a borrowed pot, to be more convincing, presents three arguments at once, she says: first, I did not take any pot from the neighbor; second, when I took it, it was already broken; third, I returned it completely whole.

Dilthey says: first, explanatory psychology thus far has not given a satisfactory explanation of the life of our feelings; second, such an explanation is completely useless, is not necessary, and cannot be given in general; third, explanatory psychology will be able to give this explanation after descriptive psychology concludes its task of separation and analysis.

This kind of mixing of positions different in content also includes a positive program of investigation, which Dilthey plans for descriptive psychology of feelings. The investigation must move predominantly in three directions. It reflects the basic types of trends of mental processes. What great poets, especially Shakespeare, gave us in images, it tries to make accessible for concept analysis. It isolates certain basic relations that occur through the life of feelings and motives of man, and tries to establish separate component parts of the states of feelings and motives (ibid., p. 58). Dilthey sees an advantage of the descriptive and analytical method over the explanatory in that it is limited to considering problems that have been solved. Obviously, the task of explanatory psychology of feelings seems to him to be insoluble. In general, there was no pot, neither a broken one nor a whole one, regardless of the fact that we have just maintained that the pot was broken when taken and whole when returned.

Another investigator, Münsterberg, avoids this contradiction; just as clearly as Dilthey and many others, he makes a distinction between causal and teleological psychology as two independent sciences with equal rights. This idea, suggested by the whole historical course of the development of contemporary psychology, matured simultaneously with various investigators: in the words of Goethe, just as apples fall simultaneously in different orchards. But more consistently than Dilthey, Münsterberg, although he dedicated his concrete work to solving the problems of explanatory psychology, nevertheless developed most fully a program and plan for research in descriptive psychology.

"The impoverished state of contemporary psychology is expressed by the fact that we know incomparably more about psychological facts than ever before, but much less about what psychology really is . . . The psychology of our time fights against the prejudice that there is only one type of psychology . . . The concept of psychology includes two completely different scientific tasks which must be essentially distinguished and for which it is best to use special designations. Actually there is psychology of two kinds, but if prejudice rules that one of them is enough for science, it is natural that some psychologists will cultivate only the first form of psychology and leave the second aside, and others will be concerned immediately with the second form and neglect the first, or perhaps, finally, both forms will be mixed together into a seeming unity and the material will be arbitrarily divided between them, or one of them will more or less merge with the other. All of these possibilities are represented in contemporary scientific psychology.

"It is self-evident that forms of psychology that are so dissimilar would not be able to exist one beside the other and be bound in spirit if they had nothing in common. What is common consists primarily in that all psychology has to do with

the experiences of the individual. This distinguishes it from sciences of a bodily nature and from normative sciences. The personality is thus the decisive point of departure for all of psychology" (H. Münsterberg, 1924, pp. 7-8).

Beyond this common point of departure begins the essential divergence of the two possible psychologies. With each beat of the pulse of our life experience, it becomes obvious to us that we can understand our own inner life in two ways, thus acquiring a double knowledge of it. Specifically: in one case, we grasp the sense of our feeling and desire, our attention and thinking, our remembering and ideas. We try to comprehend all of this and retain it as it is present in each experience, that is, as activity of our "I," as directed toward a certain goal of our personality. We can then trace how one desire includes in itself another, how one idea points to another, how in our spirit a world of internal relations opens up. But we can also look very differently at our experiences. We can present our experiences to ourselves not as a mentally acting personality, but as a simple spectator; then the experiences will become for us the content of our perception. Of course, these contents will differ from the contents of nature. We will separate them as contents of our consciousness from external contents, but will be as interested in them just as we are interested in external things and processes. We will consider the contents of consciousness only from the point of view of a spectator who describes their course and comprehends their necessary connection, that is, tries to explain them. Through this description, the content of consciousness becomes a combination of elements; through explaining these elements, a chain of causes and actions is formed. Thus we come to a completely different understanding of that same mental life: in one case, to comprehending the internal relations and to grasping the internal intentions connected with them, and in the other case, to describing and explaining the elements and their actions.

If we follow to the end and in both directions these different methods of understanding our internal life and give them a scientifically completed form, we will actually have to arrive at two basically different theoretical disciplines. One of them describes mental life as an aggregate of the content of consciousness and explains it. The other is interested in and understands the same mental life as an aggregate of relations of intention and meaning. One is causal psychology and the other teleological and intentional psychology. Since all material must be considered from both points of view, there is no delimitation of material between the one and the other psychology. Every feeling, every memory, every desire can be understood in a category of causality, as content of consciousness, just as well as from the intentional point of view, as mental activity (ibid., pp. 8-9).

In historical and contemporary psychology, both forms are mixed into a seeming unity, but each of them is seldom actually pure and consistent. For the most part, teleological psychology merges in some way with elements of causal psychology. In this case, the processes of memory, for example, are presented as causal, but the processes of feeling and will, as intentional—a mixing that arises easily under the influence of the naive ideas of daily life . . . . Thus, together with causal psychology, we can speak of intentional psychology, or of psychology of the spirit together with psychology of consciousness, or of comprehending psychology together with explanatory psychology (ibid., pp. 9-10).

In this delimitation of the tasks of the dual type of psychology, Münsterberg consistently develops the idea to its logical conclusion. He completely excludes any need for or possibility of a causal explanation in descriptive psychology which assumes understanding and comprehending system and meaning relations between experiences and, consequently, requires consideration of mental activity as a completely autonomic area of activity that is outside nature and outside life, which,

speaking in the language of Spinoza, is not a natural thing that follows the general laws of nature, but a thing that is outside the bounds of nature, as if a realm within a realm. But we have only to look into and consider carefully the argumentation of Dilthey and Münsterberg to see immediately its strength and its weakness, its positive and negative poles, its unconditional correctness and its equally unconditional fallibility. The strength and correctness of their argumentation lies exclusively in the admission of the failure, deficiency, and inadequacy of those explanations that were advanced thus far by physiological psychology with respect to higher manifestations of the mental life of man. Its correctness and its strength lie exclusively in that it places at the forefront problems of prime importance, problems of what is higher in man, and in this way, in general, places first and at full length the problem of the psychology of real, living man.

But this point also includes the weakness and fallacy of the argumentation under consideration. Speaking practically, the new psychology is not that different from the old. To some degree and even, perhaps, in what is most central and essential, they completely coincide with each other, regardless of the apparent oppositeness. Specifically, descriptive psychology wholly and fully accepts the basic idea of explanatory psychology (causal explanation can be nothing other than mechanical reduction of complex and higher processes to automatically differentiated elements of mental life). In this way, the new psychology fully takes the same positions from which the development of the old psychology always proceeded.

Admitting mechanistic causality as the only possible category of explaining mental life, limiting the causal explanation of psychology to the narrow limits of the Socratic parody—this is the common point in which the new and the old psychologies meet and coincide. Thus, the only legitimate argument in favor of the development of an independent descriptive psychology is the failure of explanatory psychology, which does not know how to escape the bounds of mechanistic causality in explaining mental life. In the broken pot of the neighbor, the new psychology sees the only reason for having to cook the meat in its own, completely separate pot. Argumentation from the broken pot comprises simultaneously the strength and the weakness of the partisans of the new psychology. It is completely incontrovertible that explanatory psychology, according to the correct remark of Scheler, did not give a false explanation to real problems of human psychology, but simply that it did not notice these problems and was blind with respect to them. It is just as incontrovertible that these problems must be placed before scientific psychology as primary and central problems urgently requiring solution. But from what has been said, reasoning logically, we can reach no other conclusion except the necessity of radically reconstructing the bases on which contemporary psychology rests. Deducing from these premises the need to transfer the solution of the given problems to some kind of new and completely separate science that totally and theoretically excludes the possibility of a causal explanation means to wholly and completely justify the contemporary state of explanatory psychology with all its errors and to share with it its fallacies, not to rise above it and not to overcome it, but simply to ask it to make room and build on this same rotten foundation, on which nothing can stand except a castle in the air or a house of cards, an illusory building of the psychology of the spirit.

For this reason, the James–Lange theory, with its parody of a causal explanation of human feelings, inevitably generates the theory of Scheler with its complete rejection of any explanation of higher feelings, replaced by the insight of a teleological connection. But Scheler also moved no farther from James than the whole new psychology moved from the old. Together with James, he evidently admits that the only explanation allowed to psychology is an explanation from the laws of physiological mechanics. For this reason, he, like all of descriptive psychology, does not solve the problem, but bypasses it. To the question placed before contemporary psychology, which we consider as the prototype of all basic problems that require a causal explanation, the question as to why Socrates sat in the Athenian dungeon, the James–Lange theory answers with a reference to the strain and weakness of the muscles that flex the extremities, and the theory of Scheler answers by indicating that remaining in the dungeon had the purpose of satisfying a feeling of higher value . . . .

The one and the other is just as incontrovertible and just as obvious as it is fruitless. The one and the other is just as far from a real scientific answer to the question. The one and the other does not pay attention to the real cause.

The real grief of the mother weeping over the death of her child, if we recall the example of Lange, is directly and closely bound with her tears, although it might have occurred in her soul without being accompanied by tears, and the tears might have been a manifestation of an opposite feeling, for example, joy. All of this is incontrovertible, but to see in this a cause would be, in the words of Plato, lengthwise and crosswise stupid. Just as completely incontrovertible and obvious is it that the decision of Socrates to remain in the dungeon was connected with the pursuit of a certain vital goal and a satisfaction of a certain sense of value. But an event opposite in meaning—his fleeing—would have the same system and value character.

In essence, rejection of any causal explanation and the attempt to bypass the problem, depending on teleological analysis, not only do not move us forward in comparison with the explanatory psychology of feelings with all its undoubted defects, but, on the contrary, they take us back a long way. Dilthey maintained that definition, precise nomenclature, and classification comprise the first task of descriptive psychology in this area (1924, p. 57). He forgets here that the path for definition and classification, which psychology opened over the course of several centuries, led to the fact that the psychology of feelings was the least fruitful and most tedious of all the chapters of science, as James justifiably wrote.

Dilthey consistently asks us to turn to the anthropology of the seventeenth century and to improve its methods. It is remarkable that from the thinkers of that century, he selects specifically what is Spinoza's oldest, most obsolete, and lifeless: his nomenclature, classification, and definition, which do not disclose the content of our affects, but only point to the conditions in which a given mental state occurs.[118]

Thus, from the teaching of Spinoza on passions, descriptive psychology draws to its side not the living part turned toward the future, but the dead part turned toward the past. Dilthey sees the only possibility that allows the new psychology to go beyond the limits of seventeenth century anthropology in applying the comparative method in the study of expressive movements and symbols of mental states (1924, p. 57). But the one and the other leave at our disposal only a new auxiliary means for solving the old problem and basically do not take us beyond the limits of the psychology of passions of the seventeenth century. Thus, one flourish of the pen deletes almost 300 years of development of psychological thought and knowledge, and the movement backwards, back to the seventeenth century, into the depths of history, is the only path of scientific progress of psychology.

In a certain sense, descriptive psychology, advancing a teleological and spiritualistic consideration of mental phenomena in place of a causal explanation, takes us back to the era of philosophical thought that was dominant before Spinoza. It was specifically Spinoza who fought for a natural, deterministic, materialistic, causal explanation of human passions. It was specifically he who was the thinker who first formed a philosophical base for the possibility of explanatory psychology of man

as a science in the true sense of that word and marked the paths for its further development.

In this sense, Spinoza resists all of contemporary descriptive psychology as its irreconcilable opponent. It is he who fought against the Cartesian dualism, spiritualism, and teleologism resurrected in contemporary descriptive psychology. In this respect, we will have to oppose our understanding of the real connection of Spinoza's teaching on passions with the contemporary psychology of emotions to the opinion of Dilthey. It is remarkable that, advancing the basic problems of human psychology, the new trend had to turn to the psychology of the seventeenth century, seriously turning its attention to the true center of mental life, to the content of our affects, and to naming Spinoza as the beacon lighting the way for new investigations. In Spinoza, the partisans of the new trend find not only the nomenclature and classification of passions, but also certain basic relations that go across the whole life of feelings and motivations, that have a decisive significance for understanding man and the subjects that are the components of a precise descriptive method. Such, for example, is the basic relation consisting in the fact that both Hobbes and Spinoza designated self-preservation as instinct or growth of the "I": a striving toward the fullness of mental states, toward overcoming self, toward development of strength and motives. Thus, not just the method, but also the content of Spinoza's teaching on passions is advanced as a guiding source for developing investigations in a new direction, in the direction of understanding man.

In this statement, in this turning to Spinoza, the truth is mixed with falsehood to such an extent that it is difficult to separate it from fallacy. In order to do this, it is necessary to recall that we were confronted at one time with a similar statement, a mixture of truth and fallacy concerning the connection of Spinozist teaching on passions with contemporary psychology of emotions. In order to understand the significance of Dilthey's idea that descriptive psychology of feelings must be the successor of Spinoza's psychology, we must recall that Lange also called Spinoza the thinker who came closest to the physiological theory of emotions, which Lange developed, because Spinoza "not only does not consider bodily manifestations dependent on mental movements, but puts them next to each other, even brings them almost to the forefront" (C. Lange, 1896, p. 89).

Thus, Lange and Dilthey, descriptive psychology and explanatory psychology of emotions, forming two opposite poles of contemporary scientific knowledge on human feelings, turn in the same way to their sources, to the Spinozist teaching on the passions. The coincidence cannot be accidental. It includes a very deep historical and theoretical idea. Even now, we must extract something significant to our purposes from the fact of coincidence of two opposite teachings in one tendency toward Spinozist thought as to their ideological beginning.

We have already spoken about the connection of the theory of Lange with the teaching of Spinoza on passions. We were able to establish that to a significant degree, admitting direct and indirect historical and ideological connections between the teaching of Spinoza about affects and the James–Lange theory is based on illusion. Lange himself vaguely understood the fallacy of his pointing to the closeness of Spinozist teaching and his theory. With a feeling of admiration, he finds a complete vasomotor theory on bodily manifestations of emotions in Malebranche,[119] who "with the astuteness of a genius, discovered the true connection between phenomena" (ibid., p. 86). We actually find the device of emotional mechanism expressed in vague language of the physiology of that day, which permits translation into the language of contemporary physiology and in this form may be close to the James–Lange hypothesis. The same factual coincidence was established very early by Irons, who showed that Descartes occupies the same position as James. We have

seen that later investigations, especially the works of Sergi, fully confirmed this opinion. But this is not enough. In the course of our investigation, we tried to explain that not only factual description of the mechanism of emotional reaction brings together these theories, separated by almost three centuries, but also that the factual coincidence is evidence of a deeper methodological relationship between them, a relationship based on the fact that contemporary physiological psychology wholly inherited from Descartes the naturalistic and mechanistic principles of interpreting emotions. Cartesian parallelism, automatism, and epiphenomenalism are the true bases of the hypotheses of Lange and James, and this gave Dunlap full right to call the great philosopher the father of all of contemporary reactological psychology.

Thus we see that the theory of Lange actually goes back not to Spinozist, but to Cartesian teaching on the passions of the soul. In this sense, we might say that Lange, in the conclusive note to his study, calls on the name of Spinoza in vain. In short, this is the result at which we arrived in considering this question.

Now we might amplify this conclusion with yet another new and most significant and important trait, which clearly appears in a comparison of descriptive and explanatory psychology of emotions: in a certain respect, Spinozist teaching actually is much more closely related to explanatory than to descriptive psychology, and this means that it is most likely closer to the hypothesis of Lange, in which the basic principle of explanatory psychology of emotions was expressed most clearly, than to the program of descriptive psychology of feelings outlined by Dilthey. In the argument between causal psychology and teleological psychology, in the argument between the deterministic and nondeterministic conceptions of feelings, in the confrontation between spiritualistic and materialistic hypotheses, Spinoza must be placed on the side of those who defend the scientific conception of human feelings against the metaphysical.

Specifically in this point in which Spinozist teaching on passions approaches explanatory psychology of emotions, it diverges in the most irreconcilable way from descriptive psychology. This time Dilthey and not Lange calls in vain on the name of Spinoza at the very beginning of his program for future investigation. Actually, what can these investigators have in common who consciously revive the teleological and metaphysical conceptions of seventeenth century anthropology against which Spinoza always fought with the strict determinism, causality, and materialism of his system? As we have been indicating, Dilthey brings to the forefront in Spinoza's teaching the most obsolete, formal, and speculative part turned toward the past, his nomenclature, classification, and definition. Dilthey's principles are not only not on the path with the great principles of the Spinozist system, but their own path can be continued only through the most fierce struggle against these principles.

After everything that has been said, there can scarcely remain any doubt that in reviving the spiritualistic and teleological principles of the seventeenth century, descriptive psychology in its basic nucleus goes back not to Spinoza, but to Descartes, in whose teaching on passions of the soul it finds its full and true program.

Spinoza is, of course, not with Dilthey and Münsterberg, not with their teaching on autonomous and independent mental life existing exclusively due to system connections and relations of meaning, but with Lange and James in their struggle against unchangeable mental essences, eternal and separate, against conceptions that consider emotions not as human emotions, but as essences, beings, powers, demons which possess man, which are outside the limits of nature. Of course, he never would agree to admitting that mental fear in itself can explain why people grow pale, tremble, etc., and in this Lange is unconditionally correct. He is with those who, like James, consider description and classification to be lower levels in

the development of science, and explanation of a causal connection as deeper investigation, investigation of a higher order.

But the complexity of the matter is increased by the fact that, no matter how obvious the fallacy of the attempt to base descriptive psychology of feelings on Spinozist teaching on passions is, in a certain respect, this attempt contains some portion of truth. We tried above to find it in the fact that the problems advanced in descriptive psychology of feelings—the problem of specific features of human feelings, the problem of the vital significance of feelings, the problem of the higher in the emotional life of man—all of these problems, to which explanatory psychology was blind and which, in their nature go beyond the limits of mechanistic interpretation, were actually first posed in full in Spinoza's teaching on the passions. In this point the Spinozist teaching is actually on the side of the new psychology against the old; it supports Dilthey against Lange.

Thus, we face the final summary, which cannot but confuse us with the extreme complexity of the results it contains. We saw that the line of Spinozist thought finds its historical continuation to some extent in Lange and in Dilthey, that is, in both explanatory and in descriptive psychology of our time. Something of Spinozist teaching is contained in each of these theories that fight with each other. Penetrating to the causal, natural-science explanation of emotions, the James–Lange theory solves one of the central problems of Spinozist materialistic and deterministic psychology at the same time. But even descriptive psychology, as we have seen, advancing to the forefront the problem of the meaning and vital significance of human feelings, also tries to resolve the basic and central problems of Spinozist ethics in this way.

In a few words, we can define the true relation of Spinozist teaching on passions to explanatory and descriptive psychology of emotions, saying that, practically speaking, this teaching on solving the one and only problem, the problem of a deterministic, causal explanation of what is higher in the life of human passions, also partially contains explanatory psychology, retaining the idea of causal explanation but rejecting the problem of the higher in human passions, and descriptive psychology, rejecting the idea of a causal explanation and retaining the problem of the higher in the life of human passions. Thus, forming its deepest and most internal nucleus, Spinoza's teaching contains specifically what is in neither of the two parts into which contemporary psychology of emotions has disintegrated: the unity of the causal explanation and the problem of the vital significance of human passions, the unity of descriptive and explanatory psychology of feelings.

For this reason, Spinoza is closely connected with the most vital, the most critical news of the day for contemporary psychology of emotions, news of the day which prevails in it, determining the paroxysm of crisis that envelops it. The problems of Spinoza await their solution, without which tomorrow's day in our psychology is impossible.

But in solving the problem of Spinoza, the explanatory and descriptive psychology of emotions, Lange and Dilthey move away completely from his teaching, and, as we have tried to show above, are wholly contained in Cartesian teaching on the passions of the soul. Thus, the crisis of contemporary psychology of emotions, having disintegrated into two irreconcilable parts that fight against each other, demonstrates for us the historical fate not of Spinozist but of Cartesian philosophical thought. This is apparent most clearly in the basic point that serves as a watershed between explanatory psychology and descriptive psychology on the question of the causal explanation of human emotions.

Actually, we have seen that specifically the Cartesian teaching of Descartes on the passions of the soul contains two independent and equally legitimate parts existing with each other, the strictly deterministic, mechanistic, causal teaching on emotions and the purely spiritualistic, nondeterministic, teleological teaching on intellectual passions. Spiritual and sensual love arise, each from its source: the first, from the free, cognitive need of the soul, and the second, from the nourishment needs of embryonal life. Their connection is so unclear that we understand much more plainly their initial separateness than their short-term coming together and communication. Since spiritual and sensual passions differ sharply from each other, naturally they must become the subject of two completely different kinds of scientific knowledge. The first must be studied as manifestations of independent, free, spiritual activity, the second, as manifestations of human automatism subject to the laws of mechanics. In this, the idea of the separation of explanatory and descriptive psychology of emotions is fully contained, an idea that is assumed by Cartesian teaching with the same inevitability with which the Spinozist teaching on passions assumes the opposite, specifically the unity of explanatory and descriptive psychology of feelings.

Developing the visceral theory of passions, as a nonmediated and direct cause of emotions Descartes advances specific organic states that cause the soul to experience passions. Making use of any kind of good does not contain in itself the feeling of joy as such. But movement of vital spirits flowing from the brain to the muscles and nerves does take on a character from which this feeling must flow. The divergence between Descartes and later representatives of the visceral theory consists only in details. As direct cause of emotion, Descartes considers only changes in internal organs, but not external movements. As Sergi says, one can imagine him speaking with James: our heart does not contract because we are sad, but we experience sadness because our heart contracts. However, he could never say: we experience fear because we flee, we are angry because we hit someone. In this sense, Descartes' theory agrees more closely with the variant that Lange gave it subsequently, and deviates somewhat from the variant that James developed. But the basic idea of a causal, automatic explanation of passions appears in Descartes' teaching in all its grandiose dimensions.

As we have shown above, this does not exhaust Descartes' teaching on the causes of passions. It must be supplemented with two ideas connected with each other that create a bridge from his teaching to contemporary descriptive psychology of emotions. Together with visceral changes, Descartes repeatedly names perceptions, memories, the thought of a loved one, and a hateful or frightening object as causes of emotions. As much as Sergi tries to eliminate the contradiction contained here, he succeeds poorly. True, differentiating between proximate and remote causes seems to make it possible to eliminate the contradiction. The last and most proximate cause of passions of the soul is the movement of the cerebral gland that is elicited by vital spirits. But the remote and first causes of passions may be sensations, memories, ideas. This was fully perceived by later successors of Descartes. For James and Lange, in just this way, the proximate and last cause of emotions is its bodily manifestation. But these investigators are also ready to consider perceptions, memories, and thoughts as remote causes of emotion.

Practically speaking, the confusion on the question of causal explanation of emotions conceals a problem of enormous importance. On the one hand, phenomena arising from human automatism and implemented according to purely mechanical laws are recognized as the last and direct causes of emotions. As fits mechanical laws, the phenomena subjected to them are devoid of any meaning. Posing the question itself on the intelligibility or meaning of causal connections in this plan is as absurd as looking for the meaning of why the impact of a rolling ball hitting one that is not moving causes the latter to move. Here, bare and absolute lack of

meaning of mechanical relations is dominant. Maintaining that we must wonder why a sensation of hunger is internally connected with appetite sounds somewhat odd, but, on the other hand, it is completely consistent.

Thus far, everything is clear. But beginning with a certain point, it seems that the pure lack of meaning of mechanical relations does not exhaust completely the possible causal consideration of emotions. However strangely, the most neutral, the most remote, the very first causes of emotions, which are far from necessary for the development of these states and in the absence of which emotions can develop just as freely as in their presence, are directly connected to their consequences in a certain intelligible relation. If a judgment is a cause of emotions, if it is true that the idea of a loved object is a cause of love and the idea of a hated object is a cause of hatred, if Descartes' statement is true that joy originates with judgment, as if we were in possession of some kind of good, then it seems that emotions not only allow, but require an evaluating, intentional (that is, connected with a certain tendency toward the object), immanently meaningful consideration and explanation. These brief determinations contain completely the whole methodology of differentiation of the higher and lower emotions in Scheler's teaching.

The two methods of considering emotional life do not meet anywhere and, like two parallel lines, do not intersect with each other. Neither of them is needed to supplement the other. They cannot at all be placed in any kind of theoretical relation to each other. Each emotion, as Münsterberg might say, can be understood as mental activity as much in the category of causality as from the point of view of intentionality. Each emotion must be considered from both points of view, which, being developed to the end, will bring us to two different methods of understanding our internal life, to two basically different theoretical disciplines, one of which describes mental life as an aggregate of the content of consciousness and explains it, and the other of which interprets and understands the same mental life as an aggregate of intelligible system relations. One of the disciplines is causal psychology, the other, teleological and intentional psychology.

Of course, there is another possibility which must also be traced to the very end. We may, perhaps, not agree with Münsterberg that between the one psychology and the other, there is no demarcation of the material, that every feeling can be understood as much in the category of causality as from the intentional point of view. But then, together with Scheler, we will inevitably come to the same demarcation of material between two different methods of comprehending emotions in which lower feelings, connected only indirectly with an object, devoid of all immanent drive toward the object, completely inaccessible to an intelligible understanding and allowing only a factual establishment of the causal connections at their base, must be the subject of explanatory psychology, while higher feelings, in which an immanent drive toward an object is present from the beginning, require teleological consideration of their intelligible connections and dependencies, comprising in this way the direct subject of descriptive psychology of the spirit.

Both of these possibilities, later realized in various trends in descriptive psychology, remain open, but both are wholly contained as logical conclusions in Descartes' teaching on causal dependence of emotions of a dual kind. According to this teaching, emotions can at one time be considered as causally determined, automatically occurring bodily changes, and at another time, as intelligibly dependent on value experiences. Both methods of consideration are theoretically absolutely independent and contain truth wholly and completely.

Contemporary psychology of emotions comes to precisely the same conclusion; it stands and falls together with admitting these two equally legitimate and equally possible, mutually independent methods of considering the emotional life of man.

As we have seen, neither Dilthey nor Münsterberg nor any of the partisans of descriptive psychology reject the first Cartesian principle, the strict mechanical causal explanation of emotional life. Some, like Münsterberg, admit that all feeling must be the object of investigation in categories of causality and in categories of purpose. Others, like Scheler, rendering to God what is God's and to Caesar what is Caesar's, attach to explanatory psychology as its legitimate sphere, the whole domain of lower feelings, and to descriptive psychology, the spirit, the higher sphere of human feelings. This differentiation does not change the essence of the matter and does not change the basic idea of the inevitability of dualistic consideration of emotions.

C. G. Lange assumes that, together with the causal emotions that he establishes in his investigation, there may be a study of emotion that will consider memories of former suffering as their causes. It is true that this does not transfer the question to the sphere of physiology. This is the task of another science of emotions. But despite the admission itself that memory can be named as a cause of emotion at one time, and vasomotor reaction, at another time, the position itself that both methods of causal explanation are equally legitimate and independent, not mutually dependent, returns us completely and fully to the Cartesian teaching on the possibility of a dual view of emotions—from the angle of an intelligible connection with memories and ideas and from the angle of mechanical dependence on bodily causes. But this scarcely differs in any way from the idea of Münsterberg that all feeling can be understood as much in the category of causality as from the intentional point of view.

C. G. Lange would probably be very surprised if he found out that many years later, P. Natorp[120] would repeat essentially the same differentiation of two possible methods of considering mental phenomena. Since we are speaking of disclosing causal patterns of phenomena that are called mental, the consideration can be nothing other than a conscious, methodically consistent, not connected with any metaphysical prejudice, natural-scientific, predominantly physiological study of organs of feelings and the brain. It is simply a branch of natural science that might better be called physiology instead of psychology. But, together with this study, there is another method of knowing mental life, the inherent task of which is not description and not explanation of causal connection, but reconstruction, reestablishment, recreation of the whole concreteness of what is experienced. To the extent that mental phenomena require causal explanation and allow it, they constitute the subject of physiological knowledge. To the extent that they are comprehended in all their internal uniqueness, they do not require and do not allow any kind of explanation of causal dependence and can be known only with the help of a complete reproduction of experiences in all their concreteness, the ideal of which is not explanation, but tautology. Scientific knowledge is essentially incapable of adding anything new to what is directly disclosed in experience itself. It can only tautologically affirm that the only explanation of the connection of experiences is the experienced connection.

C. G. Lange understands that differentiation of mental and physical causes of emotion must have far-reaching consequences. Different mental causes even of identical emotions do not elicit essentially identical phenomena. The fear of a ghost, for example, does not assume the same form as the fear of an enemy bullet (Lange, pp. 60-61). If we think through to the end these statements of Lange, we must conclude that the real scientific task for the given series of phenomena is not only the precise determination of emotional reactions of the vasomotor system to different kinds of effects, but also a completely systematic explanation of forms or shades of emotion depending on the causes that produce it. If the task of causal explanation cannot be admitted as secondary for natural-science knowledge, then,

obviously, fear of ghosts and fear before an enemy bullet, as completely special forms of fear, can be explained and scientifically known not otherwise than in connection with their causes. It is obvious that together with a physiological explanation of emotions there must also be purely psychological explanations. But does this not return us to the Cartesian teaching on the possibility of a dual causal consideration of passion caused one time by movement of low spirits and another time, by thoughts of a loved or of a hated object?

Between mental and physical emotions, there is a difference in causes as there is in presence or absence of consciousness of the corresponding causes. As we have seen, causes and consciousness of them do not remain neutral with respect to the experienced emotion, but give it a completely determined and distinct form different each time from other forms. If one should want to differentiate emotions on the basis of such a principle (ibid., p. 66), then, of course, there can be no objection to this. It is completely natural that leaving everything in the sphere of physiology, Lange does not see the possibility of drawing a precise boundary between mental and physical causes of emotions. For this reason, for him, the similarity between emotions of different origin (mental and physical) is so vividly apparent that it appears much more distinctly than the difference between them. But this is so only as long as we stay in the sphere of physiology. Obviously, if we begin to study emotion from another, a psychological aspect, the difference will appear much more substantial than the similarity.

Since they go beyond the limits of pure physiology and develop their investigation on the plane of physiological psychology, W. James and C. G. Lange attempt to explain emotional experience as such in a causal way, and vaguely sense that they cannot avoid the mixing of causal and teleological points of view that, according to the correct statement of Münsterberg, comprises the distinctive mark of all of the old psychology. When, describing the essence of fear, together with the pulse and color of the face Lange names the force of speech and clarity of thought, ascribing them all to the same order of physical symptoms of fear, he assumes, in a most obvious way, a mixing of two dissimilar aspects in the study of emotions. In completely the same way, in presenting a state of anger that he reduces to agitation in the breast, flow of blood to the face, distention of nostrils, clenching of the teeth, and a drive toward energetic acts, James clearly mixes intentional and causal approaches to the study of emotions. For, strictly speaking, what do clenching of teeth, and a drive toward energetic acts, disturbance of the pulse and blurring of thoughts have in common?

The James–Lange theory cryptically contains the requirement for supplementing the method of considering emotions with another method implemented by descriptive psychology of feelings. This is clear from the following: as we have seen, James, thinking through his theory again and again, comes to the conviction that in emotional manifestations, we have not simple reflexes, but that the manifestations always imply the individual's consciousness of the special meaning and sense that he contributes to the given external impression. Fear, anger, and other reactions and the impulsive actions develop because the external impression is understood by the individual and is for him a subject of fear or anger. Scheler would have willingly subscribed to these words since they wholly contain the idea of intentional tendency of emotion toward an object and a need for explaining the intelligible connections and dependencies that determine and promote our concrete feelings all the time.

So that no doubt should remain that the idea of descriptive psychology of feelings is contained as an internally indispensable link in the chain of Cartesian reasoning and in the most consistent of all explanatory theories of emotions, in the

James–Lange hypothesis, let us recall Descartes' teaching on purely mental, intellectual passions, on emotions that can develop in all their magnificence regardless of the body, the teaching in which Sergi sees the ruins of the visceral theory. He says that emotion, according to that teaching, is directly connected with ideas and their play. In this point of Cartesian teaching, Sergi correctly sees a transition of the physiological trend into an intellectualistic and finalistic trend, a transition to absolutely new points of view that open new horizons. We have already traced this new direction, these new points of view, these new horizons in sufficient detail and know them quite well. They are nothing other than the methodological system of the descriptive psychology of feelings.

In the same way, James' teaching on independent emotions originating from pure activity of our thoughts cannot assume anything different as its further development except the consistent descriptive psychology of feelings that considers emotion not in the categories of causality, but from the intentional point of view—as mental activity aided by disclosure of a world of internal relations that determine the life of our spirit. Except for an intuitive understanding of sensible connections and relations that are disclosed directly in experiences, what remains for scientific understanding of these purely spiritualistic sensations?

With this, we can conclude the investigation of the problem of causal explanation in contemporary psychology of emotions and summarize the results to which it brings us. We have seen that the naturalistic theory of emotions tempted the scientific thought included in this theory with the possibility of a genuine, that is, causal, knowledge of the nature of human feelings. This was the higher point toward which the hypotheses of Lange and James were directed, and in the attainment of which they saw great triumph. The creation of the psychology of emotions as a science in the real sense of the word and overturning the metaphysical teachings in this area seemed to them to be directly connected with evidence of the possibility of a strict causal explanation of emotional life. But the naturalistic theory suffered a breathtaking catastrophe specifically on the problem of causality. The higher point toward which it was directed was the point of collapse and demise. The problem of causality split contemporary psychology of emotions into two irreconcilable parts internally presuming each other.

Causal explanation needed a consideration of the teleological as a supplement. In an imperceptible way, the explanation grew into an intuitive understanding. Instead of subverting the metaphysical teachings, psychology had to resort to them as to its last and only basis. The pillar and confirmation of truth in the teaching on emotions were found in the metaphysics of the seventeenth century. James stated that purely descriptive literature on this question, beginning with Descartes even to our day, represents the dullest section of psychology in order that Dilthey might turn to metaphysical anthropology of the seventeenth century as to the only source of living psychology, the path to which lies through improving methods of the old spiritualism.

It seems to us that in this sense, Ribot, who in general had a condescending attitude toward the theory of Lange and James, understood better than others the internal dependence of their theory on Cartesian teaching, indicating the fact that the theory led to retracting the unjust attack on the thought of Descartes, which he expressed in the *Treatise on Passions of the Soul*; he also had a better understanding of the internal failure of this theory, which is exhibited most clearly in the formulation and solution of the problem of causality. Ribot says: "The only point on which I diverge from the James–Lange theory, which seems to me closest to truth in its attempt to explain facts from the aspect of those who do not admit psychological substances, pertains to the set-up of the theory, not to its basis. It is

obvious that both our authors, consciously or not, take the same dualistic point of view as the representatives of the dominant opinion to which they object. The whole difference between them is in the view of causes and effects: some see cause in emotions, others, in physical manifestations.

"However, I believe that understanding of cause and effect, any relation in general of causality, must be excluded from this problem and the dualistic position must be replaced by the unitary and monistic. The teaching of Aristotle on matter and form seems to me to be more correct if as matter, we understand somatic facts and as form, mental states corresponding to them. Nevertheless, both of these terms are closely connected and can be separated only by abstraction. Due to tradition in ancient psychology, the behavior of the soul and the behavior of the body were studied separately. The newer psychology does not look at it in this way. Actually, if the problem were given a metaphysical coloring, then we would not be dealing with psychology. However, if it remains within the sphere of experimental psychology, then there is no reason to separate them because they go hand in hand. Consciousness must not be separated from its physical conditions: they comprise one natural whole that must be studied as such.

"Considering a separate emotion, we find that movement of the face and the body, vasomotor agitation, respiratory and secretory changes express objectively what is expressed subjectively by the state of consciousness that corresponds to them, classified according to qualities on the basis of internal observation. It is one and the same phenomenon expressed in a dual form. This unitary point of view, corresponding more closely to the nature of things and to contemporary trends in psychology, saves us in practice, in my view, from many objections and difficulties" (T. Ribot, 1897, pp. 107-108).

Most remarkable in the criticism of Ribot is the exposure of the true essence of the theory of James and Lange. Ribot shows that their theory is what it is, that is, the classical theory of the cause–effect dependence between emotional experiences and manifestations turned inside out. All the paradoxical quality of this theory consists only of its showing us the back of the classical theory. But essentially, the new theory wholly retains the dualistic basis of the old. The one and the other considers emotional experiences and manifestations from the point of view of the cause–effect dependence. The whole difference between them is in the view of cause and effect. Some see cause in emotions, others, in physical phenomena. Cause and effect change places, but the members of the cause–effect dependence remain the same.

T. Ribot is also right when he sees the only means of overcoming the dualistic and metaphysical quality of the James–Lange theory in a complete elimination of the causality relationship, the concept of cause and effect, from the explanation of this problem. He proposes replacing dualistic understanding with a monistic hypothesis of parallelism and interaction—a hypothesis of psychophysical identity. But in this way, the problem of causality in contemporary psychology of emotions grows directly into a psychophysical problem; its analysis must also be the concluding link in our consideration of the results to which we were brought by the investigation of the old and the new Cartesian psychology of passions in their internal relations to each other.

20

First, the most naive and direct impression that inevitably arises when one becomes familiar with the James–Lange theory (from the moment of its appearance

even to our day) is the notion that it is directly connected with some kind of definite solution to the psychological problem in the area of the teaching on emotions. For this reason, this theory first of all forces the illusion of being materialistic. The illusion has been exposed repeatedly, but it firmly persists and remains intact, renewing itself with each new investigator to the most recent time.

James himself had to accompany his theory with a justifying thesis: "My point of view cannot be called materialistic." Obviously, it was clear to him that this problem requires explanation, that at first glance, this theory may seem to the reader to be a theory that leads to an unchangeable, materialistic interpretation of the phenomena of emotions. About his theory, James says: "In it, there is no more and no less materialism than in any view according to which our emotions are facilitated by nerve processes" (1902, p. 313). In a general form, this position does not disturb anyone, but it is easy to find materialism in it as soon as we speak about one or another particular kind of emotion. "Such processes were always considered by psychologists who tend toward Platonizing as phenomena connected with something exceptionally low. But no matter what the physiological conditions of the formation of our emotions might be, in themselves, as mental phenomena, they must, nevertheless, remain what they are. If they are deep and pure mental facts valuable in significance, then from the point of view of any theory of origin, they will remain just as deep, pure, and significant in meaning for us as they appear from the point of view of our theory. They include in themselves an internal measure of their meaning, and to prove with the proposed theory of emotions that sensual processes do not necessarily have to be distinguished by a low, material character is just as logically absurd as to argue against the proposed theory by citing the fact that it leads to a low, materialistic interpretation of the phenomena of emotions" (ibid., p. 313).

James was, of course, completely right when he tried from the very beginning to explain in this way the relation of his theory to materialism. Of course, only to a naive view can it appear that this theory necessarily contains in itself a materialistic explanation of the nature of our feelings. The dependence of mental processes on nerve processes is an indisputable fact for all scientific psychology, and any physiological theory, no matter in what it might see a material cause of nerve processes, leaves open the question of a material or idealistic interpretation of the relation between nervous and mental processes. In this sense, the peripheral theory of emotions actually contains in itself no more and no less materialism than the central or any other theory.

For this reason, the point of view of contemporary reactological psychology and behaviorism, according to which the James theory must be considered as a living embodiment of materialistic, natural-science thought, can seem to us to be nothing other than illusion. If James had to defend his theory against enemies who accused him of materialism, then investigators of our time must defend this theory from its friends and successors who praise it for its materialistic quality. Thus far, this theory has been considered as revolutionary, clearly and prominently emphasizing material, purely physiological roots of mental states. Thus far, there is a tendency to see in it a manifestation of exceptional boldness. In this way, behavioral psychology of our day accords the James theory undeserved honor in the same way that its opponents contemporary to James raised equally undeserved charges against it.

This seems so obvious and clear after the explanation of James and what we have said above on the materialistic and idealistic character of the theory under consideration that the problem seems completely exhausted from the very beginning by the simple uncovering of the widespread illusion. Illusion remains illusion. The theory of James contains in itself no more and no less materialism due to the fact

that it develops a hypothesis on the peripheral origin of emotions than the theory opposite to it which insists on their central origin. Nevertheless, the problem is much more confused and complex than it may seem at first glance. It is not at all exhausted by a simple uncovering of the illusion. It urgently requires investigation.

We believe that one fact has a paramount significance for elucidating the problem: regardless of the explanation of James himself on the seeming materialistic quality of his theory, it still became a part of the history of psychology as a materialistic interpretation of emotional life and, in this respect, shared the fate of many explanatory theories which, as Dilthey correctly notes, were connected time and again with materialism. The last is explanatory psychology in all its variants. Every theory that assumes as a base a connection of physical processes and includes mental facts in them is materialism (W. Dilthey, 1924, p. 30).

The historical fate of the James theory was expressed primarily in that it not only was accepted by the most radical wing of contemporary natural-science psychology, but also produced in its image a similarly influential and powerful direction that was called the psychology of reaction or behavior. In essence, the James theory, as we have shown above, anticipated the teaching on conditioned reflexes as the basis of behavior. We have already expressed the opinion on conditioned reflexes of one of the investigators that all of contemporary psychology of reactions is constructed according to the pattern of and much like the James–Lange visceral hypothesis. Thus, uncontrollably striving toward a natural-scientific materialism, biological and mechanistic psychology was the direct continuation of James' work. The James theory, however, proved capable of entering into contact with the spiritualistic trends in psychology. If the connection of this theory with natural-science psychology becomes self-evident in light of the naturalistic and materialistic principles that unite them, the connection with spiritualistic trends requires explanation.

This connection becomes comprehensible only when we recall a fact we have mentioned repeatedly: that the opposite poles of contemporary psychology are internally united with each other and presume each other, that their combination goes back to Descartes, who, as we have explained, can be considered the father of mechanistic psychology and spiritualistic psychology, which do not exclude, but complement each other. Time and again, we have seen how the spiritualistic theory found a primary basis for its own structure in a consistent mechanistic explanation of some question. The James–Lange theory plays the same role in contemporary spiritualistic psychology, the clearest example of which may be the psychology of H. Bergson.

Before explaining the relation of Bergson to the James–Lange theory, and the connection through which he includes this theory in his psychology of feeling, in keeping with the psychophysical problem that interests us now, we must emphasize specifically this aspect of the theory. We will use the well-known theses of Bergson on psychophysical parallelism. These contain in a concise form the basic view of this great contemporary philosopher on the metaphysical basis of psychology.

1. Bergson says, if psychophysical parallelism is not distinguished by either strictness or completeness, if there is no absolute correspondence between each specific thought and a specific state of the brain, then the concern of the experiment is to note with increasing approximation specifically those points where parallelism begins and ends.

2. If such experimental study is possible, it will measure more and more precisely the deviation between thought and the physical conditions in which this thought operates. In other words, it will elucidate ever better the relation between man—thinking substance and man—living substance, and in this way, elucidate what might be called the meaning of life.

3. If the meaning of life can be determined empirically with more and more precision and fullness, then positive metaphysics is also possible, that is, incontrovertible and capable of rectilinear and infinite progress.

The theses cited express not only the basic goal of metaphysical psychology, but also the method with which it attempts to reach the goal as well as the prerequisites of this method. The prerequisites must interest us primarily because they disclose the significance of the psychophysical problem for all of spiritualistic psychology and the place it occupies in the system of applied metaphysics. It is reduced to empirical determination of the meaning of life and comprises the basic task of metaphysical psychology. Thus, the assumption is that the meaning of life will increase as we succeed in noting and establishing more and more completely the mutual divergence of the mental and the corporal in man.

The undoubted legitimacy of such formulation of the question on psychophysical parallelism, as G. Bellot[121] noted in his discussion of the theses of Bergson, not only returns us to the unresolved problems of Cartesian metaphysics, but tries to place them on the solid, scientific ground of factual investigation. The trend in contemporary philosophy—transferring the solution of a number of central philosophical problems to the area of concrete scientific knowledge as well as the converging trend of contemporary scientific psychology—is a trend to include consciously a number of philosophical problems directly contained in empirical investigation in the circle of psychological studies; we have already noted this trend as one of the most remarkable trends of our science, leading steadily to convergence of philosophy with psychology and a very deep transformation of the whole structure and content of contemporary philosophical and psychological investigation. We repeat, in a certain sense, the present investigation was also produced by this trend and tries to find its internal justification in it.

In connection with the theses cited, Bellot says that Bergson's method is new more because of the original and ingenious use the author makes of it than in itself. It is scarcely necessary to recall here that the greatest part of Cartesian metaphysics was attributable to the problem of the relation between the soul and the body. The Cartesians considered the main task to be making these relations comprehensible, while Bergson remains alone on the ground of facts and, specifically on establishing a certain irregularity in mutual psychophysical relations; he wants to bring out the necessity of a spiritualistic hypothesis.

In response to the objections raised by Bellot, Bergson not only did not consider it necessary to repudiate a connection between the method he proposed for defending the spiritualistic hypothesis and the Cartesian method, but objected to contrasting the method he proposed for defending the spiritualistic hypothesis with the method of Descartes. Bergson believes that the criterion of comprehensibility for Cartesian philosophers was much more empirical than they themselves thought. He was in full accord with intensifying their own experience. But our experience is much more extensive. It has become so extensive that we had to give up—for almost a century—the hope of universal mathematics. Thus, comprehensibility extends, little by little, to new concepts, themselves suggested by experience. "If the Cartesians returned to life now, would they have the same idea of comprehensibility?" asked Bergson, assuming that it would become false to the method of Descartes and would require a review of the Cartesian teaching, including specifically of the trends which, without a doubt, the philosopher-Cartesian would need if he had a more flexible science and assumed a complexity of organization in natural phenomena that would be difficult to convert into a mathematical mechanism. If a certain position of the mind relative to its object, a certain adaptation of forms of investigation to their material is called a method, then this does not mean re-

maining true to the method and preserving its devices while the materials with which this method operates change radically. To remain true to a certain method means to constantly transform its form according to the material so as always to preserve the same precision of adaptation.

Thus, Bergson proceeds completely consciously in defense of the spiritualistic hypothesis along the path marked out by Descartes. The difference between the metaphysics of Bergson and that of Descartes consists only of the fact that he tries to improve the method and extend the boundaries of comprehensibility in keeping with the richer scientific experience, and, rejecting the specific devices of investigation introduced by Descartes, he remains faithful to his method, adapting it to contemporary scientific knowledge. In his own words, Bergson only accepts science in its contemporary complexity, and having this new science as material, renews his efforts, similar to those that the old metaphysicians made, depending on a more simple science. He breaks with the old mathematical framework, he takes into account biological, psychological, and sociological sciences, and on this broad base constructs a new metaphysics. This is the only difference between his and Cartesian spiritualism. The basic method of Descartes, the method of clear comprehension of the complete separation of the spirit and the body, transferred to the ground of contemporary scientific knowledge and converted into the method of experimental investigation of the divergence of thought from the physical conditions in which it operates, this is the method of Bergson. After this, there should be no special difficulties in understanding the method with which Bergson includes the James–Lange theory in his spiritualistic concept. On the contrary, we should be surprised rather by the precision and the coincidence, even in the details, with which the logical structure of Cartesian teaching on the passions of the soul, in which the spiritualistic principle is balanced by the mechanistic, is reestablished in all its fullness in the new historical setting, in the new scientific expression. Bergson achieves this logical balance by supplementing his spiritualistic conception with the mechanistic theory of emotions,

In studying the intensity of psychological states, which Bergson makes a prerequisite as an introduction to the analysis of the problem of freedom of the will, he wholly accepts the theory of James on the centripetal origin of sensations of stress. On the one hand, he applies the theory of organic sensations as bases for experiencing the intensity of mental states to attention and the intellectual effort that accompanies it, and, on the other hand, to the violent or keen emotions (anger, fear, certain varieties of joy, grief, passions, and desires). Physiological movements accompanying attention are not the cause and not the result of the phenomena, but a part of it, seemingly expressing attention extended over space. When attention is demanded, after its work is finished, we seem to be conscious of increasing pressure of the soul, increasing nonmaterial effort. Analyze this impression, and you will find in it only the feeling of muscle tension that extends spatially or changes its essence; for example, stress is transformed into pressure, fatigue, and pain.

Bergson sees no substantial difference between the stress of attention and what might be called effort of mental stress, for example, keen desire, furious anger, passionate love, mad hatred. For this reason, the intensity of strong emotions is nothing other than the muscular tension that accompanies them. Bergson cites as remarkable the description of physiological symptoms of fear given by Darwin and cited by James. He says: "Of course, we do not agree with James that the emotion of fear can be reduced to the sum of organic sensations; an irreducible element always enters into the feeling of anger, even if it were only the idea of hitting or fighting of which Darwin speaks and which gives so many different movements a common direction. But if this idea determines the direction of the emotional state

and orientation of accompanying movements, it seems to us that the increasing intensity of the state itself is nothing other than an ever more profound jolting of the organism. Exclude all traces of jolting of the organism, all weak attempts of muscle contraction, and you will have nothing but only the idea or, if you do not want to deny emotion, emotion devoid of intensity."

These words of Bergson leave no doubt that his disagreement with James is purely illusory (Bergson sees this disagreement in the presence of a mental element that is not reducible to peripheral sensations—the idea of hitting or fighting): and James always admitted the presence of such an idea in emotions, but only denied it, precisely as Bergson does, as the specific quality of an experienced feeling, retaining for it only the right to be called a purely intellectual state. But, of course, Bergson does exactly the same thing. His statement: exclude all traces of jolting of the organism, all weak attempts of muscle contraction, and of the feeling of anger, you will have only the idea—he repeats the statement of James word for word: suppress in yourself external manifestation of passion and it will be extinguished, subtract, one after another, all sensations of bodily symptoms connected with it from the state of our consciousness, and in the last analysis, nothing will be left; anger will be completely absent, and as a residue, there will be only calm, passionless judgment, wholly belonging to the intellectual area, that is, the idea of hitting or fighting, about which Bergson is speaking.

Even in syntactic structure, Bergson's position is completely analogous to a similar statement of Lange: eliminate in a frightened person all physical symptoms of fear—what then will remain of his fear? Bergson cites Spencer, who says that intensive fear is expressed in a scream, in an attempt to hide or to conceal oneself, in twitching or trembling. Bergson says that we go even further and maintain that these movements are a part of the feeling itself of fear; they convert the feeling of fear into an emotion capable of passing through various stages of intensity. If you suppress these movements, the intense fear will be replaced, more or less, by the idea of fear, an intellectual representation of danger that must be avoided. The same thing can be said about the keen feeling of joy, grief, desire, repulsion, even of shame, the cause of the intensity of which is rooted in automatic reactive movements produced by the organism and perceived by consciousness.

From this point of view, Bergson does not see a substantial difference between deep feelings, for example, the feeling of compassion, aesthetic feeling, and others, and the keen, strong emotions that were just listed. To say that love, hatred, or desire increase in strength is to say that they are projected outward, that they radiate to the surface, that peripheral sensations replace the internal elements. But regardless of what kind of feelings these are, superficial or deep, sudden or deliberate, their intensity always consists of a multitude of simple states that our consciousness vaguely differentiates.

In this way, Bergson, in his own words, refusing to see in an affective state anything other than a mental expression of the jolting of the organism or an internal echo of external causes, fully assumes the point of view of James.

The James–Lange theory finds for itself just as firm a place in the spiritualistic psychology of pure spirit as in the natural-science psychology of behavior. If we ask what function this theory can serve in the spiritualistic psychological system, how it can reinforce the psychology of the spirit, what kind of auxiliary problem it can resolve in the common defense of the metaphysical hypothesis, what its role in this system is—stated more briefly, why is it necessary to the restored Cartesian method, we will be able to give no answer other than indicating that the naturalistic theory of emotions fulfills in the neo-Cartesian teaching exactly the same role that it fulfilled in the teaching of Descartes himself: lowering passions—that basic phe-

nomenon of human nature—to simple manifestations of the soulless robot of our body, and in this way, clearing the way for admitting the absolutely indeterminate, free, mental will, independent of the body.

For this reason, Bergson is completely right when he says that in defending the spiritualistic hypothesis, he lays claim to continuing the work of the Cartesians, but takes into account the greater complexity of contemporary science. This is why we are justified in considering the fact that he includes the James–Lange theory in the psychology of feelings as very important in a symptomatically theoretical respect. The fact indicates that the James–Lange theory, representing, as we have seen, a development of one of the only nonindependent parts of Cartesian teaching, acquires its sense and true significance only by being again restored to the structure of this whole. Thus, Cartesian teaching, including in itself a prototype of all mechanical theories of emotional life on the one hand, and the teaching of Bergson, which reunites naturalistic and spiritualistic parts of the old conception on the scientific ground of contemporary natural science on the other, illuminate for us the philosophical nature of the theory under consideration. They show what it was at the time it was founded before it became differentiated and branched from the complex ideological whole within whose structure it appeared, and what it inevitably had to become in its full development, being again included in a whole system, an organic and separate part of which it comprises. As we have noted, it is most remarkable that this theory retains the same role in the new spiritualistic system that it fulfilled in Cartesian teaching. It lowers our passions to the level of simple automatism in order to raise above them the free activity of the spirit.

We can be convinced that this is really so from the investigation of Bergson of the relations between the spirit and the body. Here, Bergson fully accepts and brings to a logical limit the purely mechanistic view of the activity of the brain. He tries to show that the brain is only the weapon of action, an organ capable of creating motor automatisms but not having in itself any other possibilities. Completely in accord with mechanistic natural science, Bergson tries to trace step by step the progress of external perception, beginning with the amoeba and ending with higher vertebrates. He finds that even at the stage of a simple cell cluster of protoplasm, the living material exhibits irritability and contraction, that it responds to external influences, reacts to them mechanically, physically, and chemically. Moving up the series of organisms, we note a physiological division of labor, the appearance of differentiation and combination into a system of nerve cells. Together with this, the animals begin to react to external stimulation with more various movements, but always what is involved here is automatic motor reaction.

In higher vertebrates, there is, without a doubt, a radical difference between purely automatic acts, which are always controlled by the brain stem, and conscious activity, which requires involvement of the brain. It would be possible to imagine that, in this case, an impression coming from outside, instead of spreading in the form of movements, might be converted into cognition. But Bergson assumes that it is enough to compare the structure of the brain and that of the brain stem to be convinced that between functions of the brain and reflex activity of the brain stem there is only a difference in complexity and not in essence.

This is the basic idea of Bergson's philosophy. There is virtually no difference between functions of the brain and the reflex activity of the brain stem. This means that the whole development of perception, beginning with the amoeba and ending with higher vertebrates and man, does not result in the appearance of anything essentially new, if we consider it from the point of view of organization of physiological conditions. Development is only an increase in complexity of automatism that was already established in the organism of the amoeba, and the difference

between the functions of the brain in man and irritability and contraction of the simple cluster of cells of protoplasm is only in complexity, but not in essence. Not to see a major difference between the activity of the brain and the brain stem, and to bring the reflex activity of the brain stem to the greater variability of motor automatisms in comparison with the activity of the amoeba means to reject development as a process of continuous appearance of neoformations, it means to reduce all of the higher cerebral activity to the automatism of a simple reflex or even lower—to the irritability of protoplasm.

* * *

In no way does analysis of the Bergsonian teaching on the relation of the body to the spirit enter into the subject matter of the present investigation. In concluding a review of the fate of Cartesian teaching on the passions in contemporary psychology, it was important for us only to show that this teaching was polarized with respect to the contradictory principles included in it and found its embodiment in the extreme mechanistic and spiritualistic conceptions of contemporary psychology.

ON THE PROBLEM OF THE PSYCHOLOGY OF THE ACTOR'S CREATIVE WORK[1]

The problem of the psychology of the actor and theatrical creative work is at one and the same time old and completely new.

On the one hand, it seems there never was one even somewhat great theatrical pedagogue or critic, not one man of the theater in general, who might pose this question one way or another, and who, in practical activity, performance, teaching, or evaluations, would not proceed from one or another understanding of the psychology of the actor. Many who were active in the theater produced extremely complex systems of the actor's performance in which they found a concrete expression not only of purely artistic aspirations of their authors, not only the canons of style, but also systems of practical psychology of the actors' creative work. Such, for example, is the famous system of K. S. Stanislavsky, full of theoretical staging, which, unfortunately, we do not have to this day.

If we try to trace the sources of theatrical psychology, they will take us far back, and we will see the great and very difficult problems of this area, which over the course of a century and in various forms, agitated the minds of the best representatives of the theater. This problem, which D. Diderot[2] poses in the remarkable "Paradox of the Actor," already anticipates the sharpest arguments between various contemporary theatrical systems, but he, in his turn, was anticipated by a number of thinkers of the theater who long before Diderot put the question in a somewhat different form, but on the same plane as Diderot sets it.

There is something basic in this formulation of the question, and when one begins to study attentively its historical development, one is inevitably convinced that, obviously, it is rooted in the very essence of the creative work of the actor as it opens up to direct understanding, which is still wholly guided by a naive amazement before a new psychological phenomenon.

Thus, in theatrical systems, if the problem of the psychology of the actor with all its changes retained as central the paradox of the actor's emotion, then in the new time, investigations of a different type opened paths applicable to the same problem. New investigations begin to involve the actor's profession in the common circle of investigations of the psychology of the profession, bringing to the forefront the psychotechnical approach to the actor's craft. The problem usually at the center of attention is how certain general qualities and traits of human giftedness should be developed to ensure the person who has them success in the area of theatrical creative work. Tests are created to study fantasy, the motor system, verbal memory, and excitability of the actors, and on that basis, a "professiogram" of the actor's work is constructed according to exactly the same principle as analogous psychograms for any other professions are constructed; then, according to the register of established qualities, people are selected for this profession who best correspond to this register.

Only very recently did we note an attempt to overcome the inadequacies of this and another approach to this problem and formulate it differently. In this respect, works of a new type have come into view; in this respect also, we have called the problem of the psychology of the actor a problem that is completely new and almost not studied at all.

It is easiest to define the new approach to the old problem by comparing it to two former trends. They had a common inadequacy over and above the unique, radical methodological flaws that characterize each of them separately and which to a certain degree is opposite in the one and the other system of investigation.

The common inadequacy of former trends is the complete empiricism, the attempt to proceed from what is on the surface, to establish facts that are directly grasped and to elevate them to the rank of a scientifically discovered pattern. Although the empiricism with which people of the theater work is frequently an area of phenomena profoundly unique and extremely significant in the general sphere of cultural life, although facts such as the specific works of great masters are dealt with here, the scientific significance of these materials is not beyond the limits of the collection of factual data and general deliberation over the formulation of the problem. Also marked by the same radical empiricism are the psychotechnical investigations of the actor's craft which cannot rise to any extent above the directly factual data and include them in the general, previously determined methodological and theoretical understanding of the subject.

Moreover, as has been indicated, each of these trends has a specific inadequacy.

Stage systems, from the actor, from theatrical pedagogy, from observations of rehearsals, and during performance, which are usually enormous generalizations of the producer's or actor's experience, set specific, unique, features of experience, inherent only in the actor, as being of paramount importance, forgetting that these features must be understood against a background of general psychological patterns, that the actor's psychology comprises only a part of the total psychology in both the abstract-scientific and the concrete-life significance of this word. However, when these systems reach to general psychology for support, the attempts prove to be a more or less accidental connection in the manner of that which exists between the Stanislavsky system and the psychological system of T. Ribot.

Psychotechnical investigations, on the other hand, lose sight of all specificity, all the uniqueness of the actor's psychology, seeing in the creative work of the actor only a special combination of the same mental qualities that are found in a different combination in any profession. Forgetting that the activity of the actor is itself a unique, creative work of psychophysiological conditions, and not analyzing these specific conditions in all the variety of their psychological nature, the investigators-psychotechnicians dissolve the problem of the actor's creative work in general, and at the same time, banal test psychology, paying no attention to the actor and all the uniqueness of his psychology.

The new approach to the psychology of the creative work of the actor is characterized, first of all, by the attempt to overcome the radical empiricism of the two theories and to comprehend the psychology of the actor in all the qualitative uniqueness of its nature, but in the light of more general psychological patterns. At the same time, the factual aspect of the problem assumes a completely different character—from abstract, it becomes concrete.

If formerly the testimony of one actor or another or one epoch or another was always considered from the point of view of the eternal and unchanging nature of the theater, now investigators approach a given fact mainly as a historical fact which is finished and which must be understood most of all in the full complexity

of its historical condition. The psychology of the actor is formulated as a problem of concrete psychology, and many irreconcilable points of view of formal logic, abstract contradictions of various systems, identically reinforced by factual data, are explained as a living and concrete historical contradiction of different forms of the actor's creative work, which changes from epoch to epoch and from theater to theater.

For example, Diderot's paradox of the actor consisted of the fact that the actor portraying strong heartfelt passions and agitation on the stage and bringing the audience to a high emotional pitch, himself remains devoid of even a shade of the passion that he portrays and that shocks the viewer. The absolute formulation of the question by Diderot is as follows: must the actor experience what he portrays, or is his acting a higher form of "aping," an imitation of an ideal prototype? The question of the internal states of the actor during a stage play is the central node of the whole problem. Must the actor experience the role or not? This question was subjected to serious discussion, but the very formulation of the question suggested that it would allow only one answer. Moreover, contrasting the work of two actresses, Clairon[3] and Dumenil,[4] Diderot knew that they were representatives of two different systems of the actor's craft, equally possible, although opposite in a certain sense.

In the new formulation of the question that we are considering, the paradox and the contradiction contained in it find a resolution in the historical approach to the psychology of the actor.

In the beautiful words of Diderot, "first of all, pronouncing the words, 'Zaira, you are crying,' or 'you will remain there, my daughter,' the actor hears himself for a long time and he hears himself at the moment when he touches you, and all his talent is not in feeling, as you might think, but in transmitting most subtly the external signs of feeling and thus deceiving you. The cries of his grief are distinctly revealed in his ears, his gestures of despair are imprinted in his memory and were preliminarily learned in front of a mirror. He knows completely precisely at which moment to take out his handkerchief and when his tears will flow. Expect them at a certain word, at a certain syllable, not sooner and not later. The trembling voice, the interrupted words, the muffled or drawn-out sounds, the shuddering body, buckling knees, the swooning, the impetuous outbursts—all of this is the purest imitation, a lesson learned by heart in advance, a passionate grimace, a splendid 'aping'" (D. Diderot, 1936, pp. 576-577).

As Diderot says, all the passions of the actor and their expression enter as a component part into the system of declamation, are subject to no law of unity, and are selected and harmoniously disposed in a certain way.

In essence, two things that are very close to each other, but never completely merged, are mixed in Diderot's paradox. First, Diderot has in mind the most superpersonal, ideal character of the passions that the actor projects from the stage. These are idealized passions and movements of the soul; they are not natural, live feelings of one actor or another, they are artificial, they are created by the creative force of man and to that extent must be considered as artificial creations, like a novel, a sonata, or a statue. Because of this, they differ in content from corresponding feelings of the actor himself. Diderot says: "A gladiator of ancient times is like a great actor, and a great actor is like an ancient gladiator; they do not die as people die in bed. They must portray before us a different death so as to please us, and the viewer feels that the bare, unadorned truth of movement would be shallow and contrary to the poetry of the whole" (ibid., p. 581).

Not just from the point of view of content, but also from the aspect of formal connections and couplings that determine their course, the feelings of the actor

differ from real, live feelings. Diderot says: "But I want very much to tell you, as an example, how an actor and his wife, hating each other, played a scene of tender and passionate lovers in the theater. Never have two actors seemed so strong in their roles, never have they aroused such long applause from the orchestra and the loges. We have interrupted this scene dozens of times with applause and shouts of delight. This is in scene three, act four of Molière's *Le Dèpit Amoureux*" (ibid., p. 586). Later, Diderot brings in the dialogue of the two actors, which he calls a dual scene, a scene of the lovers and a scene of the husband and wife. The scene of the declaration of love is interwoven here with the scene of a family quarrel, and in this interweaving, Diderot sees the best evidence of his being correct (ibid., pp. 586-588).

As we have said, Diderot's view is based on facts, and this is the source of his strength, his unsurpassable significance for a future scientific theory of the actor's creative work. But there are also facts of an opposite character which do not in the least refute Diderot. These facts consist in the fact that there is still another system of performance and another nature of artistic experiences of the actor on the stage. If we take an example close at hand, the evidence is all the stagecraft of the Stanislavsky school.

This contradiction, which cannot be resolved in abstract psychology with the metaphysical formulation of the question, has a possibility of being resolved if we approach it from the dialectical point of view.

We have said that the new trend poses the problem of actor psychology as a problem of concrete psychology. Not eternal and unchangeable laws of the nature of actors' experiences on the stage, but historical laws of various forms and systems of theatrical plays are in this case the controlling direction for the investigator. For this reason, in the refutations of the paradox of Diderot that we find among many psychologists, there is still the attempt to solve the problem on the absolute plane regardless of the historical, concrete form of the theater whose psychology we are considering. Moreover, the basic prerequisite of any historically directed investigation in this area is the idea that the psychology of the actor expresses the social ideology of his epoch and that it also changes in the process of the historical development of man just as external forms of the theater and its style and content change. The psychology of the actor of the Stanislavsky theater differs much more from the psychology of the actor of the Sophocles epoch than the contemporary building differs from the ancient amphitheater.

The psychology of the actor is a historical and class category, not a biological category. The idea central to all new investigations that determines the approach to the concrete psychology of the actor is expressed in this one aspect alone. Consequently it is not biological patterns primarily that determine the character of the actor's stage experiences. These experiences comprise a part of the complex function of the artistic work that has a definite social, class function historically established by the whole state of the mental development of the epoch and class, and, consequently, the laws of coupling passions and the laws of interpreting and interweaving feelings of a role with feelings of the actor must be resolved primarily on the historical plane and not on the plane of naturalistic (biological) psychology. Only after this resolution can the question arise of how, from the point of view of the biological patterns of the mind, one or another historical form of the actor's work is possible.

Thus, it is not the nature of human passions that determines directly the experiences of the actor on the stage; it only contains the possibility of the development of many most varied and changeable forms of the stage implementation of the artistic forms.

Together with recognizing the historical nature of the problem that interests us, we come to the conclusion that we have before us a problem based in a dual respect on the sociological prerequisite in the study of the theater.

First, like any concrete mental phenomenon, the actor's work represents a part of the social-psychological activity that must be studied and defined primarily in the context of that whole to which it belongs. The function of a stage performance in a given epoch for a given class must be revealed as must the basic trends on which the actor's effect on the viewer depends, and, consequently, it is necessary to determine the social nature of the theatrical form in the context in which the given stage experiences will have a concrete explanation.

Second, admitting the historical character of this problem and at the same time touching on the experiences of the actor, we will begin to speak not so much of the individual psychological context as of the social-psychological context in which the experiences are included. In the happy German expression, the experiences of the actor are not so much a feeling, of "I" as a feeling of "we." The actor creates on the stage infinite sensations, feelings, or emotions that become the emotions of the whole theatrical audience. Before they became the subject of the actor's embodiment, they were given a literary formulation, they were borne in the air, in social consciousness.

The melancholy of Chekhov's *Three Sisters,* presented on the stage by actresses of the Arts Theater,[5] becomes the emotion of the whole audience because it was to a large degree a crystallized formulation of the attitude of large social circles for whom its stage expression was a kind of means of realization and artistic interpretation of themselves.

In the light of the aspects indicated, the significance of actors' awareness of their work becomes clear.

The first thing we come to is the establishment of the limited significance of this material. From this point of view, the actor's awareness of his sensations, the data of self-observation of his acting and his general state do not lose their significance for studying the psychology of the actor, but cease being the only and universal source for making judgments on their nature. They show how the actor recognizes his own emotions and what their relation to the structure of his personality is, but they do not disclose for us the nature of these emotions in all their actual fullness. Before us, we have only partial, factual material that illuminates the problem from only one point of view—from the point of view of the actor's self-awareness. In order to extract from such material its whole scientific significance, we must understand the part it plays within the system of the whole. We must understand the psychology of one actor or another in all his concrete historical and social circumstances; then the normal connection of the given form of stage experience with the social content that is projected through this actor's experiences to the audience will become clear and understandable for us.

We must not forget that the emotions of the actor, since they are a fact of art, go beyond the limits of his personality and make up a part of the emotional dialogue between the actor and the public. The actor's emotions experience what F. Paulhan[6] felicitously called a "fortunate transformation of feelings." They become understandable only if they are included in the broader social-psychological system of which they are a part. In this sense, one must not separate the character of the stage experience of the actor, taken from the formal aspect, from the concrete content that includes the stage image, and relation to and interest in that image from the social-psychological significance and from the function that it fulfills in the given case of the actor's experience. Let us say that the experience of the actor trying

to laugh at a certain structure of psychological and life types and of the actor trying to give an apologia for the same images will, naturally, be different.

Here we are approaching close to an extremely important psychological moment, the inexplicability of which was the cause, in our opinion, of a series of misunderstandings of the problem that interests us. For example, most of those writing about the system of Stanislavsky identified this system in its psychological part with the stylistic tasks that it initially served; in other words, they identified the system of Stanislavsky with his theatrical practical work. True, all theatrical practical work is a concrete expression of a given system, but does not exhaust the whole content of the system, which can have many other concrete expressions; theatrical practical work does not present the system in all its range. A step toward separating the system from its concrete expression was taken by E. B. Vakhtangov,[7] whose stylistic aspirations were so very different from the initial naturalism of the Arts Theater, but who, nevertheless, was aware that his own system was an application to new stylistic tasks of the basic ideas of Stanislavsky.

This can be demonstrated with the example of Vakhtangov's work on the staging of *Princess Turandot.*[8] Wishing to project from the stage not simply the content of the tale, but his own contemporary relation to the tale, his irony, a smile "addressed to the tragic content of the tale," Vakhtangov creates a new content for the play.

B. E. Zakhava[9] tells of a remarkable case from the history of the staging of this play: "At the first rehearsals, Vakhtangov used this device. He proposed the actors play not the roles indicated in the text of the play, but Italian actors playing these roles . . . For example, he proposed that the actress playing the role of Adelma play not Adelma, but an Italian actress playing Adelma. He improvised on the theme, supposing she were the wife of the director of the troupe and the mistress at the opening, that she is wearing broken shoes, that they are too big for her and when she walks, they flap at the heel, slap the floor, etc. Another actress playing Zelima is an idler who does not want to act, and she does not at all hide this from the public (she wants to sleep)" (1930, pp. 143-144).

Thus, we see that Vakhtangov directly changes the content of the play he is given, but in the form of its presentation, he depended on the same foundation that was put in place in the system of Stanislavsky: Stanislavsky taught that finding the truth of feelings on the stage is an internal justification of each stage form of behavior.

Zakhava says: "Internal justification, the basic requirement of Stanislavsky, remains as before one of the basic requirements of Vakhtangov, only the content itself of these feelings is entirely different with Vakhtangov than with Stanislavsky . . . If the feelings now become different, if they require different theatrical means of expression, still the truth of these feelings is as it was and will always be unchangeably the basis of the soil on which only the flowers of genuine great art can grow" (ibid., p. 133).

We see how the internal technique of Stanislavsky and his mental naturalism come to serve completely different stylistic tasks, opposite in a certain sense to the one that they served at the very beginning of development. We see how certain content dictates a new theatrical form, how a system proves to be much broader than the concrete application it is given.

For this reason, the declarations of the actors on their work, especially summary declarations, are in themselves incapable of explaining their character and their nature; they are made up from generalizations of the actors' own and most various experience and do not take into account all of the content embodied in the actor's emotion. It is necessary to go beyond the limits of the direct experience

of the actor to explain it. Unfortunately, this real and remarkable paradox of all of psychology has not, thus far, been sufficiently assimilated by a number of trends. In order to explain and understand experience, it is necessary to go beyond its limits; it is necessary to forget about it for a minute and move away from it.

The same thing is true also with respect to the psychology of the actor. If the actor's experience were a closed whole, a world existing within itself, then it would be natural to look for laws that govern it, exclusively in its sphere, in an analysis of its composition, a careful description of its contours. But if the actor's experience also differs from everyday life experience by the fact that it comprises a part of an entirely different system, then its explanation must be found in laws of the structure of that system.

In conclusion, we would like to note briefly the conversion that the old paradox of the actor experiences in the new psychology. In the contemporary state of our science, we are still far from resolving this paradox, but we are already close to its correct formulation as a genuine scientific problem. As we have seen, the essence of the problem, which seemed paradoxical to all who wrote about it, consists in the relation of the artificially produced emotion of a role to the real, live, natural emotion of the actor playing the role. We think that solving this problem is possible if we take into account two points that are equally important for its correct interpretation.

The first consists in that Stanislavsky expresses the involuntary quality of feeling in a certain situation. Stanislavsky says that feeling cannot be commanded. We have no direct power over feeling of this nature as we have over movement or over the associative process. But if feeling "cannot be evoked . . . voluntarily and directly, then it may be enticed by resorting to what is more subject to our power, to ideas"[10] (L. Ya. Gurevich, 1927, p. 58). Actually, all contemporary psychophysiological investigations of emotions show that the path to mastery of emotions, and, consequently, the path of voluntary arousal and artificial creation of new emotions, is not based on direct interference of our will in the sphere of sensations in the way that this occurs in the area of thinking and movement.

This path is much more tortuous and, as Stanislavsky correctly notes, more like coaxing than direct arousal of the required feeling. Only indirectly, creating a complex system of ideas, concepts, and images of which emotion is a part, can we arouse the required feelings and, in this way, give a unique, psychological coloring to the entire given system as a whole and to its external expression. Stanislavsky says: "These feelings are not at all those that actors experience in life" (ibid.). They are more likely feelings and concepts that are purified of everything extraneous, are generalized, devoid of their aimless character.

According to the justifiable expression of L. Ya. Gurevich,[11] if they passed through the process of artistic shaping, they differ according to a number of traits from corresponding living emotions. In this sense, we agree with Gurevich[12] that the solution of the problem, as usually happens in very stubborn and long controversies, "lies not in the middle between two extremes, but on a different plane that makes it possible to see the subject from a new point of view" (ibid., p. 62). We are compelled to this new point of view both by the accumulated documents on the problem of stage creativity, the testimony of the creators-actors themselves, and by the investigations carried out in recent decades by scientific psychology (ibid., p. 62).

But this is just one aspect of the problem. The other is included in the fact that the transfer of the paradox of the actor to the ground of concrete psychology immediately eliminates a number of insoluble problems that were formerly its component parts and replaces them with new problems that are productive and resolv-

able and place the investigator on new paths. From this point of view, there is not a biological-aesthetic and eternally given explanation, but each given system of the actor's performance is subject to a concrete-psychological and historical, changeable explanation, and instead of the once-and-for-all, given paradox of the actor of all times and peoples, we have before us from the historical aspect, a series of historical paradoxes of actors of given environments in given epochs. The paradox of the actor is converted into an investigation of historical development of human emotion and its concrete expression at different stages of social life.

Psychology teaches that emotions are not an exception different from other manifestations of our mental life. Like all other mental functions, emotions do not remain in the connection in which they are given initially by virtue of the biological organization of the mind. In the process of social life, feelings develop and former connections disintegrate; emotions appear in new relations with other elements of mental life, new systems develop, new alloys of mental functions and unities of a higher order appear within which special patterns, interdependencies, special forms of connection and movement are dominant.

To study the order and connection of affects is the principal task of scientific psychology because it is not in emotions taken in an isolated form, but in connections combining emotions with more complex psychological systems that the solution of the paradox of the actor lies. This solution, as might be expected even now, will bring the investigators to a position that has a fundamental significance for all of the psychology of the actor. The experience of the actor, his emotions, appear not as functions of his personal mental life, but as a phenomenon that has an objective, social sense and significance that serves as a transitional stage from psychology to ideology.

EPILOGUE

1

The basic content of this volume is comprised of two works of L. S. Vygotsky: "Tool and Sign in the Development of the Child" and "The Teaching about Emotions" ("The Teaching of Descartes and Spinoza on Passions"). Both are of great significance for understanding the wealth of ideas he left, for understanding the dynamics of his creative genius. These works were not published while the author lived. The second work was not completed. There is a basis for assuming that specifically here the philosophical-psychological quest of the remarkable Soviet investigator was interrupted, that this specifically marked the beginning of a new phase in the development of his theoretical thought.

The works of Vygotsky must not be considered as something homogeneous that forms a completed, well-developed system. The reader is already familiar with his intensive and complex work on the search for new ways to solve problems that baffled the minds of psychologists of that time. We must not extract the conceptions he generated from the context of the time, which was full of controversy, critical phenomena, and attempts to transform the whole system of psychological knowledge from various positions. As far as the philosophical position of Vygotsky himself is concerned, it can be unequivocally evaluated. He was consciously and purposefully guided by the dialectical-materialistic methodology whose principles served as a compass for him in determining the general perspectives of psychological science. As we know, all Soviet psychologists were oriented toward this methodology. But applying its principles to the solution of concrete problems required special effort and the development of their own research programs from each of them. In fact, ready solutions to these problems were not to be found anywhere.

The uniqueness of the "itinerary" that distinguished the quest of Vygotsky was determined by the individual style of his thinking and his special skill in correlating the situation in world psychology with the possibilities that its philosophical, Marxist interpretation was opening up before the investigators of mental regulation of activity; this interpretation contained a new understanding of the basic beginnings of a scientific explanation of the nature of man—social determinism, historicism, and the systemic approach.

More than anyone, Vygotsky was sensitive to the problems combined by Western authors (Binswanger et al.) under the title "criticisms of the psychological mind" and of the special direction, the subject of which was psychological knowledge itself, its basic concepts, categorical structures, and methodological tools. Vygotsky was an unsurpassed master of concrete-methodological analysis of evolution and structure of psychological ideas. He made an important contribution to the development

of "self-knowledge" of psychology, to the understanding of the originality of its disciplinary status and its dependence on the needs of social practice.

Vygotsky considered the union of psychology with this practice as a deciding factor in asserting the new methodological orientation of concrete psychological studies. As methodology, we must of course understand a system of general principles (methods) of organization and interpretation of knowledge and not just theoretical postulates on which it is based. For this reason, the problem of the relation of knowledge to the possibilities of its practical application in the sphere of interpersonal relations was for Vygotsky as urgent as the methodological problem. He understood very well that the methodology of concrete-scientific research is the general process of its formation, not limited by its logical-theoretical regulations.

He regarded the connection with urgent needs of people and the need to meet practical social requirements as factors capable of inducing those radical shifts in the conceptual composition of psychology which were lacking in both the objective historical logic of the development of science and of the society which had just experienced a great revolution. The idea that the philosophy of Marxism and the practice of the new society serve as a pledge of psychology's escape from its jolting crisis passes through Vygotsky's thought like a red thread. Vygotsky was convinced that resorting to practice would inevitably lead to the triumph of explanatory, causal psychology similar in style to the thinking of natural sciences whose successes mankind not only prided itself on, but used everyday as well.

2

The results of the intense and productive methodological and concrete-scientific quest of L. S. Vygotsky were demonstrated in the manuscript "Tool and Sign in the Development of the Child," which may serve as eminent evidence of the achievement of foremost Soviet psychology abroad in the 1930s, and of its ideational-scientific merits over other trends of world psychological thought. The whole spectrum of these trends was invariably within the scope of Vygotsky's keen attention. The successes of the branches of genetic psychology (in the studies of the behavior of animals, of children of various ages, of culturally backward peoples, of developmental anomalies due to disintegration of higher functions) enriched the scientific knowledge of the mind with powerful layers of empirical material and advanced a number of problems of fundamental significance for theories of general psychology. Not one of the major schools of psychology (behaviorism, Freudianism, Gestaltism, sociologically oriented French psychology) could henceforward disregard them; these schools tested their conceptual apparatus on the analysis of these problems, claiming productivity for their own research program and its superiority over others.

In this historical situation, in discussion with partisans of conflicting trends, Vygotsky's synthesizing mind, correlating various approaches and solutions, isolated ideas and phenomena that could serve to construct a theory based on a principally new methodological orientation, that would answer the cardinal requirements of logical development of scientific knowledge. Such a theory, according to Vygotsky's conception, was required for disclosing the patterns and mechanisms of development of higher mental functions that distinguish the vital activity of man from the behavior of all other living beings.

Let us recall that the principles of determinism, systemic quality, and development act as basic explanatory principles of psychology, and that each of them

acquires a new content in the course of the evolution of psychological knowledge. Vygotsky was distinguished not only by the fact that he proceeded from these principles. They also guided his scientific thought in the development of other concepts, in the polemics and confrontation in which his teaching was formed. The thought and structure of his teaching can be understood only by taking into account the essentially new traits that, in Vygotsky, enriched all three main explanatory principles.

We have seen how high he placed the Pavlovian sequentially deterministic pattern of the formation of a conditioned reflex. But it (like the behaviorist conception of behavior that tested its influence) was biodeterministic and, for this reason, inadequate for disclosing factors that create the mental organization of man—primordially social in its genesis and subsequent development.

The problem of the dependence of mental properties of the individual on his social connections was posed by a number of investigators, specifically, P. Janet and J. Piaget, whose views influenced Vygotsky. Both were guided by ideas of converting the "external into the internal," the interindividual (occurring in the sphere of microsocial relations) into the intraindividual (forming an internal plan of action). This idea, entering into the scientific-psychological dictionary as interiorization, made it possible to overcome the burden weighing on psychology of the dualistic representation of the nature of connections between external, objectively observable actions and contacts of the individual with other people and the internal operations of his mind, invisible processes, considered open only to the "internal gaze" of the subject experiencing them.

This was a new method of deterministic analysis. Its important advantage was that phenomena whose beginning was assumed to be immanent spiritual activity of the individual appeared as derivatives of real (subject to study with the same positive means as any other science) processes of interaction of the subject with the external (social) environment. Proceeding from these processes accessible to reproduction and objective control, the investigator penetrated into the "darkness" of another's soul. The possibility of this was guaranteed by the fact that it itself was conceived and created through acts that are done in objective, spatial-temporal coordinates.

Of course, with respect to mentally regulated behavior, these coordinates have specific characteristics. The individual acts in a specific environment, not physically or chemically identical, and the relations of people are qualitatively different from relations between natural objects. Human relations are mediated by two powerful determinants, independent of individual consciousness, but forming it—by tool and sign. Both, being products of cultural-historical development, transformed the prehuman forms of mental life into truly human forms. This is how the matter stood in phylogenesis. According to Vygotsky, to psychology falls the mission of discovering their determining role in ontogenesis, in the formation of those functions whose systemic interconnections form the higher level of mental development.

Turning for these purposes to the idea of interiorization, Vygotsky accepts as a decisive factor the conversion of external, objectively observable processes of interaction of the individual with his real—object and human—surroundings and the inclusiveness in these processes of the system of tool and cultural-sign as means. Specifically these means (tools and signs, and mainly speech signs) ensure the initial integration of the child into the microsocial community in the midst of which occurs the miracle of converting his natural, very simple functions into higher, cultural-historical functions. These represent a qualitatively new formation, a kind of crown of the great tree of universal-historical development of the mind. Its features (voluntary control of behavior on the whole and of separate processes—perception,

attention, memory, etc. and initiation of these processes by the subject without direct stimulation from outside), absent at very low levels of evolution, served from primordial times as the main argument for the indeterministic version of the uniqueness of consciousness, its nondeducibility from real, earthly conditions of human existence.

According to Vygotsky, at the level of ontogenesis, these conditions are hidden in the "symbolic activity of the child," organized by the adult. Initially, this activity is a "social form of cooperation." Social connections, being cooperation mediated by tools and signs, are converted from connections that develop during external, direct contact into deep layers of the personality, which, using means acquired in the practice of joint activity, is now capable of voluntarily controlling its own mental acts outside cooperative activity as well. In Vygotsky's interpretation, this history of conversion of means of social behavior into means of individual-psychological organization acts as the principal track of formation of higher mental functions.

P. P. Blonsky was the first to stand up for affirming the historical point of view in psychology. But in promoting this requirement, he stood on the ground of reflexological representations. Even the teaching of I. P. Pavlov on conditioned reflexes was permeated with the idea that behavior is "historical": it changes, is modified, and is restructured, acquiring new forms in the process of individual development. Determinants of development were (a) the capability of the organism for a signal interaction with the environment (acquisition by external stimuli of the function of signals) and (b) the need of the organism to preserve his basic vital constants (homeostasis), realized by means of the indicated capability.

As long as thought was limited by these determinants, it could not escape from being slave to biology. Obvious qualitative differences between reactions of animals and man remained outside the zone of causal explanation. In the search for an answer to the question on the specifics of higher nervous activity of man, Pavlov came to the idea of two signal systems. "Second signals"—speech signals—were treated as replacements of the first, introducing into the work of the cerebral hemispheres a new principle—abstraction, generalization, higher analysis, and synthesis—everything that is the privilege of the human intellect. It must be noted, however, that resorting to speech signals could bring about radical changes in the categorical structure of scientific knowledge only if these signals were interpreted as applying to a special level of interrelations of the organism with the environment different from the signal-homeostatic interrelation.

The level of determination of which we are speaking was discovered by Marxist philosophy. This level is represented by the history of work in the course of which man, altering external nature, forms his essential mental strengths and subjects them to his own authority. The new historical view decisively changed the whole system of thought. The word as an integral component of behavior "at the stage of man" now meant something different in principle than the Pavlovian "second signal." It appeared with the status of an "instrument," and the individual operating with it controlled his own actions, which acquired traits of voluntariness, conscious control, and radical planning. In these traits, the old psychology found evidence that not even one of the other realia was comparable to consciousness. Moreover, consciousness was assumed to be something primordially given, not derived from anything, an essence of a special kind. It was assumed that there was only one alternative with this kind of view—reductionism: reducing mental facts to nerve processes or stimulus–reaction relations. The permanent view of Vygotsky is defined by his confirming a different alternative, and this required a transition from an orientation toward Pavlov's teaching on conditioned reflexes to an orientation toward the teaching of Marx on the social essence of man.

The natural-science content of the Pavlovian conception now entered in a derived form into the trend in psychological analysis projected by Vygotsky. The significance of the revolution precipitated by Pavlov consists in the development of a special scientific category—the category of behavior. Having assimilated it and depending on the Marxist explanation of factors in the formation of the internal mental world of man, Vygotsky introduces new variables into the pattern of individual behavior, giving each of the individual's acts an "instrumental" significance—in Vygotsky's terminology—and including the "natural" process of formation of the mind (perception, attention, memory, etc.) in the sociocultural series. In operating with signs and symbols, the individual transforms the mental structure given by nature into an apparatus of self-regulation of his acts, recorded as the history of the culture and as methods of social interaction.

Considering Vygotsky's cultural-historical conception presented in its genesis in the manuscript "Tool and Sign . . .," we see that, reflecting the supraindividual needs of the development of psychology, this conception was generated due to the uniqueness of the individual scientific biography of its author. His work in physiology and aesthetics reflected the influence of A. A. Potebnya, the subjective, idealistic understanding of whose works (by Potebnya's partisans) structuralists (to whom Vygotsky was close at one time) contrasted with antipsychologism—a system that disconnected the product of culture from the activity of its creation, which required that the product be regarded as organized according to special laws that had nothing in common with psychology. They saw no possibility of treating the processes of creation other than from the point of view of traditional psychology that trapped them within the boundaries of the internal world of the subject.

Pavlovian teaching led to a way different from the traditional; in its concepts, behavior was given a strictly objective explanation. This teaching, like structuralism, rejected turning toward the internal, subjective plane of vital activity. But if structuralism concentrated on the product as an objective creation constructed on bases independent of the actions of anyone whatever, Pavlov studied processes and mechanisms. They pertained to biologically based behavior and not to the interaction of a personality with the world of culture. Nevertheless, since they pertained not to results estranged from action, results in which processes of their generation are not evident, but to the real, living action, the Pavlovian teaching served as a point of support for Vygotsky in overcoming his earlier psychological tendencies. Moreover, in itself this teaching could not become a lever for the construction of psychology (since the subjective seemed to extend "this side" of behavior). Having passed through the school of Potebnya and then of Pavlov, Vygotsky turned to the Marxist explanation of the phylogenesis of consciousness and found his point of support there. Tools-signs represent cultural value independent of the individual. This is their basic difference from stimuli-signals that serve, according to Pavlov, as regulators of response reactions. But these cultural signs are not special essences foreign to everything subjective, as they appear in structuralistic conceptions. They work continuously in the consciousness of the subject socializing with other people, creating a complex architectonics of mental function.

Thus we see that the transformations produced in psychology by Vygotsky became possible only in the ideological atmosphere of Soviet science. In the environment in which Vygotsky's talent grew, objectively and independently of this talent, ideas circulated that represented various lines of development of scientific thought. This was Russian philology, the teaching on conditioned reflexes, and the Marxist conception of man that entered the consciousness of Soviet scientists under the influence of the process of building a new society. The views of Vygotsky must be considered in the dynamics. They developed along a spiral—from culturological,

structuralistic systems that became a strong antidote to the subjective-idealistic picture of mental life, to a natural-science understanding of the mechanisms of that life developed by Pavlov. Later, the principle of cultural-historical determination of the origin of human consciousness was established, but on bases disclosed by Marxism, which made it possible to create a new variant of objective psychology. The trends that developed outside the boundaries of psychology as an independent science (progressive philology and aesthetics, the teaching on higher nervous activity, the historical-mathematical theory of society) were refined in the work of Vygotsky into a conception of higher mental functions, in which the investigation of the development of the child's mind became the empirical reference point.

As has been noted, Vygotsky applied Marx' explanation of the phylogenesis of consciousness to the analysis of determinants of its ontogenesis. But in phylogenesis, sign systems appear and change in the crucible of social-historical practice, the nucleus of which is work. With respect to early childhood, however, productive work cannot be considered as a determinant of development. Nevertheless, real, practical actions of the child acquire, according to Vygotsky, a significance of the "greatest genetic instance" when they are united with the application of symbolic signs. Later, in critical notes on the cultural-historical theory, certain Soviet psychologists emphasized the fact that the theory is distinguished by the tendency to understand the social only as interaction of consciousnesses (of the child and the adult)—outside material practice.* But in doing this, they lost sight of the fact that central for Vygotsky was the problem of the genesis of individual consciousness (higher mental functions), of the transition to a uniquely human type of regulation of behavior that is formed in the first years of the child's life when there can be no thought of "material practice" in the sense of social production. As far as the primary forms of practical actions ("practical intellect") are concerned, Vygotsky not only included processes of the child's manipulation of external objects in the category of factors most essential for his mental development, but also disclosed the qualitative difference between these processes and the "tool" actions of higher animals.

As we assume, there is no basis for including Vygotsky in the ranks of the partisans of the formula "socialness without the material," which the French social-psychological school followed, which undoubtedly had an effect on him, specifically in connection with Vygotsky's including the principle of sociodeterminism in the explanation of the genesis of the human mind (from this also comes the idea of interiorization).

Understanding socializing as symbolic activity, he believed its tool to be speech, a phenomenon of culture, therefore something independent not only of individual consciousness, but also of direct contacts of this consciousness with the consciousness of others. Reference to culture (language, art, science, and other forms of culture) as systems of values created by society, but not diluted in the processes of communication among its members, allowed the construction of the study of consciousness at the beginnings of historicism. Cultural signs (symbols) and methods of operation recorded in them (just as a tool may not be a physical thing but a material "cluster" of work operations accomplished by social man) become rooted, according to Vygotsky, in consciousness "from outside," and "grow" into it. But they bring with them not just the experience of interpersonal contacts. Owing to them, the individual becomes a co-participant in the great world of culture.† We must admit that even less well-founded than reproofs that Vygotsky ignored practical forms of interrelations of the individual with the objective environment are assertions that he seemed to consider mental processes as a reflection of physiological processes in the brain.

*See specifically: *Psychological Science in the USSR*, Moscow, 1960, Vol. 1, p. 433 and others.

†We note, by the way, that Vygotsky developed not a "cultural-historical theory of thinking," but a theory of the formation of higher mental functions as special regulators of behavior in ontogenesis.

The whole essence of the cultural-historical conception can be reduced to disclosing the determinants external with respect to the bodily substrate, transforming it into a carrier of higher mental functions as a purely human regulator of activity. Of course, just as any other theory, the cultural-historical conception is a child of its time. But it should be judged by what is new that it introduced in comparison with former knowledge, by the shifts it caused in the general categorical apparatus of psychological thought, and by its influence on the subsequent development of science. Approaching the contribution of Vygotsky with such criteria, we have a basis for assuming that the development of the explanatory principles that guided the efforts of subsequent generations of Soviet psychologists can be traced to him.

3

The unfinished work of L. S. Vygotsky on the psychophysiology of emotions must be considered in the context of the general conceptual quest of the author. Its sense was determined by the task of constructing a new teaching on the mind of man as an integral and developing essence in all the fullness of his life. Vygotsky moved step by step toward this teaching. The movement of his thought was directed toward encompassing all the variety of mental manifestations in a single picture, the methodological framework of which was formed by the principles of determinism, development and systemic quality. These had long since guided psychological knowledge, giving it the dignity of a science. But their content changed from one epoch to another, transforming both the theoretical composition of the concepts of vital activity as well as its empirical investigation.

Among the three indicated methodological principles, determinism led as the inherent idea of the causal connection of phenomena. "... [A] causal explanation is the basic problem of the possibility of psychology as a science ..." Vygotsky maintained decisively (p. 181 of the present volume).

Vygotsky considered the central factor in the crisis being played out in psychology to be the sharp confrontation of two trends—the causal and the spiritualistic. In the plan to unlink the "two psychologies," some features of the development of knowledge of the mind during the period being considered took on a different aspect. If the so-called elementary processes (sensation, perception, association, reaction time) were successfully included in the orbit of deterministic analysis, others (thinking, will) continued not to be subject to it. Finally, overall mental activity of man was represented in the form of two heterogeneous orders of phenomena. Consciousness seemed to be divisible into lower and higher functions, into essences belonging to different worlds and subject to investigation in concepts with no connection among themselves. Vygotsky's thinking strained against this in order to overcome the version of "two psychologies." He decidedly rejected the path of their eclectic union, the path of compromise solutions. "As in the legend, two trees united in their crowns tore into two the body of the ancient prince, so every scientific system will be torn into two if it attaches itself to different trunks" (Vol. 1).

According to Vygotsky, the trunk that ensures progress for psychology is perhaps only the natural-science, causal study of psychological facts directed toward real causes hidden from the consciousness observing itself (no matter how penetrating the observation—whether it is traditional introspective psychology, or in-

sightful, phenomenological, or any other kind). Speaking of the new psychology capable of leading investigation of its subject out of the crisis controversies, Vygotsky assumed that resolving this problem would not at all mean that the builders of the future would all have to begin from the beginning, rejecting as fallacy the preceding "efforts of free thought to master the mind" (Vol. 1).

Together with the works of G. Fechner, H. Helmholtz, A. Binet, and T. Ribot, he referred the James–Lange peripheral theory of emotions to the ranks of these efforts. Such was the initial relation of Vygotsky to this theory when, turning to the historical path in psychology, he isolated in it the idea that represented the trunk of a natural-science explanation of mental functions, the development of which must become the new science of these functions in the post-crisis epoch.

The James–Lange peripheral theory, according to which the bodily reaction to a stimulus is primary and the emotional state coupled with it secondary, actually contained elements of deterministic explanation. Feeling, which for centuries was considered as a product of the soul (although accompanied by bodily shocks), appeared as an effect of processes within the organism. This gave Vygotsky a basis for assuming that the orientation of the camp that opposes idealism, indeterminism, and phenomenology to cognitive psychology was represented in the peripheral (visceral) theory of emotions. However, having been involved with the problem of emotions and having made a careful analysis of the history and methodology of its development over several years, Vygotsky reviewed his evaluation. He came to the conclusion that this theory reproduces the explanatory plan created by Descartes and that both the theory and the plan combine what is incompatible, specifically, causality with spiritualism. In this, both appeared "to bind themselves to two different trunks" and for this reason were "torn in two." Evidence for this position is the chapter on the broad panoramic study of emotions, which Vygotsky pondered and which he managed to finish.

Thus, if in his first prognoses of the paths for overcoming the crisis situation, he saw the future of psychology in its gravitating toward being scientific and following the centuries-old tradition of the causal course, into this general view, an important corrective was now introduced: not every causality is capable of bringing psychology to new limits. The Cartesian variant of causal interpretation of the psyche does not simply oppose the spiritualistic as an antithesis, but is its unfailing twin, its inseparable sojourner. This led to a basically new understanding of the roots of the psychological crisis, which now appeared *not only as a crisis of Cartesian introspective conception of consciousness* (such an opinion was dominant in psychological literature), *but as a crisis of Cartesian treatment of determinism, which was inherent in it.* In its turn, this meant that the problem that the psychologist must solve by methodological thought to overcome the crisis situation in his science is not solved by transforming the view supplied to it by the 17th century, the view of consciousness as observing its own content and acts.

Let us remember that the question of consciousness was at the epicenter of the psychological crisis. During the time when psychology was being isolated into an independent science, it was faced with defining its own subject that distinguished it from philosophy (as whose servant it was considered for ages) and from physiology (owing to the achievements of which experimentation was introduced into it).

Phenomena of consciousness accorded the subject in his direct experience were isolated as unique realia not studied by any other sciences. It was assumed that these could be grasped through particular, specially organized internal observation. According to this kind of program, which at first inspired many young investigators, psychology was entrusted with the search for the threads from which the "material"

of consciousness is woven and the laws according to which they are "interwoven." Consciousness was represented by a kind of internal "field" (devoid, however, of spatial characteristics), where reflection finds its nonmaterial objects (phenomena, processes). Not one other science is interested in them. They remain the portion of the psychology.

Although the version according to which the closed sphere of consciousness serves as the subject of psychology, where only self-observation can penetrate, held its ground for quite a long time, it was exploded at the beginning of the 20th century, mostly due to the successes of Freudianism and behaviorism. The former portrayed consciousness as an agent that maximizes the actions of powerful latent forces. The latter demanded an end to consciousness as a vestige of times of scholastics and alchemy. In this historical situation, for psychology oriented toward Marxism, the problem of primary importance was the struggle for consciousness which, however, represented not a return to the obsolete introspective version, but to overcoming it along the paths of developing a *new theory of conscious control of mental activity.*

Vygotsky acted as an initiator of this struggle and this effort. We must not forget the uniqueness of this historical period. At this time, in the sciences pertaining to man, the materialistic approach was thought to be expressed by the formula, "psychology without consciousness." Vygotsky immediately attracted attention with his paper, "Consciousness as a Problem of the Psychology of Behavior" (Vol. 1). The struggle for consciousness at that time meant a struggle against its ancient treatment, arising before the time of Augustine, which continued to guide the minds of those who were engulfed not by speculative metaphysical meditations, but by everyday work in the laboratory surrounded by apparatus and protocols of experiments.

A great deal of time and effort was given to criticism of introspectionism and attacks on the subjective method. It seemed that psychology, having finished with this method, would stand on firm ground. However, owing to a penetrating analysis of common methodological principles of psychology in their historical development, Vygotsky disclosed the internal connection between introspection and mechanodeterminism. In this way, it became evident that no matter how sharp the criticism of introspective representations was, introspection in itself was inadequate without a radical transformation of the deterministic method of thinking from which the classical introspective conception that caused so much difficulty in psychology was inseparable. Vygotsky concentrated his dagger-like blows of critical thought not against this conception, the weakness of which was demonstrated in many ways, but against determinism (in its mechanistic variant), which seemed to place psychology in the same rank as other natural sciences.

Descartes was the father of mechanodeterminism in psychology, and his principal psychological work was the *Treatise on Passions of the Soul.* According to Vygotsky, the ideas of this *Treatise* hold the central place in the whole methodological structure of the psychology of the new times, including its experimental trend. "All the principal contradictions of contemporary psychology, both those lying at the base of its crisis and those pertaining to its separate and particular problems, are contradictions embedded in the Cartesian teaching on the passions. In this sense, we do not know another book the study of which would be as central in its significance to understanding the real historical sense of the whole past of psychological science and its contemporary crisis as the last, concluding work of Descartes—his *Treatise on the Passions*.... In a certain sense, we are justified in asserting that this *Treatise*, little known to psychologists and far from central, stands

at the very beginning of all contemporary psychology and all the contradictions that are tearing it apart (pp. 180-181 of the present volume).

The annals of psychology—from the 17th century to the period of the crisis inclusive—considered from this point of view, appeared as a verbatim translation of Descartes' teaching on the passions. Vygotsky's careful analysis of this work determined this. His analysis disclosed the historical limitedness of the mechanodeterministic approach not only with respect to the emotional states of man, but also with respect to the entire sphere of the mind as a whole. For this reason, for Vygotsky, the subject of the historical-methodological analysis is, together with emotions (feelings, affects), the broadest complex of radical psychological problems—the psychophysical (relation of consciousness to phenomena of the physical world that generate it), the psychophysiological (relation of these phenomena to the bodily mechanism), the psychognostic (pertaining to the cognitive role of mental processes), the psychopraxic (the problem of the influence of consciousness and will on the behavior of the individual).

We have before us one of the main features of the thinking of Vygotsky—his skill in considering every single event in psychology through the "magic crystal" of the new methodology that allowed him to determine immediately a great number of conceptual threads that connect an event with the whole front of the movement of scientific knowledge.

4

The scheme of Descartes, fixing a historically limited form of determinism, was devised in a period when a new view of the causal connection of things was being examined in the forge of professional activity, the advantage of which over the natural philosophy of the middle ages became ever more evident. Descartes himself indicated that for explaining nature, he learned much from the example of certain bodies artificially created by man. Descartes imagined an organic body similar in form to a mechanism whose components and the principle of their interaction were accessible to direct experimental testing; before Descartes, the motive force and organizer of all actions of such an organic body was believed to be the soul. But in his doctrine, man appeared as a center of incompatible sources: of a consciousness that only thinks and a body that only moves.

Dualism also permeated Descartes' views of emotional life, an analysis of which is also found at the center of Vygotsky's manuscript published in this volume.

The Soviet psychologist turned toward the past with a historical-methodological purpose, and not with a purely historical investigation of the problems of his science. Here again we have before us one of the defining features of his work—the undeviating drive to realize the principle of historicism with respect to an explanation not only of the patterns of the mind, but also with respect to the activity of the mind in recognizing these patterns. Vygotsky invariably related psychological facts and theories and the subject content of knowledge of mental reality to an analysis of the means used for constructing this knowledge.

His research proceeded synchronically as if on two levels, constantly relating analysis of fact, ideas, and hypothesis to explaining the principles of the work of the intellectual apparatus that generated these products. Scientific fact, idea, hypothesis—these are the thoughts of the scientist that reflect reality with varying degrees of adequacy. But there may also be "thoughts of a second order" that have as their subject thinking itself, its structure and dynamics, which are no less real

than the objects produced through them and independent of consciousness. Turning to "thoughts of a second order," the investigator becomes a logician of science, its methodologist. Knowing how to apply the logical-methodological approach to what is concrete-scientific facilitated the major achievements of Vygotsky. Just in knowing the work of Vygotsky "The Historical Meaning of the Crisis in Psychology" (Vol. 1), we would be convinced that in working on logical-methodological problems, the author, educated in the philosophy of dialectical materialism, developed their innovative understanding that was realized with respect to the situation in psychology at the turn of the 19th century, at a time when this discipline was disintegrating into a multitude of schools and trends. In contrast to L. Binswanger and other Western authors who presented the problem of methodological investigation as a particularly logical "criticism of concepts," Vygotsky indicated that concepts are continuously criticized in the practice of scientific work itself and in the processes of their correlation with empirical data. From this it followed that the task of methodology is not to prescribe from outside rules and norms of activity corresponding to criteria of science in general for workers in a concrete area of knowledge, but to derive principles of effective organization of this activity from its real dynamics, from its history.

The idea that logical-methodological study of science must be inseparably linked to the historical was basically new. To what extent Vygotsky was perspicacious in this respect, we can confirm in our time when the disintegration of traditional methodological conceptions in Western philosophy resulted in the appearance of the so-called historical school (K. Popper, I. Lakatos, T. Kuhn et al.), representatives of which declared that the philosophy (logic, methodology) of science without the history of science is empty.

This trend appeared during the epoch of scientific-technical revolution with its dynamism, when, before the eyes of a single generation, seemingly immovable scientific truths collapsed and radically new views were generated that, in this way, demonstrate graphically the historical essence of scientific knowledge. Long before these processes, Vygotsky was demonstrating that methodological investigation of scientific knowledge can be carried out only on a historical basis, and he himself left examples of such investigation, specifically, the critical analysis of the methodological sense of one of the basic chapters of psychology—the teaching on emotions. Attempts to reconstruct the past of this teaching were made even before Vygotsky. Thus, an interesting historical sketch pertained to the well-known Canadian historiographer G. Brett (Vygotsky used his abstract). But Vygotsky's attention was drawn not to relics, but to the ideas and principles that arose long before contemporary experimental psychology though they penetrated its body and continued to control every step of its workers.

5

The James–Lange peripheral conception, the Cartesian genealogy of which Vygotsky traced, set the approach inherent in mechanistic physiology. It did not even try to explain the vital sense of perturbation in internal organs, which, according to this conception, resulted in the subjective states pertaining to the discharge of emotions. Moreover, experimental investigation of bodily changes in emotions gave impetus to a theory that was an alternative to the peripheral.

This was called the central theory since it moved the bodily substrate of feelings to the higher nerve centers. Its author was the American physiologist, W. Cannon,

whose conclusions Vygotsky analyzed in detail. Studying the reason for the inhibition of secretion of gastric juices in an experimental dog due to emotional excitation, Cannon concluded that to explain this phenomenon, it is necessary to consider the "adrenaline factor" (secretion of suprarenal adrenaline) internally connected with functions of the sympathetic nervous system. This system is responsible for autonomic "storms" observed in various affects (fear, rage, etc.).

Did the James–Lange hypothesis influence Cannon when he approached his experiments? There can be scarcely any doubt that it did, if only because Cannon studied with James at Harvard and, for this reason could have, so to speak, first-hand knowledge of his views. James' key idea explained affects physiologically on the basis that their source is hidden in the depths of the organism. It seemed that Cannon followed this path. Emotions were correlated with changes in the internal organs (and not in the soul or in consciousness). In the introduction to the Russian edition of Cannon's work, *Bodily Changes in Pain, Hunger, Fear, and Rage,* the editor of the translation, the Soviet biologist, B. M. Zavadovsky, wrote that the Cannon book shows that the James hypothesis "in our eyes, is invested with real concrete forms of the biological experiment" (in: W. Cannon, 1927, p. 3).

L. S. Vygotsky justifiably disputes this evaluation, turning attention to Cannon's works as a physiological basis for the peripheral theory of emotions. This theory had no empirical foundation. Its authors related their assumptions to imagined, not real experiments. They said, let us remove the internal modifications from emotion—then nothing will be left of it.

Testing of the James–Lange theory not in the mind, but in the laboratory showed that it was unfounded. As Vygotsky correctly noted, Sherrington was the first to test it, but even stronger arguments against it were developed by the Cannon laboratory, where a new experimental model appeared at the beginning of the 20th century—the sympathectomized animal, that is, an animal in which the sympathetic section of the autonomic nervous system was completely removed.

All the emotional reactions usually typical for these animals were fully retained. In the presence of a dog, the sympathectomized cat raised its paw with extended claws, made a threatening sound, and bared its teeth. Moreover, due to the removal of the sympathetic ganglia, no changes at the level of peripheral reactions (vascular and others) could occur in the animal. Using the method of extirpation of various segments of the brain, Cannon and his students developed a hypothesis according to which the main organ of emotional behavior is the thalamus. Contemporary physiologists assume that emotions cannot have any limited substrate as a neurohumoral base. The conception of interaction of the cortical–subcortical structures is given preference. Experimental and clinical data favor the decisive role of the hypothalamolimbic system. Vygotsky could not have known about these data.

According to James, visceral sensations, and only these, give perception an emotional flavor, an intimate warmth and richness of experience. On the basis of the physiological experiment, Cannon concluded that James ascribed to visceral sensations a function that was completely foreign to them. Signals proceeding from internal organs, being very weak, cannot serve as a means of distinguishing such powerful emotions as fear and rage. In this case, what is the biological value of the diverse and remarkable manifestations of activity of the sympathetic system?

The action that James and Lange ascribed to the visceral processes, taking them to be the basis of human passions, turned out to be fictive. What then is the real purpose of these vegetative reactions?

The search for the answer to this question moved Cannon to develop one of the strongest and most productive theories in 20th century physiology—the teaching on homeostasis—the preservation of the internal environment of an organism de-

spite the influence of factors that disturb it. "Processes occurring in the internal organs as a result of the activity of the sympathetic system are indeed remarkable and diverse. Their meaning for the organism, however, consists not in giving experiences a certain coloration, but rather in an adaptation of the internal 'economics' that would not allow—despite a shift in external circumstances—a substantial disturbance of the uniform order of internal life" (W. B. Cannon, 1929, p. 358). This position, noted in the second edition of Cannon's book, was developed in subsequent works of the American physiologist, who was later called the "father of homeostasis." Having formulated the teaching on homeostasis, Cannon also included in it his treatment of affects as disturbances in the "internal management of the organism."

"At first glance, changes that occur with emotional confusion look like a significant disturbance of homeostasis. In themselves, this is what they seem to be. But I am convinced that they may be explained only as preparation for strong muscular stress. When stress occurs, changes in the internal environment immediately appear to be advantageous and are rapidly neutralized by effects of the stress itself" (W. B. Cannon, 1932, p. 216).

After the work of Cannon on homeostasis, changes in the internal environment of the organism due to affect appeared not as primary, but as derivative (the authors of the peripheral theory ranked affect as an ultimate cause for which there were no biological bases). These changes were significant as phenomena connected with mobilization of bodily forces for possible "flight or fight," preparing the organism for reestablishing the dynamic equilibrium of the internal environment when faced with demands that inevitably disturb its equilibrium.

Cannon treated the mechanisms of reestablishing homeostasis, with which bodily changes in emotion were now connected, as products of natural selection. Thus, we see that the biodeterministic method of analysis allowed Cannon to overcome the mechanodeterminism of his teacher, James, whose peripheral hypothesis, as Vygotsky demonstrated, mistook both bodily changes in emotions and emotions themselves. However, neither Cannon's "centralism" nor his including the bodily mechanism of emotions in the general pattern of homeostasis led research beyond the limits of physiology. The categories within the system of which he worked did not make it possible to disclose the specifics of emotion as a mental reality. For this reason, Vygotsky, placing Cannon's theory above the James–Lange theory, nevertheless assumes that the first is still incapable of overcoming dualism.

In explaining the limitedness of the natural-science, causal view of the psyche, biological determinism made substantial progress in comparison with mechanistic determinism, its predecessor, but it could not master its central areas; however, the limitedness did give new impetus to the indeterministic movement in philosophy. This movement isolated more tangible features of human consciousness—its internal activity, individual sense of experience, orientation toward spiritual values, and others—as an indisputable indicator of its immanent inclusion in an entirely different order of existence than secretion of adrenaline or extension of the nostrils in anger. This direction repudiated the outmoded Cartesianism—not only the mechanistic picture of the external world, but also the introspectionistic picture of the internal world, which, as was noted, dominated experimental psychology, which had separated from philosophy and was striving to find the primary elements of consciousness.

Sensory (or quasisensory) nature was assigned to these elements, and the establishment of regular connections between them was a problem to be solved by methods similar to those applied in the natural sciences. As to the problem of the relation of consciousness to its bodily substrate, psychophysical parallelism was con-

sidered to be a solution uniquely consistent with the principles of natural science (specifically the law of conservation of energy).

For the first time in our psychology, Vygotsky's manuscript presented a penetrating analysis of a new, idealistic direction (it entered history as a philosophy of life), which opposed both determinism and classical introspectionism. It appeared with the thesis that together with physical nature and reflexive consciousness (reason, judgment), there is a third principle that is not reducible to them. It was designated with the ancient word *life*, but with traits coupled to it from biological conceptions that were successfully worked out in natural science on the basis of Darwinian teaching. Among these traits was a special vital, personal principle due to which, as was subsequently said, the individual realizes himself, his existence, in a unique, inimitable way. The cognitive psychology of Dilthey was one of the first branches of this trend.

With respect to the sphere of emotions, this trend turned to the variables for which there were, in general, numerous physiologically oriented explanations of its phenomena, whether they were peripheral theories or central.

Conflict of causality and spiritualism that permeated the whole historical path of psychology appeared here with a new foreshortening. The specifics of emotional experiences of man, the essences of the social-historical, primordially immersed in the world of cultural values, fell, as Vygotsky convincingly pointed out, into a trap of irrationalistic philosophy and were mystified there and separated from the real, practical connections of the human personality with objective reality, from its involvement in material and spiritual productivity, with the development of which, personality and the wealth of its feelings also develops. For this reason, although it would seem that the culturological orientation in understanding these phenomena, presented by W. Dilthey, M. Scheler, and others, would have to be impressive for Vygotsky, who was concentrating on criticism of naturalism, mechanism, and dualism, he rejects it with the same decisiveness as the attempts to derive emotions from vascular reaction, the functions of the thalamus, or expressive movements that remind man that he is a refugee from the simian tribe.

Having organically assimilated the historical-materialistic view of human consciousness, Vygotsky discerned as culturological conceptions of Dilthey, Scheler, and others, the whole spiritualistic approach, in overcoming which, psychology affirmed principles that allowed ascribing to cognition a sense of the scientific with respect to its realia. Moreover, comparing this approach to emotional processes with the mechanistic approach, Vygotsky shows that, with obvious oppositeness, they actually complement each other, and, more precisely, are inseparable companions. Thus, setting a goal of describing the independent, sensible laws of higher emotional acts and functions ("logic of the heart" according to H. Lotze), Scheler considers them as parallel, causal psychophysical dependencies of feelings on bodily processes. In its turn, distinguishing higher and lower emotions in the conception of James coincided with the articulation advanced by Scheler, the phenomenologist.

It seems that both polar views have a common root, which, according to Vygotsky, is the root that also serves the Cartesian teaching on the passions. It is a child of the scientific revolution of the 17th century, which, shaking to its foundation the model of man of the middle ages and ensuring progress of knowledge, plunged the new psychology which was developing empirical-laboratory lines into a quagmire of deep crisis for more than two centuries.

L. S. Vygotsky showed that historical reflection, in turning toward long obsolete conceptions (which may be more archaic than the Descartes hypothesis on animal spirits that move the brain gland!), because it discloses the methodological infrastructure of these conceptions, reveals the source of contemporary collisions. It can

correlate contemporaneity with the quests of earlier ages only because through concrete views and hypotheses it penetrates into the depth of their categorical patterns that connect hoary antiquity with the frontiers of science. Vygotsky was a master of such penetrating analysis. The methodology of science and its history were very closely connected in his thinking. Methodology was considered as a historically dependent form of organization of knowledge, and history as a realization in irreversible time, in layers of concrete events that change from epoch to epoch, of stable, methodological, regulators of the cognitive process.

According to Vygotsky, historical-methodological analysis was called upon not just to trace the dependence of developments actually accomplished in science to their "genetic" roots. Disclosing the patterns of development of science, this analysis was turned toward the future. In addition, it made it possible to evaluate what was produced in past epochs not only from the point of view of influences that led to crisis phenomena, but also to evaluate the quests for solutions that were opposed to these influences but were not developed due to the dominance of other ideological forces that were antagonistic to the solutions.

Such orientation determined the position, central to all of Vygotsky's research, on the idea that, together with the Descartes teaching on the passions, which led psychology into a cycle of inescapable contradictions, the 17th century developed another teaching whose potential remained unexploited although specifically this teaching would have made it possible to reconstruct contemporary psychological theory on bases that would have saved it from these contradictions, from dividing emotions into lower and higher, from subjecting some to the laws of nature and others to laws of the spirit, from contrasting causality, teleology, descriptive explanation, etc. According to Vygotsky, Spinoza produced such an anti-Cartesian trend.

Developing a basis for this conclusion required careful consideration of the nature of the relation between the teachings of both great philosophers with the same persistence and consistency with which Vygotsky demonstrated the single Cartesian genealogy of the two only seemingly incompatible theories—the visceral (peripheral) theory of emotions on the one hand, and the phenomenological (intentional) on the other. To the methodological pivot of these theories, he contrasts the line marked out by Spinoza as leading the study of human motivations and experiences into a basically new channel.

If in Descartes' *Treatise on Passions of the Soul*, Vygotsky saw the source of the contemporary psychological crisis, then in Spinoza's *Ethics*, he saw ideas that made it possible to overcome the whole complex of dualistic versions of the relation of the mind to its bodily substrate, intellectual and affective (motivating), "higher" and "lower" forms of emotional behavior, involuntary and voluntary. Vygotsky completed only that part of his investigation that envisioned explaining the methodological role of the Cartesian pattern in the construction of newer, concrete-scientific conceptions.

Vygotsky does not miss the chance to remind the reader that the position of Spinoza is not comparable to this pattern. He subjects to resolute criticism the historians of philosophy who treat Spinoza as an heir of Descartes. In polemics with them, Vygotsky exaggerates the spiritualistic and undervalues the deterministic trend of Descartes' teaching on passions of the soul.

Vygotsky speaks of the "Augustinianism" of Descartes. It is true that the introspective concept of consciousness was generated in the depths of religious metaphysics—in the works of Plotinus and Augustine. In Descartes, however, it is purified of religious interpretation and becomes "secular." According to the Plotinus–Augustinian conception, man uses phenomena of his consciousness to enter into contact with the Most High as the only unshakable reality. For Descartes,

however, the only indisputable object of introspection is its own thought. There may be doubt about everything, natural or supernatural, but there can be no skepticism about the judgment, "I think," from which it inexorably follows that there is a carrier of this judgment—a thinking subject.

Only a man of the new formulation could give individual consciousness such independent high status. Concentrating on disclosing growing contradictions in the psychological conceptions of Descartes, Vygotsky did not pay attention to this social-philosophical aspect. He believed that its appearance was determined by mechanism and dualism, that Descartes's determinism in treating passions of the soul was exhausted by the model of a mechanistically operating, nonanimated body (of course, participation of the soul was completely eliminated from the organization of actions of the organism as a natural body). As a counterweight to this, it must be stressed that Descartes did not at all assume a certain category of passions to be neutral with respect to active regulation of human behavior, specifically those that, according to contemporary terminology, carry the name of emotions.

According to Descartes, under the influence of emotions, the organism strives toward what is beneficial to it and avoids external effects that are harmful to it. Descartes combined the concept of emotion with the idea of self-preservation of the living body, which, as we shall see, had a major significance for Spinoza also. Self-preservation is not realized automatically. It is provided by the apparatus of emotions that fulfill a unique signal function. Regardless of the ability to think (reflect) on the benefit or harm, emotions as states generated (inanimate) by the body orient it in the surrounding world, directing it toward some objects and diverting it from others according to requirements of self-preservation. In this way, in the Descartes conception, emotions were generated by representations that severed the net of mechanodeterministic categories not from the height of incorporeal and substantial activity of consciousness intruding from outside, but on the basis of natural properties of the organism.

Among these properties were two connected concepts unfamiliar to the thinking of the physicist: the factor of demand or need of the organism to conduct itself with "partiality" with respect to the world for the purpose of surviving in it (subsequently, demand was included in the category of motivation), and the factor of value that characterizes not the state of the organism, but the properties of external objects from the point of view of their significance for it (their usefulness or harmfulness). Vygotsky did not note these innovations of Descartes. Neither did he consider the evolution of Descartes' views and a feature of these as important as the striving to overcome the initial treatment of the organism in strictly physical concepts and the view of the animal as a pure machine.

Descartes' deviation from mechanicism did not attract the attention of Vygotsky; he was trying to reconstruct the Cartesian teaching in a clearly consistent expression of his principles since mechanicism and dualism specifically, and not the attempts to overcome them on the part of Descartes himself, affected the path of development of psychology.

As we know, Vygotsky believed his central task to be proving that in all parameters, the Spinozist system of ideas was the antithesis of the Cartesian, and that specifically the latter plunged concrete teachings on emotional processes into a crisis situation. To overcome it, it was necessary to turn back to Spinoza, who, having passed the Cartesian school, produced a teaching on man opposite to its postulates, a teaching on the motivating forces of man's behavior. Vygotsky believed that the James–Lange conception of affects, as well as its seeming alternative, the conception of experiences of Dilthey–Scheler, being Cartesian in essence, were retained in psychology only because other conceptions capable of surpassing the Cartesian

were not being developed as a counterweight. Here, he had in mind not explanations of concrete mechanisms of emotional behavior, nor classification of its separate manifestations, or other forms of empirical knowledge of human feelings, but general philosophical indicators on which the treatment of these mechanisms, manifestations, etc. depends.

According to Vygotsky, the main reference point for Spinoza was naturalism, consistent, uncompromising, allowing no supernatural essences or forces and for this reason rejecting the view of passion (feeling, affect) as the most direct expression of the duality of human nature. But the problem of duality of behavior (at the human level) was not limited to its emotional aspect.

From the teaching on emotions extended invisible, but unbreakable threads to the most various problems: ontological (is being a single substance), gnosiological (how is this being known), ethical (how are actions of man as a free, moral personality possible), psychological (how are the various mental functions—thinking, feeling, will—related to each other). Vygotsky showed that for each of the problems, the solution of Spinoza contradicts the Cartesian, and from this a polarity of their explanations of emotions (passions, affects) inevitably followed.

6

In working on his manuscript, immediately following the critical part, Vygotsky planned to write a positive part with a well-developed analysis of the methodological principles that could be drawn from Spinoza's *Ethics,* setting up a basis for a radically new direction in the study of emotions as one of the central chapters in psychology. Vygotsky mentions this project frequently, referring the reader to a following section of the manuscript which he had not yet written. We do not know whether Vygotsky produced a draft of this section or whether the ideas that he meant to present in a systematized form were not yet formulated. To understand Vygotsky's points of departure and the vector of the movement toward the goal for which all of his investigations were undertaken, reliable material can be found only where Vygotsky chooses Spinoza as an ally in criticism of Cartesianism. We shall try to reconstruct the possible courses of Vygotsky's thought in his analysis of Spinoza from the point of view of building on it the basis of a new theory of emotions.

Entering into a discussion with Descartes, Spinoza cryptically inserted his own convictions in his contra-arguments. The selection of these contra-arguments that Vygotsky used allows us, within certain limits, to present the contours of the positions whose mutual connection could form a system of positive—anti-Cartesian—ideas capable, as Vygotsky trusted, of converting the section on emotions into an integral part of the whole teaching on human consciousness, free of the contradictions that prevented the development of deterministic psychology (and, according to Vygotsky, no other psychology can be scientific).

The first crucial word in this system was monism. Spinoza—as a counterweight to Descartes—proclaimed that nature is the only substance. In this way, he deprived the mental in any of its forms (whether it be thinking, will, consciousness) of any substantial meaning. Nature was infinite. Space, with which Descartes identified it, was only one of its innumerable attributes. Another of its attributes was thinking.

What relation does this general-philosophy postulate have to the special psychological teaching on the emotional reactions of man? We have already had occasion to note that behind one or another development and sense of this "local"

teaching is hidden a whole complex of global philosophical problems. From the ontological view of substance as a single nature, disclosed to man in two of its attributes, came the idea of indivisibility of the mental and the physical, and thereby also the *impossibility of influence of one of them on the other as independent substances.* As a result, the question that created many blind alleys and "epistemological barriers" was eliminated not only in philosophy, but also in the very thicket of research practice of the psychologist concerned particularly with explaining the determining dependencies between the emotional states experienced by the research subject and the processes taking place in the organism and in its various systems.

According to Spinoza, man represents an integral natural being. His thinking and his spatial body are included in one and the same causal order. Determined by the same causes, they cannot enter among themselves in a determining relation. There is only one governing law and one need, one and the same order both for things (including such a thing as the body) and for ideas.

Spinoza treats the question of interrelations between two attributes of substance (thought and space) as *a psychophysical and not psychophysiological problem.*

The subject here is a single "ideocorporeal" thing—the human organism—in the general order of the universe and not of the correlations between the individual soul and the individual body outside the universal pattern to which both are irreversibly subject. Spinoza repudiates the fallacious course of the idea where indivisible elements are first split, its components hypostasized (mental and bodily) into independent essences (substances, things), and then an attempt is made to find connections among what, after this operation on the integral structure, is impossible to conceive as ontologically related or logically homogeneous.

On the ontological plane, the idea of psychophysical unity required identifying the general principle to which any thing is subject as a whole (in both attributive characteristics open to the human mind—as mental and as physical). Spinoza holds the drive toward self-preservation—a powerful stimulating ("motivating") force—as a universal law of existence and change in any concrete thing, laid down by nature in each of its individual realia.

We have already been introduced to the idea that passions of the soul are generated from the drive of the body toward self-preservation. Descartes expressed it. Spinoza developed the idea further, according to the psychophysical monism that he inflexibly upheld. From the principle of the existence of any concrete thing, it is transformed into a moving—in essence, sole—source of human behavior. This source (let us stress once again, emanating from the universal principle of self-preservation) acquires the status of a drive, which "is nothing other than the very essence of man" (Spinoza, 1957, p. 464).

Drive is a psychophysiological phenomenon because it refers to the soul and to the body.

Here the indivisibility of the attributes of a single substance appears not on a "cosmic" scale, not as applied to an inexhaustible universe as a whole, but as applied to the behavior of a concrete man in all the diversity of his passions, affects, and feelings.

In contemporary terminology, the phenomenon that Spinoza calls a drive is referred to the category of motivations. Accordingly, translating the philosophical principle of psychophysical unity into working, scientific language, we might say that in the material of real investigation and explanation of the facts of the vital activity of man, motivation acquired a basically suppositional character. In it, the unity of the mental and the physical, the bodily and the spiritual acquired concrete embodiment. Specifically here, a direct thread extended from the general understanding of the place of man in nature to the analysis of each of the concrete acts of the psychophysiological regulation of his behavior.

Spinoza termed these motivational acts affects. "As affects, I understand states of the body that increase or decrease the ability of the body itself to act, favor it or limit it, and the ideas of these states as well" (ibid., p. 456).

From Spinoza's point of view, the body is an integral, psychophysical, dynamic system that undergoes changes, passing from less perfect to more perfect and vice versa. The flow of spiritual states reflects not only the shifts in this system, but is also directed toward increasing its capability to act. From this it followed that the soul seems to serve the body. It tries to have images of what is favorable to it and, on the contrary, it "turns away from an image of what diminishes or limits the capability of its body" (ibid., p. 467).

According to Spinoza, the drive for self-preservation is connected internally with two other basic affects—joy and sorrow. These affects reflect the transition of man from lesser to greater completeness. Positive affects increase the capability of the body to act and the soul to know; negative affects decrease this capability. For this reason, in the context of Spinoza's interpretation, the drive toward self-preservation (self-actualization) is a drive not to equilibrium (maintaining what has been attained), but toward "self-development," toward increase, toward ceaseless intensification of activity both with respect to the body and with respect to the soul. From this understanding of the principle of self-preservation, it followed that the primary motive of behavior is expressed not in striving to attain equilibrium with the environment, but in an attitude of overcoming its resistance, of increasing the capability of the human body for self-development, for extending its psychophysical potentials.

Placing motivation at the center of his psychological system, Spinoza tried to overcome not only the dualism of the bodily and the mental in the structure of behavior, but also the dualism of the *lower* (generated by the body as a physical *thing*) and the *higher* (flowing from the sphere of *pure* will) stimulating forces.

"The will and the mind (intellect) is one and the same" (ibid., p. 447). This conclusion should not be interpreted in the sense that Spinoza was placing intellectualism as a counterweight to libertarianism. For him, intellect is not at all an independent force or capability. It is inseparable from the body since the attribute of thinking is inseparable from the attribute of extent. Affects move these as they move all else in human behavior. Among these are emotional (psychophysical) acts of various levels, but no matter how various they are, their nature is unity.

The idea of antagonism from earliest times between body and spirit led to dividing the sphere of motivation into opposed forces. As a counterweight to this conception, Spinoza demonstrated the bodily essence of motives (affects) of any order. In the eyes of opponents of materialism, this signified exalting the lower, material inclinations to the detriment of higher values and ideals.

The actual intention of the Spinozist conception was expressed by the prospect of converting these values into regulators of real and, therefore, bodily behavior. Its author still knew nothing about nerve and humoral mechanisms of motivation, about the interaction of cortical and subcortical structures, etc. But not knowing the concrete psychophysiological characteristics of emotional behavior, he maintained the general principle without which these same characteristics could not be developed.

On the basis of the postulate on the inseparability of the soul from the body, whose law of life is the drive for self-preservation and the experience of joy when capability to act increases and sorrow when it decreases, Spinoza assumed that behavior always has an affective tonality, is always motivated.

For Spinoza, the principle of primacy of the mind, of the intellectual side in the sphere of cognition (he referred sensory experience to a lower level), did not convert man into a contemplative, inactive being in the sphere of behavior. According to Spinoza, a factor of development of the mind is activity of the body. "Whoever as a child or youngster has a body capable of very little and most likely is dependent on external causes, that person has a soul that, considered in itself, knows almost nothing about itself or about God,* or about things; and, conversely, whoever has a body capable of very much, has a soul that, considered in itself, has great knowledge of itself and of God and things" (ibid., p. 615).

Knowledge not only of other things, but of the soul itself was placed in direct dependence on the capability of the body to act. Thus, Spinoza combined the principle of causality with the principle of active functioning that extended the possibilities of both the physical body and the inseparable whole mental organization developing with it.

Unfortunately, because of the incompleteness of Vygotsky's manuscript, it is difficult to determine the spectrum of ideas that were identified by the author in the teachings of Spinoza as a starting point for developing his own solutions pertaining to the problem of motivating forces in human behavior. Nevertheless, the main lines are distinctly drawn. Determinism is primary. For Descartes, this principle signified mechanodeterminism, which entailed treating emotions as states suffered by the soul (passions) elicited by changes in the "machine of the body." As far as truly human active states were concerned (thinking, will), according to the Cartesian conception, they were referred to nonbodily acts, the final causal instance of which was the individual subject.

Overcoming mechanodeterminism and its inevitable accompaniments—epiphenomenalism (everything mental, generated by the body, can only be a consequence or result, but has no independent causal meaning), indeterminism in the treatment of higher functions (since they cannot be extracted from the interaction of physical bodies), dualism (contrasting the involuntary mental processes to the voluntary)—such was the historical thinking of Spinoza as presented by Vygotsky (as seems apparent from the text available to us).

Since Spinoza was an eminent determinist, it followed from Vygotsky's presentation that a new form of determinism was generated in the philosophy of Spinoza—as a methodological base of a new psychological theory free of the birthmarks of the Cartesian method of thinking. According to Vygotsky, this theory has as its subject man as an integral and active psychophysical being, striving toward self-development, motivated only by bodily-spiritual needs. Its key category is the concept of motivation. Uncompromisingly causal explanation (and not description or cognition) serves as its main method. Disclosing the historical meaning of the great step taken by Spinoza on the path that made it possible to eliminate the crisis phenomena in contemporary psychology (generated by Spinoza's overcoming the Cartesian tradition), Vygotsky, however, never speaks of the limitations of this theory, of the fact that it was constructed on the basis of naturalism, and not historicism, which served as a guiding star for Vygotsky.

7

It may be that the concluding part of the work not only would have disclosed the greatness of Spinoza's contribution, but would have provided a critical analysis

*Spinoza considered God identical with nature.

of his teaching. The basis for this opinion is the general conception of the development of mental phenomena given by Vygotsky in his other works and the series of positions that he developed pertaining specifically to human feelings, particularly in the essay published in this volume on the psychology of the actor's creative work.

The short essay pertaining to the special question showed the orientation of the author, his approach to the experience of the personality as a cultural-historical phenomenon. True, in this case, the subject is not the "natural life feelings," but idealized passions produced by the creative force of the actor (which in its time inspired Diderot to consider the problem of how these two orders of emotions are related in the activity of the actor). But Vygotsky proceeded from the fact that "the actor's psychology comprises only a part of the total psychology" (p. 238, this volume), and the qualitative uniqueness of its nature may be sensed only "in light of more general psychological patterns" (p. 238, this volume). For this reason, his judgments on the specifics of the experiences of the actor (where feelings of the role and feelings of the personality merge) reflect the approach he developed toward the psychology of emotions as a whole.

We shall note several of the more substantial points. First of all, Vygotsky indicates the need to surmount the empiricism expressed by the situation where the investigator, limited by testimony of self-observation or evidence of the subject on the emotional states he is experiencing, cannot rise above these facts and grasp them with a general methodological understanding of the topic. Seemingly, nothing is given to man with such direct certainty and intimacy as the feeling he is experiencing. But real knowledge about it is acquired only with an explanation of its genesis and a sense of the basis of objective patterns that are acting behind the wings of internal observation.

It is obvious that Vygotsky defended the correctness of explanatory psychology of experience as a counterweight to descriptive and cognitive psychology with this thesis. In evaluating explanatory psychology as the only scientific psychology, he stood firmly on the same positions as Descartes, the physicist, and of Spinoza. However, if for them, explanation meant separating emotional phenomena from laws of nature, then Vygotsky insists on the need to consider experience as a fact that requires resorting to laws of history. It is not the biological nature of man that serves as the source of his spiritual passions and agitation, but the historical-cultural context of his activity.

For Descartes, the causal explanation of emotions was built on a mechanodeterministic basis, for Darwin, on a biodeterministic one. For Vygotsky, however, the point of departure is sociodeterminism, since the historical development of behavior is determined by the action of social forces. He emphasizes: "In the process of social life, feelings develop . . . emotions appear in new relations with other elements of mental life, new systems develop, new alloys of mental functions" (p. 244, this volume).

If in his preceding periods of thinking about psychological systems, Vygotsky concentrated on considering the cognitive processes (perception, memory, speech) as parts of a whole, then at this point, the problems of feelings, experiences, and affects moved to the center of analysis.

Now, in the new phase of his creativity, he felt especially keenly the need to comprehend the *unity of the cognitive and the affective-motivational in the activity of the personality.* Working basically on problems of thinking and speech, he clearly saw the limitedness of the intellectual orientation inherent in the most interesting research in this area. He began to ascribe a decisive significance to problems of the connection between intellect and affect. He treated consciousness as a "dynamic system of meaning that represents the unity of affective and intellectual processes"

(Vol. 1). Now, for Vygotsky, it was not units of verbal thinking in themselves (signs as carriers of meaning), but their affective charge that became the main subject of contemplation of the specifics of psychological analysis in contrast to linguosemiotic analysis. He emphasizes that "in every idea, there is, in a processed form, an affective relation of man to the reality represented in the idea" (ibid.).

This position anticipated Vygotsky's last published work, *Thinking and Speech*, where he treated the meaning of the word as a unity of thinking and speech, of subject generalization and interpersonal communication. Understanding that it was necessary to move further—toward organic inclusion of human behavior in the psychological analysis, of the real motive power of the speech-thinking process: passions, needs, motivations—Vygotsky turned to the study of the role of these determinants.

The last book of *The Collected Works of L. S. Vygotsky* was published exactly a half century after his life was cut short by tuberculosis.

In just a few years, the teacher from a small, provincial, Byelorussian town became an eminent psychologist of the 20th century. The objective logic of the development of science and the social situation in the new Russia was conditioned by the appearance of Vygotsky and the greatest scientific school in Soviet psychology that gathered around his ideas, from which various trends radiated.

Affirming the principles of sociodeterminism, historicism, and systemic character, Vygotsky was the first to understand the dependence of the progress of applied, specialized trends in psychology (and in this way, also its potentials to serve people directly) on creating a general psychology as a methodology of the "middle level," which would specify the concrete categories through the prism of which mental reality would become distinguishable as a special scientific subject (distinct from knowledge at the level of "everyday" concepts), accessible to empirical study, operations research, and direct instrumental control.

Vygotsky's concept had a permanent influence on the fate of Soviet psychology. As far as its perception in the West is concerned, there is evidence concentrated in the evaluation of J. Bruner: "Every psychologist who was working for the past quarter century on cognitive processes and their development must recognize the influence of the work of Lev Semenovich Vygotsky" (J. Bruner, *Cognitive Psychology*, p. 9).

—M. G. Yaroshevsky

NOTES TO THE RUSSIAN EDITION

Tool and Sign in the Development of the Child

1. This was written by L. S. Vygotsky in 1930. Published for the first time according to the text of the manuscript.
2. Stumpf, Karl (1848-1936), see Vol. 1, p. 461.*
3. Linnaeus, Carolus (1707-1778), see Vol. 1, p. 471.
4. Cf. the introductory paper of Vygotsky to the Russian edition of the book of K. Bühler, *A Study of the Mental Development of the Child* (Vol. 1, pp. 196-209).
5. Gesell, Arnold (1880-1961), see Vol. 4, p. 408.
6. Köhler, Wolfgang (1887-1967), see Vol. 1, p. 460. Author of many works on perception. For details on the attitude of Vygotsky toward the work of Köhler, see "Tool and Sign in the Development of the Child," this volume; Thinking and Speech, Vol. 2, pp. 89-118; Vygotsky's introduction to the Russian translation of Köhler's *Study of the Intellect of Human-like Apes,* Vol. 1, pp. 210-237.
7. Lipmann, Otto (1880-1933), see Vol. 5, p. 343.
8. Bühler, Karl (1879-1963), see Vol. 1, p. 465; Vol. 2, p. 484; Vol. 4, p. 407.
9. Bühler, Charlotte (1893-?), see Vol. 4, p. 405.
10. Bogen, Helmut (1893-?), German psychologist, specialist in child psychology. On the works of Lipmann and Bogen, see also: L. S. Vygotsky, "The Problem of Development in Structural Psychology," Vol. 1, p. 265.
11. Basov, Mikhail Jakovlevich (1893-1931), Soviet psychologist. He developed one of the first variants of the theory of activity in psychology.
12. Galton, Francis (1822-1911), see Vol. 1, p. 464. He developed the method of so-called group photography (popular at the beginning of the 20th century) in which the faces of many people were taken in one picture. As a result, similar traits stood out and individual traits were muted. Galton believed that this method is a good analog for illustrating the psychological mechanism of forming concepts. See also: L. S. Vygotsky, "Psychological Systems," Vol. 1, pp. 109-131.
13. Piaget, Jean (1896-1980), see Vol. 1, p. 464, Vol. 4, p. 409. For details on the attitude of Vygotsky toward the works of Piaget, see *Thinking and Speech*, Vol. 2, pp. 23-79, and Vygotsky's introduction to the Russian edition of Piaget's book, *Speech and Thinking of the Child* (Moscow, 1932).
14. Morozova, Natal'ya Grigor'evna (born 1910), Soviet psychologist, defectologist, student of L. S. Vygotsky.
15. Binet, Alfred (1857-1911), see Vol. 1, p. 462.
16. This study is a development of the idea expressed by Vygotsky in the paper "The Problem of Cultural Development of the Child." *Pedologiya*, 1928, No. 1.

*Here and below, all volume numbers and page numbers cited in *The Collected Works of L. S. Vygotsky* refer to the Russian original work.

17. On egocentric speech, see *Thinking and Speech*, Vol. 2, pp. 5-361.
18. Kohs, Samuel K. (1890-?), American psychologist, specialist in child psychology, author of a number of tests. For Vygotsky's evaluation of Kohs' work, see also his paper, "Psychological Systems," Vol. 1, pp. 109-131.
19. Geshelina, Liya Solomonovna (1892-?), pedagogue, specialist in preschool education.
20. Potebnya, Aleksandr Afanas'evich (1835-1891), see Vol. 2, p. 486; Vol. 3, p. 349. He developed problems on the relation of language and thinking, teaching on the "internal form of the word," etc. Potebnya's works had great influence on Vygotsky. See *Thinking and Speech* (Vol. 2, pp. 5-361), *Psychology of Art* (1968).
21. Sakharov, Lev Solomonovich (?-1928), see Vol. 2, p. 486. In view here is his *Methods of Studying Concepts* (1930). For Vygotsky's evaluation of this work, see also *Thinking and Speech*, "Experimental Study of the Development of Concepts."
22. Kotelova, Yuliya Vladimirovna (1905-1980), see Vol. 2, p. 486.
23. Yerkes, Robert (1876-1956), see Vol. 2, p. 485. For Vygotsky's detailed evaluation of his work, see *Thinking and Speech*, Vol. 2, pp. 89-118.
24. Stern, William (1871-1938), see Vol. 2, p. 464. For Vygotsky's detailed evaluation of Stern's work, see *Thinking and Speech*, Vol. 2, pp. 80-89.
25. Levina, Roza Evgen'evna (born 1908), see Vol. 2, p. 483.
26. Watson, John B. (1878-1958), American psychologist, leader in behaviorism. In view here is his *Psychology as a Science of Behavior*. For Vygotsky's evaluation of Watson's ideas, see also *Thinking and Speech*, Vol. 2, pp. 89-118. This idea of Watson was previously expressed by the English philologist, M. Müller.
27. Head, Henry (1861-1940), see Vol. 1, p. 467.
28. This idea of Vygotsky was later developed by his students, particularly D. B. Elkonin (1971, pp. 16-25).
29. Claparède, Edward (1873-1940), see Vol. 1, p. 463; Vol. 2, p. 482.
30. See Vygotsky's works: *Problem of Cultural Development of the Child* and *History of Higher Mental Functions*.
31. Volkelt, Hans (1886-?), German psychologist-idealist, member of the Leipzig school.
32. Werner, Heinz (1890-?), German psychologist, specialist in child psychology and educational psychology.
33. For Vygotsky's detailed evaluation, see his introduction to W. Köhler's *Study of the Intellect of Human-like Apes* (Vol. 1, pp. 210-237).
34. Jaensch, Erik (1883-1940), see Vol. 1, p. 464.
35. Kafka, Gustav (1883-?), German psychologist. In view here is his work (G. Kafka, 1922).
36. Lewin, Kurt (1890-1947), see Vol. 1, p. 465. For more on Vygotsky's attitude toward his work, see "Tool and Sign in the Development of the Child," this volume; *Lectures in Psychology*, "Lecture 6, The Problem of Will and Its Development in Childhood" (Vol. 2, pp. 454-465).
37. Koffka, Kurt (1886-1941), see Vol. 1, p. 460.
38. Cf. the well-known formula of Vygotsky: "We can formulate a general genetic law of cultural development in the following form: every function in the cultural development of the child appears on the stage twice, on two planes, first—on the social, then on the psychological plane, first among people as an intermental category, then within the child as an intramental category" (Vol. 3, p. 145).
39. Menchinskaya, Nataliya Aleksandrovna (born 1905), Soviet psychologist, student and colleague of Vygotsky, later a specialist in pedagogical psychology.

40. Bozhovich, Lidiya Il'inichna (1904-1981), Soviet psychologist, student of L. S. Vygotsky, specialist in the area of the psychology of the child's personality.
41. Slavina, Liya Solomonovna (born 1906), Soviet psychologist, student of Vygotsky, working on problems of special psychology.
42. Leont'ev, Aleksei Nikolaevich (1903-1979), see Vol. 1, p. 404; Vol. 2, p. 483. On the basis of these positions of Vygotsky, he made an experimental study reflected in the monograph *Development of Memory* (Moscow, 1931).
43. Zankov, Leonid Vladimirovich (1901-1977), Soviet psychologist, student of Vygotsky, specialist in the psychology of memory, training, and defectology.
44. Thorndike, Edward (1874-1949), see Vol. 1, p. 461; Vol. 2, p. 485; Vol. 5, p. 345.
45. In view here is the scene from Goethe's *Faust* (Part 1, scene, work room of Faust), where Faust subjects to doubt the Biblical statement, "In the beginning was the word," and replaces it with, "In the beginning was the deed." See also *Thinking and Speech*, Vol. 2, pp. 295-361.
46. Gutzman, Herman Albert Karl (1865-1922), German psychologist, specialist in the psychology of speech.
47. Lipmann, Hugo (1863-1925), German psychiatrist. His teaching on apraxias was published in *Drei Aufsätze aus dem Apraxiegebiet*, Berlin, 1908. He also worked on problems of visual hallucinations and studied aphasia.

The Teaching about Emotions

1. This manuscript was written in approximately 1931-1933. It was given various titles: *The Teaching of Descartes and Spinoza on the Passions in Light of Contemporary Psychoneurology; Spinoza; Psychology Outlines. The Problem of Emotions; Teaching about Emotions: A Historical-Psychological Study.* Short excerpts of it were published twice: "Two Trends in Understanding the Nature of Emotions in Psychology Abroad at the Beginning of the 20th Century." *Voprosy Psikhologii*, 1968, No. 2, pp. 149-156; "The Teaching about Emotions in Light of Contemporary Psychoneurology," *Voprosy Filosofii*, 1970, No. 6, pp. 119-130. In the present edition, the manuscript is published in full for the first time according to the text of the only preserved author's version, dated 1933.
2. Lange, C. G. (1834-1900), Danish anatomist.
3. James, William (1842-1910), see Vol. 1, p. 460. C. G. Lange's book, *Emotions*, was published in Danish in 1885 and later translated into other languages, including Russian (with the title, *Dushevnye Dvizheniya* [Mental Movements]). Vygotsky cites the Russian edition. The paper by the American psychologist and philosopher, W. James, "What Is Emotion?" (*Mind*, 1884, Vol. 9), was published in 1884. James later developed the ideas presented in the paper in *Principles of Psychology* (1890).
4. Dumas, Georges (1866-1946), see Vol. 1, p. 470. Vygotsky had in view Dumas' preface to the French translation of K. G. Lange's book, later published in a Russian edition in 1896.
5. In view here is the conception of emotions developed by Charles Darwin (see Vol. 1, p. 462) in *Expression of Emotions in Animals and Man* (1872). First to apply the evolutionary approach and objective method to the study of emotions in man and animals, he treated expressive movements in emotions as components of adaptive behavior in the struggle for existence. In man, expressive movements in emotions were considered to be rudiments of his animal origin.

6. Spencer, Herbert (1820-1903), see Vol. 1, p. 471. In view here is his *Principles of Psychology* (1855), which influenced Darwin in particular. Spencer considered expressive movements in man in emotions as rudimentary behavior.
7. Malebranche, Nicolas (1638-1715), French philosopher-idealist, principal representative of occasionalism. He tried to combine Cartesianism and Christian theology in its Augustinian variant.
8. Titchener, Edward (1867-1927), see Vol. 1, p. 471.
9. Lotze, Herman (1817-1881), see Vol. 1, p. 471.
10. Maudsley, Henry (1835-1918), English physiologist and psychologist with a natural science orientation.
11. Sergi, Giuseppe (1841-1936), Italian anthropologist with a mathematical orientation, biologist, psychologist, cultural historian.
12. Bard, Philip (1898-?), American physiologist. He worked on the psychology and physiology of emotions.
13. Dunlap, Knute (1875-1949), American psychologist, specialist in general and social psychology and psychology of religion. In view here is a preface he wrote to a collection in which papers of James and Lange were published. Vygotsky cites Dunlap from a paper of W. B. Cannon (1927). The work of Dunlap is mentioned on p. 106 of that paper. In view of the fact that Vygotsky cites many papers on the basis of this work, we shall subsequently indicate this as: cited after W. B. Cannon, 1927, p. . . . .
14. Perry, Ralph (1876-1957), American philosopher-neorealist, student of James. He had a great influence on Cannon.
15. Cannon, Walter Bradford (1871-1945), American physiologist. The first edition of his book on the analysis of the physiological mechanisms of emotional processes, *Bodily Changes in Pain, Hunger, Fear and Rage,* was published in 1915.
16. The Russian translation of this book of Cannon, under the title *Fiziologiya Emotsii. Telesnyue Izmeneniya pri Boli, Golode, Strakhe i Yarosti* [*Physiology of Emotions. Bodily Changes in Pain, Hunger, Fear and Rage*], with preface and editing by the Soviet biologist, B. M. Zavadovsky (1895-1951), appeared in Leningrad in 1927. This was a translation of the third English edition of Cannon's book, published in 1923.
17. Zavadovsky, Boris Mikhailovich (1895-1951), see Vol. 2, p. 491.
18. McDougall, William (1871-1938), English and American psychologist and philosopher. He contrasted behaviorism and associationism to so-called goal-directed or hormic psychology. In *Introduction to Social Psychology* (1908), he explained social phenomena by instincts. This is the work to which Cannon refers (W. B. Cannon, 1927, p. 153).
19. Sherrington, Charles (1857-1952), see Vol. 1, p. 462.
20. Angell, James Roland (1869-1949), American psychologist, representative of the functional trend. Cited after W. B. Cannon, p. 108.
21. Cf. Spinoza, *Ethics*, Part I, Axiom 6: "A true idea must agree with its object."
22. Holdberg, Ludvig (1684-1754), Danish writer and playwright of comedies. Herman von Bremen—hero of a comedy by the same name.
23. Vagus nerve. In man, the tenth pair of cranial nerves. It is a mixed nerve containing motor, sensory, and autonomic (sympathetic and parasympathetic) fibers. The results of experiments of which Vygotsky is speaking are presented in the well-known course of lectures of C. Sherrington: *Interactive Activity of the Nervous System*. "Lecture 7. Reflex as a Reaction of Sustained Adaptation." This was first published in London in 1906. In 1935, the lectures (including this lecture) were published in Russian in the book by R. Creed, D. Denny-Brown, J. Eccles, E. Diddell, and C. Sherrington, *Reflex Activity of the Spinal Cord*. In the 1930s, in preparing L. S. Vygotsky's manuscript for publication, Z. S. Vygotskaya and A. R. Luria included in the Literature the Russian translation of this work of Sherrington, leaving the text of Vygotsky himself unchanged of course. We considered it opportune also to refer the reader to the Russian translation of Sherrington's work. Subsequently, it will be referred to in abbreviated form: *Reflex Activity* . . ., p. . . .

24. Morgan, Conway Lloyd (1852-1936), English biologist, zoopsychologist, philosopher. One of the founders of the theory of emergent evolution (see Note 90).
25. Bekhterev, Vladimir Mikhailovich (1867-1927), Russian physiologist, neuropathologist, psychologist. In the present work, Vygotsky repeatedly cites Bekheterev's investigations of emotional reactions of animals in which the brain cortex, specifically the thalamus opticus, was removed. L. S. Vygotsky dates these investigations at 1887. In 1887, a paper by Bekhterev was published in German: "Die Bedeutung der Sehhügel auf Grund von experimentellen und pathologischen Daten." *Virchows Arch.*, 1887, pp. 110, 102-154, 322-365. The paper sparked interest in the work of Bekhterev abroad. Thus, W. Cannon, whose data Vygotsky obviously used, cites it (W. B. Cannon, p. 115). In 1882-1887, Bekhterev published a number of papers in Russia on this subject, including "Induced Movements Developed with Damage to the Brain Cortex," *Russkaya Meditsina* [Russian Medicine], No. 1, pp. 6-8; No. 3, pp. 54-55; "Function of the Thalami Optici," *Vrach* [Doctor], 1883, No. 4, pp. 51-52; No. 5, pp. 68-70, and others.
26. Pieron, Henri (1881-1927), French psychologist, student of A. Binet and P. Janet. He worked in the areas of experimental psychology, zoopsychology, psychophysiology, pathopsychology, and applied psychology.
27. Maranon, Gregorio (1887-1960), Italian endocrinologist.
28. Lehmann, Alfred (1858-1921), Danish psychologist.
29. Cannon compares the results of the following investigations: C. C. Stewart, "Mammalian Smooth Muscle. The Cat's Bladder," *Amer. J. Physiol.*, 1900, No. 4, pp. 185-208; E. Sertoli, "Contribution a la physiologie generale des muscles lisses," *Arch. Ital. Biol.*, 1883, No. 4, p. 86; D. N. Langley, "On the Physiology of Salivary Secretion." *J. Physiol.*, 1889, No. 10, p. 300; I. P. Pavlov and E. O. Schumova-Simanowskaja, "Die Innervation der Magendrüsen beim Hunde," *Arch. Physiol.*, 1895, No. 66 (see W. B. Cannon, p. 112).
30. Stewart, Colin Campbell (1873-?), American physiologist.
31. Sertoli, Enrico (1842-1910), Italian physiologist.
32. Langley, John Newport (1852-1925), English physiologist and histologist.
33. Shumova-Simanovskaya, Ekaterina Olimnievna (1852-1905), Russian physiologist, student of I. P. Pavlov.
34. Wells, Frederick Lyman (1884-?), American psychologist, specialist in cognitive processes.
35. Landis, C. (1897-?), American psychologist, specialist on developmental psychology, pathopsychology and psychology of emotions.
36. Dana, Charles (1852-1935), American physician, neurologist, medical historian, and literary critic.
37. Wilson, Samuel Alexander (1878-1937), English neurologist, specialist in aphasia.
38. Konovalov, Nikolai Vasil'evich (1900-1966), Soviet neuropathologist. Together with S. A. Wilson, he described and presented a system of therapy for hepatocerebral dystrophy ("Westphal's, Wilson's, Konovalov's disease").
39. Küppers, Egon (1887-?), German psychologist.

40. Bentley, Isaac Madison (1877-1955), American psychologist, specialist in general, child, and social psychology.
41. Vygotsky has in view the symposium on the problem of emotions that took place at Wittenberg College (hence the title, Wittenborgian) in Springfield. Ohio, October 19-23, 1927. The symposium marked the opening of a new psychology laboratory. Leading specialists on this problem participated, including: A. Adler, V. M. Bekhterev, E. Claparède, P. Janet, H. Pieron, W. Stern, K. Bühler, W. McDougall, W. Cannon, E. Titchener, R. Woodworth, E. R. Jaensch, M. Prince, W. Pillsbury, and others. In 1928, the materials of the symposium were published under the title *Feelings and Emotions. The Wittenberg Symposium*, Worcester, 1928. Vygotsky used these materials widely, particularly the papers of Brett, Claparède, Prince, Bentley, Spearman, and others (see References). Bentley did not write the Introduction to the symposium. His paper was the first published in the symposium (see M. Bentley, 1928).
42. Dal', Vladimir Ivanovich (1801-1872), see Vol. 3, p. 358.
43. Bergson, Henry (1859-1941), see Vol. 1, p. 464. At the beginning of the 1900s, he was the leader of new philosophical trends (intuitivism, "philosophy of life").
44. Cassirer, Ernst (1874-1945), German philosopher, cultural historian, logician. Head of the neo-Kantian trend in German philosophy. One of the founders of semiotics.
45. Ach, Narciss (1871-1946), see Vol. 2, p. 483. For more details on the attitude of Vygotsky toward the works of Ach, see *Thinking and Speech*, Vol. 2, pp. 118-184.
46. Wertheimer, Max (1880-1943), see Vol. 1, p. 460.
47. Vygotsky imprecisely cites the words of F. Engels from *Dialectics of Nature*. The precise text is: "The fact is that to everyone who is involved in theoretical problems, the results of contemporary natural science intrude with the same urgency as natural science investigators—whether they want to or not—are forced to come to general theoretical conclusions." K. Marx and F. Engels, *Works*, Vol. 20, p. 366.
48. In view here is the following statement of J. W. Goethe: "Nature is unknowable because one person is not in a state to understand it although all of humanity might be able to understand it. But since this dear humanity is never all together, then nature can very successfully play hide and seek with us." *Izbrannye Sochineniya po Estestvoznaniyu* [Collected Works on Natural Science], Moscow, 1957, p. 400.
49. Kretschmer, Ernst (1888-1964), see Vol. 1, p. 464.
50. Krüger, Felix Emil (1874-1948), German psychologist, one of the leaders of the so-called Leipzig school. Works on the study of character, psychology of the personality, etc.
51. Leipzig school—one of the trends in German psychology of the 1920s. Also called "integral" (Ganzheit) psychology in contrast to Gestalt psychology. The principal participators worked at Leipzig University.
52. Müller, Johannes Peter (1801-1858), German physiologist and psychologist, one of the founders of physiology as an independent science.
53. Holmes, Gordon Morgan (1876-1962), English physiologist, neurologist.
54. The plan is not in Vygotsky's manuscript.
55. Woodworth, Robert (1869-1962), American psychologist.
56. Kiril'tsev, Sergei Ivanovich (1858-?), Russian physician and physiologist.
57. Tilney, Frederick (1875-1938), American psychologist, physiologist, neurologist, defectologist.

58. Jackson, John (1835-1911), English neurologist, physiologist, one of the founders of modern neurology. Cited after W. B. Cannon, p. 118.
59. Lange, Nikolai Nikolaevich (1858-1921), see Vol. 1, p. 460.
60. Vygotsky has in view the following position of Kretschmer: "Hysterical symptoms are forms of reactions of a phylogenetically preexisting impulsive mental base" (1924, p. 8).
61. Archer, William (1856-1924), English drama critic.
62. Vygotsky has in view the following point in the work of H. Heine "On the History of Religion and Philosophy in Germany": "Great genius is formed with the help of another genius not so much by assimilation as through friction. Precisely so the philosophy of Descartes did not at all engender the philosophy of Spinoza, but only facilitated its appearance. For this reason, at the beginning, we meet the methods of the teacher in the student" (*Works*, Moscow, 1958, Vol. 6, p. 64).
63. Fischer, K. (1824-1907), German philosopher, Hegel follower, author of *The History of Philosophy* in six volumes (1852-1877).
64. "Short treatise on God, Man, and His Happiness," the earliest of the known works of Spinoza (1658-1660).
65. According to Descartes, the six basic forms of passions are astonishment, love, hatred, desire, joy, and grief.
66. Petzoldt, Josef (1862-1929), see Vol. 1, p. 470.
67. Asmus, Valentin Ferdinandovich (1894-1975), Soviet philosopher, logician, cultural historian.
68. *Treatise on Passions . . .*, or *Passions of the Soul*, works of Descartes (1646-1649).
69. "Teaching on the Origin and Nature of Affects" is the title of Section III of *Ethics*, Spinoza's principal work, finished in 1675.
70. "Teaching on the Power of the Mind or Human Freedom" is the title of Section V of *Ethics*.
71. Høffding, Harald (1843-1931), Danish philosopher, historian of philosophy, and psychologist. See also Vol. 3, p. 357.
72. Nahlowsky, Josef Wilhelm (1812-1885), German philosopher, specialist in the area of ethics.
73. Herbart, Johann Friedrich (1776-1841), German philosopher, psychologist, one of the founders of scientific pedagogy. See also Vol. 1, p. 466.
74. This expression of Spinoza (*Ethics*, Theorem 17, Scholia) belongs to the number of favorite comparisons of Vygotsky. He concludes "The Historical Meaning of the Crisis in Psychology" with this specifically (Vol. 1, p. 436).
75. Irons, David (1870-1907), American psychologist and philosopher, specialist in the area of ethics and emotions.
76. Larguier des Bancels, Jean (1876-?), French psychologist, specialist in the area of the study of temperament and emotions.
77. Ribot, Theophil (1839-1916), see Vol. 1, p. 463.
78. Brett, George Sidney (1879-1944), Canadian historian of psychology.
79. Münsterberg, Hugo (1863-1916), German psychologist. For Vygotsky's detailed evaluation of his methodological views, see "The Historical Meaning of the Crisis in Psychology" (Vol. 1, pp. 291-436).
80. Spearman, Charles Edward (1863-1945), English psychologist, specialist in the psychology of thinking, individual differences, and testology.
81. Vygotsky has in view the following points in the book of K. G. Lange, *Mental Movements*: about Spinoza: "Spinoza may be closer than anyone, perhaps, to his view of emotions" (p. 89); on Descartes: "Descartes defines joy by consciousness that the subject enjoys its blessing, but we will not find out from

him exactly what joy itself is" (p. 82). See Descartes, *Passions of the Soul*, Chapter 1, §§35-36. The same is true of C. G. Lange's book *Mental Movements*: grief (pp. 23-28), joy (pp. 28-31), fear (pp. 31-37), anger and rage (pp. 37-44), impatience (p. 44), disillusionment (p. 45).

82. Spranger, Edward (1882-1939), see Vol. 1, p. 465.
83. Dilthey, Wilhelm (1833-1911), German philosopher and cultural historian to whom can be traced the idea of philosophy of life as one of the idealistic trends. He proposed a plan for creating descriptive or cognitive psychology. See also Vol. 1, p. 465.
84. For the relation of explanatory and descriptive psychology from Vygotsky's point of view, see "The Historical Meaning of the Crisis in Psychology" (Vol. 1, pp. 291-431); "History of the Development of Higher Mental Functions" (Vol. 3, pp. 6-41).
85. Elizabeth von der Pfalz (1618-1680), princess, daughter of the Pfalz elector, granddaughter of Maria Stewart. She conducted a lively correspondence with Descartes, which played a role in his developing the *Treatise on the Passions* . . . .
86. In view here is the following position of I. Kant (*Anthropology*, Book 3, §71): "To be subject to facts and passions—this is, in any case, a mental illness because both the one mental movement and the other exclude the mind's control.
87. Mantegazza, Paolo (1831-1910), Italian physician, anthropologist, philosopher, psychologist.
88. Piderit, Theodor (1826-1898), German psychologist, physiologist.
89. Prince, Morton (1854-1929), American psychiatrist, specialist in pathopsychology and psychology of individual differences.
90. Emergent ("emergent"—arising unexpectedly) evolution: the conception that considers development as a stepwise process in which the appearance of higher qualities is promoted by the interference of incomprehensible forces. The developed conception of emergent evolution is presented in the works of S. Alexander, *Space, Time and Deity* (1927), and C. Lloyd-Morgan, *Emergent Evolution* (1927).
91. Cf. Descartes, *Metaphysical Thought*, "Thought 6."
92. Cf. Descartes, *Metaphysical Thought*, "Thought 2."
93. Cf. Descartes, *Metaphysical Thought*, "Thought 2."
94. St. Augustine, Aurelius (354-430), Christian theologian who, on the basis of idealistic, free-will philosophy, developed a teaching on mental processes. See also Vol. 2, p. 488.
95. Vygotsky has in view an interpretation of the work of Maxwell, *Substance and Movement* (§78), translated by H. Høffding (1904, p. 60).
96. In view here is the following statement of Aristotle: "For now and heretofore, astonishment stimulates people to philosophize" (*Metaphysics*, Part 1, Chapter 2). Cf. Descartes, R., *Passions of the Soul*, Part II, §§69-76; Part III, §§211-212).
97. Descartes, R., *Passions of the Soul*, Part II, §75.
98. Kechek'yan, Stepan Fedorovich (1890-1967), Soviet philosopher and jurist.
99. Spinoza, B., *Political Treatise*, Chapter 2, §11.
100. See Descartes, R., *Passions of the Soul*, Part III, §§211-212.
101. In view here is the monologue of Salieri in the first scene of Pushkin's tragedy *Mozart and Salieri*: "I stifled sounds/And then dissected music like a corpse."
102. St. Teresa (1515-1582), Spanish nun. When she lived, she was victimized by the Inquisition, but in 1622, she was enrolled by the Catholic Church in the ranks of the saints; she is considered the patron saint of Spain.
103. Janet, Pierre (1859-1947), see Vol. 2, p. 482.
104. Bain, Alexander (1818-1903), see Vol. 1, pp. 465-466.

105. Having finished the work *Thoughts on the First Philosophy* (1636-1640), at the end of 1640 Descartes sent the manuscript to a number of people, including the eminent English philosopher, T. Hobbes (1588-1679), who was then living in Paris. In January-February 1641, Hobbes sent his comments to Descartes. Criticizing Descartes from a materialistic position, Hobbes wrote that the subject of thinking is the body that thinks, and thinking is an activity or property of that body. The spirit is not an independent substance: clear ideas of the spirit rise to clear impressions of the organs of sensory perception. Descartes included Hobbes' critical comments (like those of other opponents) and the response to them in the first edition of *Thought* (1641).
106. This pertains to Christina Augusta (1626-1689), Queen of Sweden in 1632-1654, In 1646, a friend of Descartes, Chanut, who lived in Sweden, sent Descartes the queen's questions. In February, 1647, Descartes wrote the response which is the subject here.
107. Stout, George Frederick (1860-1944), English philosopher-idealist, representative of the so-called analytical psychology.
108. See Descartes, R., *Metaphysical Thought*, Thought 6.
109. In view here is the comedy of A. P. Chekhov, *The Cherry Orchard*, Act 4. From the last retort of Fiers (going to the door, and pulling the knob): "It's locked. They left . . . (he sits down on the sofa). They forgot me . . . ." The graphic expression "they forgot the man" refers to a favorite expression of Vygotsky. He uses it especially in "History of the Development of Higher Mental Functions," Vol. 3, p. 72.
110. There is no special work of Descartes under this title. In Descartes' *On the Formation of the Animal. Description of the Human Body* (1648), Section 4 is titled, "On the Formation of the Embryo; on the Parts Formed in the Sperm."
111. Freud, Sigmund (1856-1939), see Vol. 1, p. 462.
112. Scheler, Max Ferdinand (1872-1928), German philosopher-idealist and psychologist.
113. Schopenhauer, Artur (1788-1860), German philosopher-idealist who considered a "peaceful will" as the metaphysical basis for a peaceful existence.
114. This refers to the famous part of Plato's dialogue *Phaedo* (the time of the action is 399 B.C. and the time of the writing of the dialogue is the second half of the 480s and first half of the 470s B.C.); the *Phaedo* is the concluding part of a triptych, the first two parts of which are the *Apology of Socrates* and *Crito*. The *Phaedo* (Phaedo of Elida, pupil and friend of Socrates) dialogue recounts the last days of Socrates, his discussion with students, and his death. Socrates argues with Anaxagoras of Clazomenae, ancient Greece (circa 500-428 B.C.), a naturalist-philosopher of the materialistic trend. Socrates says that Anaxagoras ascribes the order of things—completely absurdly—to air, ether, water, and many other things, and he continues (cited according to modern translation): "In my view, it does not matter whether someone would state that Socrates was bound in all his actions to Mind, and then, undertaking to explain the reason for each of the actions separately, would say: 'Socrates is now sitting here because his body consists of bones and sinews and bones are hard and separated from each other by joints, and sinews can bend and relax and surround the bones—together with flesh and skin, which encloses everything. And since the bones move freely in their joints and sinews, relaxing and tensing, they allow Socrates to bend his legs and arms. This is why he is now stooped and sitting here (Editor: in jail).' No, to call such things causes is complete nonsense. If someone were to say that without this—without bones, sinews and everything else that I command, I would not be able to do what I

consider necessary, he would be right. But to maintain that they are the cause of everything I do . . . is not to distinguish between the true cause and that without which cause could not be cause" (Plato, *Works*, 3 Vols., Moscow, 1970, Vol. 2, p. 68).

115. Brentano, Franz (1838-1917), see Vol. 1, p. 465. One of the predecessors of the idealistic trend in functional psychology and phenomenology.
116. Phänder, Alexander (1870-1941), see Vol. 1, p. 471.
117. Geiger, Moritz (1880-?), German philosopher and psychologist who worked in the area of aesthetics.
118. In view here is the following idea of Dilthey: "True, in the study of expressive movements and symbols of conceptions for mental states, new auxiliary means are being discovered; but especially the comparative method, which introduces simpler relations between feelings and motives in animals and primitive peoples, makes it possible to go beyond the limits of the anthropology of the 17th century" (1924, p. 57).
119. In view here is the work of Malebranche, *Searching for the Truth* (1674).
120. Natorp, Paul Gerhardt (1854-1924), see Vol. 1, p. 471. His basic works were in the area of logic and pedagogy.
121. Bellot, Gustav (1859-1929), French philosopher, specialist in the area of ethics and the psychology of religion.

On the Problem of the Psychology of the Actor's Creative Work

1. This paper was written in 1932. First published in the book: P. M. Yakobson, Psikhologiya stsenicheskikh chuvstv aktera [Psychology of the Stage Feelings of the Actor], Moscow, 1936, pp. 197-211.
2. Diderot, Denis (1713-1784), French philosopher, educator, author of several comedies. *Paradox of the Actor* (1770-1773, final edition 1778, was first published in 1830) is a consideration of the nature of the actor's craft, written in the dialogue form, which Diderot favored. This was inspired by an unknown author's brochure on the eminent English actor, Garrick, a brochure which Diderot disputes.
3. Clairon, pseudonym of Claire Hippolyte Leyris de la Tudi (1723-1803), French dramatic actress who appeared in the tragedies of Voltaire and Racine. Diderot believed that Clairon did not identify with the personages she portrayed.
4. Dumenille, pseudonym, real surname Marchand, Marie Francoise (1711-1803), French dramatic actress who appeared in the tragedies of Racine, Corneille and Voltaire. Diderot compared her to Clairon and believed that Dumenille did identify with her heroines.
5. *Three Sisters*, a play by A. P. Chekhov, was first presented in the Moscow Arts Theater (produced by K. S. Stanislavsky and V. I. Nemirovich-Danchenko) in 1901.
6. Paulhan, Frederick (1856-1931), see Vol. 2, p. 488. For more details on Vygotsky's attitude toward his work, see *Thinking and Speech*, Vol. 2, pp. 5-361.
7. Vakhtangov, Evgenii Bagrationovich (1883-1922), Russian Soviet director, pupil of Stanislavsky. In 1913, he founded the Students' Studio of the Moscow Arts Theater, later renamed the Third Studio, and in 1921, a theater (as of 1926, the Evg. Vakhtangov Theater).

8. *Princess Turandot*, a play by Carlo Gozzi (1762), a subject borrowed from Nisami through Lesage, was rehearsed in the Vakhtangov studio from 1920, premiered in 1922, and since that time has been part of the repertoire of the Evg. Vakhtangov Theater as a season opener.
9. Zakhava, B. E. (1896-1976), Soviet actor, director, historian, and theoretician of the theater and pedagogue. He was a pupil of Vakhtangov.
10. The statements of Stanislavsky cited here and below are manuscript materials from his archive. Vygotsky cites from the book of L. Ya. Gurevich (1927).
11. Gurevich, Lyubov' Yakovlevna (1866-1940), Russian Soviet writer, translator, and historian of the theater.
12. The book of L. Ya. Gurevich, *Creativity of the Actor*, was subtitled, "Resolution of an Age-Old Argument." Gurevich defined the substance of the argument thus: is it or is it not necessary for an actor "to pretend" on the stage (p. 5).

REFERENCES

Asmus, V. F. (1929). *Ocherki Istorii Dialektiki v Novoi Filosofii* [Notes on the History of Dialectics in the New Philosophy]. Moscow-Leningrad.

Bekhterev, V. M., Vasil'ev, L. L., and Verbov, A. F. (1926). *Refleksologiya Truda* [Reflexology of Work]. Moscow-Leningrad.

Bergson, H. (1911). *Materiya i Pamyat'* [Material and Memory]. St. Petersburg.

Blonsky, P. P. (1921). *Ocherk Nauchnoi Psikhologii* [Outline of Scientific Psychology]. Moscow.

Cannon, W. (1927). *Fiziologiya Emotsii* [Physiology of Emotions]. Leningrad.

Chelpanov, G. I. (1917). Ob analiticheskom metode v psikhologii [Analytical method in psychology]. *Psikhologicheskoe Obozrenie, No. 1* [Psychological Review, No. 1].

Creed, R., Denny-Brown, D., Eccles, J., et al. (1935). *Reflektornaya Deyatel'nost' Spinnogo Mozga* [Reflex Activity of the Spinal Cord]. Moscow-Leningrad.

Descartes, R. (1914). *Sochineniya (T. 1)* [Works (Vol. 1)], Kazan'.

Diderot, D. (1936). *Sochineniya (T. 5)* [Works, (Vol. 5)]. Moscow.

Dilthey, W. (1924). *Opisatel'naya Psikhologiya* [Descriptive Psychology]. Moscow.

Fischer, K. (1906). *Istoriya Novoi Filosofii, T. 1, 2* [History of the New Philosophy, Vols. 1, 2]. St. Petersburg.

Frolov, Yu. P. (1925). *Fiziologicheskaya Priroda Instinkta* [Physiological Nature of Instinct]. Moscow-Leningrad.

Gurevich, L. Ya. (1927). *Tvorchestvo Aktera* [Creativity of the Actor]. Moscow-Leningrad.

Høffding, H. (1904). *Ocherki Psikhologii, Osnovannoi na Opyte* [Notes on Psychology Based on Experiment]. St. Petersburg.

Ivanovsky, V. N. (1923). *Metodologicheskoe Vvedenie v Nauku i Filosofiyu* [Methodological Introduction to Science and Philosophy]. Minsk.

James, W. (1902). *Psikhologiya* [Psychology]. St. Petersburg.

Jameson, D. (1925). *Ocherk Marksistskoi Psikhologii* [Outline of Marxist Psychology]. Moscow.

Kechek'yan, S. F. (1914). *Eticheskoe Mirosozertsanie Spinozy* [Ethical World View of Spinoza]. Moscow.

Köhler, W. (1930). *Issledovanie Intellekta Chelovekopodobnykh Obez'yan* [Study of the Intellect of Human-like Simians]. Moscow.

Kornilov, K. N. (1922). *Uchenie o Reaktsiyakh Cheloveka* [Teaching on Human Reactions]. Moscow.

Külpe, O. (1916). Sovremennaya psikhologiya myshleniya [Contemporary psychology of thinking]. *Novye Idei v Filosofii, Vyp. 16* [New Ideas in Philosophy, Issue 16]. Petrograd.

Lange, K. G. (1896). *Dushevnye Dvizheniya* [Mental Movements]. St. Petersburg.

Lange, N. N. (1914). *Psikhologiya* [Psychology]. Moscow.

Leont'ev, A. N. (1930). Razvitie pamyati [Development of memory]. *Trudy Psikhologicheskoi Akademii Kommunisticheskogo Vospitaniya, Vyp. 5* [Proceedings of the Psychological Academy of Communist Education, Issue 5].

Münsterberg, N. (1924). *Osnovy Psikhotekhniki, Ch. 1* [Fundamentals of Psychotechnique, Part 1]. Moscow.

Novoe v Refleksologii i Fiziologii Nervnoi Sistemy [Recent Developments in Reflexology and Physiology of the Nervous System]. (1925). Leningrad.

Petzoldt, J. (1909). *Problema Mira s Tochki Zreniya Positivizma* [The Problem of the World from the Point of View of Positivism]. St. Petersburg.

Radlov, E. L. (1920). *Ocherk Istorii Russkoi Filosofii* [Outline of the History of Russian Philosophy]. Petrograd.

Rechi i Privetstviya na Torzhestvennom Otkrytii Psikhologicheskogo Instituta im. Shchukinoi pri Imperatorskom Moskovskom Universitete [Speeches and Salutations at the Ceremonial Opening of the Shchukina Psychological Institute at the Imperial Moscow University]. (1914). Moscow.

Ribot, T. (1897). *Psikhologiya Chuvstv* [Psychology of Feelings]. Kharkov.

Sakharov, L. S. (1930). O metodakh issledovaniya [Research methods]. *Psikhologiya, No. 3* [Psychology, No. 3].
Sbornik Posvyashchennyi 75-letiyu I. P. Pavlova [Symposium in Honor of the 75th Anniversary of I. P. Pavlov]. (1924). Leningrad.
Sechenov, I. M. (1873). *Psikhologicheskie Etyudy* [Psychological Studies]. St. Petersburg.
Spinoza, B. (1933). *Etika* [Ethics]. Leningrad.
Spinoza, B. (1957). *Izbrannye Proizvedeniya, T. 1* [Selected Works, Vol. 1]. Moscow.
Stern, W. (1922). *Psikhologiya Rannego Detstva do Shestiletnego Vozrasta* [Psychology of Early Childhood to Age Six]. Petrograd.
Thorndike, E. (1925). *Printsipy Obucheniya, Osnovannye na Psikhologii* [Principles of Teaching Based on Psychology]. Moscow.
Titchener, E. B. (1914). *Uchebnik Psikhologii, Ch. II* [Psychology Text, Part II]. Moscow.
Trudy Pervogo Vserossiiskogo S'ezda po Pedagogicheskoi Psikhologii [Proceedings of the First All-Union Congress on Pedagogical Psychology] (1907). St. Petersburg.
Vvedensky, A. I. (1917). *Psikhologiya bez Vsyakoi Metafiziki* [Psychology without Any Metaphysics]. Petrograd.
Watson, J. (1926). *Psikhologiya kak Nauka o Povedenii* [Psychology as a Science of Behavior]. Moscow.
Ukhtomskii, A. A. (1923). Dominanta kak rabochii printsip nervnykh tsentrov [The dominant as the working principle of nerve centers]. *Russkii Fiziologicheskii Zhurnal, T. 7, Vyp. 1-3* [Russian Physiology Journal, Vol. 7, Nos. 1-3].
Zakhava, B. E. (1930). *Vakhtangov i Ego Studiya* [Vakhtangov and His Studio]. Moscow.

* * *

Ach, N. (1921). *Über die Begriffsbildung; eine experimentelle Untersuchung.* Bamberg.
Bard, P. A. (1928). A diencephalic mechanism for the expression of rage with special reference to the sympathetic nervous system. *Amer. J. Physiol.*, 84.
Bentley, I. M. (1928). Is emotion more than a chapter heading? In: *Feelings and Emotions,* pp. 18-23. Norcester.
Bogen, H., and Lipmann, O. (1923). *Naive Physik.* Leipzig.
Brentano, F. (1874). *Psychologie von empirischen Standpunkten.* Leipzig.
Brett, G. S. (1928). Historical development of the history of emotions. In: *Feelings and Emotions,* pp. 388-396. Norcester.
Cannon, W. B. (1925). Pseudaffective medulliadrenal secretion. *Amer. J. Physiol.*, 72.
Cannon, W. B. (1927). The dispensability of the sympathetic division of the autonomic system. *Boston Med. Surg. J.*, 197.
Cannon, W. B. (1927). The James–Lange theory of emotions. A critical examination and an alternative theory. *Amer. J. Psychol.*, 39.
Cannon, W. B. (1929). *Bodily Changes in Pain, Hunger, Fear and Rage*, 2nd ed., Boston.
Cannon, W. B. (1932). *The Wisdom of the Body.* London.
Cassirer, E. (1925). *Sprache und Mythos, ein Beitrag zum Problem der Götternamen.* Leipzig-Berlin.
Claperède, E. (1928). Feelings and emotions. In: *Feelings and Emotions,* pp. 124-139. Norcester.
Dana, C. (1921). The anatomic seat of the emotions. A discussion of the James–Lange theory. *Arch. Neurol. Psychiat.*, 6.
Dunlap, K. (1928), Emotion as a dynamic background. In: *Feelings and Emotions,* pp. 150-160. Norcester.
Head, H., and Holmes, G. (1911). Sensory disturbances from cerebral lesions. *Brain, No. 34.*
Irons, D. (1895). Descartes and modern theories of emotion. *Philos. Rev.*, 4.
Janes, P. (1928). *De l'Angoisse à l'Extase.* Paris.
Kafka, G. (1922). *Handbuch der vergleichenden Psychologie.* Munich.
Kirilcev, S. (1891). Cases of affections of the optic thalamus. Reviewed in: *Neurologischem Zentralblatt*, No. 10.
Lehmann, A. (1892). *Die Hauptgesetze des menschlichen Gefühlslebens.* Leipzig.
Lipmann, H. (1908). *Augsätze aus dem Apraxiebegiet.* Berlin.
Lotze, H. (1852). *Medizinische Psychologie der Seele.* Leipzig.
Maranon, G. (1924). Contribution à l'étude de l'action émotive de l'adrenaline. *Rev. Franc. d'Endocrinol.*, 2.
Morgan, C. L. (1900). *Animal Behavior.* London.
Müller, J. (1842). *Handbuch der Physiologie des Menchen.* London.
Münsterberg, H. (1918). *Grundlage der Psychologie.* Leipzig.
Nahlowsky, J. (1862). *Das Gefühlsleben.* Leipzig.
Newman, E. B., Perkins, F. T., and Wheeler, K. N. (1930). Cannon's theory of emotion. A critique. *Psychol. Rev.*, 37.
Perry, R. (1926). *General Theory of Value.*

Piderit, T. (1886). *Mimik und Physiognomik.* Detmold.
Pieron, H. (1920). La dynamogenie emotionelle. *J. Psychol.*, 17.
Prince, M. (1928). Can emotion be regarded as energy? In: *Feelings and Emotions,* pp. 161-169. Norcester.
Scheler, M. (1923). *Die Sinnegesetze des emotionalen Lebens.* Leipzig.
Spearman, C. E. (1928). A new method for investigating. The springs of action. In: *Feelings and Emotions.* Norcester.
Stern, W. (1917). *Die Psychologie und der Personalismus.* Leipzig.
Stern, W., and Stern, C. (1928). *Die Kindersprache.* Berlin.
Tilney F., and Morrison, J. F. (1912). Pseudobulbar palsy clinically and pathologically considered. *J. Ment. Nerv. Diseases*, No. 39.
Wells, F. L. (1925). Reactions to visual stimuli in affective settings. *J. Exper. Psychol.*, No. 8.
Wilson, S. A. K. (1924). Pathological laughing and crying. *J. Neurol. Psychopath.*, 4.
Woodworth R., and Sherrington, C. S. (1904). A pseudaffective reflex and its spinal path. *J. Physiol.*, No. 31.
Yerkes, R. (1916). *The Mental Life of Monkeys and Apes.* New York.
Yerkes, R. M., and Learned, E. W. (1925). *Chimpanzee Intelligence and Its Vocal Expression.* Baltimore.

WORKS OF L. S. VYGOTSKY

The bibliography of the works of L. S. Vygotsky includes titles of monographs, papers, reviews, forewords, lectures, reports, and speeches as well as the editing of a number of publications.

The multifaceted scientific-research and pedagogical activity of Vygotsky was reflected in numerous lectures and reports in academic institutions in Moscow, Leningrad, Kharkov, and Tashkent; he participated in many congresses, conferences, plena, and meetings. Manuscript texts of reports, speeches, and papers of Vygotsky which are not part of the present publication were found in archive sources.

It was possible to retrieve a number of papers of literary criticism which Vygotsky wrote when he was 19 to 22 years old. Vygotsky sometimes signed some papers and notes published in the journals *Letopis'* and *Novaja Zhizn'* in 1916-1922 as "L. S." or "L. V." Of the works that were found signed with these initials, only those are included in the bibliography whose authorship was established either by comparison with subsequent published work of the scientist or by a mention of these papers and notes found in the personal archive of Vygotsky.

The material in the bibliographic index is listed in chronological order according to the years in which the work was written; this will make it easier for the reader to trace the evolution of the scientific views of the scientist. In cases where the date of writing of the manuscript has not been established, the title is included in the bibliographic index of the year of publication. Within each year, the works are listed in [Russian] alphabetical order.

If the books or papers were published several times, all the editions are listed under the first publication with an indication of the nature of the change in the text.

The bibliography of the works of L. S. Vygotsky published abroad is in the form of a list of works according to the year of publication, and within the year the titles are listed in alphabetical order according to the Latin alphabet.

In compiling the bibliography, the following materials were used:

1. The general alphabetical and systematic catalogues, Central Reference Office and the Information-Bibliographic Department of the Lenin State Library of the USSR.
2. Newspapers, journals, and collections beginning with 1916.
3. Soviet bibliographic directories and chronicles.
4. *Psychological Abstracts,* Lancaster, American Psychological Association. 1931-1983, N 75, Vols. 1-70.
5. *Index Translationum*, Paris, UNESCO Press, Vols. 1-30.
6. Archive materials:
   (a) A. I. Herzen Pedagogical Institute, Leningrad.
   (b) Scientific-Research Institute of Defectology, Academy of Pedagogical Sci-

ences, USSR.
(c) Scientific-Research Institute of General and Pedagogical Psychology of the Academy of Pedagogical Sciences, USSR.
(d) State Archive of the Moscow Oblast'.
(e) Personal archive of L. S. Vygotsky preserved by the family of the scientist.
(f) Scientific archive of the Academy of Pedagogical Sciences of the USSR.

The present bibliography is compiled in accordance with the All-Union State Standard in effect for bibliographic description of printed works (GOST [All-Union Standard] 7.1.76* of 28 December, 1976, No. 2890. In effect as of 1 January, 1978).

This list of works, based on the "Bibliography of the Works of L. S. Vygotsky" (see *Voprosy Psikhologii* [Problems in Psychology], 1974, No. 3), is extended and supplemented by the same author.

1915

1. The Tragedy of Hamlet, the Prince of Denmark, W. Shakespeare. Personal archive of L. S. Vygotsky. Gomel, 5 August-12 September, 1915. Manuscript.

1916

2. Literary notes. *Peterburg* [St. Petersburg], a novel by Andrei Bely. *Novyi Put'* [New Way], 1916, No. 47, columns 27-32. Signed L. S. Vygotsky.
3. Review of *Peterburg* [St. Petersburg], Andrei Bely. *Letopis'* [Chronicle], 1916, No. 12, columns 327-328. Signed L. S.
4. Review of the book *Borozdy i Mezhi* [Furrows and Boundaries], Vjacheslav Ivanov. Moscow, Musatet, 1916. *Letopis'* [Chronicle], 1916, No. 10, pp. 351-352.
5. The Tragedy of Hamlet, the Prince of Denmark, W. Shakespeare. Personal archive of L. S. Vygotsky. Moscow, 14-28 February, 1916. Twelve notebooks. Manuscript. Ibid. in *Psikhologija Iskusstva* [Psychology of Art], L. S. Vygotsky, second edition, edited and supplemented. Moscow, Iskusstvo, 1968, pp. 339-496.

1917

6. Review of the book, *Budet Radost'* [There Will Be Joy], D. Merezhkovsky. St. Petersburg, Ogni, 1916. *Letopis'* [Chronicle], 1917, No. 1, pp. 309-310. Signed L. S.
7. Review of the foreword and notes of N. L. Brodsky to I. S. Turgenev's poem, *Pop* [The Priest]. Moscow, 1916. *Letopis'* [Chronicle], 1917, No. 5-6, pp. 366-367. Signed L. S.

1922

8. O metodakh prepodavanija khudozhestvenoi literatury v shkolakh II stupenii. [On methods of teaching literature in level II schools]. Personal archive of L. S. Vygotsky (Gomel?), 1922. 17 pp. Manuscript. Abstracts of Reports at the District Scientific-Methodological Conference, 7 August, 1922.

1923

9. Ob issledovanija protsessov ponimanija jazyka metodom mnogokratogo perevoda teksta s odnogo jazyka na drugoi [The study of processes of understanding language using the method of multiple translation of a text from one language to another]. Personal archive of L. S. Vygotsky. Gomel, 1923. 8 pp. Manuscript.

1924

10. *Voprosy Vospitanija Slepykh, Glukhonemykh i Umstvenno Otstalykh Detei* [Problems in Educating Blind, Deaf-Mute and Mentally Retarded Children], edited by L. S. Vygotsky. Moscow, Izd-vo SPON NKP, 1924, 157 pp.
11. Metodika refleksologicheskogo i psikhologicheskogo issledovanija [Methodology of reflexological and psychological research]. In *Problemy Sovremennoi Psikhologii* [Problems of Modern Psychology]. Leningrad, GIZ, 1926, Vol. 2, pp. 26-46. Proceedings of the All-Russia Congress on Psychoneurology, Leningrad, 1 January, 1924. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1982, Vol. 1, pp. 43-62.
12. K psikhologii i pedagogike detskoi defektivnosti. [Psychology and pedagogics of abnormality in children]. In *Voprosy Vospitanija Slepykh, Glukhonemykh i Umstvenno Otstalykh Detei* [Problems in Educating Blind, Deaf-Mute and Mentally Retarded Children]. Moscow, Izd-vo SPON NKP, 1924, pp. 5-30. Ibid. *Defektologija* [Defectology], 1974, No. 3, pp. 70-76. Ibid. (excerpt) in *Khrestomatija po Vozrastnoi i Pedagogicheskoi Psikhologii* [Readings in Developmental and Pedagogical Psychology]. Moscow, Izd-vo Mosk. Univ., 1980, pp. 24-35. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5, pp. 62-84.
13. Foreword to *Voprosy Vospitanija Slepykh, Glukhonemykh i Umstvenno Otstalykh Detei* [Problems in Educating Blind, Deaf-Mute and Mentally Retarded Children]. Moscow, Izd-vo SPON NKP, 1924, pp. 3-4.
14. Foreword to *Psikhologija Obshchaja i Eksperimental'naja* [General and Experimental Psychology], A. F. Lazursky. Leningrad, GIZ, 1925, pp. 5-23. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1982, Vol. 1, pp. 63-77.
15. Printsipy vospitanija fizicheski defektivnykh detei [Principles of educating physically handicapped children]. *Narodnoe Prosveshchnie* [National Education], 1925, No. 1, pp. 112-120; *Proceedings of the Second Congress of Social and Legal Protection of Minors, December 1924.* Ibid. second supplementary edition in *Puti Vospitanija Fizicheski Defektivnogo Rebenka* [Methods of Educating the Physically Handicapped Child]. Moscow, Izd-vo SPON NKP, 1926, pp. 7-

22. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5, pp. 49-62.

1925

16. O vspomogatel'noi shkole [The supplementary school]. Review of Vspomogatel'naja Shkola [The Supplementary School], A. N. Graborov. Leningrad, GIZ, 1925. *Narodnoe Prosveshchenie* [National Education], 1925, No. 9, pp. 170-171.
17. Foreword to *Po Tu Storony Printsipa Udovol'stvija* [This Side of the Pleasure Principle]. Moscow, Sovremennye Problemy, 1925, pp. 3-16. With A. R. Luria.
18. Printsipy sotsial'nogo vospitanija glukhonemykh [Principles of social rearing of deaf-mute children]. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5, pp. 101-114.
19. *Psikhologija Iskusstva* [Psychology of Art]. Moscow, Iskusstvo, 1965, 379 pp. Ibid. second edition, edited and supplemented. Moscow, Iskusstvo, 1968, 576 pp.
20. *Soznanie kak problema psikhologii povedenija* [Consciousness as a problem of the psychology of behavior]. In *Psikhologija i Marksizm* [Psychology and Marxism]. Moscow-Leningrad, GIZ, 1925, Vol. 1, pp. 175-198. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1982, Vol. 1, pp. 78-98.

1926

21. *Grafika A. Bykhovskogo* [Drawings of A. Bykhovsky]. Moscow, Sovremennaja Rossija, 1926, 22 pp. Text pp. 5-8.
22. Metody prepodavanija psikhologii. Programma kursa [Methods of teaching psychology. Course curriculum]. Moscow District State Archives, F. 948, op. 1, d. 613, 25 pp.
23. O vlijanii rechevogo ritma na dykhanie [Effect of speech rhythm on respiration]. In *Problemy Sovremennoi Psikhologii* [Problems of Modern Psychology]. Leningrad, GIZ, 1926, Vol. 2, pp. 169-173.
24. *Pedagogicheskaja Psikhologija* [Pedagogical Psychology]. Moscow, Rabotnik Prosveshchehnija, 1926, 348 pp. Ibid. (excerpt) in *Khrestomatija po Vozrastnoi i Pedagogicheskoi Psikhologii* [Readings in Developmental and Pedagogical Psychology]. Moscow, Izd-vo Mosk. Univ., 1980, pp. 49-52.
25. Po Povodu stat'i K. Koffki o samonabljudenii [Apropos of the paper of K. Koffka on self-observation]. In *Problemy Sovremennoi Psikhologii* [Problems of Modern Psychology]. Leningrad, GIZ, 1926, pp. 176-178. Ibid. Moscow, Izd-vo Mosk. Univ., 1972, 8 pp. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1982, Vol. 1, pp. 98-102.
26. Foreword to *Principy Obuchenija, Osnovannye na Psikhologii* [Principles of Teaching Based on Psychology]. Moscow, Rabotnik Prosveshchenija, 1926, pp. 5-23. Ibid. second edition, 1929, pp. 5-24. Ibid. third edition, 1930, pp. 5-24. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1982, Vol. 1, pp. 176-195.
27. Foreword to *Praktyka Eksperimental'noi Psikhologii, Pedagogiki i Psikhotekhniki* [Training in Experimental Psychology, Pedagogy and Psychotechnology]. Moscow, Voprosy Truda, 1926, pp. 3-5. With A. R. Luria.

28. Problema dominantnykh reaktsii [The problem of dominant reactions]. In *Problemy Sovremmenoi Psikhologii* [Problems of Modern Psychology]. Leningrad, GIZ, 1926, Vol. 2, pp. 100-123.
29. Review of *Psikhika Proletarskogo Rebenka* [The Mind of the Proletarian Child], Otto Ruele. Moscow-Leningrad, GIZ, 1926. Personal archive of L. S. Vygotsky, 1926, 3 pp. Manuscript.

1927

30. Biogeneticheskii zakon v psikhologii i pedagogike [Biogenetic law in psychology and pedagogy]. *BSE* [Great Soviet Encyclopedia], 1927, Vol. 6, pp. 275-279.
31. Defekt i sverkhkompensatsija [Defect and overcompensation]. In *Umstvennaja Otstalost', Slepota i Glukhonemota* [Mental Retardation, Blindness and Deafmuteness]. Moscow, Doloi Negramotnost', (1927?), pp. 51-76.
32. Istoricheskii smysl psikhologicheskogo krizisa [The historical meaning of the crisis in psychology]. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1982, Vol. 1, pp. 291-436. Ibid. in *Istorija Sovetskoi Psikhologii Truda* [The History of Soviet Psychology of Work]. Moscow. Izd-vo Mosk. Univ., 1983, pp. 58-61. Partial.
33. *Praktikum po Eksperimental'noi Psikhologii* [Laboratory Course in Experimental Psychology]. Moscow-Leningrad, GIZ, 1927, 231 pp. With V. A. Artemova, N. A. Bernshtein, N. F. Dobrynin, and A. R. Luria.
34. *Psikhologicheskaja Khrestomatija* [Readings in Psychology]. Moscow-Leningrad, GIZ, 1927, 432 pp. With V. A. Artemov, I. F. Dobrynin, and A. R. Luria.
35. Review of *Metodika Psikhologicheskikh Nabljudenii za Det'mi* [Methodology of Psychological Observation of Children], M. Ja. Basov. Moscow-Leningrad, GIZ, 1926. *Narodnyi Uchitel'* [National Teacher], 1927, No. 1, p. 152.
36. Sovremennaja psikhologija i iskusstvo [Modern psychology and art]. *Sovetskoe Iskusstvo* [Soviet Art], 1927, No. 8, pp. 5-8; 1928, No. 1, pp. 5-7.

1928

37. Anomalii kul'turnogo razvitija rebenka [Anomalies in the cultural development of the child]. *Voprosy Defektologii* [Problems in Defectology], 1929 (publ. 1930), No. 2 (8), pp. 106-107. Brief summary of the report at the meeting of the Defectology Division of the Institute of Scientific Pedagogy at the Second Moscow State University, 28 April, 1928. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5, pp. 326-327.
38. Bikheviorizm [Behaviorism]. *BME* [Great Medical Encyclopedia], 1928, Vol. 3, columns 483-486.
39. Bol'nye deti [Sick children]. *Pedagogicheskaja Entsiklopedija* [Pedagogical Encyclopedia], 1928, Vol. 2, columns 396-397.
40. Voljuntarizm [Voluntarism]. *BME* [Great Medical Encyclopedia], 1928, Vol. 5, columns 588-589.
41. Volja i ee rasstroistva [The will and its disorders]. *BME* [Great Medical Encyclopedia], 1928, Vol. 5, columns 590-600.
42. Vospitanie slepogluknonemykh detei [Education of blind, deaf-mute children]. *Pedagoigicheskaja Entsiklopedija* [Pedagogical Encyclopedia], 1928, Vol. 2, columns 395-396.

43. Presentation at a conference on problems of methodology of teaching in a pedagogical technical school, 10 April, 1928. Moscow District State Archives, F. 948, op. 1, d. 775, pp. 13-15.
44. Genezis kul'turnykh form povedenija [Genesis of cultural forms of behavior]. Personal archive of L. S. Vygotsky, 28 pp. Stenographic record of lecture, 7 December, 1928.
45. Defekt i kompensatsija [Defect and compensation], *Pedagogicheskaja Entsiklopedija* [Pedagogical Encyclopedia], 1928, Vol. 2, columns 391-392.
46. Instrumental'nyi metod v pedologii [Instrumental method in pedology]. In *Osnovnye Problemy Pedologii v SSSR* [Basic Problems in Pedology in the USSR]. Moscow, 1928, pp. 158-159.
47. Itogi s'ezda [Congress proceedings]. *Narodnoe Prosveshchenie* [National Education], 1928, No. 2, pp. 56-67. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5, pp. 327-328.
48. Kaleki [Cripples]. *Pedagogicheskaja Entsiklopedija* [Pedagogical Encyclopedia], 1928, Vol. 2, column 396.
49. K voprosu o dinamike detskogo kharaktera [The problem of the dynamics of child character]. In *Pedologija i Vospitanie* [Pedology and Education]. Moscow, Rabotnik Prosveshchenija, 1928, pp. 99-119. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5, pp. 153-165.
50. K voprosu o dlitel'nosti detstva umstvenno otstalogo rebenka [The problem of duration of childhood of the mentally retarded child]. *Voprosy Defektologii* [Problems in Defectology], 1929 (publ. 1930), No. 2(8), p. 111. Brief summary of the report at the meeting of the Division of Defectology of the Institute of Scientific Pedagogy at the Second Moscow State Universtiy, 18 December, 1928. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5, pp. 328-329.
51. K voprosu o mnogojazychii v detskom vozraste [The problem of being multilingual in childhood]. In *Umstvennoe Razvitie Detei v Protsesse Obuchenija* [Mental Development of Children in the Process of Teaching], L. S. Vygotsky. Moscow-Leningrad, Uchpedgiz, 1935, pp. 53-72. Ibid. (excerpt) in *Khrestomatija po Vozrastnoi i Pedagogicheskoi Psikhologii* [Readings in Developmental and Pedagogical Psychology]. Moscow, Izd-vo Mosk. Univ., 1980, pp. 67-72. Ibid. (abbreviated) *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 3. pp. 329-337.
52. Lectures on developmental psychology. Personal archive of L. S. Vygotsky, 1928, 54 pp. Stenographic record of lectures at the Academy of Communist Education. Content: Development of behavior. Structure and function of cultural operations of the child. etc.
53. Metody izuchenija umstvenno otstalogo rebenka [Methods of studying the mentally retarded child]. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols]. Moscow, Pedagogika, 1983, Vol. 5, pp. 325-326. Abstracts of reports at the First All-Russia Conference of Workers of Supplementary Schools.
54. Na perekrestkakh sovetskoi i zarubezhnoi pedagogiki [At the crossroads of Soviet and foreign pedagogy]. *Voprosy Defektologii* [Problems in Defectology], 1928, No. 1, pp. 18-26.
55. Pamjati V. M. Bekhtereva [Memories of V. M. Bekhterev]. *Narodnoe Prosveshchenie* [National Education], 1928, No. 2, pp. 68-70.
56. *Pedologija Shkol'nogo Vozrasta* [School-Age Pedology]. Moscow, Izd-vo BZO pri Pedfake 2-go MGU, 1928, 218 pp. Assignment Nos. 1-8.
57. Problema kul'turnogo razvitija rebenka [The problem of the cultural development of the child]. *Pedologija* [Pedology], No. 1, pp. 58-77.

58. Psikhologicheskaja nauka v SSSR [Psychological science in the USSR]. In *Obshchestvennye Nauki v SSSR (1917-1927)* [Social Sciences in the USSR (1917-1927)]. Moscow, Rabotnik Prosveshchenija, 1928, pp. 25-46.
59. Psikhologicheskoe osnovy vospitanija i obuchenija glukhonemogo rebenka [Psychological bases for the rearing and teaching of the deaf-mute child]. *Pedagogicheskaja Entsiklopedija* [Pedagogical Encyclopedia], 1928, Vol. 2, column 395.
60. Psikhologicheskoe osnovy vospitanija i obuchenija slepogo rebenka [Psychological bases for rearing and teaching the blind child]. *Pedagogicheskaja Entsiklopedija* [Pedagogical Encyclopedia], 1928, Vol. 2, columns 394-395.
61. Psikhologicheskoe osnovy vospitanija rebenka s defektom [Psychological Bases for Rearing an Abnormal Child]. *Pedagogicheskaja Entsiklopedija* [Pedagogical Encyclopedia], 1928, Vol. 2, columns 392-393.
62. Razvitie trudnogo rebenka i ego izuchenie [Development of the difficult child and studying him]. In *Osnovnye Problemy Pedologii v SSSR* [Basic Problems in Pedology in the USSR]. Moscow, 1928, pp. 132-136. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5, pp. 175-180.
63. Rebenok s defektom i normal'nyi [The abnormal and the normal child]. *Pedagogicheskaja Entsiklopedija* [Pedagogical Encyclopedia], 1928, Vol. 2, column 398.
64. Sotsial'no-psikhologicheskaja osnova vospitanija rebenka s defektom [Social-psychological basis of rearing an abnormal child]. *Pedagogicheskaja Entsiklopedija* [Pedagogical Encyclopedia], 1928, Vol. 2, columns 393-394.
65. Tri osnovnykh tipa defekta [Three basic types of abnormalities]. *Pedagogicheskaja Entsiklopedija* [Pedagogical Encyclopedia], 1928, Vol. 2, column 392.
66. Trudnoe detstvo [Difficult childhood]. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5, pp. 137-149.
67. Umstvenno otstalye deti [Mentally retarded children]. *Pedagogicheskaja Entsiklopedija* [Pedagogical Encyclopedia], 1928, Vol. 2, columns 397-398.

1929

68. Vystuplenija po dokladam (ob anomal'nom detstve) Lectures on reports (on anomalous childhood). *Voprosy Defektologii* [Problems in Defectology], 1929 (publ. 1930). No. 2(8), pp. 108-112. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5, pp. 331-332. Abbreviated.
69. Geneticheskie korni myshlenija i rechi [Genetic roots of thinking and speech]. *Estestvoznanie i Marksizm* [Natural Science and Marxism], 1929, No. 1, pp. 106-133.
70. Genial'nost' [Genius]. *BME* [Great Medical Encyclopedia], 1929, Vol. 6, columns 612-613.
71. K voprosu o plane nauchno-issledovatel'skoi raboty po pedologii natsional'nykh men'shinstv [The problem of scientific-research work on pedology of national minorities]. *Pedologija* [Pedology], 1929, No. 3, pp. 367-377.
72. K voprosu ob intellekte antropoidov v svjazi s rabotami V. Kelera [The problem of intellect of anthropoids in connection with the work of W. Köhler]. *Estestvoznanie i Marksizm* [Natural Science and Marxism], 1929, No. 2, pp. 131-153.

73. O nekotorykh metodologicheskikh voprosakh [Certain methodological problems]. Nauchnyi Arkhiv APN SSSR [Scientific Archive of the Academy of Pedagogical Sciences of the USSR], F. 4, op. 1, ed. khr. 103, pp. 51-52; 73-74. Abstracts of Reports at the Institute of Scientific Pedagogy at the Second Moscow State University, 1929.
74. Osnovnye polozhenija plana pedologicheskoi issledovatel'skoi raboty v oblasti trudnogo detstva [Basic assumptions of the plan for pedological research in the area of difficult childhood]. *Pedologija* [Pedology], 1929, No. 3, pp. 333-342. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5, pp. 188-195.
75. Osnovnye problemy sovremennoi defektologii [Basic problems in modern defektology]. *Trudy 2-go MGU* [Proceedings of the Second Moscow State University], 1929, Vol. 1, pp. 77-106. Report to the Defectology Section of the Institute of Scientific Pedagogy at the Second Moscow State University. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5, pp. 6-33.
76. Ocherk (istorija) kul'turnogo razvitija normal'nogo i nenormal'nogo rebenka [Outline (history) of the cultural development of the normal and the abnormal child]. Personal archive of L. S. Vygotsky, 1929-1930. Manuscript. Predystorija pis'mennoi rechi [Prehistory of written speech]. In *Umstvennoe Razvitie Detei v Protsesse Obuchenija* [Mental Development of Children in the Process of Teaching]. Moscow-Leningrad, Uchpedgiz, 1935, pp. 73-95. Chapter 7 of the manuscript. Ibid. in *Khrestomatija po Vozrastnoi i Pedagogicheskoi Psikhologii* [Readings in Developmental and Pedagogical Psychology]. Moscow, Izd-vo Mosk. Univ., 1980, pp. 72-81. Razvitie lichnosti i mirovozzrenija rebenka [Development of personality and world view of the child]. In *Psikhologija Lichnosti. Teksty* [Psychology of Personality. Texts]. Moscow, Izd-vo Mosk. Univ., 1982, pp. 161-165. Chapter 16 of manuscript.
77. *Pedologija Podrostka* [Pedology of the Adolescent]. Moscow, Izd-vo BZO pri Pedfake 2-go MGU, 1929, 172 pp. Assignments 1-4 and 5-8. As manuscript. Contents: Introduction. Sexual maturation.
78. *Predmet i Metody Sovremennoi Psikhologii* [Subject Matter and Methods of Modern Psychology], edited by L. S. Vygotsky. Moscow, Izd-vo BZO pri Pedfake 2-go MGU, 1929, 191 pp.
79. Problema kul'turnogo vozrasta [The problem of cultural age]. Personal archive of L. S. Vygotsky, 1929, 18 pp. Stenographic record of lecture, 15 February, 1929.
80. Razvitie aktivnogo vnimanija v detskom vozraste [Development of active attention during childhood]. In *Voprosy Marksistskoi Pedagogiki. Trudy AKV* [Problems in Marxist Pedagogy. Proceedings of the Academy of Communist Education]. Moscow, 1929, No. 1, pp. 112-114. Ibid. with the title: Razvitie vysshikh form vnimanija v detskom vozraste [Development of higher forms of attention during childhood]. In *Izbrannye Psikhologicheskie Issledovnija* [Collected Psychological Studies]. Moscow, Izd-vo APN RSFSR, 1956, pp. 389-426. Ibid. in *Khrestomatija po Vnimaniju* [Readings on Attention]. Moscow, Izd-vo Mosk. Univ., 1976, pp. 184-192.
81. Review of *Shkol'naja Dramaticheskaja Rabota na Osnove Issledovanija Detskogo Tvorchestva* [Theater Work in School Based on Study of Children's Creativity], N. Dmitrieva, N. Ol'denburg, and L. Perekrestova. Moscow-Leningrad, GIZ, 1928. *Iskusstvo v Shkole* [Art in School], 1929, No. 8, pp. 29-31.

82. Review of *Sovremennye Uspekhi Zoopsikhologii* [Current Achievements in Zoopsychology], D. N. Kashkarov. Moscow, GIZ, 1928. *Estestvoznanie i Marksizm* [Natural Science and Marxism], 1929, No. 3, pp. 185-192.
83. Review of *Die Kindersprache*, Cl. and W. Stern. Leipzig, 1928. *Estestvoznanie i Marksizm* [Natural Science and Marxism], 1929, No. 3, pp. 185-192.
84. Review of *O Merakh Pedagogicheskogo Vozdeistvija* [Measures of Pedagogical Results], S. M. Rives. Moscow, Rabotnik Prosveshchenija, 1929, *Pedologija* [Pedology], 1929, No. 4, pp. 645-646.
85. Struktura interesov v perekhodnom vozraste i interesy rabochego podrostka [Structure of interests at the transitional age and interests of the employed adolescent]. In *Voprosy Pedologii Rabochego Podrostka* [Problems in Pedology of the Adolescent]. Moscow, Izd-vo Inst. Povysh. Kvalif. Pedag., 1929, No. 4, pp. 25-68.

1930

86. *Issledovanie Pedagogicheskogo Protsessa dlja Uchitelei* [A Study of the Pedagogical Process for Teachers], B. R. Buckingham, edited by L. S. Vygotsky and A. A. Nusenbaum. Moscow, Rabotnik Prosveshchenija, 1930, 341 pp.
87. Biologicheskaja osnova affekta [Biological basis of affect]. *Khochu Vse Znat'* [I Want to Know Everything], 1930, No. 15-16, pp. 480-481.
88. *Ocherk Dukhovnogo Razvitija Rebenka* [Outline of the Mental Development of the Child], K. Bühler, edited by L. S. Vygotsky. Moscow, Rabotnik Prosveshchenija, 1930, 222 pp.
89. Vvedenie k materialam, sobrannym sotrudnikami In-ta Nauch. Pedagogiki, 13 Apr. 1930 [Introduction to materials collected by colleagues at the Institute of Scientific Pedagogy, 13 April 1930]. Scientific Archive of the Academy of Pedagogical Sciences of the USSR, F. 4, op. 1, ed. khr. 103, pp. 81-82a.
90. Vozmozhno li simulirovat' vydajushchujusja pamjat'? [Is it possible to simulate outstanding memory?]. *Khochu Vse Znat'* [I Want to Know Everything], 1930, No. 24, pp. 700-703.
91. *Voobrazhenie i Tvorchestvo v Shkol'nom Vozraste* [Imagination and Creativity during School Years]. Moscow-Leningrad, GIZ, 1930, 80 pp. Ibid. second edition. Moscow, Prosveshchenie, 1967, 93 pp.
92. *Vopsory Defektologii* [Problems of Defectology], edited by L. S. Vygotsky, D. I. Azbukin, and L. V. Zankov. Moscow, 1930, No. 6, 157 pp.
93. Vstupitel'naja stat'ja [Introductory paper]. In *Ocherk Dukhovnogo Razvitija Rebenka* [Outline of the Mental Development of the Child]. Moscow, Rabotnik Prosveshchenija, 1930, pp. 5-26. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1982, Vol. 1, pp. 196-209.
94. Vydajushchajasya pamjat' [Outstanding memory]. *Khochu Vse Znat'* [I Want to Know Everything], 1930, No. 19, pp. 553-554.
95. Instrumental'nyi metod v psikhologii [Instrumental method in psychology]. In *Razvitie Vysshikh Psikhicheskikh Funktsii* [Development of Higher Mental Functions], L. S. Vygotsky. Moscow, Izd-vo APN RSFSR, 1960, pp. 224-234. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1982, Vol. 1, pp. 103-108.
96. K voprosu o rechevom razvitii i vospitanii glukhonemogo rebenka [The problem of speech development and teaching of the deaf-mute child]. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5, pp.

329-330. Abstracts of Reports at the Second All-Russia Conference of Workers with Deaf-mute Children and Adolescents, 1930.

97. *Issledovanie Intellekta Chelovekopodobnykh Obez'jan* [Study of the Intellect of Human-like Simians], W. Köhler, edited by L. S. Vygotsky. Moscow, Izd-vo Kom. Akad., 1930, XXIX (5-207) pp.
98. K probleme razvitija interesov v perekhodnom vozraste [The problem of developing interests during the transitional age]. *Robitnicha Osvita.* Kharkov, Derzh. Vid. Ukr., 1930, No. 7-8, pp. 63-81.
99. Kul'turnoe razvitie anomal'nogo i trudno vospituemogo rebenka [Cultural development of the abnormal child who is difficult to teach]. In *Psikhonevrologicheskie Nauki v SSSR* [Psychoneurological Sciences in the USSR]. Moscow-Leningrad, Medgiz, 1930, pp. 195-196. Abstracts of Reports at the First Congress for the Study of Human Behavior. Moscow, 1 February, 1930. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5, pp. 330-331.
100. Novoe v oblasti pedologicheskikh issledovanii [New developments in the area of pedological research]. *Destkii Dom* [Children's House], 1930, No. 7, pp. 22-27. Report at the Third All-Russia Congress on Child Welfare, May, 1930.
101. O Psikhologicheskikh sistemakh [Psychological systems]. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1982, Vol. 1, pp. 109-131.
102. Orudie i znak [Tool and sign]. Personal archive of L. S. Vygotsky, (1930?). Manuscript. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1984, Vol. 6, pp. 5-90.
103. O svjazi mezhdu trudovoi dejatel'nost'ju i intellektual'nym razvitiem rebenka [The connection between work activity and intellectual development of the child]. *Pedologija* [Pedology], 1930, No. 5-6, pp. 588-596. Ibid. *Defektologija* [Defectology], 1976, No. 6, pp. 3-8. Ibid. in *Khrestomatija po Vozrastnoi i Pedagogicheskoi Psikhologii* [Readings in Developmental and Pedagogical Psychology]. Moscow, Izd-vo Mosk. Univ., 1980, pp. 114-120.
104. Povedenie zhyvotnykh i cheloveka [Behavior of animals and man]. In *Razvitie Vysshikh Psikhicheskikh Funktsii* [Development of Higher Mental Functions], L. S. Vygotsky. Moscow, Izd-vo APN RSFSR, 1960, pp. 397-454.
105. Foreword to *Issledovanie Pedagogicheskogo Protsessa dlja Uchitelei* [A Study of the Pedogogical Process for Teachers], B. R. Buckingham. Moscow, Rabotnik Prosveshchenija, 1930, pp. 5-21.
106. Foreword to *Issledovanie Intellekta Chelovekopodobnykh Obez'jan* [Study of the Intellect of Human-like Simians], W. Köhler. Moscow, Izd-vo Kom. Akad., 1930, pp. I-XXIX. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1982, Vol. 1, pp. 210-237.
107. Problema vysshikh intellektual'nykh funktsii v sisteme psikhotekhnicheskogo issledovanija [The problem of higher intellectual functions in the system of psychotechnical research]. *Psikhotekhnika i Psikhophiziologija Truda* [Psychotechnology and Psychophysiology of Work], 1930, Vol. III, No. 5, pp. 374-384. Ibid. *Istorija Sovetskoi Psikhologii Truda* [History of Soviet Psychology of Work]. Moscow, Izd-vo Mosk. Univ., 1983, pp. 50-58.
108. Psikhika, soznajnie i bessoznatel'noe [The mind, consciousness and unconsciousness]. In *Elementy Obshchei Psikhologii* [Elements of General Psychology]. Moscow, Izd-vo BZO pri Pedfake 2-go MGU, 1930. fourth edition, pp. 48-61. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1982, Vol. 1, pp. 132-148.
109. Razvitie vysshikh form povedenija v detskom vozraste [Development of higher forms of behavior in childhood]. In *Psikhonevrologicheskie Nauki v SSSR* [Psychoneurological Sciences in the USSR]. Moscow-Leningrad, Medgiz, 1930, pp. 138-139.
110. Razvitie soznanija v detskom vozraste [Development of consciousness during childhood]. Personal archive of L. S. Vygotsky, (1930?), 23 pp. Stenographic record.
111. Son i snovidenija [Sleep and dreams]. In *Elementy Obshchei Psikhologii* [Elements of General Psychology]. Moscow, Izd-vo BZO pri Pedfake 2-go MGU, 1930, pp. 62-75.
112. Sotsialisticheskaja peredelka cheloveka [Socialist transformation of man]. *VARNITSO* [All-Union Association of Workers of Science and Technology for Assistance to the Building of Socialism], 1930, No. 9-10, pp. 36-44.
113. Strukturna psikhologija [Structural psychology]. In *Osnovnye Techenija Sovremennoi Psikhologii* [Basic Trends in Modern Psychology], L. S. Vygotsky, S. Gellershtein et al. Moscow-Leningrad, GIZ, 1930, pp. 84-125. Ibid. second edition. Moscow, Izd-vo Mosk. Univ., 1972. 47 pp.
114. Eidetika [Eidetics]. In *Osnovnye Techenija Sovremennoi Psikhologii* [Basic Trends in Modern Psychology], L. S. Vygotsky, S. Gellershtein et al. Moscow-Leningrad, GIZ, 1930, pp. 178-205. Ibid. *Khrestomatija po Oshchushcheniju i Vosprijatiju* [Readings in Sensation and Perception]. Moscow, Izd-vo Mosk. Univ., 1975, pp. 275-281. Abbreviated.
115. Eksperimental'noe issledovanie vysshikh protsessov povedenija [Experimental study of higher processes of behavior]. In *Psikhonevrologicheskie Nauki v SSSR* [Psychoneurological Sciences in the USSR]. Moscow-Leningrad, Medgiz, 1930, pp. 70-71. Abstracts of Reports at the First Congress for the Study of Human Behavior. Moscow, January, 1930.
116. *Etjudy po Istorii Povedenija. (Obez'jana. Primitiv. Rebenok)* [Studies in the History of Behavior. (Simian. Primitive Man. Child). Moscow-Leningrad, GIZ, 1930, 232 pp. With A. R. Luria.

1931

117. Bühler, C. et al. *Sotsial'no-psikhologicheskoe Izuchenie Rebenka Pervogo Goda Zhizni* [Social-Psychological Study of the Child's First Year], edited by L. S. Vygotsky and A. R. Luria. Moscow-Leningrad, Medgiz, 1931, 234 pp.
118. Speech. Archive of the Scientific-Research Institute of General and Pedagogical Psychology of the Academy of Pedogogical Science of the USSR, F. 82, op. 1, ed. khr. 11, pp. 5-15. Materialy reaktologicheskoi diskussii [Materials of reactological discussion]. 1931. Stenographic record with corrections of L. S. Vygotsky.
119. *Diagnostika Razvitija i Pedologicheskaja Klinika Trudnogo Detstva* [Diagnostics of Development and the Pedological Clinic for Difficult Childhood]. Moscow, Izd-vo Eksper. Defektol. Inst., 1936, 78 pp. Ibid. in *Khrestomaia po Patopsikhologii* [Readings in Pathopsychology]. Moscow, Izd-vo Mosk. Univ., 1981, pp. 66-80. Excerpt. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5, pp. 257-311.
120. Istorija razvitija vysshikh psikhicheskikh funktsii [The history of the development of higher mental functions]. In *Razvitie Vysshikh Psikhicheskikh Funktsii* [Development of Higher Mental Functions], L. S. Vygotsky. Moscow, Izd-vo APN RSFSR, 1960, pp. 13-223. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 3, pp. 5-228.

121. K voprosu o kompensatornykh protsessakh v razvitii umstvenno otstalogo rebenka [The problem of compensatory processes in the develoopment of the mentally retarded child]. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5, pp. 115-136. Stenographic record at the Conference of Workers of Supplementary Schools, Leningrad, 23 May, 1931.
122. K voprosu o pedologii i smezhnykh s neju naukakh [The problem of pedology and allied sciences]. *Pedologija* [Pedology], 1931, No. 3, pp. 52-58. Pedologija i skmezhnye s neju nauki (okonchanie) [Pedology and allied sciences (conclusion)]. *Pedologija* [Pedology], 1931, No. 7-8, pp. 12-22. Conclusion with the heading: K voprosu o psikhologii i pedologii [The problem of psychology and pedology]. *Psikhologija* [Psychology], 1931, Vol. 4, No. 1, pp. 78-100.
123. Kollektiv kak faktor razvitia anomal'nogo rebenka [The group as a factor in the development of the abnormal child]. *Voprosy Defektologii* [Problems in Defectology], 1931, No. 1-2, pp. 8-17; No. 3, pp. 3-18. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5. pp. 196-218.
124. Myshlenie [Thought]. *BME* [Great Medical Encyclopedia], 1931, Vol. 19, pp. 414-426.
125. *Pedologija Podrostka* [Pedology of the Adolescent]. Moscow, Izd-vo BZO pri Pedfake 2-go MGU, 1931, 504 pp. As manuscript. Assignments 9-16. Sections: Psikhologija podrostka [Psychology of the adolescent]. Sotsial'nye problemy pedologii perekhodnogo vozrasta [Social problems of pedology of the transitional age]. Zakljuchenie [Conclusion]. Excerpt titled: Dinamika i struktura lichnosti [Dynamics and structure of the personality]. In *Khrestomatija po Vozrastnoi i Pedagogicheskoi Psikhologii* [Readings in Developmental and Pedagogical Psychology]. Moscow, Izd-vo Mosk. Univ., 1980, pp. 138-142. Separate chapters. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1984, Vol. 4, pp. 5-242.
126. Prakticheskaja dejatel'nost' i myshlenie v razvitii rebenka v svjazi s problemoi politekhnizma [Practical activity and thinking in the development of the child in connection with the problem of polytechnism]. Personal archive of L. S. Vygotsky, 4 pp. Manuscript. Abstracts of Reports at the Psychotechnical Congress, May 1931.
127. Foreword in *Razvitie Pamjati* [Development of Memory], A. N. Leont'ev, 1931, Moscow-Leningrad, Uchpedgiz, 1931, pp. 6-13. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1982, Vol. 1, pp. 149-155.
128. Foreword in *Ocherki Osobennostei Povedeija i Vospitanija Glukhonemogo Rebenka* [Notes on Features of Behavior and Rearing of the Deaf-Mute Child]. Moscow-Leningrad, Uchpedgiz, 1931, pp. 3-5. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5, pp. 219-221.
129. *Psikhologicheskii Slovar'* [Psychological Dictionary]. Moscow, Uchpedgiz, 1931, 206 pp. With B. E. Varshava.
130. *Psikhotekhnika i pedologija* [Psychotechnology and pedology] Archive of the Scientific Research Institute of General and Pedagogical Psychology of the Academy of Pedogogical Science of the USSR, F. 82, op. 1, ed. khr. 3, pp. 23-57. Report at the meeting of the Section in the Communist Academy, 21 November, 1930. Responses to questions on the report, pp. 59-71. Ibid. *Psikhotekhnika i Psikhophiziologija Truda* [Psychotechnology and Psychophysiology of Work], 1931, No. 2-3, pp. 173-184. Abbreviated.

1932

131. K voprosu o psikhologii tvorchestva aktera [The problem of the psychology of the creativity of the actor]. In *Psikhologija Stsenicheskikh Chuvstv Aktera* [Psychology of the Stage Feelings of the Actor], P. M. Yakobson. Moscow, GIZ, 1936, pp. 197-211. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1984, Vol. 6, pp. 319-328.
132. K probleme psikhologii shizofrenii [The problem of the psychology of schizophrenia]. *Sovetskaja Nevropatologija, Psikhiatrija, Psikhogigiena* [Soviet Neuropathology, Psychiatry, Psychohygiene], 1932, Vol. 1, No. 8, pp. 352-364. Ibid. under the title: Narushenie ponjatii pri shizofrenii [Disruption of concepts in schizophrenia]. In *Izbrannye Psikhologicheskie Issledovanija* [Collected Psychological Studies], L. S. Vygotsky. Moscow, Izd-vo APN RSFSR, 1956, pp. 481-496.
133. K probleme psikhologii shizofrenii [The problem of the psychology of schizophrenia]. In *Sovremennye Problemy Shizofrenii* [Current Problems in Schizophrenia]. Moscow, Medgiz, 1933, pp. 19-28. Report at the Conference on the Problem of Theory and Practice in Schizophrenia, Moscow, June 1932. Different from the work in item 132. Ibid. in *Khrestomatia po Patopsikhologii* [Readings in Pathopsychology]. Moscow, Izd-vo Mosk. Univ., 1981, pp. 60-65.
134. Lektsii po Psikhologii [Lectures in Psychology]. In *Razvitie Vysshikh Psikhichjeskikh Funktsii* [Development of Higher Mental Functions], L. S. Vygotsky. Moscow, Izd-vo APN RSFSR, 1960, pp. 235-363. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1982, Vol. 2, pp. 363-465. Content 1. Vosprijatie i ego razvitie v detskom vozraste [Perception and its development during childhood]. 2. Pamjat' i ee razvitie v detskom vozraste [Memory and its development during childhood]. In *Khrestomatija po Obshchei Psikhologii. Psikhyologija Pamjati* [Readings in General Psychology. Psychology of Memory]. Moscow, Izd-vo Mosk. Univ., 1979, pp. 155-162. 3. Myshlenie i ego razvitie v detskom vozrastie [Thinking and its development during childhood]. 4. Emotsii i ikh razvitie v detskom vozrastie [Emotions and their development during childhood]. *Psikhologija* [Psychology], 1959, No. 3, pp. 125-134. 5. Voobrazhenie i ego razvitie v detskom vozrastie [Imagination and its development during childhood]. 6. Volja i ee razvitie v detskom vozrastie [Will and its development during childhood].
135. *Mladencheskii Vozrast* [Infancy]. Personal archive of L. S. Vygotsky, 1932, 78 pp. Manuscript. Ibid. Personal archive of L. S. Vygotsky, 19 pp. Stenographic record of a lecture, 21 November, 1932. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1984. Vol. 4, pp. 269-317.
136. Foreword to *Vospitanie i Obuchenie Gluboko Otstalogo Rebenka* [Rearing and Teaching of the Severely Retarded Child]. Moscow-Leningrad, Uchpedgiz, 1932, pp. 3-10. Ibid. *Defektologija* [Defectology], 1969, No. 1, pp. 83-87. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5, pp. 222-230.
137. Foreword to *Razvitie Pamjati* [Development of Memory], A. N. Leont'ev. Moscow, 1932, 11 pp. With A. N. Leont'ev. Separate proof.
138. Problema razvitija rebenka v issledovanijakh Arnol'da Gezella. Kriticheskii ocherk [The problem of the development of the child in the studies of Arnold Gesell. A critical note]. In *Pedologija Rannego Vozrasta* [Pedology of Early Childhood]. Moscow-Leningrad, Uchpedgiz, 1932, pp. 3-14.
139. Problema rechi i myshlenija rebenka v ucheni Zh. Piazhe. Kritichjeskoe issledovanie [The problem of speech and thinking of the child in the teaching of

J. Piaget. A critical study]. In *Rech i Myshlenie Rebenka* [Speech and Thinking of the Child], J. Piaget. Moscow-Leningrad, Uchpedgiz, 1932, pp. 3-54.

140. Rannee detstvo [Early childhood]. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1984, Vol. 4, pp. 340-367. Stenographic record of a lecture. Leningrad Pedagogical Institute, 15 December, 1932.
141. Sovremennye techenija v psikhologii [Current trends in psychology]. In *Razvitie Vysshikh Psikhicheskikh Funktsii* [Development of Higher Mental Functions], L. S. Vygotsky. Moscow, Izd-vo APN RSFSR, 1960, pp. 458-481.

1933

142. Vvodnaja lektsija po vozrastnoi psikhologii [Opening lecture on developmental psychology], Archive of the A. I. Herzen Leningrad Pedagogical Institute, 34 pp. Stenographic record, Central House of Artists, Child Rearing, 19 December, 1933.
143. Dinamika umstvennogo razvitija shkol'nika v svjazi s obucheniem [Dynamics of mental development of the schoolchild in connection with teaching]. In *Umstvennoe Razvitie Detei v Protsesse Obuchenija* [Mental Development of Children in the Process of Teaching], L. S. Vygotsky. Moscow-Leningrad, GIZ, 1935, pp. 33-52. Stenographic record of a report at the Meeting of the Department of Defectology of the Bubnov Pedagogical Institute, December, 1933.
144. Doshkol'nyi vozrast [Preschool age]. Personal archive of L. S. Vygotsky, 15 pp. Stenographic record of a lecture at the Leningrad Pedagogical Institute, 13-14 December, 1933.
145. Igra i ee rol' v psikhicheskom razvitii rebenka [Play and its role in the mental development of the child]. *Voprosy Psikhologii* [Problems in Psychology], 1966, No. 6, pp. 62-76. Stenographic record of a lecture at the Leningrad Pedagogical Institute, 1933.
146. K voprosu o dinamike umstvennogo razvitija normal'nogo i nenormal'nogo rebenka [The problem of the dynamics of the mental development of the normal and abnormal child]. Personal archive of L. S. Vygotsky. Stenographic record of a lecture at the Bubnov Pedagogical Institute, 23 December, 1933.
147. Krizis pervogo goda zhizni [Crisis at age one]. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1984, Vol. 4, pp. 318-339. Stenographic record of a lecture at the Leningrad Pedagogical Institute, 21 December, 1933.
148. Krizis trekh let [Crisis at age three]. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1984, Vol. 4, pp. 368-375. Stenographic record of a lecture at the Leningrad Pedagogical Institute, April 1933.
149. Krizis semi let [Crisis at age seven]. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1984, Vol. 4, pp. 376-385. Stenographic record of a lecture at the Leningrad Pedagogical Institute, April 1933.
150. Kriticheskie vozrasta [Critical ages]. Archive of the Leningrad Pedagogical Institute, 20 April, 1933, 15 pp. Manuscript.
151. Negativnaja faza perekhodnogo vozrasta [Negative phase of the transitional age]. Archive of the A. M. Herzen Leningrad Pedagogical Institute, 17 pp. Stenographic record of a lecture at the Leningrad Pedagogical Institute, 26 June, 1933.

152. Ob issledovanii uchebnoi raboty shkol'nika [On the study of the schoolwork of a schoolchild]. Personal archive of L. S. Vygotsky. Stenographic record of a report at the Leningrad Pedagogical Institute, 31 January, 1933.
153. O pedologicheskom analize pedagogicheskogo protsessa [Pedological analysis of the pedagogical process]. In *Umstvennoe Razvitie Detei v Protsesse Obuchenija* [Mental Development of Children in the Process of Teaching], L. S. Vygotsky. Moscow-Leningrad, Uchpedgiz, 1935, pp. 116-134. Stenographic record a report at the Experimental Defectological Institute, 17 March, 1933.
154. O perekhodnom vozraste [The transitional age]. Archive of A. I. Herzen Pedagogical Institute, 19 pp. Stenographic record of a lecture at the Leningrad Pedagogical Institute, 25 June, 1933.
155. Pedologija doshkol'nogo vozrasta [Pedology of the Preschool Age]. Archive of the A. I. Herzen Pedagogical Institute, 16 pp. Stenographic record of a lecture at the Leningrad Pedagogical Institute, 31 January, 1933. Corrections by L. S. Vygotsky.
156. Foreword in *Trudnye Deti v Shkol'noi Rabote* [Difficult Children and School Work], L.V. Zankov, M. S. Pevzner, and V. F. Shmidt. Moscow-Leningrad, Uchpedgiz, 1933, pp. 3-4.
157. Problema vozrasta. Igra [The problem of age. Play]. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1984, Vol. 4, pp. 244-268. Stenographic record of concluding address at the seminar, Leningrad Pedagogical Insitute, 23 March, 1933.
158. Problema razvitija (absoljutnaja i otnositel'naja uspeshnost') [The problem of development (absolute and relative success)]. Archive of the A. I. Herzen Leningrad Pedagogical Institute, 17 pp. Stenographic record of a lecture at the Leningrad Pedagogical Institute, 27 November, 1933.
159. Problema soznanija [The problem of consciousness]. In *Psikhologija Grammatiki* [The Psychology of Grammar]. Moscow, Izd-vo Mosk. Univ., 1968, pp. 178-196. Remarks of L. S. Vygotsky on a report of A. R. Luria, 5 and 9 December 1933. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1982, Vol. 1, pp. 156-167.
160. Razvitie zhiteiskikh i nauchnykh ponyatii v shkol'nom vozraste [Development of life and learning concepts during school age]. In *Umstvennoe Razvitie Detei v Protsesse Obuchenija* [Mental Development of Children in the Process of Teaching], L. S. Vygotsky. Moscow-Leningrad, Uchpedgiz, 1935, pp. 96-115. Stenographic report at a meeting of the Scientific-Methodological Council of the Leningrad Pedological Institute, 20 May, 1933.
161. *Uchenie ob Emotsijakh. Istoriko-psikhologicheskoe Issledovanie* [Teaching on Emotions. Historical-psychological Study]. 500 pp. Manuscript. The monograph also had the titles *Spinoza* and *Notes on Psychology: The Problem of Emotions.* Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1984, Vol. 6, pp. 91-318. Uchenie ob emotsijakh v svete sovremennoi psikhonevrologii [Teaching on emotions in light of contemporary psychoneurology]. *Voprosy Filosofii* [Problems in Philosophy], 1970, No. 6, pp. 119-130. A chapter in the monograph. O dvukh napravlenijakh v ponimanii prirody emotsii v zarubezhnoi psikhologii nachala XX veka [Two trends in understanding the nature of emotions in foreign psychology at the beginning of the 20th century]. *Voprosy Psikhologii* [Problems in Psychology], 1968, No. 2, pp. 149-156. Excerpt from the monograph.

1934

162. K voprosu o dementsii pri bolezni Pika [The problem of dementia in Pick's disease]. *Sovetskaja Nevropatologija, Psikhiatrija, Psikhogigiena* [Soviet Neuropathology, Psychiatry, Psychohygiene], 1934, Vol. 3, No. 6, pp. 97-136. With N. V. Samukhin. Ibid. in *Khrestomatia po Patopsikhologii* [Readings in Pathopsychology]. Moscow, Izd-vo Mosk. Univ., 1981, pp. 114-149. Abbreviated.
163. K voprosu o razvitii nauchnykh ponjatii v shkol'nom vozraste [The problem of the schoolchild's development of scientific concepts]. In *Razvitie Nauchnykh Ponjatii u Shkol'nika* [Development of Scientific Concepts in the Schoolchild], Zh. I. Shif. Moscow-Leningrad, Uchpedgiz, 1935, pp. 3-17.
164. Mladenchestvo i rannii vozrast [Infancy and early childhood]. Archive of the A. I. Herzen Leningrad Pedagogical Institute, 24 pp. Stenographic record of a lecture at the Leningrad Pedagogical Institute, 23 February, 1934.
165. *Myshlenie i Rech'* [Thinking and Speech]. Moscow-Leningrad, Sotsekgiz, 1934, 323 pp. Ibid. in *Izbrannye Psikhologicheskie Issledovanija* [Collected Psychological Studies], L. S. Vygotsky. Moscow, Izd-vo APN RSFSR, 1956, pp. 39-386. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1982, Vol. 2, pp. 5-361. Mysl' i slovo [Thought and word]. *Nauka i Tekhnika* [Science and Technology], 1977, No. 6-9. (In Latvian, pp. 29-33.) Chapter 7. Chapters 1, 2, 4, 5, and 7 in *Khrestomatija po Obshchei Psikhologii. Psikhologija Myshlenija* [Readings in General Psychology. The Psychology of Thinking]. Moscow, Izd-vo Mosk. Univ., 1981, pp. 153-182. Abbreviated.
166. Myshlenie shkol'nika [Thinking of the schoolchild]. Archive of the A. I. Herzen Leningrad Pedagogical Institute, 14 pp. Stenographic record of a lecture at the Leningrad Pedagogical Institute, 3 May, 1934.
167. *Osnovy Pedologii* [Fundamentals of Pedology]. Moscow, Izd-vo 2-go Mosk. Med. Inst., 1934, 211 pp. Stenographic record of a course of lectures, Second Moscow Medical Institute, 1934. Ibid. Leningrad, Izd-vo Leningr. Ped. Inst., 1935, 133 pp.
168. Perekhodnyi vozrast [The transitional age]. Archive of the A. I. Herzen Leningrad Pedagogical Institute, 29 pp. Stenographic record of a lecture at the Leningrad Pedagogical Institute, 25 March, 1934.
169. Problema Vozrasta [The Problem of Age]. Personal archive of L. S. Vygotsky, 1934, 95 pp. Manuscript. Problema vozrastnoi periodizatsii detskogo razvitija [The problem of developmental periodization in child development]. *Voprosy Psikhologii* [Problems in Psychology], 1972, No. 2, pp. 114-123. Paragraph No. 169 in the work.
170. Problema obuchenija i umstvennoe razvitie v shkol'nom vozraste [The problem of teaching and mental development during school age]. In *Umstvennoe Razvitie Detei v Protsesse Obuchenija* [Mental Development of Children in the Process of Teaching], L. S. Vygotsky. Moscow-Leningrad, Uchpedgiz, 1935, pp. 3-19.
171. Problema razvitija v strukturnoi psikhologii [The problem of development in structural psychology]. In *Osnovy Psikhicheskogo Razvitija* [Fundamentals of Mental Development], K. Koffka. Moscow-Leningrad, Sotsekgiz, 1923, pp. IX-LVI. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1982, Vol. 1, pp. 238-290.
172. Problema razvitija i raspada vysshikh psikhicheskikh funktsii [The problem of development and disintegration of higher mental functions]. In *Razvitie Vysshikh Psikhicheskikh Funktsii* [Development of Higher Mental Functions], L. S. Vygotsky. Moscow, Izd-vo APN RSFSR, 1960, pp. 364-383. Report at a conference of the Institute of Experimental Medicine, 28 April, 1934. L. S. Vygotsky's last report presented a month and a half before his death.
173. Psikhologija i uchenhie o lokalizatsii psikhicheskikh funktsii [Psychology and the teaching on the localization of mental functions]. In *Pervyi Vseukrainskii S'ezd Nevropatologov i Psikhiatrov* [First All-Ukraine Congress of Neuropathologists and Psychiatrists]. Abstracts of reports. Kharkov, 1934, pp. 34-41. Abstracts of reports represented at the First Ukrainian Congress on Psychoneurology. Ibid. in *Razvitie Vysshikh Psikhicheskikh Funktsii* [Development of Higher Mental Functions], L. S. Vygotsky. Moscow, Izd-vo APN RSFSR, 1960, pp. 384-396. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1982, Vol. 1. pp. 168-174.
174. Slaboumnye pri bolezni Pick'a [The retarded with Pick's disease]. Personal archive of L. S. Vygotsky, (1934?), 4 pp. Manuscript.
175. *Fashizm v Psikhoneurologii* [Fascism in Psychoneurology]. Moscow-Leningrad, Biomedgiz, 1934, 28 pp. With V. A. Giljarovsky et al.
176. Shkol'nyi vozrast. Glava I [School age. Chapter 1]. Private archive of D. B. Elkonin, 1934, 42 pp. Manuscript.
177. Shkol'nyi vozrast [School age]. Archive of the A. I. Herzen Leningrad Pedagogical Institute, 61 pp. Stenographic record of a lecture at the Leningrad Pedagogical Institute, 23 February, 1934. Continuation of the lecture. Archive of the A. I. Herzen Leningrad Pedagogical Institute, 25 pp. Stenographic record of a lecture at the Leningrad Pedagogical Institute, 10 March, 1934. Osnovnye psikhologicheskie osobennosti shkol'nogo vozrasta [Basic psychological features of the school age]. Archive of the A. I. Herzen Leningrad Pedagogical Institute, 43 pp. Manuscript written by Vygotsky on the basis of the stenographic records indicated.
178. Eksperimental'noe issledovanie vospitanija novykh rechevykh refleksov po sposobu svjazyvanija s kompleksami [Experimental study of developing new speech reflexes using the method of combination with complexes]. Personal archive of L. S. Vygotsky. Manuscript.

1935

179. Obuchenie i razvitie v doshykol'nom vozraste [Teaching and development during the preschool age]. In *Umstvennoe Razvitie Detei v Protsesse Obuchenija* [Mental Development of Children in the Process of Teaching], L. S. Vygotsky. Moscow-Leningrad, Uchpedgiz, 1935, pp. 20-32. Stenographic record of a report at the All-Russia Conference on Preschool Education. Ibid. *Sem'ja i Shkola* [Family and School], 1969, No. 12, pp. 14-16. Ibid. in *Istorija Sovetskoi Doshkol'noi Pedagogiki. Khrestomatija* [History of Soviet Preschool Pedagogy]. Moscow, Prosveshchenie, 1980, pp. 241-245. Abbreviated.
180. Problema umstvennoi otstalosti [The problem of mental retardation]. In *Umstvenno Otstalyi Rebenok* [The Mentally Retarted Child]. Moscow, Uchpedgiz, 1935, pp. 7-34. Ibid. in *Izbrannye Psikhologicheskie Issledovanija* [Collected Psychological Studies], L. S. Vygotsky. Moscow, Izd-vo APN RSFSR, 1956, pp. 453-480. Ibid. in *Khrestomatia po Patopsikhologii* [Readings in Pathopsychology]. Moscow, Izd-vo Mosk. Univ., 1981, pp. 150-157. Abbreviated. Ibid. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5, pp. 231-256.

181. *Umstvenno Otstalyi Rebenok* [The Retarded Child], edited by L. S. Vygotsky. Moscow, Uchpedgiz, 1935, 176 pp.

WORKS OF VARIOUS YEARS

182. Defektologija i uchenie o razvitii i vospitanii nenormal'nogo rebenka [Defectology and the teaching on the development and education of the abnormal child]. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5, pp. 166-173.
183. Iz zapisjnykh knizhek L. S. Vygotskogo [From the notebooks of L. S. Vygotsky]. *Vestnik Mosk. Univ.* [Journal of Moscow University], Series 14, *Psikhologija* [Psychology], 1977, No. 2, pp. 89-95. Content: Instrumental'nyi metod. K probleme voli. O lokalizatsii psikhicheskikh funktsii v mozge. Psikhologija i fiziologija, i dr. [The instrumental method. The problem of will. Localization of mental functions in the brain. Psychology and physiology. Et al.]
184. Iz zapisjnykh knizhek L. S. Vygotskogo [From the notebooks of L. S. Vygotsky]. *Vestnik Mosk. Univ.* [Journal of Moscow University], Series 14, *Psikhologija* [Psychology], 1982, No. 1, pp. 60-67. Content: O pis'mennoi rechi. Problema grammatiki. Psikhofizicheskaja problema. K lokalizatsii i dr. [Written speech. The problem of grammar. The psychophysical problem. On localization. Et al.].
185. Moral insanity. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5, pp. 150-152.
186. Opytnaja proverka novykh metodov obuchenija glukhonemykh detei [Experimental testing of new methods of teaching deaf-mute children]. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5, pp. 322-325.
187. Osnovy raboty s umstvenno otstalymi i fizicheski defektivnymi det'mi [Fundamentals of work with mentally retarded and physically handicapped children]. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5, pp. 181-187. (Partial content of item Nos. 39, 42, 45, 48, 59-61, 63-65, 67).
188. *Pedologija Junosheskogo Vozrasta. Osobennosti Povedenija Posrostka* [Pedology of the Juvenile Age. Features of Behavior of the Adolescent]. Moscow, BZO pri 2-m MGU, 106 pp. Lessons 6-9.
189. Problema kul'turnogo povedenija rebenka [The problem of the cultural behavior of the child]. Personal archive of L. S. Vygotsky, 81 pp. Manuscript. Different from item 57.
190. Slepoi rebenok. [The blind child]. *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, Pedagogika, 1983, Vol. 5, pp. 86-100.
191. *Trudnoe Detstvo* [Difficult Childhood]. Moscow, BZO pri pedfake 2-go MGU, 45 pp.

TRANSLATED WORKS

1925

1. The principles of social education of deaf and dumb children in Russia. In: International conference on the education of the deaf. London, 1925, pp. 227-237.

1929

2. Die genetischon Vursein des Denken und der Spreche. In: *Unter den Banner des Marxismus*. Berlin, 1929, Vol. 3, No. 3, pp. 450-470.
3. The problem of the cultural development of the child. In: *Genetic Psychology*. Massachusetts, 1929, Vol. 36, No. 3, pp. 415-434.

1930

4. With Luria, A. The function and the integration of egocentric speech. Proceedings of the IX International Conference of Psychology. In: *Psychological Review Co*. "S. 1.", 1930, pp. 464-465.

1934

5. Thought in schizophrenia. In: *Archives of Neurology and Psychiatry*, 1934, Vol. 31, No. 5, pp. 1063-1077.

1939

6. Thought and speech. In: *Psychiatry*, 1939, Vol. 2, pp. 29-54. Idem. In: *A Book of Readings*. New York, 1961, pp. 509-537.

1962

7. *Shikó to Gengo*. Tokyo: Meji Tosho Shuppan, 1962, 2 vols.
8. *Thought and Language*. New York–London, Wiley, 1962, XXI, 168 pp. Idem. 2nd edn., Cambridge, Massachusetts, MIT Press, 1965, XXI, 168 pp.

1964

9. *Denken und Sprechen*. Berlin, Akademie Verlag, 1964, VIII, 324 pp.
10. *Seisin Hattatsu Ron*. Tokyo, Meiji Tosho Shuppan, 1964, 78 pp.

1965

11. Psychology and localization of functions. In: *Neuropsychologia*. Oxford–London–New York–Paris, 1965, Vol. 3, No. 4, pp. 381-386.

1966

12. Development of the higher mental functions. In: *Psychological Research in the USSR*, 1966, Vol. 1, pp. 11-46.
13. *Pensiero e Linguaggio*. Firenze, Giunti, 1966, 232 pp.

1967

14. *Gondolkodás és Beszed*. Budapest, Akademiai Kiado, 1967, 406 pp. Idem. Budapest, Akademiai Kiado, 1971, 406 pp.
15. Play and its role in the mental development of the child. In: *Soviet Psychology*, New York, 1967, Vol. 3.

1968

16. *Müveszet Pszichológia*. Budapest, Kossuth Kiado, 1968, 470 pp.

1969

17. Apprendimento e sviluppo intellettuale nell'etá scolastica. In: Vygotsky, Lurija, Leontjev. *Psicologia e Pedagogia*. Roma, Editori Riuniti, 1969, pp. 25-40. Idem. Roma, Editori Riuniti, 1974, pp. 25-40.
18. *Denken und Sprechen*. Frankfurt/M., S. Fischer, 1969, XXI, 379 pp. Idem. Frankfurt/M., 1971, 379 pp. Idem. Frankfurt/M., 1972, 379 pp. Idem. Frankfurt/M., 1974, 379 pp. Idem. Frankfurt/M., 1977, 379 pp.

1970

19. *Hamlet*. Tokyo, Kokubunsha, 1970, 321 pp.
20. *Seishin Hattatsu no Riron*. Tokyo, Meiji Tosho Shuppan, 1970, 243 pp.

1971

21. *A Magasabb Pszichikus Funkciók Fejlódese*. Budapest, Gondolat Kiado, 1971, 447 pp.
22. *Geijutsu Shiurigaku*. Tokyo, Meiji Tosho Shuppan, 1971, 392 pp.

23. *Myšleni a řeč*. Praha, SPN, 1971, 295 pp. Idem. Praha, SPN, 1977, 295 pp.
24. *Opere Psihologice Alese (1)*. Bucuresti, Editura Didaktica si Pedagogica, 1971, 364 pp.
25. *Tækning og sprog*. København, Hans Reitzel, 1971, Vol. 1, 208 pp. Idem. Hans Reitzel, 1976, 207 pp. (Chapters 1-5 of *Thinking and Speech*).
26. *The Psychology of Art*. Cambridge, Massachusetts–London, 1971, XI, 305 pp.
27. *Wybrane Prasepsychologiczne*. Warszawa, Panstwowe Wydawnictwo naukowe, 1971, 549 pp.

1972

28. *Kodomo no Sôzôryoku to Sozô*. Tokyo, Shin Dokushosha, 1972, 184 pp.
29. *Opere Psihologice Alese (2)*. Bucuresti, Editura Didaktika si Pedagogica, 1972, 313 pp.
30. *Psicologia del Arte*. Barcelona, Barral, 1972, 526 pp.
31. *Psicologia dell'arte*. Roma, Editori Riuniti, 1972, 387 pp.
32. Spinoza's theory of the emotions in light of contemporary psychoneurology. In: *Soviet Studies in Philosophy*. 1972, Vol. 10, pp. 362-382.

1973

33. *Immaginazione e Creativita' Nell'eta' Infantile*. Roma, Editori Riuniti, 1973, 140 pp.
34. *La Tragedia di Amleto*. Roma, Editori Riuniti, 1973, 231 pp.
35. *Lo Sviluppo Psichico del Bambino*. Roma, Paideia, 1973, 232 pp. Idem. Roma, Paideia, 1975, 232 pp. Idem. Roma, Editori Riuniti, 1977, 232 pp.
36. *Psihologia Artei*. Bucuresti, Univers, 1973, 399 pp.

1974

37. *Storia dello Sviluppo delle Funzioni Psichiche Superiori*. Firenze, Giunti, 1974, 335 pp.
38. *Tækning og Sprog*. København, Hans Reitzel, 1974, Vol. 2, 244 pp. (Chapters 6 and 7 of *Thinking and Speech*).

1975

39. *Kodomo no Chiteki Hattatsu to Kyóju*. Tokyo, Meiji Tosho Shuppan, 1975, 217 pp.

1976

40. Correnti contemporanee della psicologia. In: *La Psicologia Sovietica 1917–1936*. Roma, Editori Riuniti, 1976, pp. 122-142.

41. Il problema della periodizzazione dello sviluppo infantile. In: *La Psicologia Sovietica 1917–1936.* Roma, Editori Riuniti, 1976, pp. 315-329.
42. Il problema dello sviluppo e della disintegrazione delle funzioni psichiche superiori. In: *La Psicologia Sovietica 1917–1936.* Roma, Editori Riuniti, 1976, pp. 330-347.
43. Il problema dello sviluppo culturale del bambino. In: *La Psicologia Sovietica 1917–1936.* Roma, Editori Riuniti, 1976, pp. 295-314.
44. *Jidó Shinrigaku Kógi.* Tokyo, Meiji Tosho Shuppan, 1976, 234 pp.
45. *Psychologie der Kunst.* Dresden, Verlag der Kunst, 1976, 351 pp.

1977

46. *Mislenje I Gover.* Beograd, Nolit, 1977, 398 pp.
47. *Vvoj Vyššich Psychických Funkci.* Praha, SPN, 1977, 363 pp.

1978

48. *Mind in Society. The Development of Higher Psychological Processes.* Cambridge, Massachusetts–London, Harvard University Press, 1978, 159 pp. Idem. Second printing, 1979, 159 pp. Contents:

Basic Theory and Data

(1) Tool and symbol in child development (pp. 19-31).
(2) The development of perception and attention (pp. 31-38).
(3) Mastery of memory and thinking (pp. 38-52).
(4) Internalization of higher psychological functions (pp. 52-58).
(5) Problems of method (pp. 58-79).

Educational Implications

(6) Interaction between learning and development (pp. 79-92).
(7) The role of play in development (pp. 92-105).
(8) The prehistory of written language (pp. 105-121).

1979

49. Il giuoco e la sua funzione nello sviluppo prichoco del bambino. *Riforma della Scuola,* 1979, No. 7, pp. 41-50.

1980

50. *Psychologie Umeni.* Praga, Literárnevedná Răda, 1981, 523 pp.

1982

51. *Ajattelu ja Kieli.* Espoo, Weilin–Goos, 1982, 270 pp.

WORKS ABOUT L. S. VYGOTSKY

This list is the first systematic collection of basic literature devoted to L. S. Vygotsky. It includes monographs, articles, and dissertations published in Russian to 31 December, 1983, and in other languages to 31 December, 1982; only the first editions are listed. The list includes two types of studies. First, works devoted entirely to presentation and analysis of works of Vygotsky as a whole or of any of its aspects; second, works that give a complete (although possibly brief) presentation (analysis, criticism) of the works of Vygotsky (its separate aspects) in one context or another (corresponding pages in the monograph are indicated in parentheses). Not included are works in which Vygotsky's name is only mentioned (containing a reference), but in which there is no integral analysis of his views.

This list must not be taken as exhaustive since the criteria of selection of works of the second type were quite arbitrary; also, it is probable that some works did not come to our attention. Some works (a very small number) we deliberately did not consider suitable for inclusion in this list: we are speaking of some critical works of the 1930s that do not meet elementary criteria of scientific [technical] correctness.

Works in Original Russian

Abul'khanova-Slavskaja, K. A., *O Sub"ekte Psikhicheskjoi Dejatel'nosti* [On the Subject of Mental Activity]. Moscow, 1973, 288 pp. (pp. 101-104).

Akhutina, T. V., *Neirolingvisticheskii Analiz Dinamicheskoi Afazii* [Neurolinguistic Analysis of Dynamic Aphasia]. Moscow, 1975, 144 pp. (pp. 36-47).

Amonashvili, Sh. A., Mekhanizm pis'mennoi rechi i metodika obuchenija pis'mu [The mechanism of written speech and the methodology of teaching writing]. In *Nauchnoe Tvorchestvo L. S. Vygotskogo i Sovremennaja Psikhologija* [The Scientific Work of L. S. Vygotsky and Modern Psychology]. Moscow, 1981, pp. 6-7.*

Anan'ev, B. G., K psikhopatologii i psikhologii vnutrenei rechi [Psychopathology and psychology of internal speech]. In *Trudy AN Gruzinskoi SSR. Psikhologija.* [Proceedings of the Georgian SSR. Psychology]. Tbilisi, 1946, Vol. 3, pp. 1-20.

Anan'ev, B. G., K teorii vnutrennei rechi v psikhologii [Theory of internal speech in psychology]. *Uchenye Zapiski LGPI im. A. I. Gertsena* [Scientific Journal of the A. I. Herzen Leningrad Pedagogical Institute]. Leningrad, 1946, Vol. 53, pp. 155-173.

*Subsequently this book will be referred to as *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.]

Andreeva, G. M., L. S. Vygotskii i sotsial'naja psikhologija [L. S. Vygotsky and social psychology]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 7-9.

Andreeva, G. M., *Sotsial'naja Psikhologija* [Social Psychology]. Moscow, 1980, 416 pp. (pp. 15-17).

Asmolov, A. G., Osnovnye printsipy psikhologicheskogo analiza v teorii dejatel'nolsti [Basic principles of psychological analysis in the theory of activity]. *Voprosy Psikhologii* [Problems in Psychology], 1982, No. 2, pp. 14-27.

Asmolov, A. G., Tri grani interiorizatsii [Three boundaries of interiorization]. In *Nauchnoe Tworchestvo L.S.V.* [Scientific Works of L.S.V.], pp. 10-13.

Bibliographic annotation, Lev Semenovich Vygotskii. *Ukrainskaja Sovetskaja Entsiklopedija* [Ukrainian Soviet Encyclopedia]. Kiev, 1979, Vol. 2, p. 397.

Bibliographic annotation, Lev Semenovich Vygotskii. *Filosofskaja Entsiklopedija* [Philosophy Encyclopedia]. Moscow, 1960, Vol. 1, p. 311.

Bibliographic annotation, Kul'turno-istoricheskaja teorija razvitija vysshikh psikhicheskikh funktsii [Cultural-historical theory of the development of higher mental functions], *Psikhologicheskii Slovar'* [Dictionary of Psychology]. Moscow, 1983, p. 174.

Bibliographic annotation, Lev Semenovich Vygotskii. In *Umstvenno Otstalyi Rebenok* [The Mentally Retarded Child]. Moscow, 1935, pp. 2-4.

Bein, E. S., Vlasova, T. A., Levina, R. E., Morozova, N. G., and Shif, Zh. I., Posleslovie [Epilogue]. In L. S. Vygotsky: *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, 1983, Vol. 5, pp. 333-342.

Bein, E. S., Levina, R. E., and Morozova, N. G., Kommentarii [Notes]. Ibid., pp. 343-357.

Berkhin, N. B., Iz istorii sovetskoi psikhologii iskusstva [From the history of Soviet psychology of art]. In *Aktual'nye Problemy Istorii Psikhologii* [Urgent Problems in the History of Psychology]. Yerevan, 1982, pp. 60-67.

Berkhin, N. B., O mnimom i podlinnom soderzhenii "psikhologii iskusstva" L. S. Vygotskogo [On the supposed and the real content of the "psychology of art" of L. S. Vygotsky]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 13-14.

Berkhin, N. B., *Obshchie Problemy Psikhologii Iskusstva* [Common Problems in the Psychology of Art]. Moscow, 1981, 63 pp. (pp. 7-24).

Bibler, V. S., Vnutrennaja rech' v ponimanii L. S. Vygotskogo [Internal speech as understood by L. S. Vygotsky]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 14-20.

Bibler, V. S., *Myshlenie kak Tvorchestvo* [Thinking as Creativity]. Moscow, 1975, 399 pp. (pp. 154-161).

Bibler, V. S., Ponimanie L. S. Vygotskim vnutrennei rechi i logika dialoga (eshche raz o predmete psikhologii) [Vygotsky's understanding of internal speech and the logic of dialog (one more time on the subject of psychology)]. In *Metodologicheskie Problemy Psikhologii Lichnosti* [Methodological Problems of the Psychology of Personality]. Moscow, 1981, pp. 117-134.

Bibrikh, R. R., and Orlov, A. B., K. Levin, L. S. Vygotskii: perekhod ot metafizicheskoi k dialekticheskoi psikhologii kak protsess [K. Lewin and L. S. Vygotsky: transition from metaphysical to dialectical psychology as process]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 20-24.

Blonsky, P. P., *Pamjat' i Myshlenie* [Memory and Thinking]. Moscow, 1935, 214 pp. (pp. 149-153).

Bozhovich, L. I., Znachyenie kul'turno-istoricheskoi kontseptsii L. S. Vygotskogo dlja sovremennykh issledovanii psikhologii lichnosti [Significance of the cultural-historical conception of L. S. Vygotsky for contemporary studies in the psychology of personality]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 24-30.

Bozhovich, L. I., Kontseptsija kul'turno-istoricheskogo razvitija i ee perspektivy [The concept of cultural-historical development and its prospects]. *Voprosy Psikhologii* [Problems in Psychology], 1977, No. 2, pp. 29-39.

Bozhovich, L. I., *Lichnost' i Ee Formirovanie v Detskom Vozraste* [Personality and Its Formation during Childhood]. Moscow, 1968, 464 pp. (pp. 149-160).

Bozhovich, L. I., and Slavina, L. S., Sovetskaja psikhologija vospitanija za 50 let [Fifty years of Soviet psychology of education]. *Voprosy Psikhologii* [Problems in Psychology], 1967, No. 5, pp. 51-71.

Brudnyi, A. A., O psikholingvisticheskikh aspektakh teorii L. S. Vygotskogo [Psycholinguistic aspects of the theory of L. S. Vygotsky]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 30-31.

Brushlinsky, A. V., Kul'turno-istoricheskaja teorija myshlenija [The cultural-historical theory of thinking]. In *Issledovanija Myshlenija v Sovetskoi Psikhologii* [Studies of Thinking in Soviet Psychology]. Moscow, 1966, pp. 123-174.

Brushlinsky, A. V., *Kul'turno-istoricheskja Teorija Myshlenija* [The Cultural-historical Theory of Thinking]. Moscow, 1968, 104 pp.

Brushlinsky, A. V., Myshlenie kak protsess i problema dejatel'nosti [Thinking as a process and the problem of activity]. *Voprosy Psikhologii* [Problems in Psychology], 1982, No. 2, pp. 29-40.

Brushlinsky, A. V., Problema obshchestvenno-individual'nogo v psikhike cheloveka i kul'torno-istoricheskaja teorija [The problem of community-individual in the psyche of man and the cultural-historical theory]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 31-37.

Budilova, E. A., *Filosofiskie Problemy v Sovetskoi Psikhologii* [Philosophical Problems in Soviet Psychology]. Moscow, 1972, 336 pp. (pp. 58-67, 120-152).

Davydov, V. V., Vidy Obobshchenija v Obuchenii [Types of Generalization in Teaching]. Doctoral Dissertation, Moscow, 1970, pp. 541-565.

Davydov, V. V., Vidy Obobshchenija v Obuchenii [Types of Generalization in Teaching]. Moscow, 1972, 423 pp. (pp. 187-201).

Davydov, V. V., Znachenie tvorchestva L. S. Vygotskogo dlja sovremennoi psikhologii [Significance of the work of L. S. Vygotsky for modern psychology]. *Sovetskaja Pedagogika* [Soviet Pedagogy], 1982, No. 6, pp. 84-87.

Davydov, V. V., Problema obobshchenija v trudakh L. S. Vygotskogo [The problem of generalization in the works of L. S. Vygotsky]. *Voprosy Psikhologii* [Problems in Psychology], 1966, No. 6, pp. 42-55.

Davydov, V. V., Zinchenko, V. P., Munipov, V. M., and Radzikhovsky, L. A., Predislovie [Foreword]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 3-5.

Davydov, V. V., and Radzikhovsky, L. A., Problema ideal'nogo v tvorchestva L. S. Vygotskogo [The problem of the ideal in the work of L. S. Vygotsky]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 50-55.

Davydov, V. V., and Radzikhovsky, L. A., Teorija L. S. Vygotskogo i dejatel'nostnyi podkhod v psikhologii. [The theory of L. S. Vygotsky and the activity approach

to psychology]. *Voprosy Psikhologii* [Problems in Psychology], 1980, No. 6, pp. 48-59; 1981, No. 1, pp. 67-80.

Elkonin, D. B., O sposobe oposredstvovanija reshenija zadach "na soobrazhenie" [Method of mediating the solving of problems "by reason"]. *Voprosy Psikhologii* [Problems in Psychology], 1981, No. 1, pp. 100-118.

Elkonin, D. B., Ob oposredstvovanii protsessa reshenija zadach na soobrazhenie [Mediating the process of solving problems by reason]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 173-176.

Elkonin, D. B., Rol' znakogo oposredstvovanija v protsesse reshenija zadach "na soobrazhenie" [The role of sign mediation in the process of solving problems "by reason"]. Candidate's Dissertation, Moscow, 1982, 150 pp. (pp. 29-36).

Elkonin, D. B., Intellektual'nye vozmozhnosti mladshikh shkol'nikov i soderzhanie obuchenija [Intellectual potential of young schoolchildren and the content of teaching]. In *Vozrastnye Vozmozhnosti Usvoenija Znanii* [Age-related Potentials for Assimilating Knowledge]. Moscow, 1966, pp. 13-53.

Elkonin, D. B., Kommentarii [Notes]. In L. S. Vygotsky: *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, 1984, Vol. 4, pp. 404-415.

Elkonin, D. B., K probleme periodizatsii psikhologicheskogo razvitija v detskom vozraste [The problem of periodization of development during childhood]. *Voprosy Psikhologii* [Problems in Psychology], 1971, No. 4, pp. 6-20.

Elkonin, D. B., L. S. Vygotskii cegodnja [L. S. Vygotsky today]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 176-182.

Elkonin, D. B., Nekotorye itogi izuchenija psikhologii razvitija detei doshkolnogo vozrasta [Certain results of the study of developmental psychology of preschool children]. In *Psikhologicheskaja Nauka v SSSR* [Psychological Science in the USSR]. Moscow, 1959, Vol. 2, pp. 228-286.

Elkonin, D. B., Posleslovie [Epilogue]. In L. S. Vygotsky: *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, 1984, Vol. 4, pp. 386-403.

Elkonin, D. B., Problema obuchenija i razvitija v trudakh L. S. Vygotskogo [The problem of teaching and development in the works of L. S. Vygotsky]. *Voprosy Psikhologii* [Problems in Psychology], 1966, No. 6, pp. 33-42.

Elkonin, D. B., Problemy psikhologii detskoi igry v rabotakh L. S. Vygotskogo, ego sotrudnikov i posledovatelei. [Problems of the psychology of children's play in the works of L. S. Vygotsky, his colleagues and followers]. *Voprosy Psikhologii* [Problems in Psychology], 1976, No. 6, pp. 94-102.

Erastov, N. P., Vidy znakov i urovni poznavatel'noi dejatel'nosti pri analize lingvisticheskikh otnoshenii [Types of signs and levels of cognitive activity in analysis of linguistic relations]. In *Problema Dejatel'nosti v Sovetskoi Psikhologii, ch. I* [The Problem of Activity in Soviet Psychology, Part I]. Moscow, 1977, pp. 158-163.

G. F., O sostojanii i zadachakh psikhologicheskoi nauki v SSSR [State and tasks of psychological science in the USSR]. *Pod Znamenem Marksizma* [Under the Marxist Flag], 1936, No. 9, pp. 87-99.

Gal'perin, P. Ya., Vvedenie k stat'e L. S. Vygotskogo "Spinoza i ego uchenie o strastjakh v svete sovremennoi psikhonevrologii" [Introduction to the paper of L. S. Vygotsky, "Spinoza and his teaching on passions in the light of modern psychology"]. *Voprosy Filosofii* [Problems in Philosophy], 1970, No. 6, pp. 119-120.

Gal'perin, P. Ya., Idei L. S. Vygotskogo i zadachi psikhologii segodnja [The ideas of L. S. Vygotsky and the tasks of psychology today]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 46-50.

Gal'perin, P. Ya., K ucheniju ob interiorizatsii [The teaching on interiorization]. *Voprosy Psikhologii* [Problems in Psychology], 1966, No. 6, pp. 25-33.

Gal'perin, P. Ya., Razvitie issledovanii po formirovaniju umstevennykh deistvii [Development of studies on the formation of mental actions]. In *Psikhologicheskaja Nauka v SSSR* [Psychological Science in the USSR]. Moscow, 1959, Vol. 1, pp. 441-470.

Gal'perin, P. Ya., Zaporozhets, A. V., and Karpova, S. N., *Aktualnye Problemy Vozrastnoi Psikhologii* [Urgent Problems in Developmental Psychology]. Moscow, 1978, 118 pp. (pp. 73-76, 80-83).

Gamezo, M. V., Lomov, B. F., and Rubakhin, V. F., Psikhologicheskie aspekty metodologii i obshchei teorii znakov i znakovykh sistem [Psychological aspects of the methodology and general theory of signs and sign systems]. In *Psikhologicheskie Problemy Pererabotki Znakovoi Informatsii* [Psychological Problems of Processing Sign Information]. Moscow, 1977, pp. 5-48.

Gordeeva, N. D., and Zinchenko, V. P., *Funktsional'naja Struktura Deistvija* [The Functional Structure of Action]. Moscow, 1982, pp. 8-12.

Il'in, G. L., O dvukh ponimanijakh printsipa oposredstvovannosti psikhicheskogo v contseptsii L. S. Vygotskogo [Two interpretations of the principle of mediation of the mental in the conceptions of L. S. Vygotsky]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 68-72.

Istomina, Z. M., *Razvitie Pamjati* [Development of Memory]. Moscow, 1978, 120 pp. (pp. 21-24).

Ivanov, V. V., Znachenie idei M. M. Bakhtina o znake, vyskazyvanii i dialoge dlja sovremennoi semiotiki [The significance of the ideas of M. M. Bakhtin on sign, expression and dialogue for modern semiotics]. *Trudy po Znakovym Sistemam* [Proceedings on Sign Systems], Tartu, 1973, No. 6, pp. 5-44.

Ivanov, V. V., Kommentarii [Notes]. In L. S. Vygotsky: *Psikhologija Iskusstva* [Psychology of Art]. Moscow, 1968, pp. 499-560.

Ivanov, V. V., *Ocherki po Istorii Semiotiki v SSSR* [Notes on the History of Semiotics in the USSR]. Moscow, 1976, 302 pp. (pp. 20-22, 28-29, 66-67, etc.).

Ivanova, A. Ya., *Obuchaemost' kak Printsip Otsenki Umstvennogo Razvitija Detei* [Trainability as a Principle of Evaluation of Mental Development of Children]. Moscow, 1976, 86 pp. (pp. 6-23).

Ivanova, A. Ya., and Mandrusova, E. S., Printsipy psikhologicheskogo issledovnija detei doshkol'nogo vozrasta s patologiei rechi [Principles of psychological study of preschool children with speech pathology]. In *Narushenie Rechi u Doshkol'nikov* [Disturbances in Speech in Preschool Children]. Moscow, 1972, pp. 129-143.

Kedrov, B. M., O krizise psikhologii, ee predmete i meste v sisteme nauk (v kontekste trudov L. S. Vygotskogo) [The crisis in psychology, its subject matter and place in the system of sciences (in the context of the works of L. S. Vygotsky)]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 72-76.

Kedrov, B. M., O metodologicheskikh voprosakh psikhologii [Methodological problems in psychology]. *Psikhologicheskii Zhurnal* [Psychological Journal], 1982, No. 5, pp. 3-12.

Kharash, A. U., Ob oposredstvujushchei funktsii jazyka [The mediating function of language]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 161-163.

Khomskaja, E. D., Idei sistemnosti v trudakh L. S. Vygotskogo i A. R. Luria [Ideas of systemics in the work of L. S. Vygotsky]. Ibid., pp. 163-166.

Kolbanovsky, V. N., Lev Semenovich Vygotskii [Lev Semenovich Vygotsky]. *Sovetskaja Psikhotekhnika* [Soviet Psychotechnology], 1934, No. 4, pp. 387-396.

Kolbanovsky, V. N., O psikhologicheskikh vzgljadakh L. S. Vygotskogo [The psychological views of L. S. Vygotsky]. *Voprosy Psikhologii* [Problems in Psychology], 1956, No. 5, pp. 104-114.

Kolbanovsky, V. N., Problemy myshlenija i rechi v trudakh L. S. Vygotskogo [Problems of thinking and speech in the works of L. S. Vygotsky]. In L. S. Vygotsky: *Myshlenie i Rech'* [Thinking and Speech]. Moscow, 1934, pp. 6-35.

Kolominsky, Ya. L., Sotsial'no-psikhologicheskaja kontseptsija ontogeneza v svete idei L. S. Vygotskogo [The social-psychological conception of ontogenesis in light of the ideas of L. S. Vygotsky]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 77-80.

Kozyrev, A. V., and Turko, P. A., "Pedologicheskaja shkola" professora L. S. Vygotskogo [The "pedological school" of Professor L. S. Vygotsky]. *Vysshaja Shkola* [Secondary School], 1936, No. 2, pp. 44-57.

Krantsov, G. G. and Krantsova, E. E., Puti razrabotki idei L. S. Vygotskogo o roli obshchenija v psikhicheskom razviti rebenka [Methods of developing the ideas of L. S. Vygotsky on the role of intercourse in the mental deelopment of the child]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 80-82.

L. S. Vygotskii i sovremennaja defektologija [L. S. Vygotsky and modern defectology], *Defektologija* [Defectology], 1982, No. 3, pp. 3-6.

Lektorsky, V. A., L. S. Vygotskii i problema refleksii [L. S. Vygotsky and the reflex problem]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 82-84.

Lektorsky, V. A., Sadovsky, V. N., and Yudin, E. G., Operatsional'naja kontseptsija intellekta v rabotakh Zhana Piazhe [The operational conception of intellect in the works of Jean Piaget]. In *Piazhe Zh. Izbrannye Psikhologicheskie Trudy* [Selected Psychological Works of J. Piaget]. Moscow, 1969, pp. 9-53.

Leont'ev, A. A., L. S. Vygotskii i predmet nauchnoi psikhologii [L. S. Vygotsky and the subject of scientific psychology]. Ibid., pp. 84-91.

Leont'ev, A. A., *Psikholingvistika* [Psycholinguistics]. Leningrad, 1967, 118 pp. (pp. 77-83).

Leont'ev, A. A., *Psikholingvisticheskie Edinitsy i Porozhdenie Rechevogo Vyskazyvanija* [Psycholinguistic Units and the Generation of Spoken Expression]. Moscow, 1969, 305 pp. (pp. 36-38, 111-114, 157-161).

Leont'ev, A. A., Tvorcheskii put' A. N. Leont'eva [The creative path of A. N. Leont'ev]. In *A. N. Leont'ev i Sovremennaja Psikhologija* [A. N. Leont'ev and Modern Psychology]. Moscow, 1983, pp. 6-39.

Leont'ev, A. A., *Jazyk, Rech' Rechevaja Dejatel'nost'* [Language, Speech, Speech Activity]. Moscow, 1969, 214 pp. (pp. 202-210).

Leont'ev, A. A., *Jazykoznanie i Psikhologija* [Linguistics and Psychology]. Moscow, 1966, 80 pp. (pp. 23-40).

Leont'ev, A. N., Bor'ba za problemu soznanija v stanovlenii sovetskoi psikhologii [The struggle behind the problem of consciousness in establishing Soviet psychology]. *Voprosy Psikhologii* [Problems in Psychology], 1967, No. 2, pp. 14-23.

Leont'ev, A. N., Vvedenie k publikatsii: Iz neizdannykh materialov L. S. Vygotskogo [Introduction to the publication: From the unpublished materials of L. S. Vygotsky]. In *Psikhologija Grammatiki* [The Psychology of Grammar]. Moscow, 1968, pp. 178-179.

Leont'ev, A. N., Vstupitel'naja stat'ja [Introductory paper]. In L. S. Vygotsky: *Psikhologija Iskusstva* [L. S. Vygotsky: The Psychology of Art]. Moscow, 1965, pp. III-XI.

Leont'ev, A. N., O tvorcheskom puti L. S. Vygotskogo. Vstupitel'naja stat'ja [The creative path of L. S. Vygotsky. Introductory paper]. In L. S. Vygotsky: *Sobr. Soch. v 6-ti t.* [L. S. Vygotsky: Collected Works in 6 vols.]. Moscow, 1982, Vol. 1, pp. 9-41.

Leont'ev, A. N., *Dejatel'nost'. Soznanie. Lichnost'* [Activity, Consciousness, Personality]. Moscow, 1974, 304 pp. (pp. 96-100).

Leont'ev, A. N., L. S. Vygotskii. Sovetskaja Psikhonevrologija [Soviet Psychoneurology], 1934, No. 6, pp. 187-190.

Leont'ev, A. N., Nachalo sovremennoi psikhologii [The beginning of modern psychology]. *Znanie—Sila* [Knowledge—Power], 1978, No. 5, p. 55.

Leont'ev, A. N., O putjakh issledovanija vosprijatija [Ways of studying perception], In *Vosprijatie i Dejatel'nost'* [Perception and Activity]. Moscow, 1976, pp. 3-27.

Leont'ev, A. N., Ob istoricheskom podkhode v izuchenii psikhiki cheloveka [The historical approach to studying the mind of man]. In *Psikhologicheskaja Nauka v SSSR* [Psychological Science in the USSR]. Moscow, 1959, Vol. 1, pp. 9-45.

Leont'ev, A. N., Oposredovannoe zapominanie u detei s nedostatochnym i boleznenno izmenennym intellektom [Mediated remembering in children with inadequate and disease-induced altered intellect]. *Voprosy Defektologii* [Problems in Defectology], 1982, No. 4, pp. 15-27.

Leont'ev, A. N., Problema dialekticheskogo metoda v psikhologii pamjati [The problem of the dialectical method in the psychology of memory]. In *Voprosy Marksistskoi Pedagogiki* [Problems in Marxist Pedagogy]. Moscow, 1929, pp. 101-110.

Leont'ev, A. N., Psikihologicheskoe issledovanie rechi [Psychological study of speech]. In A. N. Leont'ev: *Izbrannye Psikhologicheskie Proizvedenia* [A. N. Leont'ev: Collected Psychological Works]. Moscow, 1983, Vol. 1, pp. 65-76.

Leont'ev, A. N., Razvitie vnutrennei struktury vysshego povedenija [Development of the internal structure of higher behavior]. In *Psikhonevrologicheskie Nauki v SSSR. Materialy I Vsesoyuznogo S'ezda po Izucheniju Povedenija Cheloveka* [Psychoneurological Studies in the USSR. Materials of the First All-Union Congress on the Study of Human Behavior]. Moscow-Leningrad, 1930, pp. 140-141.

Leont'ev, A. N., *Razvitie Pamjati* [Development of Memory]. Moscow, 1931, 278 pp.

Leont'ev, A. N., and Luria, A. R., Iz istorii stanovlenija psikhologicheskikh vzgljadov L. S. Vygotskogo [From the history of the formation of the psychological views of L. S. Vygotsky]. *Voprosy Psikhologii* [Problems in Psychology], 1976, No. 6, pp. 83-94.

Leont'ev, A. N., and Luria, A. R., Primechanija [Notes]. In L. S. Vygotsky: *Izbranye Psikhologicheskie Issledovanija* [L. S. Vygotsky: Collected Psychological Studies]. Moscow, 1956, pp. 497-503.

Leont'ev, A. N., and Luria, A. R., Psikhologicheskie vozzrenija L. S. Vygotskogo [Psychological views of L. S. Vygotsky]. In L. S. Vygotsky: *Izbranye Psikhologicheskie Issledovanija* [L. S. Vygotsky: Collected Psychological Studies]. Moscow, 1956, pp. 4-36.

Leont'ev, A. N., Luria, A. R., and Teplov, B. M., Predislovie [Foreword]. In L. S. Vygotsky: *Razvitie Vysshykh Psikhicheskikh Funktsii* [L. S. Vygotsky: Development of Higher Mental Functions]. Moscow, 1960, pp. 3-10.

Leont'ev, A. N., and Puzyrei, A. A., Vstuplenie k publikatsii: iz zapisknykh knizhek L. S. Vygotskogo [Introduction to the publication of the notebooks of L. S. Vygotsky]. *Vestnik MGU. Psikhologija* [MGU Journal. Psychology], 1977, No. 2, p. 89.

Levina, R. E., Idei Vygotskogo o planirijushchei funktsii rechi [The ideas of Vygotsky on the planning function of speech]. *Voprosy Psikhologii* [Problems in Psychology], 1968, No. 4, pp. 105-115.

Levina, R. E., K Psikhologii Detskoi Rechi v Patologicheskikh Sluchajakh [The Psychology of Children's Speech in Pathological Cases]. Moscow, 1936, 78 pp.

Levitin, K. E., *Mimoletnyi Uzor* [Transient Pattern]. Moscow, 1978, 80 pp. (pp. 36-54).

Liders, A. G., Kategorija "iskusstvennoe—estestvennoe" i problema obuchenija i razvitija u L. S. Vygotskogo i Zh. Piazhe [The category "artificial—natural" and the problem of teaching and development in L. S. Vygotsky and J. Piaget]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 91-94.

Lifanova (Shakhlevich), T. M., Istoricheskii analiz razvitija problemy compensatsii defekta v nauchnom tvorchestve L. S. Vygotskogo [Historical analysis of the development of the problem of compensation for defect in the scientific work of L. S. Vygotsky]. In *Sovershestvovanie Vospitatel'noi Raboty vo Vspomogatel'noi Shkole* [Improving Educational Work in the Auxiliary School]. Minsk, 1983, pp. 4-9.

Lifanova (Shakhlevich), T. M., Bibliografija trudov L. S. Vygotskogo [Bibliography of the works of L. S. Vygotsky]. In L. S. Vygotsky: *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, 1984, Vol. 6, pp. 360-375.

Ljadis, V. Ya., *Pamjat' v Protsesse Razvitija* [Memory in the Process of Development]. Moscow, 1976, 255 pp. (pp. 10-15).

Logvinenko, A. G. Dvuplanovaja struktura zritel'nogo obraza v svete kontseptsii vysshikh funktsii L. S. Vygotskogo [The two-plane structure of the visual image in light of the conception of higher functions of L. S. Vygotsky]. In L. S. Vygotsky: *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, 1984, Vol. 6, pp. 95-96.

Lotman, Yu. M., O dvukh modeljakh kommunikatsii v sisteme kul'tury [Two models of communication in the system of culture]. In *Trudy po Znakovym Sistemam, vyp. 6* [Works on Sign Systems, 6th ed.] Tartu, 1973, pp. 227-244.

Lubovsky, V. I., Obshchie i spetsificheskie zakonomernosti razvitija psikhiki anomal'nykh detei [General and specific patterns of development of the minds of abnormal children]. *Defektologija* [Defectology], 1971, No. 6, pp. 15-19.

Luchkov, V. V., and Pevzner, M. S., Znachenie teorii L. S. Vygotskogo dlja psikhologii i defektologii [The significance of the theory of L. S. Vygotsky for psychology and defectology]. *Vestnik MGU. Psikhologija* [MGU Journal. Psychology], 1981, No. 4, pp. 60-70.

Luria, A. R., Mozg i psikhyka [Brain and Mind]. *Kommunist* [Communist], 1964, No. 6, pp. 107-117.

Luria, A. R., *Mozg Cheloveka i Psikhicheskie Protsessy* [The Mind of Man and Mental Processes]. Moscow, 1963, 478 pp. (pp. 54-60).

Luria, A. R., O meste psikhologii v rjadu sotsial'nykh i biologicheskikh nauk [The place of psychology in the ranks of social and biological sciences]. *Voprosy Psikhologii* [Problems in Psychology], 1977, No. 9, pp. 68-76.

Luria, A. R., *Ob Istoricheskom Izuchenii Poznavatel'nykh Protsessov* [The Historical Study of Cognitive Processes]. Moscow, 1974, 170 pp. (pp. 5-24).

Luria, A. R., *Osnovnye Problemy Neirolingvistiki* [Fundamental Problems of Neurolinguistics]. Moscow, 1975, 252 pp. (pp. 6-10).

Luria, A. R., *Osnovy Neiropsikhologii* [Fundamentals of Neuropsychology]. Moscow, 1973, 374 pp. (pp. 73-76).

Luria, A. R., Posleslovie [Epilogue]. In L. S. Vygotsky: *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, 1982, Vol. 2, pp. 466-479.

Luria, A. R., Psikhologija kak istoricheskaja nauka. (K voprosu ob istoricheskoi prirode psikhologicheskikh protsessov) [Psychology as a historical science. (The question of the historical nature of psychological processes)]. In *Istorija i Psikhologija* [History and Psychology]. Moscow, 1971, pp. 36-62.

Luria, A. R., Puti sovetskoi psikhologii za 15 let [Fifteen years of the paths of Soviet psychology]. *Sovetskaja Psikhonevrologija* [Soviet Psychoneurology], 1933, No. 1, pp. 25-36.

Luria, A. R., Razvitie rechi i formirovanie psikhologicheskikh protsessov [Development of speech and formation of psychological processes]. In *Psikhologicheskaja Nauka v SSSR* [Psychological Science in the USSR]. Moscow, 1959, Vol. 1, pp. 516-577.

Luria, A. R., Teorija razvitija vysshikh psikhicheskikh funktsii v sovetskoi psikhologii [The theory of development of higher mental functions in Soviet psychology]. *Voprosy Filosofii* [Problems in Philosophy], 1966, No. 7, pp. 72-80.

Luria, A. R., *Jazyk i Soznanie* [Language and Consciousness]. Moscow, 1979, 320 pp. (pp. 80-90).

Luria, A. R., and Gippenreiter, Yu. B., Primechanija [Notes]. In L. S. Vygotsky: *Razvitie Vysshikh Psikhicheskikh Funktsii* [L. S. Vygotsky: Development of Higher Mental Functions]. Moscow, 1960, pp. 482-484.

Markova, A. K., Issledovanija motivatsii uchebnoi dejatel'nosti i idei L. S. Vygotskogo [Studies of motivation of educational activity and the ideas of L. S. Vygotsky]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 96-100.

Matjushkin, A. M., Posleslovie [Epilogue]. In L. S. Vygotsky: *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, 1983, Vol. 3, pp. 338-353.

Matjushkin, A. M., Kommentarii [Notes]. Ibid., pp. 354-360.

Mazur, E. S. Problema smyslovoi reguljatsii v svete idei L. S. Vygotskogo [The problem of semantic regulation in light of the ideas of L. S. Vygotsky]. *Vestnik MGU. Psikhologija* [MGU Journal. Psychology], 1983, No. 1, pp. 31-40.

Munipov, V. M., and Radzikhovsky, L. A., Psikhotekhnika v sisteme nauchnykh predstavlenii L. S. Vygotskogo [Psychotechnology in the system of scientific conceptions of L. S. Vygotsky]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 104-107.

Nepomnjashchaja, N. I., L. S. Vygotskii o tselostnom metode v psikhologii [L. S. Vygotsky on the holistic method in psychology]. Ibid., pp. 108-110.

Nepomnjashchaja, N. I., Teorija L. S. Vygotskogo o svjazi obuchenija i razvitija [The theory of L. S. Vygotsky on the connection between teaching and development]. In *Obuchenie i Razvitie* [Teaching and Development]. Moscow, 1966, pp. 183-199.

Nikitina, E. S., O vnutrennei rechi kak predmete izuchenija [Internal speech as a subject for study]. In *Eksperimental'nye Issledovanija v psikholingvistike* [Experimental Studies in Psycholinguistics]. Moscow, 1982, pp. 130-142.

Nikol'skaja, A. A., Fundamental'nye problemy psikhologii v tvorchestve L. S. Vygotskogo i P. P. Blonskogo [Fundamental problems of psychology in the work

of L. S. Vygotsky and P. P. Blonsky]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 110-125.

Noskova, O. G., L. S. Vygotskii o roli psikhotekhniki v razvitii psikhologicheskoi nauki [L. S. Vygotsky on the role of psychotechnology in the development of psychological science]. Ibid., pp. 115-117.

Petrenko, V. F., Idei L. S. Vygotskogo i teorija glubinnykh semanticheskikh rolei [The ideas of L. S. Vygotsky and the theory of deep semantic roles]. Ibid., pp. 117-119.

Petrovsky, A. V., *Istorija Sovetskoi Psikhologii* [The History of Soviet Psychology]. Moscow, 1967, 367 pp. (pp. 103-107, 161-167, 244-251).

Petrovsky, A. V., *Voprosy Istorii i Teorii Psikhologii* [Problems of History and Theories of Psychology]. Moscow, 1984, pp. 122-138.

Petrovsky, A. V., L. S. Vygotskii i razvitie sotsial'no-psikhologicheskoi teorii [L. S. Vygotsky and the development of sociopsychological theory]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 119-122.

Petrovsky, A. V., and Petrovsky, V. A., L. S. Vygotskii i problema lichnosti v sovremennoi psikhologii [L. S. Vygotsky and the problem of personality in modern psychology]. *Vestnik MGU. Psikhologija* [MGU Journal. Psychology], 1982, No. 4, pp. 15-20.

Petrovsky, V. A., Predposylki psikhologii lichnosti v svete idei L. S. Vygotskogo [Premises of the psychology of personality in light of the ideas of L. S. Vygotsky]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 122-125.

Piskun, V. M., and Tkachenko, A. N., L. S. Vygotskii i A. A. Potebnya [L. S. Vygotsky and A. A. Potebnya]. Ibid., pp. 125-128.

Podd'jakov, N. N., K probleme umstvennogo razvitija rebenka [The problem of mental development of the child]. Ibid., pp. 128-131.

Ponomarev, Ya. A., Ponimanie L. S. Vygotskogo predmeta psikhologii, vyskazannoe v rabote "Psikhika, Soznanie, Bessoznatel'noe" [L. S. Vygotsky's conception of the subject of psychology expressed in the work *The Mind, Consciousness and Unconsciousness*]. Ibid., pp. 131-132.

Puzyrei, A. A., Vygotskii Lev Semenovich [Vygotsky, Lev Semenovich]. *KLE* [Concise Literary Encyclopedia], Moscow, 1978, Vol. 9, pp. 212-213.

Puzyrei, A. A., Interiorizatsija [Interiorization], *KLE* [Concise Literary Encyclopedia], Moscow, 1972, Vol. 10, p. 321.

Radzikhovsky, L. A., Analiz tvorchestva L. S. Vygotskogo sovetskimi psikhologami [Analysis of the work of L. S. Vygotsky by Soviet psychologists]. *Voprosy Psikhologii* [Problems in Psychology], 1979, No. 6 pp. 58-67.

Radzikhovsky, L. A., Dejatel'nost': struktura, genez, edinitsy analiza [Activity: structure, genesis, units of analysis]. *Voprosy Psikhologii* [Problems in Psychology], 1983, No. 6, pp. 121-127.

Radzikhovsky. L. A., K istorii i perspektivam teorii dejatel'nosti v sovetskoi psikhologii [Toward a history and prospects of the theory of activity in Soviet psychology]. *Novye Issledovanija v Psikhologii* [New Studies in Psychology], 1982, No. 1, pp. 2-6.

Radzikhovsky, L. A., Kommentarii [Notes]. In L. S. Vygotsky: *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, 1982, Vol. 2, pp. 480-491.

Radzikhovsky, L. A., L. S. Vygotskii i razvitie dejatel'nostnogo podkhoda v sovetskoi psikhologii [L. S. Vygotsky and the development of the activity approach in Soviet psychology]. In *Sbornik Nauchnykh Rabot NII Obshch. i Ped. Psikhologii APN SSSR* [Compendium of Scientific Works of the Scientific Research Institute of the Academy of Pedagogical Sciences of the USSR]. Moscow, 1978, pp. 20-25.

Radzikhovsky, L. A., O rannikh etapakh nauchnogo tvorchestva L. S. Vygotskogo [Early stages of the scientific work of L. S. Vygotsky]. *Voprosy Psikhologii* [Problems in Psychology], 1979, No. 1, pp. 99-105.

Radzikhovsky, L. A., *Osnovnye Etapy Nauchnogo Tvorchestva L. S. Vygotskogo* [Basic Stages of the Scientific Work of L. S. Vygotsky]. Candidate's Dissertation, Moscow, 1979, 226 pp.

Radzikhovsky, L. A., Problema soznanija v rannykh psikhologicheskikh rabotakh L. S. Vygotskogo [The problem of consciousness in the early psychological works of L. S. Vygotsky]. *Novye Issledovanija v Psikhologii* [New Studies in Psychology], 1979, No. 2, pp. 107-110.

Radzikhovsky, L. A., Problema sub'ekta i ob'ekta v psikhologicheskoi teorii dejatel'nosti [The problem of subject and object in the psychological theory of activity]. *Voprosy Psikhologii* [Problems in Psychology], 1982, No. 9, pp. 57-66.

Radzikhovsky, L. A., Sovremennye issledovanija tvorchestva L. S. Vygotskogo [Current studies of the work of L. S. Vygotsky]. *Voprosy Psikhologii* [Problems in Psychology], 1982, No. 3, pp. 165-167.

Radzikhovsky, L. A., and Khak, F. M., Znachenie rannykh rabot L. S. Vygotskogo dlja razvitija sovetskoi psikhologii [The significance of the works of L. S. Vygotsky for the development of Soviet psychology]. *Vestnik MGU. Psikhologija* [MGU Journal. Psychology], 1977, No. 3, pp. 11-20.

Radzikhovsky, L. A., and Khomskaja, E. D., A. R. Luria i L. S. Vygotskii (pervye gody sotrudnichestva) [A. R. Luria and L. S. Vygotsky (the first years of collaboration)]. *Vestnik MGU. Psikhologija* [MGU Journal. Psychology], 1981, No. 2, pp. 66-76.

Rubinshtein, S. L., *Osnovy Obshchei Psikhologii* [Fundamentals of General Psychology]. Moscow, 1940, 596 pp. (pp. 338-339).

Rubinshtein, S. Ya., L. S. Vygotskii o razvitii psikhiki umstvennootstalykh detei [L. S. Vygotsky on the development of the mind of mentally retarded children]. *Defektologija* [Defectology], 1970, No. 5.

Rubinshtein, S. Ya., O nekotorykh idejakh L. S. Vygotskogo v oblasti patopsikhologii [Certain ideas of L. S. Vygotsky in the area of pathopsychology]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 132-135.

Rubinshtein, S. Ya., *Psikhologija Umstvenno Otstalogo Shkol'nika* [The Psychology of the Mentally Retarded Schoolchild]. Moscow, 1979, 192 pp. (pp. 42-57, 105-117).

Rubtsov, V. V., Diagnostika kollektivnogo deistvija detei kak issledovatel'skaja problema [Diagnostics of group action of children as a research problem]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 135-140.

Sadovsky, V. N., Geshtal'tpsikhologija L. S. Vygotskogo i Zh. Piazhe (K istorii sistemnogo podkhoda v psikhologii) [Gestalt psychology of L. S. Vygotsky and J. Piaget (Toward a history of the systemic approach in psychology)]. Ibid., pp. 140-143.

Sakharov, L. S. Ob Obrazovanii ponjatii [On the formation of concepts]. *Psikhologija* [Psychology], 1931, No. 1, pp. 3-33.

Semenov, I. N., Vygotskii Lev Semenovich [Vygotsky, Lev Semenovich]. *BSE* [Great Soviet Encyclopedia], 1971, Vol. 5, p. 521.

Shakhlevich, T. M., Bibliografija trudov L. S. Vygotskogo [Bibliography of the works of L. S. Vygotsky]. *Voprosy Psikhologii* [Problems in Psychology], 1974, No. 3, pp. 152-160.

Shakhlevich, T. M., Biografii L. S. Vygotskogo [Biographies of L. S. Vygotsky]. In *Sbornik Nauchnykh Trudov Aspiranto* [Compendium of the Scientific Works of Post-graduates]. Minsk, 1972, pp. 454-461.

Shakhlevich, T. M., L. S. Vygotskii o probleme razvitija anomal'nogo rebenka [L. S. Vygotsky on the problem of development of the abnormal child]. In *Pedagogy and Psychology* [Pedagogy and Psychology]. Minsk, 1972, pp. 185-197.

Shakhlevich, T. M., L. S. Vygotskii o tseljakh i zadachakh obuchenija i vospitanija anomal'nykh detei [L. S. Vygotsky on the goals and tasks of teaching and rearing abnormal children]. In *Puti Povyshenija Soznatel'nosti Uchenija vo Vspomogatel'noi Shkole* [Ways of Increasing Awareness of Teaching in the Auxiliary School]. Tashkent, 1975, Vol. 155, pp. 89-92.

Shakhlevich, T. M., Nauchno-pedagogicheskaja i obshchestvennaja dejatol'nost' L. S. Vygotskogo v Belorussii (istoriko-arkhivnoe issledovanie) [Scientific-pedagogical and social activity of L. S. Vygotsky in Belarus (historical-archival study)]. In *Gumanitarnye Nauki* [Humanities], Minsk, 1974, pp. 326-333.

Shakhlevich, T. M., O defektologicheskikh trudakh L. S. Vygotskogo [Work of L. S. Vygotsky on defectology]. *Defektologija* [Defectology], 1974, No. 3, pp. 76-80.

Shaknarovich, A. M., Issledovanija sintaksisa detskoi rechi i ideja L. S. Vygotskogo o semanticheskom sintaksirovanii [Study of the syntax of children's speech and the idea of L. S. Vygotsky on semantic syntax formation]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 166-168.

Shchedrovitsky, G. P., Problema sootnoshenija logicheskikh i psikhologicheskikh issledovanii myshlenija v istorii sovetskoi psikhologii [The problem of correlating logical and psychological thinking in the history of Soviet psychology]. In *Materialy IV Vsesojuznogo S'ezda Obshchestva Psikhologov* [Materials of the Fourth All-Union Congress of the Society of Psychologists]. Tbilisi, 1971, pp. 937-938.

Shchedrovitsky, G. P., Jazykovoe myshlenie i ego analiz [Linguistic thinking and its analysis]. *Voprosy Jazykoznanija* [Problems in Linguistics], 1957, No. 1, pp. 57-68.

Shein, A. A., Rannye psikhologicheskie issledovanija L. S. Vygotskogo [Early psychological studies of L. S. Vygotsky]. Voprosy Psikhologii [Problems in Psychology], 1965, No. 6, pp. 7-15.

Shif, Zh. I., *Razvitie Nauchnykh Ponjatii u Shkol'nikov* [Development of Scientific Concepts of School-children]. Moscow-Leningrad, 1935, 80 pp.

Shif, Zh. I., *Usvoenie Jazyka i Razvitie Myshlenija u Glukhikh Detei* [Acquisition of Language and Development of Thinking in the Deaf]. Moscow, 1968, 318 pp. (pp. 240-246).

Shmelev, A. G., and Pokhil'ko, V. I., L. S. Vygotskii i dinamicheskaja kontseptsija sub'ektivnykh semanticheskikh prostranstv [L. S. Vygotsky and the dynamic conception of subjective semantic spaces]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 168-171.

Shreider, B. A., Nekotorye osobennosti znakovykh vyrazhenii javlenii soznanija [Certain features of sign expressions of the phenomena of consciousness]. Ibid., pp. 171-173.

Smirnov, A. A., K 50-letju sovetskoi psikhologii [On the 50th anniversary of Soviet psychology]. *Voprosy Psikhologii* [Problems in Psychology], 1967, No. 5, pp. 13-28.

Smirnov, A. A., *Problemy Psikhologii Pamjati* [Problems of the Psychology of Memory]. Moscow, 1966, 423 pp. (pp. 25-36).

Smirnov, A. A., 50 let Instituta Psikhologii [50 years of the Psychology Instititute]. *Sovetskaja Pedagogika* [Soviet Pedagogy], 1963, No. 6, 129-141.

Smirnov, A. A., *Razvite i Sovremennoe Sostojanie Psikhologicheskoi Nauki v SSSR* [Development and the Current State of Psychological Science in the USSR]. Moscow, 1975, 352 pp. (pp. 168-178).

Smirnov, A. A., Sovetskaja psikhologija za 40 let [Soviet psychology over 40 years]. *Voprosy Psikhologii* [Problems in Psychology], 1957, No. 5, pp. 9-56.

Sobkin, V. S., K issledovaniju poetiki tekstov L. S. Vygotskogo [The study of the poetics of the texts of L. S. Vygotsky]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 143-145.

Sokolov, A. N., *Vnutrennjaja Rech' i Myshlenie* [Internal Speech and Thinking]. Moscow, 1968, 248 pp. (pp. 39-42).

Sokolov, A. N., Issledovanija po probleme rechevykh mekhyanizmov obshchenija [Study of the problem of speech mechanisms of intercourse]. In *Psikhologicheskaja Nauka v SSSR* [Psychological Science in the USSR], 1959, Vol. 1, pp. 488-515.

Sokolov, A. N., Problema myshlenija i rechi v kul'turno-istoricheskoi teorii L. S. Vygotskogo [The problem of thinking and speech in the cultural-historical theory of L. S. Vygotsky]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 145-147.

Stetsenko, A. P., L. S. Vygotskii i problema znachenija [L. S. Vygotsky and the problem of meaning]. Ibid., pp. 148-151.

Talankin, A. A., O povorote na psikhologicheskom fronte [The reversal on the psychological front]. *Sovetskaja Psikhologija* [Soviet Psychology], 1931, No. 2-3, pp. 8-23.

Talyzina, N. F., *Upravlenie Protsessom Usvoenija Znanii* [Guiding the Process of Acquiring Knowledge]. Moscow, 1975, 344 pp. (pp. 13-19).

Teplov, B. M., *Sovetskaja Psikhologicheskaja Nauka za 30 Let* [Soviet Psychological Science after 30 Years]. Moscow, 1947, 32 pp. (pp. 14-19).

Tikhomirov, O. K., L. S. Vygotskii i sovremennaja psikhologija [L. S. Vygotsky and current psychology]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 151-154.

Tikhomirov, O. K., Obshchestveno-istoricheskii podkhod k razvitiju psikhicheskoi dejatel'nosti cheloveka [The social-historical approach to development of the mental activity of man]. In *Voprosy Psikhologii* [Problems in Psychology], 1961, No. 12, pp. 144-147.

Tikhomirov, O. K., Teorija psikhologicheskikh sistem [Theory of psychological systems]. *Vestnik MGU. Psikhologija* [MGU Journal. Psychology], 1982, No. 2, pp. 3-12.

Tkachenko, A N., Aktual'nye problemy psikhologii [Urgent problems in psychology]. *Voprosy Psikhologii* [Problems in Psychology], 1983, No. 1, pp. 156-158.

Tkachenko, A N., Problemy iskhodnoi edinitsy analiza psikhicheskogo v istorii sovetskoi psikhologii [Problems of the original unit of analysis of the psychological in the history of Soviet psychology]. *Voprosy Psikhologii* [Problems in Psychology], 1980, No. 2, pp. 155-159.

Tulviste, P. E., K probleme tipologii verbal'nogo myshlenija [The problem of typology of verbal thinking]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 154-157.

Tumundzhjan, O. M., Trudy L. S. Vygotskogo v Severnoi Amerike [The works of L. S. Vygotsky in North America]. Ibid., pp. 158-161.

Vardanjan, G. A., K voprosu o kriterii otsenki "zony blizhaishego razvitija" rebenka [The problem of criteria for evaluating the "zone of proximal development" of

the child]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 37-38.
Velichkovsky, B. M., Tri programmy perestroiki psikhologii i krizis sovremennogo kognitivizma [Three programs for reorganizing psychology and the crisis of modern cognitivism]. Ibid., p. 39.
Venger, A. L., Navyk? Otkrytie mira? [Habit? Discovery of the world?]. *Znanie—Sila* [Knowledge—Power], 1982, No. 8, pp. 26-28.
Venger, A. L., O znachenii raznykh storon protsessa interiorizatsii dlja psikhicheskogo razvitija rebenka [The significance of various aspects of the process of interiorization for mental development of the child]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 39-41.
Venger, L. A., K probleme formirovanija vysshikh psikhicheskikh funktsii [The problem of formation of higher mental functions]. Ibid., pp. 41-43.
Voiko, V. I., Nauchnoe nasledie L. S. Vygotskogo i stanovlenie printsipov sovetskoi psikhologii [The scientific legacy of L. S. Vygotsky and establishing the principles of Soviet psychology]. Ibid., pp. 44-46.
Yaroshevsky, M. G., Predmetnaja dejatel'nost' kak osnova sistemy psikhologii [Objective activity as a basis for a system of psychology]. *Voprosy Psikhologii* [Problems in Psychology], 1984, No. 1, pp. 159-162.
Yaroshevsky, M. G., *Psikhologija v XX Stoletii* [Psychology in the 20th Century]. Moscow, 1971, 368 pp. (pp. 274-288).
Yaroshevsky, M. G., and Gurgenidze, G. S., Kommentarii [Notes]. In L. S. Vygotsky: *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, 1982, Vol. 1, pp. 459-472.
Yaroshevsky, M. G., and Gurgenidze, G. S., L. S. Vygotskii —issledovatel' problem, metodologii nauki [L. S. Vygotsky, investigator of problems of the methodology of science]. *Voprosy Filosofii* [Problems in Philosophy], 1977, No. 8, pp. 91-105.
Yaroshevsky, M. G., and Gurgenidze, G. S., L. S. Vygotskii o prirode psikhiki [L. S. Vygotsky on the nature of the mind]. *Voprosy Filosofii* [Problems in Philosophy], 1981, No. 1, pp. 142-154.
Yaroshevsky, M. G., and Gurgenidze, G. S., Posleslovie [Epilogue]. In L. S. Vygotsky: *Sobr. Soch. v 6-ti t.* [Collected Works in 6 vols.]. Moscow, 1982, Vol. 1, pp. 437-458.
Yaroshevsky, M. G., and Gurgenidze, G. S., Problemy metodologii nauki v tvorchestve L. S. Vygotskogo [Problems of methodology in the work of L. S. Vygotsky]. *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 183-190.
Yaroshevsky, M. G., and Tkachenko, A. N., Analiz kontseptsii L. S. Vygotskogo v trudakh A. R. Luria [Analysis of the conception of L. S. Vygotsky in the works of A. R. Luria]. In *A. R. Luria i sovremennaja psikhologija* [A. R. Luria and Modern Psychology]. Moscow, 1982, pp. 21-28.
Yudin, E. G. Dejatelnost' kak ob'jasnitel'nyi printsip i kak predmet nauchnogo izuchenija [Activity as an explanatory principle and as a subject of scientific study]. *Voprosy Filosofii* [Problems in Philosophy], 1976, No. 5, pp. 65-78.
Zak, A. Z., Kharakteristika "zony blizhaishego razvitija" pri diagnostike refleksii u mladshikh shkol'nikov [The characteristics of the "zone of proximal development" in reflex diagnostics in young schoolchildren]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 55-57.
Zamsky, Kh. S., *Istorija Oligofrenopedagogiki* [The History of Oligophrenopedagogics]. Moscow, 1980, pp. 84-89.

Zamsky, Kh. S., Lev Semenovich Vygotskii i oligofrenopedagogika [Lev Semenovich Vygotsky and oligophrenopedagogics]. *Defektologija* [Defectology], 1971, No. 6, pp. 9-15.
Zankov, L. V., Lev Semenovich Vygotskii kak defektolog [Lev Semenovich Vygotsky as a defectologist]. *Defektologija* [Defectology], 1971, No. 6, pp. 3-9.
Zaporozhets, A. V., Kul'turno-istoricheskaja teorija v psikhologii [Cultural-historical theory in psychology]. *Pedgogichskaja Entsiklopedija* [Pedagogical Encyclopedia], 1965, Vol. 2, pp. 563-564.
Zaporozhets, A. V., Lev Semenovich Vygotskii [Lev Semenovich Vygotsky]. *Pedgogichskaja Entsiklopedija* [Pedagogical Encyclopedia], 1964, Vol. 1, pp. 436-437.
Zaporozhets, A. V., Rol' L. S. Vygotskogo v razrabotke problem vosprijatija [The role of L. S. Vygotsky in working out the problems of perception]. Voprosy Psikhologii [Problems in Psychology], 1966, No. 6, pp. 13-25.
Zaporozhets, A. V., Rol' L. S. Vygotskogo v razrabotke problemy emotsii [The role of L. S. Vygotsky in working out the problem of emotions]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 57-63.
Zeigarnik B. V., Oposredstvovanie i samoreguljatsija v norme i patologii [Mediation and self-regulation under normal conditions and in pathology]. *Vestnik MGU* [MGU Journal], 1981, No. 2, pp. 9-15.
Zeigarnik B. V., *Patologija Myshlenija* [Pathology of Thinking]. Moscow, 1962, 244 pp. (pp. 78-80).
Zeigarnik B. V., Perspektivy patopsikhologicheskikh issledovanii v svete uchenija L. S. Vygotskogo [Prospects in pathopsychological studies in light of the teaching of L. S. Vygotsky]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 63-64.
Zinchenko, V. P., Idei L. S. Vygotskogo o edinitsakh analiza psikhiki [Ideas of L. S. Vygotsky on units of analysis of the mind]. *Psikhologicheskii Zhurnal* [Psychological Journal], 1981, No. 2, pp. 118-133.
Zinchenko, V. P., and Lebedinsky, V. V., L. S. Vygotskii i N. A. Bernshtein: skhodnye cherty mirovozzrenija [L. S. Vygotsky and N. A. Bernshtein: similar traits in world-view]. In *Nauchnoe Tvorchestvo L.S.V.* [The Scientific Work of L.S.V.], pp. 64, 68.
Zinchenko, P. I., Problema neproizvol'nogo zapominanija [The problem of involuntary remembering]. *Nauchnye Zapiski Khar'kovskogo Gos. Ped. Inst. In. Jaz.* [Scientific Notes of the Kharkov State Pedagogical Institute of Foreign Languages], 1939, Vol. 1, pp. 145-187.
Zvegintsev, V. A., *Jazyk i Lingvisticheskaja Teorija* [Language and Linguistic Theory]. Moscow, 1983, 247 pp. (pp. 218-222).

Works in Languages Other than Russian

Alberti, A., Prefacione. In: Vygotsky L. S., *Immaginazione e Creativita' Neell'eta' Infantile.* Roma, 1972, pp. 7-15.
Bain, B., Toward an integration of Piaget and Vygotsky bilingual considerations. *Linguistics*, 1978, No. 160, pp. 5-19.
Bell, R. Q., A reinterpretation of the direction of effect in studies of socialization. *Psychol. Rev.*, 1968, No. 75, pp. 81-85.

Bell, R. Q., Stimulus control of parents or caretaker behavior by offspring. *Dev. Psychol.*, 1971, No. 4, pp. 63-72.
Berg, E. E., L. S. Vygotsky's theory of the social and historical origins of consciousness. Unpublished doctoral dissertation, University of Wisconsin, 1970, Vol. 2, p. 548.
Bickley, R., Vygotsky's contributions to a dialectical materialist psychology. *Sci. Society*, 1977, No. 41, pp. 191-207.
Bronckart, J.-P., The regulating role of speech: a cognitivist approach. *Hum. Dev.*, 1973, No. 16, pp. 417-439.
Brown, A. L., Theories of memory and the problems of development. In: Cermak, L. S., and Craik, F. I. (eds.), *Levels of Processing in Human Memory*, Hillsdale, 1979.
Brown, A. L., Vygotsky: A man for all seasons. *Contemp. Psychol.*, 1979, No. 24, pp. 161-163
Brozek, J., Soviet psychology. In: Marx, M. H., and Hillix, W. A., *Theories and Systems of Psychology*. New York, 1973, pp. 529-548.
Brozek, J., Vygotskii, Lev Semenovich. In: Wolman, B. B. (ed.), *International Encyclopedia of Psychiatry, Psychology, Psychoanalysis, Neurology*. New York, 1977, Vol. 11, p. 409.
Bruner, J. S., Introduction. In: Vygotsky L. S., *Thought and Language*. Cambridge, Massachusetts, 1962, pp. V-X.
Bruner, J. S., Preface to Vygotsky Memorial issue. *Sov. Psychol.*, 1967, No. 5, pp. 3-5.
Bruner, J. S., The beginnings of intellectual skill: I and II. *New Behaviour*, 1975, Oct. 2 (20-24) and Oct. 9 (58-61).
Buim, N., Runders, J., and Turnure, J., Early material linguistic environment of normal and Down's syndrome language-learning children. *Am. J. Mental Deficiency*, 1974, No. 79, pp. 52-58.
Camaconi, L., Linguaggio interiore e linguaggio egocentrico un paradigma unitario. *Eta Evolutiva*, 1981, No. 8, pp. 76-80.
Cecchini, M., Introduzione. In: Vygotsky L. S., Lurija A. R., and Leontjev A. N., *Psicologia e Pedagogia*. Roma, 1969, pp. 7-19.
Cole, M., Alexander Romanovich Luria: 1902-1977. *Am. Psychol.*, 1977, Vol. 32, No. 11, pp. 969-971.
Cole, M., Introduction. In: *Soviet Developmental Psychology*. White Plains, New York, 1977, pp. IX-XXII.
Cole, M., A portrait of Luria. In: Luria A. R. *The Making of Mind*. Cambridge, Massachusetts, 1979, pp. 181-225.
Cole, M., The unmaking of mind: behind the autobiography. *Psychol. Today*, 1980, No. 14, pp. 88-89.
Cole, M., and Bruner, J., Cultural differences and inferences about psychological processes. *Am. Psychol.*, 1971, Vol. 26, No. 10, pp. 867-876.
Cole, M., and Maltzman, I., Introduction. In: *A Handbook of Contemporary Soviet Psychology*. New York, 1968, pp. 3-38.
Cole, M., and Scribner, S., *Culture and Thought*. New York, 1974, pp. 39-42.
Cole, M., and Scribner, S., Introduction. In: Vygotsky, L. S., *Mind in Society*. New York, 1978, pp. 1-15.
Cumming, J., Vygotsky, Lev Semenovich. In: Eysenek, H. J., Arnold, W. J., and Meili, R. (eds.), *Encyclopedia of Psychology*, London, 1975, Vol. 2, p. 1170.
Di Lisa,O., Linguaggio, potere e ideologia: Vygotskij e Bachtin. *Prospettive Settanta*, 1980, No. 2.

Elsasser, N., and John-Steiner, V., An interactionist approach to advancing literacy. *Harvard Educ. Rev.*, 1977, No. 47, pp. 3, 355-370.
Ervin, S., Incisive ideas from the Soviet Union. *Contemp. Psychol.*, 1962, No. 7, pp. 406-407.
Fodor, J., Some reflections on L. S. Vygotsky's *Thought and Language*. *Cognition*, 1972, No. 1. pp. 82-95.
Fosberg, I., A modification of the Vygotsky block test for the study of the higher thought processes. *Am. J. Psychol.*, 1948, No. 61, pp. 558-561.
Fraser, C., and Roberts, N., Mothers' speech to children of four different ages. *J. Psycholing. Res.*, 1975, No. 4, pp. 9-16.
Frederickc, S., Vygotsky on language skills. *Classical World*, 1974, No. 67, pp. 283-290.
Garrioni, E., Recensione della psicologia dell'arte. *Paese Sera*, 1973, 23 marzo.
Gillisen, Y., Hendrix, T., Kiens, H., and Voncken, J., De tegenstelling Vygotskij–Piaget. *Psychol. Maatschappij*, 1977, No. 2, pp. 57-69.
Golden, M., Montare, A., and Bridger, W., Verbal control of delay behaviour in two-year-old boys as a function of social class. *Child Dev.*, 1977, No. 48, pp. 1107-1111.
Gulutsan, M., Jean Piaget in Soviet psychology. *Alberta J. Educ. Res.*, 1967, Vol. XIII, No. 3, pp. 239-247.
Hanfmann, E., and Kasanin, J., A method for the study of concept formation. *J. Psychol.*, 1937, No. 3, pp. 521-540.
Hanfmann, E., and Kasanin, J., Conceptual thinking in schizophrenia. *Nervous and Mental Disorder Monographs*, 1942, No. 67.
Hanfmann, E., and Vakar, G., Translators' preface. In: Vygotsky, L. S., *Thought and Language*. Cambridge, Massachusetts, 1962, pp. XI-XIII.
Harris, A., Social dialectics and language: Mother and child construct the discourse. In: Riegel, K. (ed.), *The Development of Dialectical Operations*. Basel, 1975, pp. 80-96.
Hewes, D., and Evans, D., Three theories of egocentric speech: a contrastive analysis. *Commun. Monographs*, 1978, No. 45, pp. 18-32.
Holzkamp, K., *Kritische Psychologie*. Vorbereitende Arbeiten, Frankfurt/Main, 1972.
Hyden, C., *Psykologi och Revolutionem. L. S. Vygotski och den Sovjetiska Psykologins Utveckling*. Stockholm, 1978.
Hyden, C., *Psykologi och Materialism*. Stockholm, 1981.
Ijzendoom, R. V., Veer, R. v. d., and Goossens F., *Kritische Psycholigie*. Baarn, 1981, 7, pp. 21-89.
Jakobson, R., Anthony's contribution to linguistic theory. In: Jakobson, R., *Selected Writings*, Vol. 2, Mouton, 1971, pp. 285-288.
John-Steiner, V., and Souberman, E., Afterword and notes. In: Vygotsky, L. S., *Mind in Society*. Cambridge, Massachusetts–London, 1978, pp. 121-140.
Kohlberg, L., Yaeger, J., and Hjerthol, E., Private speech: four studies and a review of theories. *Child Dev.*, 1968, No. 39, pp. 691-736.
Kussmann, T., *Sowjetische Psychologie: Auf der Suche nach der Methode*. Bern–Stuttgart–Wien, 1974, pp. 71-80.
Kvale, S., Memory and dialectics. In: Riegel, K. (ed.), *The Development of Dialectical Operations*. Basel, 1975, pp. 181-193.
Lecaldano, E., Psicologia ed educazione secondo Vygotskij. *La Ricerca*, 1969, 1 apr., pp. 1-4.
Leontiev, A. N., The development of voluntary attention in the child. *J. Gen. Psychol.*, 1932, No. 2, 52-81.

Leontiev, A. N., and Luria, A. R., Some notes concerning Dr. Fodor's "Reflections on L. S. Vygotsky's *Thought and Language*." *Cognition*, 1972, Vol. 1, No. 2-3, pp. 311-316.
Levi, G., Alcune idee di Vygotskij sullo sviluppo e il ritardo mentale nel bambino. *Eta Evolutiva*, 1981, No. 8, pp. 87-90.
Levitin, K., *One is Not Born a Personality. Chapter 1. Ages and Days*. Moscow, 1982, pp. 16-101.
Limber, J., Language in child and chimp? *Am. Psychol.*, 1977, Vol. 32, No. 4.
Linn, M., The role of intelligence in children's response to instruction, *Psychol. Schools*, 1973, No. 10, pp. 67-75.
London, I., A historical survey of psychology in the Soviet Union, *Psychol. Bull.*, 1949, No. 46, pp. 241-277.
Loschi, T., Il linguaggio del bambino: le ipotesi di Piaget e Vygotskij. *Vita dell'Infanzia*, 1975, No. 12, pp. 29-35.
Luria, A. R., Psychology in Russia. *J. Genet. Psychol.*, 1928, No. 35, pp. 347-355.
Luria, A. R., The problem of the cultural behavior of the child. *J. Genet. Psychol.*, 1928, No. 35, pp. 493-506.
Luria, A. R., Psychological expedition to Central Asia. *Science*, 1931, 74, 1920, 383-384.
Luria, A. R., Psychological expedition to Central Asia. *J. Genet. Psychol.*, 1932, No. 40, pp. 241-242.
Luria, A. R., The second psychological expedition to Central Asia. *J. Genet. Psychol.*, 1934, No. 44, pp. 255-259.
Luria, A. R., The development of mental functions in twins. *Character Personality*, 1936, No. 4, pp. 35-47.
Luria, A. R., L. S. Vygotsky: A biographical sketch. *Psychiatry*, 1939, No. 2, pp. 53-54.
Luria, A. R., L. S. Vygotski and the problem of localization of functions. *Neuropsychol.*, 1965, No. 5, pp. 387-392.
Luria, A. R., Autobiographia, In: Lindzey, G. (ed.), *A History of Psychology in Autobiography*, Englewood Cliffs, New Jersey, 1974, pp. 253-292.
Luria, A. R., Towards the basic problems of neurolinguistics. *Brain Language*, 1974, No. 1, pp. 1-14.
Luria, A. R., Biographical note on L. S. Vygotsky. In: Vygotsky, L. S., *Mind in Society*. Cambridge, Massachusetts–London, 1978, pp. 15-16.
Luria, A. R., *The Making of Mind*. Cambridge, Massachusetts–London, 1979, pp. 38-57.
Luria, A. R., and Majovski, L. V., Basic approaches used in American and Soviet clinical neuropsychology. *Am. Psychol.*, 1977, pp. 959-968.
Manacorda, M. A., La pedagogia di Vygotskij. *Riforma della Scuola*, No. 26, pp. 31-39.
Massucco, Costa A., *Psicologia Sovietca*. Torino, 1963.
Meacham, J., The development of memory abilities in the individual and in society. *Hum. Dev.*, 1972, No. 15, pp. 205-228.
Mecacci L., L'uomo nuovo sovietico. In: *Momenti e Problemi di Storia dell'URSS*. Roma, 1968, pp. 249-257.
Mecacci, L., Cenni bio-bibliografici. In: Vygotskij, L. S., *Lo Sviluppo Psichico del Bambino*. Roma, 1973, pp. 59-63.
Mecacci, L., *Cervello e Storia. Ricerche Sovietiche di Neorofisiologia e Psicologia*. Roma, 1977.

Mecacci, L., Riflessologia e scuola storico-culturale. In: Legrenzi, P. (a cura di), *Storia della Psicologia*. Bologna il Milano, 1979.
Mecacci, L., Vygotskij: per una psicologia dell'uomo. *Riforma della Scuola*, 1979, No. 27 (7), pp. 24-30.
Mecacci, L., Il manifesto della scuola storico-culturale. *Storia e Critica della Psicologia*, 1980, Vol. 1, No. 2, pp. 263-267.
Mecacci, L., Koffka e la psicologia sovietica. *Storia e Critica della Psicologia*, 1980, Vol. 1, No. 2, pp. 95-98.
Meece, R., and Rosenblum, R., Conceptual thinking of sixth-grade children as measured by the Vygotsky block test. *Psychol. Rev.*, 1965, No. 17, pp. 195-202.
Meichenbaum, D., Theoretical and treatment implications of developmental research on verbal control of behaviour. *Can. Psychol. Rev.*, 1975, No. 16, pp. 22-27.
Mininni, G., Marxismo e freudismo. In: Volosinov, V. N., *Freudismo*. Bari, 1977, pp. 23-50.
Moore, T., Language and intelligence: A longitudinal study of the first eight years. Part II: Environmental correlates of mental growth. *Hum. Dev.*, 1968, No. 11, pp. 1-24.
Morganti, S., Psicologia sovietica. In: Funari, E. (a cura di), *Psicologia*. Scuole e Indirizzi, Milano, 1977.
Musatti, T., Vygotskij e la psicologia dell eta'evolutiva. *Eta Evolutiva*, 1981, No. 8, pp. 69-75.
Orsolini, M., La formazione dei concetti in Piaget, Bruner e Vygotskij. *Scuola e Citta*, 1979, No. 6-7, pp. 261-270.
Parreren, C. F. V., and Carpay, J. A. M., *Soviet Psychologen over Onderwijs en Cogniteve Ontwikkeling*. Groningen, 1980.
Piaget, J., Comments on Vygotsky's critical remarks concerning "The language and thought of the child and reasoning in the child." In: Vygotsky, L. S., *Thought and Language*, Cambridge, Massachusetts, 1962, pp. 169-183.
Phillips, S., The contribution of L. S. Vygotsky to cognitive psychology. *Alberta J. Educ. Res.*, 1977, No. 23, pp. 31-42.
Ponzio, A., Semantica, teoria dell'ideologia e teoria dell'individuo umano in V. N. Volosinov. In: Volosinov, V. N., *Marsixmo, e Filosofia del Linguaggio*. Bari, 1976, pp. 5-41.
Ponzio, A., Linguaggio, inconscio e ideologia. In: Volosinov, V. N., *Freudismo*. Bari, 1977, pp. 7-22.
Ponzio, A., Semiotica marxista, teoria dell'individuo umano e dell'ideologia negli anni venti in URSS. In: *Marxismo, Scienza e Problema dell'uomo*. Verona, 1978, pp. 59-114.
Ponzio, A., Leggendo insieme Vygotskij e Bachtin. *Scienze Umane*, 1979, No. 1, pp. 123-134.
Rahmani, L., Studies on the mental development of the child, In: O'Connor, N. (ed.), *Present-Day Russian Psychology*. Oxford, 1966, pp. 152-177.
Rahmani, L., *Soviet Psychology. Philosophical, Theoretical and Experimental Issues*. New York, 1973.
Riegel, K. F., Dialectic operations: the final period of cognitive development. *Hum. Dev.*, 1973, No. 16, pp. 346-370.
Riegel, K. F., Toward a dialectical theory of development, *Hum. Dev.*, 1975, No. 18, pp. 50-64.
Riegel, K. F., Dialectical operations of cognitive development. In: *Contributions to Human Development*. Basel, 1976, Vol. 2, pp. 60-71.

Riegel, K. F., *Foundations of Dialectical Psychology*. New York, 1979.
Rigotti, E., Il problema della filosofia della lingua in L. S. Vygotskij ed altri autori sovietici. *Rivista di Filosofia Neoscolastica*, 1969, No. 1, pp. 38-71.
Robustelli, F., Evoluzione biologica e evoluzione culturale in Vygotskij. *Scienze Umane*, 1980, No. 1, pp. 165-174.
Sahakian, W. S., *History and Systems of Psychology*. New York–London, 1975, pp. 401-405.
Salmaso, D., Vygotskij, Lurija e la neuropsicologia. *Storia e Critica della Psicologia*, 1980, Vol. 1, No. 1, pp. 53-59.
Sameroff, A., Transactional models in early social relations. In: Riegel, K. F. (ed.), *The Development of Dialectical Operations*. Basel, 1975, pp. 65-79.
Scaparro, F., and Morganti, S., Osservasioni su L. S. Vygotskij e la psicologia del gioco. *Eta' Evolutiva*, 1981, No. 8, pp. 81-86.
Scheerer, E., Gestaltpsychology in the Soviet Union. Part 1. The period of enthusiasm. *Psychol. Res.*, 1980, No. 41, pp. 113-132.
Schribner, S., and Cole, M., Cognitive consequences of formal and informal education. *Science*, 1973, No. 182, pp. 553-559.
Schubert, F.-C., Vygotsky test. In: Eysenek, H. S., Arnold, W. J., and Meili, R. (eds.), *Encyclopedia of Psychologia*. London, 1975, Vol. 2, p. 1170.
Semeonoff, B. and Laird, A., The Vygotsky test as a measure of intelligence. *Br. J. Psychol.*, 1952, No. 43, pp. 94-102.
Sinclair, H., Some comments on Fodor's "Reflections on L. S. Vygotsky's *Thought and Language*." *Cognition*, 1972, No. 1, pp. 317-318.
Snow, C. E., Mothers' speech to children learning language. *Child Dev.*, 1972, No. 43, pp. 549-565.
Stewin, L., and Martin, J. The development stages of L. S. Vygotsky and J. Piaget: A comparison. *Alberta J. Educ. Res.*, 1977, No. 23, pp. 31-42.
Sutton, A., Cultural disadvantage and Vygotskii's stages of development. *Educ. Studies*, 1980, Vol. 6, No. 3, pp. 199-209.
Tornatore, L., Vygotskij e l'educazione linguistica. *Scuola e Citta*, 1980, No. 31, pp. 251-256.
Toulmin, S., The Mozart of psychology (review of *Mind in Society*). *New York Rev. Books*, 1978, 28 Sept., pp. 51-57.
Vegetti, M. S. Arte e psicoanalisi in uno scritto di L. S. Vygotskij. *La Cultura*, 1971, No. 9, pp. 397-406.
Vegetti, M. S., Una psicologia della creativita. *Riforma della Scuola*, 1972, No. 12, pp. 35-37.
Vegetti, M. S., Vygotskij e la psicologia sovietica. In: Vygotskij, L. S., *Storia dello Sviluppo delle Funzioni Psichiche Superiori*. Roma, 1974, pp. 9-39.
Voc, J. F., *Onderwijswetenschap en Marxisme. De Methodenstrijd in de Sovjetonderwijswetenschap*. Groningen, 1976.
Vygotski, Lev Semenovich, In: Wolman, B. B. (compl. ed.), *Dictionary of Behavioral Science*. London, 1975.
Weinreich, V., Review of "Thought and Language" by L. S. Vygotsky, *Am. Anthropol.*, 1963, Vol. 65, No. 6, pp. 1401-1404.
Wertsch, J. V., Editor's introduction to Levina, R. E., L. S. Vygotsky's ideas about the planning function of speech in children. In: *The Concept of Activity in Soviet Psychology*. New York, 1981, pp. 279-281.
Wertsch, J. V., Editor's introduction to Vygotsky, L. S., The development of higher forms of attention in childhood. In: *The Concept of Activity in Soviet Psychology*. New York, 1981, pp. 189-191.

Wertsch, J. V., Editor's introduction to Vygotsky, L. S., The genesis of higher mental functions. In: *The Concept of Activity in Soviet Psychology*. New York, 1981, pp. 144-147.
Wertsch, J. V., Editor's introduction to Vygotsky, L. S., The instrumental method in psychology. In: *The Concept of Activity in Soviet Psychology*. New York, 1981, pp. 134-136.
Wertsch, J. V., From social interaction to higher psychological processes. A clarification and application of Vygotsky's theory, *Hum. Dev.*, 1979, No. 22, pp. 1-22.
Wertsch, J. V., The significance of dialogue in Vygotsky's account of social, egocentric and inner speech. *Contemp. Educ. Psychol.*, 1980, No. 5, pp. 150-162.
Wertsch, J. V., Trends in Soviet cognitive psychology. *Storia e Critica della Psicologia*, 1981, Vol. 2, No. 2, pp. 219-295.
Zappi, G., *Psicologia Marxista*. Bologna, 1969.

AUTHOR INDEX

Ach, N., 103, 272
Adler, A., 272
Alexander, S., 274
Anaxagoras, 275
Angell, D. R., 84, 85, 89, 270

Archer, W., 117, 273
Archimedes, 164
Aristotle, 72, 75, 132, 171, 180, 198, 228, 274
Asmus, V. F., 124, 199, 273
Augustine, Saint, 165, 166, 212, 259, 274

Bach, 215
Bain, A., 186, 274
Bard, P. A., 74, 83, 85, 86, 97, 99, 109, 111-113, 138, 270
Basov, M. Ya., 7, 267
Bayley, N., 110
Bekhterev, V. M., 88, 109, 271, 272
Bellot, G., 231, 276
Bentley, M., 101, 102, 119, 272
Bergson, H., 103, 173, 230-235, 272
Binet, A., 10, 28, 56, 88, 252, 267, 271
Binswanger, L., 245, 255
Blonsky, P. P., 248
Bogen, H., 6, 7, 267
Bozhovich, L. I., 43, 269
Brainard, P. P., 7
Brentano, F., 213, 214, 276
Brett, G. S., 132, 134, 136, 157, 158, 255, 272, 273
Brisseau, 110, 111
Britton, S. W., 89, 109
Bruner, J., 266
Bühler, C., 5, 267
Bühler, K., 4-8, 63-65, 267, 272

Cannon, W. B., 75-79, 81, 82, 84-86, 89-94, 98, 100, 107-116, 118, 119, 134, 144, 150, 182, 255-257, 270-273
Cassirer, E., 103, 272
Chabrier, J. F., 206, 207, 210
Chanut, 275
Chekhov, A. P., 198, 241, 275, 276
Christina of Sweden, 193, 275
Clairon (Leyris de la Tudi, C. H.), 239, 276
Claparède, E., 21, 139, 140, 178, 268, 272
Corneille, P., 276
Creed, R. S., 77, 88, 89, 270

Dal', V. I., 102, 272
D'Allonnes, R., 95
Dana, C., 96, 97, 107, 113, 144, 182, 271
Dante, A., 207
Darwin, C., 71, 130, 145, 154, 155, 179, 232, 258, 269, 270
Denny-Brown, D., 270
der Pfalz, Elizabeth von, 149, 150, 162, 165, 167, 200, 274
Descartes, R., 72, 75, 89, 120-143, 146-150, 155, 159-184, 186-194, 197-203, 205, 206, 209-211, 213, 214, 220-227, 230-235, 245, 252-255, 258-262, 264, 273-275
Deseaumere, 88
Diddell, E., 270
Diderot, D., 237, 239, 240, 265, 276
Dilthey, W., 147, 148, 211, 215, 216, 218-222, 225, 227, 230, 258, 260, 274, 276
Dumas, G., 71, 72, 95, 130-133, 143, 150, 155, 161, 162, 184, 194, 195, 269
Dumenille, M. F., 239, 276
Dunlap, K., 75, 132-134, 140, 144, 160, 182, 186, 187, 195, 221, 270

Eccles, J., 270
Elkonin, D. B., 268

Engels, F., 64, 104, 131, 272

Fechner, G. T., 252
Fischer, K., 121-126, 141, 162, 163, 165-169, 171, 172, 174-176, 193, 200, 273

Froebes, J., 209
Freud, S., 208, 209, 216, 275
Fulton, 110, 113

Galilei, Galileo, 132
Galton, F., 7, 267
Garrick, D., 276
Geiger, M., 214, 276
Gemelli, A., 88
Gerke, E. D., 7, 8
Gesell, A., 3
Geshelina, L. S., 11, 268
Goethe, J. W., 65, 68, 71, 104, 107, 216, 269, 272
Gozzi, C., 277
Guillaume, P., 8, 17
Gurevich, L. Ya., 243, 277
Gutzman, H. A. K., 65-68, 269

Head, H., 17, 97, 98, 107, 111, 112, 115, 144, 182, 268
Hegel, G. F. W., 3, 127, 273
Heine, H., 121, 273
Helmholtz, H. von, 252
Herbart, J. F., 127, 273
Herrick, C. J., 106, 107
Hertz, M., 28
Heymans, G., 88
Hobbes, T., 132, 188, 215, 220, 275
Høffding, H.. 127, 132-134, 167, 273, 274
Holdberg, L., 87, 270
Holmes, G. M., 107, 111, 272
Hugo, V., 97
Irons, D., 129, 273

Jackson, J. H., 110, 111, 273
Jaensch, E., 31, 46, 103, 268, 272
James, W., 71-76, 78-89, 91-101, 105, 107, 108, 111-120, 127-140, 144-150, 153-161, 178, 179, 182-188, 194-199, 203, 205-208, 210, 211, 218-223, 226-230, 232-234, 252, 255-257, 260, 269, 270
Janet, P., 185, 247, 271, 272, 274

Kafka, G., 34, 35, 268
Kant, I., 49, 150, 151, 153, 155, 198, 274
Kechek'yan, S. F., 172, 173, 274
Kiril'tsev, S. I., 109, 272
Koffka, K., 36, 64, 106, 268
Köhler, W., 4-7, 13, 15, 16, 19, 28, 31, 32, 34, 35, 64, 103, 267, 268
Kohs, S. K., 11, 268
Konovalov, N. V., 96, 271
Kotelova, Yu. V., 12, 43, 268
Kretschmer, E., 105, 117, 272, 273
Krüger, F., 106, 272
Kuchurin, 42
Kuhn, Th., 255
Küppers, E., 98, 107, 112, 271

Lakatos, I., 255
Landis, C., 95, 271
Lange, C. G., 71-76, 78-89, 91-96, 100, 101, 105, 107, 108, 111, 113, 116, 117, 119, 120, 127-140, 143-146, 148, 150-157, 159-161, 176, 178, 179, 183, 184, 186, 194-196, 198, 199, 203-206, 208, 210-212, 218-223, 225-228, 230, 232-234,252, 255-257, 260, 269, 270, 273, 274
Lange, N. N., 115, 275
Langley, J. N., 94, 271
Larguier des Bancels, J., 129, 273
Learned, B. W., 13
Lehmann, A., 94, 99, 271
Leont'ev, A. N., 47, 48, 54, 269
Lesage, A. R., 277
Levina, R. E., 15, 268
Lewin, K., 36, 62, 64, 159, 268
Lewis, J. T, 89
Lindner, G., 35
Linnaeus, C., 3, 267
Lipmann, H., 65-67, 269
Lipmann, O., 4-6, 267
Lloyd-Morgan, see Morgan, C. L.
Locke, J., 182
Lotze, H., 72, 173, 208, 258, 270
Luria, A. R., 271

McDougall, W., 77, 116, 134, 140, 186, 198, 270, 272
Machiavelli, N., 212
Malebranche, N., 72, 120, 128-134, 136, 161, 182, 186, 187, 199, 220, 270, 276
Mantegazza, P., 154, 274
Maranon, G., 92-94, 271
Marcus Aurelius, 212
Marx, K., 64, 131, 248, 250, 272
Maudsley, H., 72, 270
Maxwell, J. C., 167, 274
Menchinskaya, N. A., 42, 268
Meyerson, G., 8, 17, 95
Michelangelo, 215
Mignard, M., 185, 198
Molière, 187, 240
Montaigne, M. E. de, 212
Morgan, C. Lloyd, 88, 271, 274
Morozova, N. G., 9, 267
Morrison, J. F, 110
Müller, J., 106, 107, 272
Müller, M., 268
Münsterberg, H., 134, 186, 216-218, 221, 224-226, 273

Nahlowsky J. W., 127, 273
Natorp, P., 225, 276
Nemirovich-Danchenko, V. I., 276
Newman, E. W., 111
Nisami, Iljas ben Jussuf, 277

Pascal, B., 209. 212
Pashkovskaya, E. I., 12, 43
Paulhan, F, 241, 276
Pavlov, I. P., 94, 205, 247-250, 271
Perkins, F. T., 111
Perry, R., 75, 84, 89, 270
Petzoldt, J., 124, 125, 273
Phaedo, 275
Phänder. A., 214, 276
Piaget, J., 9, 14, 15, 21, 52, 103, 247, 267
Pieron, H., 88, 271, 272
Piderit, T., 154, 274
Pillsbury, W. B., 272
Plato, 81, 219, 275, 276
Plotinus, 259
Pogano, 88
Popper, K., 255
Potebnya, A. A., 12, 249, 268

Prince, M., 159-161, 186, 198, 272, 274
Pushkin, A. S., 177, 274

Racine, J., 276
Ribot, Th., 129, 227, 228, 238, 252, 273

Sakharov, L. S., 12, 43, 268
Scheler, M., 208-210, 213, 214, 218, 219, 224, 226, 258, 260, 275
Schopenhauer, A., 209, 275
Seneca, L. A., 212
Sergi, G., 72, 88, 137-142, 149, 176-180, 182, 184, 187, 189, 202, 203, 221, 223, 227, 270
Sertoli, E., 94, 271
Shakespeare, W., 216
Shapiro, S. A., 7
Sherrington, C., 77, 83, 87-89, 91, 92, 95, 97, 99, 100, 109, 137, 144, 184, 194, 256, 270, 271
Shumova-Simanovskaya, E. O., 271
Slavina, L. S., 43, 269
Socrates, 146, 197, 213, 218, 219, 275
Sophocles, 240
Spearman, Ch. F., 134, 186, 272, 273
Spencer, H., 71, 153-155, 179, 233, 270
Spinoza, B., 71-74, 78, 86, 104, 105, 120-130, 136, 137, 147, 162, 165-167, 169, 170, 172, 173, 178, 199, 211, 215, 218-223, 245, 259-264, 270, 273, 274
Spranger, E., 147, 211, 274
Stanislavsky, Ch. E., 237, 240, 242, 243, 276, 277
Stern, W., 13, 28, 29, 268, 272
Stewart, C. C., 94, 271
Stout, G. F., 196, 275
Stumpf, K., 3, 105, 177, 267

Teresa, Saint, 185, 274
Tilney, F., 110, 272
Titchener, E. B., 72, 74, 75, 129, 270, 272
Thorndike, E., 61, 62, 269

Vakhtangov, E. B., 242, 276
Volkelt, H., 29, 106, 268
Voltaire, F. M., 276
Vygotskaya, Z. S., 271
Vygotsky, L. S., 67, 245-261, 264-275, 277

Ward, J., 134
Watson, J. B., 15, 268
Wells, F. L., 94, 271
Werner, H., 29, 268
Wertheimer, M., 103, 272
Westphal, A., 271
Wilson, S. A., 96, 97, 110, 111, 144, 271
Woodworth, R., 109, 272
Wundt, W., 58, 66, 154, 155, 179, 182, 183, 186

Yakobson, P. M., 276
Yerkes, R., 13, 268
Yusevich, 51

Zavadovsky, B. M., 76, 256, 270
Zankov, L. V., 51, 269
Zakhava, B. E., 242, 277

SUBJECT INDEX

Act, word and, 65–68
Action
  automatic versus voluntary, 36–37
  bodily causes, 169
  developmental stages of perception, 28
  freedom of, 64–65
  toward future, 64
  practical, 14–17
  socialization of practical intellect, 21
  stereotypic patterns of, 7, 8
  symbolic forms of thinking and, 5
  syncretism of, 21–22
  thoucentric, 67
  voluntary—purposeful, 36–37, 64
Activity
  control of others, 21–22
  perception and, 31
  practical, 17–20
  sensory-motor function, 29, 30–34
  stereotypic, 8
  symbolic, 13
Actors and acting, 237–244
Adrenaline, 92
Affect
  latent period, 94
  motor system and, 31
  neurophysiological experiments, 86–91
Altruism, 66
Anesthesia, 110
Anthropoids, 4–7, 13, 36
Aphasia, 8, 12, 18, 33
  higher mental functions with, 43–44
  practical action in, 67
Apraxia, 65
Associative pathways, 106–107
Attention
  reconstruction of, 34–35
  sign operations and organization of higher functions, 39–44
Automatic action versus voluntary action, 36–37

Behavioral psychology, 73–74
Bergson, H., 231–232, 233, 234
Biological/physiological manifestations of emotion, 76–91
Bliss, passive, 185
Botanical model, 3

Causes, instrumental and final, 176–177
Central nervous system, 106–111
Centrifugal (central-to-peripheral) model of emotions, 178–179, 183, 184, 187–188, 189; *see also* Descartes, R.
Cerebral synesthesia, 185
Classical theory of emotions, 79, 86, 198
Classification of emotions, 83
Cognition, 174, 175
  versus emotional, mental process, 114
  joy and, 185
Combinative activity tests, 11–12
Communication, 67
Comparative genetic method, 59–60
Concept formation, 7, 12
Conditionality, sign and meaning, 9
Control of others, 21–22

Cooperation
  sociogenesis and higher mental functions, 53
  and use of signs, 10
Cortical pathways, 106–111
Counting, 42
Cultural forms of behavior, revolution of, 55–56

Darwin, 153
Deaf-mute children, 7, 12, 35
Descartes, R., 75, 120*ff*, 136–168,
Development
  of higher forms of perception, 27–30
  parallelogram of, 54
  practical intellect, 20–22
  sign operations and, 39–44
Developmental psychology, 106
Diderot, D., 237*ff*

Ecstatic states, 185
Egocentric speech, 14, 15, 22–25, 53–54, 67
Eidetoid image, 51
Emotion-like sensations and perceptions, 106
Emotions
  classical theory, 79, 86
  classification of, 83
  innate, 198
  from mental causes, 212
  neurophysiological experiments, 86–91
  physiology of, 76–86
Ethics, 120
Evolutionists, 71
Experimental-genetic method, 60
Experimental-genetic study
  fate of sign operations, 52–56
  origin of sign operations, 49–52
  relationship of perception to movement, 31
  structure of sign operations, 45–49
Experimental philosophy, 103–104
Experiments, practical intellect, 4–12
Expressive functions, 67

Feeling-image, 106
Final causes, 176–177
First causes, 176–177
Freedom
  of action, 64–65
  and necessity, 172–173
  will and, 175, 176
Freud, S., 208
Function, and symbolic significance, 9
Functional systems problem, 61–63
Future
  action directed toward, 64
  concept of, 25
  reconstruction of memory and attention, 34–35

Genetic analysis, 49–52
Genetic method
  comparative, 59–60
  experimental, 31, 45–56
Genetic psychology, 12
Goethe, W., 104, 107

Hallucinations, motor, 182
Higher forms of practical activity, 17–20
Higher mental functions
  interiorization of, 53
  sign operations and, 39–40; *see also* Signs, and higher mental processes
Historical formations of behavior, 47

Ideas, as first causes, 177
Ideational behavior in apes, 13
Images, eidetoid, 51
Innate emotions, 198
Innate representations, 7
Innervational sensations, theory of, 182–183
Instrumental thinking, 5
Intellectual actions of ape, 36
Interiorization of higher mental functions, 53
Interiorization of sign operations, 54, 55
Internal speech, 15

James-Lange theory, 73*ff*
  experimental contradictions, 78–86
  neurophysiological experiments, 86–91
Joy, pathological manifestations of, 185

Kant, I., 150*ff*

Latent period of visceral and affective reactions, 94
Leipzig school, 106

Magnanimity, 174
Malebranche, 120, 129, 130, 131, 133, 134, 136, 186–187
Mastery, 67

Meaning
  innate representations and, 7
  sign and, 9–10
Memory, 25, 102, 103
  higher functions of, 10
  reconstruction of memory and attention, 34–35
  replacement of function, 56
  sign operations and organization of higher functions, 39–44
  structure of sign operations, 45–49
Mental causes of emotions, 212
Mental retardation, 7, 54
Metaphysics, 209, 210
Methodology, 57–60
Mnemotechnique, 56
Motor formulas, stereotypic, 8
Motor hallucinations, 182
Movement
  perception and, 31
  sensory-motor function, 29, 30–34
Mute tests, 11–12

Naming, sign operations, 52
Natural history of sign, 50
Necessity, freedom and, 172–173
Neurophysiological experiments, 86–91
Numerical operations, 42, 56

Object perception, 29
Objects
  developmental stages of perception, 28
  socialization of practical intellect, 21
Ontogenesis, sign operations, 46
Organic theory of emotions, 71ff'
  confirmation of, 73–78
  corticothalamic centers versus, 105–111
  experimental contradictions, 78–86
  peripheral versus central localization, 111–120
  skeletal muscle tension and movement as source, 96–99
Organization of behavior
  psychophysiological forms, 28
  speech and, 15, 16–17
  symbolic activity and, 13
Organization of mental processes, sign operations and, 39–44

Parallelogram of development, 54
Pascal, B., 209
Passive bliss, 185
Pathological manifestations of joy, 185
Perception
  emotion-like, 106
  higher forms, development of, 27–30
  laws of, 12
  object, 29
  relationship to movement, 31
  sign operations and organization of higher functions, 39–44
  speech and, 29–30
Philosophical problems, 103–104
Phylogenesis, 37, 42
Planning function of speech, 24, 25
Practical activity, 17–20
Practical intellect
  development, 20–22
  experiments, 4–12
  function of socialized and egocentric speech, 22–25
  function of speech in use of tools, 12–14
  higher forms of practical activity, 17–20
  speech and practical action, 14–17
Pride, 174
Primate experiments, 4–7, 13
Problem solving, speech and, 15
Proprioceptive structures, 84
Proximate causes, 176–177
Pseudobulbar paralysis, 109–110
Psychological linguistics, 12
Psychophysical parallelism, 187
Psychophysiology, 28–29, 73–78
Psychotechnical screening, 7
Purposeful action, 64

Quasi-needs, 36

Reflex principle, 100
Relations, developmental stages of perception, 28
Revolution of cultural forms of behavior, 55–56

Sensation of feeling, 105–106
Sensations
  adrenaline and, 93
  emotion-like, 106
  as first causes, 177
  innervational, 182–183
  and passions, 177
Sensorimotor function, division of, 30–34
Sensory fields, , 12, 28, 31, 35, 64
  merging with motor fields, 25
  verbalized function of attention and, 34

Sensual passions, 197–198
Sign-meaning relationship, 14
Sign operations
  analysis of, 45–56
  in apes, 13
  fate of, 52–56
  interiorization of, 54, 55
  and organization of mental processes, 39–44
  origin of sign operations, 49–52
  structure of, 45–49
Signs
  concept formation, 12
  and meaning, 9–10
  as mediating stimuli, 37
  natural history of, 50
  relationship of perception to movement, 31, 32–33
  and tool use, 63
  use of, 8–10
Signs, and development of higher mental processes, 27–38
  development of higer forms of perception, 27–30
  reconstruction of memory and attention, 34–35
  sensorimotor function, division of, 30–34
  voluntary structure of higher mental functions, 35–38
Skeletal muscle, as source of emotions, 96–99
Social character of action, 66
Social genesis of higher mental functions, 10–11, 41, 53
Social interactions, and use of signs, 10
Socialization of practical intellect, 21–22
Socialized speech, 22–25, 54
Speech, 102, 103
  egocentric, 14, 15, 22–25, 53–54, 67
  internal, 15
  and perception, 29–30
  planning function of, 24, 25
  and practical action, 14–17
  practical intellect, 12–14
  and practical thinking, 5
  reconstruction of memory and attention, 34–35
  reflecting function of, 24
  sign operations, 52
  socialized, 22–25, 54
  symbolic, 13
Spencer, H., 153
Spinoza, B., 71*ff*, 78, *104–105, 120–129, 136ff*, 165*ff*, 219–220
Stanislavsky, K.S., 237
Stereotypic motor formulas, 8
Stimuli-signs, relationship of perception to movement, 31, 32–33
Stimulus-response relations, 57–58, 59
Stoics, 169–170
Structural psychology, 106
Study methods, 57–60
Symbolic forms of thinking, 5
Symbolic situations, mechanisms of, 36
Symbolic speech, 13
Symbol operations in apes, 13
Syncretism of action, 21–22
Synesthesia, cerebral, 185

Teleological psychology, 210, 216, 219
Teleological theory of emotions, 179
Thalamus, 97–99, 106, 107–111, 115*ff*
Thinking, 103
  verbal, 5, 12
Thoucentric action, 67
Time, 34–35; *see also* Future; Memory
Tool use, 6, 12–14, 17, 31, 34, 63–65

Vagus nerve resections, 87*ff*
Verbalized perception, 29–30
Verbal thinking, 5, 12
Visceral reactions, latent period, 94
Visceral theory of passions, 177–178
Visual field, 12, 25, 28, 31, 35, 64
Visual space, 25
Voluntary action, 64
Voluntary structure of higher mental functions, 35–38

Will, 35–38, 169–172, 175, 176
Wisdom, 174, 175
Word and act, 65–68

Zoopsychology, 4