Chapter 6
The Age of Infancy

Outline of Chapter 6: The Age of Infancy

As we mentioned in the outline for the previous chapter, this material originally formed part of a single chapter called "The Age of Infancy," in which Chap. 5 was merely a prologue. *The Collected Works* in Russian informs us that the manuscript was found in the Vygotsky family archives but that the first two sections were missing. The editors mention some studies which appear to corroborate Vygotsky's account of infancy, but chide him for underestimating the ability of infants to form conditional reactions. They also remind us of the importance of the influence of the environment on the infant, as if seeking to counteract Vygotsky's own emphasis.

That emphasis is soundly on the emerging influence of the infant on the environment. Vygotsky ended the last chapter with the emergence of interest in the environment and the demise of the passive state of physiological separation and biological dependence that brought about the social situation of development in birth. Vygotsky commences this chapter with a new social situation of development; he continues with the social and neurological factors (backgrounded in birth and now foregrounded in infancy) that bring the neoformation into being; he then defines and delimits the neoformation that solves and dissolves the social situation of development (at least from the child's point of view); finally, he ends this chapter with a critical review of competing theories, from the most environmentalist to the most solipsistic.

I. **The Social Situation of Development in the Age of Infancy**

   1. The apparent asociality of the infant. The infant appears, at least to a superficial empirical eye, to be more of a social object than a social actor: speechless, passive, and preoccupied with simple needs like feeding, sleeping, and positioning. This misleading passivity in social relations gives rise to all of the incorrect theories of infancy to be critically reviewed at the end of the chapter.

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2. The real pansociality of the infant. In fact, the infant is a maximally social being because these simple life needs (food, rest, and comfort) can only be satisfied through being "intertwined" with caring adults.
3. The limitations of infant sociality. But the infant is not yet "interwoven" with the culture because the infant entirely lacks speech. As a result, the scope of the child's sociality is entirely nonverbal and interpersonal.
4. The social situation of development: maximal sociality and minimal speech. This contradiction—between maximal sociality and minimal sociocultural communication—constitutes the child's social situation of development in infancy.

II. **The Genesis of the Basic Neoformation in Infancy.**

1. The dynamics of infancy. Vygotsky commences with a discussion of changes, both between the first two age periods of life and within the second.
2. The genesis of higher brain centres. Vygotsky notes that these inter-age and intra-age changes appear to coincide with important changes in the brain, both quantitative and qualitative.
3. The genesis of instinct, habit, and intellect. Vygotsky now demonstrates that infancy includes at least three qualitatively different relationships between perception and behavior. He first notes two important aspects: their primordial, primitive unity and their potential for complex recombination in a higher structure. Then, Vygotsky suggests three qualitatively different structures for the unity of perception and behavior that can occur in infancy, namely the higher structures of behavior that Bühler proposed: instinct, habit, and intellect.
4. The genesis of social behavior. The higher brain centres and the links between sensory perception and behavior examined in the previous parts are external and internal lines of development which all have to do with the site of development, that is, the child himself. Vygotsky now ends this section with a consideration of the form of behavior that is closest to the source of development, namely social behavior.

III. **The Basic Neoformation of the Age of Infancy.**

1. What is new? In the previous section, Vygotsky stated the prerequisites for the emergence of the basic neoformation in the form of lines of development in the brain and in behavior. In this section, he will sketch the outlines of that basic neoformation. In the next section, Vygotsky will attack the Piagetian view which holds that the child is not fundamentally oriented to real satisfaction of real, physical needs. In this section, however, he begins by arguing that the helplessness of the infant is only overcome thanks the real satisfaction of real needs.
2. The Great We. Vygotsky now defines and delimits the basic neoformation of the child's consciousness, which corresponds exactly to this path through another person. He calls it the "Ur Wir," a German term which means a "proto-We" or perhaps a "Grand-We," by which he means a form of consciousness in

which the child does not differentiate between his own consciousness and that of others; the child simply assumes that just as we share the world of perception and the world of planned activity, we must also share the world of consciousness that subtends perception and activity. It is a "proto-We" in the sense that it is a "we" that exists even before there is an "I" and a "you" or an "I" and a "he": It is a "Grand-We" in the sense that it is the ancestor of the world of individuals voluntarily collaborating which will eventually develop. Vygotsky draws on two researchers to elucidate this concept:

a. Evidence for the differentiation of infant pansociality. Vygotsky now looks for experimental evidence of a "Great We" and finds it in the work of Fajans, a student of Kurt Lewin. We remember that Kurt Lewin found certain objects had "vectors" or "fields of attraction" that suggested activity affordances: for example, a door would attract children to open it, and a rock would attract children to sit on it (but some rocks would actually lose its attraction for very young children as soon as they turned their backs on it to sit!).
b. Evidence against the gradual socialization of infant individualism. To conclude this section—and to introduce the necessity for the next section on the competing theories of infancy—Vygotsky notes critically that most theories of infancy turn the social development of the infant inside out.

IV. **Basic Theories of Infancy.**

1. Reflexology. Vygotsky begins his critical review of theories of infancy at the extreme environmentalist end of the axis environment-child, with the theory he criticized above that interprets the infant's behavior as entirely reducible to reflexes.
2. Three stages. Bühler's theory, which was the origin of his own distinction between instincts, habits, and intellect, takes three steps in the direction of the child's subjectivity. But like the reflexological theory, it fails one of the key tests that Vygotsky sets for any viable theory of infancy: the ability to pinpoint theoretically the distinction between a speechless infant and an animal.
3. Structure. The Gestaltist tradition in psychology correctly notes the starting point of infant development. Once again, however, the theory overgeneralizes a single valid insight; if we reduce the whole of development to structure, we find that the way in which a chimpanzee solves a problem such as fetching a fruit with a stick and the way the same problem is solved by a human is structurally identical, and therefore structural theory also fails the key test. Just as development in the means of development disappears when we reduce all development to the formation of reflexes, there can be no development if all development is reducible to the formation of structures.
4. Subjectivism. Vygotsky now turns to a theory which does recognize the specificity of infant development, but which explains it as the slow extension of the ego through the active expansion of the radius of subjectivity. This means that the child experiences the world as a set of material processes

(i.e., doings) rather than relational processes (i.e., beings). In other words, the child experiences activities with objects as events rather than as things; the child's world is made up of processes rather than participants. This deontic rather than epistemic infancy is interpreted in an even more extreme fashion by Piaget in the final group of theories.

5. Solipsism. Vygotsky concludes this chapter as he began it, with the argument that what has been interpreted as the asociality of the infant is in fact the infant's pansociality. This pansocial Ur Wir consciousness is a true stable neoformation in that it forms an inseparable part of and plays an independent role in many higher social activities. For example, when we sing in chorus, when we dance in groups, when we march in protests, or when we play or even just watch a game of soccer, we can feel that the Ur Wir still exists and exerts a great force in social and in psychological life.

Chapter 6: The Age of Infancy

The Social Situation of Development in the Age of Infancy[1]

At first sight, it might appear easy to show that the infant is an asocial being, either completely or very nearly so. He lacks even the most basic means of social communication—human speech. His life activity is largely limited to the satisfaction of simple life needs. He constitutes to a great degree an object rather than a subject, that is, an active participant, in social relations. This easily gives the impression that infancy is the asocial period of child development, that the infant is a purely biological entity, utterly deprived of specifically human properties, and particularly the most basic among them—sociality. It is this view which lies at the foundation of a series of erroneous theories of the age of infancy, to which we turn below.

For in truth, both this impression and its foundation in this view of an absolutely asocial infant constitute a grave misconception. Careful research shows that we encounter in the child in the age of infancy a completely specific and utterly unique sociality, one which stems from the ineffable and unrepeatable social situation of development, the uniqueness of which is defined by two basic moments. The first of these consists of that which strikes our glance first, out of all of the features of the infant, that which we usually characterize as a complete biological helplessness. The infant is incapable of satisfying a single one of life's needs by himself. The most elementary and basic needs of life for the infant can be met in no other way than with the help of adults who care for him. Neither the feeding nor the movement

[1] As we mentioned at the beginning of the outline of this chapter, the Russian *Collected Works* editors say that the first part of Vygotsky's manuscript is missing, so they begin the section on the newborn with the number "2." The present section on the age of infancy is, accordingly, numbered "3" in the Russian *Collected Works* (and, somewhat confusingly, "2" in the English edition). To avoid confusion, we have simply eliminated the numbers.

of the infant, not even turning him from one side to the other, can be accomplished in any other way than through cooperation with adults. This path through the other, through the adult—this is the basic path of activity for the child of this age. Absolutely everything in the behavior of the infant is intertwined and interwoven into the social. Such is the objective situation of his development. It only remains for us to find what it is that corresponds to this objective situation in the consciousness of the subject of development, that is, of the infant.

No matter what happens to the infant, he always finds himself in a situation linked to caring provided to him by adults. Thanks to this there arises a completely unique form of social relations between the child and the adult persons in his environment. Above all, thanks to the immaturity of the biological functions, none of what will subsequently fall within the sphere of individual adaptations of the child and none of what is to be carried out independently can be done except through others, except through a situation of collaboration. Thus, the child's first contact with reality (even when performing the most elementary biological functions) is entirely socially mediated.

Objects appear and disappear from the child's purview always thanks to the participation of adults. The child always moves through space in someone's arms. Changing his position, even simply turning over, is once again woven into a social situation. Eliminating irritations which annoy the child and satisfying his basic needs always take place (in the same way) through others. Thanks to all of this, there arises a unique and unrepeatable dependency of the child upon the adult which permeates and pervades, as we have said, the most apparently individual biological needs and requirements of the infant. The dependency of the infant upon adults creates the utterly unique character of the relations of the child to reality (and to himself): these relations are always mediated by others, always refracted through the prism of relations with another human being.

In this way, the relations between the child and reality from the very beginning are social relations. In this sense, the infant can be called a maximally social being. Any relationship of the child's, even the simplest, to the outside world always turns out to be a relation refracted through relations with other humans. The whole life of the infant is organized in such a way that in every situation, visibly or invisibly, another human is present. This can be expressed in another way by saying that every relation of the child to things is a relationship carried out with the aid of or by means of other humans.

The second feature which characterizes the social situation of development in the age of infancy is that with this maximum dependency upon adults, with all the infant's behavior being completely intertwined with and woven into sociality, the child still lacks the basic means of social communication in the form of human speech. It is this second aspect in conjunction with the first that lends a peculiarity to the social situation in which we find the infant. The whole organization of life compels maximal communication with adults. But this communication exists as nonverbal communication, often silent communication of an utterly unique order. The contradiction between the maximally social infant (the situation in which the

infant finds himself) and minimal possibilities for communication lays the basis for the whole of the child's development during the age of infancy.

The Genesis of the Basic Neoformation in the Age of Infancy

Prior to proceeding with an analytical review of the complex composition of the processes of development in the age of infancy, we wish to preface this with a general summation and a characterization of the dynamics of this age.

The beginning of the age of infancy coincides with the end of the newborn crisis. The turning point is found between the second and the third month in the life of the child. At this time we may observe new manifestations in all areas. With the culmination of the sudden drop in the curve of daily quantity of sleep and the termination of the maximum amount of negative reactions, food intake is no longer done so greedily, so that the child now sometimes interrupts feeding and opens his eyes. There is every precondition for activities that go beyond sleeping, feeding, and crying. In comparison with the neonate, there is a diminishment of the frequency of reactions to individual excitations. There is far less internal interference observed in sleep and wincing when exposed to external excitations. In contrast, the activity of the child becomes more diverse and extensive.

As new forms of behavior at this time, there is the addition of experimental play, babble, the first active sensory organ activity, the first active reactions to positioning, the first coordination of two simultaneously acting organs, and the first social reactions—expressive motions linked to functional pleasure and surprise.

Everything points to this: that the passivity with which the neonate related to the world has now given place to reciprocating interest. The latter becomes most obvious in the new manifestations of perceptual activity in the waking state. As we have said, in place of passivity, out of which the child emerges only when exposed to strong sensory stimulation, there is now a propensity to have an influence over stimuli. What is new here is the impact on attention of sensory stimuli, of the child's own movements, of his own sounds, and of sound in general, and of attention to other humans. Only now does an interest in all of this make possible further development in each separate area (Bühler et al., 1931, p. 219).[2]

[2] Vygotsky is referring to the 1931 Russian translation of: Bühler, Charlotte; Hildegard Hetzer und Beatrix Tudor-Hart (1927). *Soziologische und psychologische Studien über das erste Lebensjahr*. Jena: Fischer.

Beatrix Tudor-Hart (1903–1979) was, along with Hildegard Hetzer, a research assistant of Charlotte Bühler in Vienna. She returned to the United Kingdom and taught at the Beacon Hill School founded by Bertrand Russell. She then had a very successful career as a teacher and principal in a number of experimental cooperative schools. In the 1930s she founded the Fortis Green School, which was the first school in Britain owned and run by parents and teachers. Later, she wrote several books on preschool and elementary school education, including *Toys, Play and Discipline in Childhood* (1955) and *Learning to Live* (1963).

H. Wallon[3] also notes that the second month opens a new period in the development of the child, in which a purely affective type of motorics[4] gradually gives way to an activity approaching in character the sensorimotor. At the same time, as established by sensory synergy (the disappearance of strabismus), the face assumes an expression of attentiveness and availability for the perception of external influences. The child begins to take in visual impressions, and soon he begins to listen—at first, it is true, only to sounds that emanate from himself. He reaches for objects and touches them with his hands, lips, and tongue, displaying true activeness. At this time, there is the development of the makings of manual activeness, which has such a major significance for the whole of psychic development. All of these reactions, correctly oriented, are directed to adaptations, and they become positive; so long as there is not too much excitation, they do not descend to the negative or organic forms that prevailed in previous stage.

In this way, at the beginning of this period, the child shows an especial interest in the outside world and the capacity to actively go beyond direct drives and instinctive tendencies. For the child, it is as if the external world has been discovered. This new relationship to reality signifies the beginning of the infant period—or rather of its first stage.

The second stage of the age of infancy is also marked by a drastic change in the relation of the child to the external world. A turning point of the same significance is observed between 5 and 6 months. From that time, sleep and wakefulness occupy equal amounts of time. Between 4 and 5 months, the daily quantity of neutral reactions increases dramatically, along with the duration of positive expressive movements during the daytime. Fluctuations between the preponderance of single

[3] Henri Wallon (1879–1962) was a French psychologist and a Marxist (he served as Minister of Education in the underground Resistance Government formed by the uprising against Nazi rule in 1944). He was a central figure in reestablishing public school education after the war, and remained a central figure in French educational psychology for the whole of the postwar period (although less important in Switzerland because of the influence of Piaget). His periodization scheme is quite close to Vygotsky's (and thus quite distant from Piaget's).

[4] Vygotsky uses the term моторика here. It is tempting to translate this as "motor skills," and that is certainly how we would translate the term if Piaget was using it to describe a stage of infant development. But in the next sentence, Vygotsky includes strabismus, when the eyes do not focus on the same point (e.g., in cross-eyedness). Many infants are born with strabismus, which can interfere with depth perception; this is poorly described as a "motor skill." In fact, the sensorimotor stage about which Piaget wrote is yet to come; instead, Vygotsky is referring to Wallon (e.g., 1943, p. 129, 1949, p. 194), who uses "inquiétude motrice" to describe infant hunger and "connexions motrices" to describe feeding; in English this would be "motoric uneasiness" and "motoric connections" or "motoric links," that is, neurological links and not nascent ability or knowledge. Moreover, Vygotsky is referring to Wallon in Russian, which does have a perfectly good single word for this, a word we have chosen to render as "motorics." This has two disadvantages. First of all, the word is not strictly English (although it could be, since "motoric" is an English adjective). Secondly, it does not seem to describe pathology very well. So when Vygotsky speaks of defective motorics (e.g., persistent strabismus), we will translate моторика as an impaired or degraded "motility." Like the Russian word, "motility" does refer to the self-propulsion faculty of an organism (as opposed to "mobility" which is more generally a capacity for passively being moved as well as a capacity for active motion).

reactions and impulsive movements on the one hand, and that of prolonged processes of behavior on the other, extend up to 5 months. Among the new forms of behavior at this time, we see, *inter alia*, the first assured defensive movements, assured ostension, the first lively outbursts of joy, cries at the failure of intentional movements, and also, possibly, the first wishes, experimental acts, social reactions to peers, and searches for missing toys. All of these forms of behavior speak to a particular activeness which transcends responding to an excitation, an active quest for stimulation, active employment, which becomes evident in the simultaneous growth in the daily quantity of spontaneous reactions. As it appears, these facts largely cannot be explained simply by reciprocating interest. We must assume that its place has been taken by an active interest in the surroundings.

We could add to this summary characterization of the second stage of the age of infancy an essential feature: It consists in the appearance of imitation. In the first stage of the age of infancy, early forms of imitative movements, vocal reactions, etc., as several authors have claimed, do not occur. What has been noted by psychologists as early imitation of movements (opening the mouth—W. Preyer[5]) or sounds (W. Stern) are only apparent imitations. For up to 5 months or even longer, no imitation of any kind can be obtained. Obviously, imitation is possible only when motivated by a conditional reflex.[6]

Proceeding from what was said above with regard to periods, we may in the first year of life distinguish a period of passiveness, a period of receptive interest, and a period of active interest which present a gradual transition to activeness. A noteworthy turning point is the 10th month, when, with the disappearance of aimless movements, we may observe in the making the future development of more complex forms of behavior: the first utilization of tools and the usage of words to express a wish. The child begins a new period, which will end already outside the first year of his life. This period is the crisis at 1, which is a connecting link between infancy and early childhood.

This summary characterization of the basic stages and bordering periods of the age of infancy does not pursue any other aim than to create a very broad presentation of the external picture of development in this beginning stage. To study the basic patterns of development in the age of infancy, we must necessarily divide the complex process of its self-composition, analytically consider its most important

[5] W. T. Preyer (1841–1897) was an English physiologist who studied and worked in Germany (Heidelberg and then Jena). He wrote *Die Seele des Kindes* ("The Soul of the Child"), one of the first books of child psychology. Preyer was a staunch Darwinian, much interested in Fechner's "psychophysics," which constituted the first quantitative study of the relationship between stimulus and sensation.

[6] This appears to contradict the editors of the Russian language *Collected Works*, who argue that conditional reflexes occur in the first or second week of life (see Footnote 11 in Chap. 5). But it also appears to contradict Vygotsky's own statement, at the end of Chap. 5, to the effect that a child at only a month or 2 of age responds to a cry with a cry and smiles at the sound of a familiar voice. Perhaps it is useful to keep in mind that Vygotsky has a definition of "imitation" that includes construing its goal or purpose. Where the sense of an action is not understood, Vygotsky refers to only "apparent" or "seeming" imitation—a mere copy of real imitation.

aspects with complex internal dependencies of one upon another, and in this way find a path which leads to the emergence of the basic neoformation of this age. We must begin with the most primary, the most independent, process—the growth and development of the major organic systems, which constitute the direct continuation of the embryonic period of development and serve as prerequisites for other, more highly placed, aspects of the development of the child's personality.

By the moment of birth, the infant brain has already been formed in its basic components (form, positioning of the separate components, and their mutual links). However, the cerebrum of the brain is also characterized at this moment as profoundly immature, both in its structural and in its functional relations. This immaturity is so eye-catching that it has given rise to the assertion, on the part of R. Virchow, that the infant is a purely spinal-medullary being, with behavior in which the cerebrum does not take any part. This theory was not supported in the light of further research—the basic results of which we now present.

The first and most blatant expression of the immaturity of the cerebrum of the brain we see in the fact of the extremely rapid growth of cerebral substance in the child. According to O. Pfister,[7] by the fourth or fifth month, the weight of the brain doubles. Further increase does not proceed so quickly. According to L.L. Volpin,[8] the brain doubles in weight by 8 months, and by the end of the year, it has increased two and a half times. Later the growth slows, so that by 3 the weight of the brain has tripled compared to the weight of the newborn brain. This indicates that the most enhanced growth in the brain takes place in the first year of life, a time when the increase in brain substance weight is equal to the build-up in all the subsequent years taken together.

However, by itself the sum of brain weight still has little to say about the inner development of the central nervous system. To answer this question it is necessary to turn to the consideration of development of the most important sections and systems of the cerebrum of the brain. The most remarkable feature of the function of the central nervous system in the age of infancy is that the motorics of the child in the first months of life are dominated by primitive motor reactions that in adults are inhibited and revealed only in pathological conditions. By the end of the first year, there still persist significant mechanisms that are characteristic of quadrupeds. With the further development of higher centres these atavistic movements are inhibited, but under conditions of illness they can be disinhibited and discovered at a later age.

In this way, the motorics of the newborn and the infant differ in three quite exceptional features: (1) The movements specific to the infant completely disappear in the course of subsequent development. (2) These movements are in their

[7] Oskar Pfister (1873–1956), an early colleague of Sigmund Freud, Eugen Bleuler, and Carl Jung, was a Swiss Lutheran minister who tried to apply psychoanalysis to Christian theology.

[8] L.L. Volpin is listed as the author of a Russian paper published in 1902 on weight data on the growth of the brain in children. Note that all of these claims about brain weight gain have been supported by modern research which is not limited to studying autopsy data: if anything, Vygotsky somewhat underestimates brain growth in the first 2 years of life, which is usually around 350% (Brodal, 2016: 155).

character archaic, atavistic, and ancient in the phylogenetic sense of this word and may be compared to ancient phylogenetic stages of the development of the central nervous system. In this way, it has been suggested, the development of the brain of the child might observe the transitional stages of phylogenesis: from the fishes, which lack the striatum (the striped corpus) and which function only with the pallidium (the pale corpus), to the amphibians, in which the former has already reached a significant stage of development (Maslov[9]). (3) Finally, these specific parts of infant motorics that disappear in the course of development display analogies not only to phylogenetically ancient functions but also to pathological motoric symptoms observed in later ages with organic and functional lesions of the central nervous system. All the descriptions of infant motility are filled with such analogies between the motorics of the infant and pathological motility such as athetosis, chorea, and other nervous disorders.

The three features above may be explained only in the light of basic laws of the history of development and construction of the nervous system. Three of these laws are of paramount significance for the problem that interests us. We present them as formulated by E. Kretschmer.

The Conservation of Lower Centres as Discrete Stages

In the history of development, the lower, older centres and arcs[10] are not simply pushed to one side with the gradual formation of the higher centres, but work on in union with them as subordinate instances, run under the control of higher, historically younger, centres, so that in an undamaged nervous system they cannot usually be independently discerned.

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[9] This does not refer to the American psychologist Abraham Maslow (who created the idea of a pyramid of hierarchically ordered needs crowned by self-actualization) but rather to the Russian pediatrician, Mikhail Stepanovich Maslov (Михаил Степанович Маслов, 1885–1961). He published clinical lectures on childhood illness in 1924, and Vygotsky cites him in his work on belly button formation in neonates.

[10] The "reflex arc" (and also the "subcortical arc of action" Vygotsky refers to below) refers to the "arc" created by a sensory motor neural impulse which simply "jumps" to a motor nerve without actually entering the brain or the cerebral cortex. It is this which allows a medullar-spinal frog to catch flies, and it is also this which accounts for human reflex actions, such as removing your hand from a hot stove before you even feel pain.

Vygotsky uses the term подчиненные инстанции which we have translated quite literally as "subordinated instances." The word "instance" here means something like "moment": a holistic structure in itself which becomes part of another one (the way that a clause becomes a subordinate clause in a long sentence). A previously independent function becomes a subordinated instant or a moment of a more complex one, the way that the instinctive salivation of a dog is a lower, historically older, and instant in the complex operation of the dog's feeding by a human. Not only the infant's hunger but the whole of the neoformation of infancy, the child's "independent, instinctual" life linked to the midbrain is similar: it lives on, but only as dependent and noninstinctual life now controlled from the cortex.

The transfer of functions upwards. However, the subordinate centres do not retain their original type of functioning in the history of the development, but give up a substantial portion of their previous functions to the higher, new centres being constructed on them. (Foerster, M. Minkovsky, and others).[11] So, the spinomedullar frog, which has been surgically deprived of its cerebral functions and retains only its spinal-medullar centres, can perform very complex and relatively expedient actions, such as the scratching reflex,[12] in such a way that some have spoken outright of a spinomedullar soul. Such developed functions in humans are proper to the brain alone, particularly the cortex of the large brain, and with a rupture in connection they can no longer be implemented by the medulla, which in humans functions only very primitively and fragmentarily as an independently acting body.

The emancipation of the lower centres. If the higher centre is functionally weakened or cut off from the subordinate centres as the result of shock, infirmity, or injury, the overall function of the nervous apparatus does not simply cease but is transferred to a subordinate instance, which becomes independent and displays to us all the surviving elements of the previous type of functioning. We have already seen, as has been said, how a human spinal medulla separated from the brain retains a tonic-clonic reflex phenomenon of a primitive kind.[13] And the same regularities

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[11] It seems probable that the reference to "M." Minkowski is incorrect (like the previous reference to "D. Canestrini") and that either Eugene Minkowski (1885–1971) or Oskar Minkowski is meant. Eugene was a phenomenologist, close to Bergson, who was a student of Bleuler and who worked on the loss of psychological functions in wartime. But it is more likely that Vygotsky means Oskar Minkowski (1858–1931), who specialized in experiments on dogs in which various organs were destroyed surgically, and is best known for his work on the pancreas. The only "M. Minkowski" who might qualify would be too young and in the wrong profession—the famous conductor Marc Minkowski, who was Eugene's grandson.

Otfrid Foerster (1873–1941) was a German doctor, a student of Wernicke and Babinsky, who did his thesis on typhoid fever. Although he was not trained as a neurosurgeon, during World War I he had patients who suffered epilepsy as a result of gunshot wounds to the head. He would give them local anesthetic and then find the areas of the cortex which caused epilepsy by poking with electrified needles. When he found the area, he would cut it out of the brain, and his cuts were delicate enough not to cause damage. By doing this to many patients, he was able to develop the first "map" of the cerebral cortex.

[12] If you scratch a dog's belly, you often get an apparently sympathetic movement from the hind leg called a "scratching reflex," as if the dog were trying to produce the effect that you are producing. Similarly, a frog, even one whose brain has been destroyed, will scratch with its hind leg if you apply an irritant to its body. Ukhtomsky, who is probably one of the others who Vygotsky refers to here, used this as evidence for his theory of development as the discovery of one "dominant" reaction that is able to overcome others. This theory is related to Vygotsky's own theory of developmental periods that culminate in a central neoformation.

[13] Vygotsky is apparently referring to Virchow's work on the spine and the medulla, in which Virchow speculated that the newborn child is essentially a "spinal-medullar" being, like a frog whose brain has been destroyed. As we saw, Vygotsky rejected this view because consciousness is not simply located in the cortex.

"Tonic" and "clonic" describe two phases of an epileptic seizure—the tonic phase is the first phase, in which the muscles suddenly contract and the person falls, while the clonic phase is the phase of convulsions. Here, Vygotsky apparently just means the kinds of nervous signals that are given by the spinal cord during muscle spasms.

are repeated with the higher, not yet anatomically differentiated, cortical and subcortical arcs of action. We see this especially in hysteria and catatonia when in violation of the higher psychic functions of the intentional will, the patient will often function in a psychomotoric functioning mode, lower from the point of view of historical development, which takes over the leadership mechanism, a mode which we will later consider as a hypobulic mechanism, as a lower layer of higher volitional processes. This general neurobiological law can be formulated in the following way: if within the psychomotor sphere, the action of a higher instance becomes functionally weak, the proximal lower instance becomes independent, with its own primitive laws.

To these three basic laws it is necessary to add yet another law, first formulated by L. Edinger, who in the process of studying animals found that in principle all mechanisms, beginning with the end of the spinal medulla (which relates as well to the initial brain) and ending with the olfactory nerves, are in higher and lower vertebrates structured identically, that, consequently, whether we speak of humans or fish, the basis of all the simple functions is absolutely identical for the whole series.[14]

The regularities we have outlined, appearing in the history of the construction of the nervous system in onto- and in phylogenesis, permit us to explain the main noteworthy features of the functions of the brain in the age of infancy.

If we give up the view according to which the infant has an exclusively spinomedullar existence, it is nevertheless impossible not to admit that the cerebral cortex constitutes in this age the most immature portion of the nervous system. This is evident in the lack of all higher psychological functions doubtless directly related to the activity of the cortex and also in the lack of specific motor actions which are characteristic of mature and developed cortical functions. Research shows that the infant constitutes a being whose behavior is due in large part to the ancient subcortical centres of the brain, a creature of the midbrain.

From the circumstance that the lower, more ancient segments of the brain mature earlier than others and are to a greater degree already mature at the moment of birth, it is very clear and necessary from the point of view of development that it is in these very areas where the apparatuses playing the leading role in the whole economy of organic life that all the basic life directions are concentrated. Here is the concentration of the centres of instinctive and emotional life, which are linked on the one hand to the vegetative nervous system which governs the basic life functions of the organism, and on the other—with the cerebral cortex—, the higher organ of human thinking, will, and consciousness. However, the age we are considering is characterized by the circumstance that, thanks to the immaturity of the cortex and links between the subcortical and cortical centres, the apparatuses of vegetative and

[14] Ludwig Edinger (1855–1918) was a German neuroanatomist who in 1885 discovered the Edinger-Westphal mechanism that controls the size of the pupil and linked it to expressions in human fetuses. He was, as Vygotsky says, very interested in comparative anatomy in both ontogenesis (where he studied ancephalic children) and phylogenesis (where he and his daughter Tilly studied the neuroanatomy of fish, reptiles, and even dinosaurs). But the insight that all neurons have the same basic structure (axon, dendrites, and nucleus) was not original to him.

primitive animal life remain still relatively independent without being subject to regulation, inhibition, and control from the side of higher cortical centres.

That is why the activity of these apparatuses resembles, on the one hand, the motor skills of lower vertebrate animals in which the apparatuses we are considering constitute higher centres, higher centres that do not have hierarchically dominant centres above them, and on the other hand has an affinity with pathological motorics, originating thanks to the emancipation of the lower centres. The emancipation of the lower centres, which is manifested in their activity according to their autonomous, archaic and own primitive laws, is normal for infants and is caused by the immaturity of the higher centres. This explains the atavistic character of infant motorics, as well as their amazing resemblance to pathological motor manifestations of later ages. The key to both can be found in the immaturity of the higher centres and the resulting independence of the lower parts of the nervous system. It is quite natural that, with the functional immaturity of the cortex, a motility should arise that is similar, in the first place, to the motility of animals completely devoid of a new brain, and, in the second place, to the pathological motility arising from the degradation of higher centres and the emancipation of lower arcs of action.

In this is also found likewise the explanation of the third feature of infant motorics. In the course of further development of movements which are proper to the indicated age, it is as if they completely disappear from the inventory of motor acts which are proper to a more mature age. As a matter of fact, the movements of the infant do not disappear with the course of development but, according to the first law we cited, the centres that took charge continue to work in alliance with higher nervous formations, entering to their composition as subordinate instances and transferring a part of their functions upwards to younger and newer centres.

As we have already said, the nervous system undergoes extremely energetic development during the course of the first year of life. This manifests itself not only in the speed of growth in brain weight but also in a series of qualitative changes that characterize the dynamic construction of the nervous system in infancy. Studies have shown that in the first year of life we may distinguish three epochs that succeed each other in the construction of the nerve centres and their functions.

The first one is characterized by the immature cortex and stratium and the predominant significance of the pallidum, which constitutes in this epoch the highest of the independently functioning brain centres. This determines all of the specificity of the motorics of the newborn. In the beginning period of development, the child constitutes a pallidal being. That the motor actions of the newborn are regulated by the thalamopallidal system is shown by the athetoid, worm-like movements of the newborn, their *en masse* (i.e., undifferentiated—Trans.) character, and by the physiological muscle rigidness. Motorics in the newborn are very similar to what is seen in neurological clinics of the motorics of people with damage to the striatum. This centre in the newborn is not yet covered by a myelin sheath. It is responsible for acts of sitting, standing, and walking. But its most important significance lies in that it is a higher centre relative to the globus pallidus (the pallidum), that it takes over a part

of its functions, and that it has a regulating and inhibiting influence on pallidal functions.[15]

This is why the underdevelopment of the corpus striatum explains the independent and the disinhibited functioning of pallidum. The same disinhibited pallidal function occurs in adult humans if the striatum is damaged when a lower centre is emancipated and begins to act according to its independent laws. Hence, the athetoid character of the motorics of the newborn. In the phylogenetic line, these motorics remind us more of the motorics of fish, which do not have a corpus striatum and in which the globus pallidus is the supreme nervous centre. The thalamus opticus, directly linked to the activity of the globus pallidus, constitutes the organ which collects all of the excitations from external and internal stimuli that flow into the cerebral cortex, where they are colored with affective hues. The thalamus opticus includes the apparatus which leads gestures of the body and face, as well as all of the expressive movements in general. So along with the thalamus opticus, the globus pallidus is linked from the very beginning with the underlying spinal-medullar centres; the reactions of the newborn more accurately characterize it as a thalamo-optico-pallido-spinal-medullar being. These reactions are expressed in unconditional reflexes and in undifferentiated masses of movements: the first are related to spinal-medullar activity in the newborn, while the second are pallidum functions. The striatum, as we have said, is the organ of sitting, standing, and walking. Based on this, pallidum childhood may be characterized as a nonsitting, nonstanding, and nonwalking, that is, as a recumbent childhood, where mobility is of an automatic-massed character, phylogenetically interpreted by Foerster[16] as the creeping mechanism.

The second epoch in the development of the nervous system in the age of infancy is the maturation of the corpus striatum. Linked to this there are primitive attitudinal mechanisms and synergies necessary for sitting, standing, and grasping. This epoch can be called striatopallidal. The pallidum system is lower reflex centre, and the striatal system is the higher reflex centre with receptive-coordinative functions. The striatal system has no direct link with its periphery. The zone of influence of the striatal system applies only to the pallidum, and it has no direct associative link with

[15] Vygotsky ended *Foundations of Pedology*, Lecture 7, with the unusual suggestion that it is not growth that makes possible differentiation, but rather differentiation that makes growth possible. We might think that the growth of the brain, which makes possible the differentiation of behavior, disproves this. But when we really understand Vygotsky's argument, we see that brain differentiation is a nearly perfect example of what he is talking about.

Humans are born with almost all the brain neurons they will ever have. Nevertheless, as Vygotsky says, the brain's weight doubles in the first year alone. The main growth in the weight of the brain is in the glial cells. Glial cells build coatings of myelin around the long stem fibers of the nerve cells (the "axons"), and it is this insulation which keeps the nerve impulse from spreading to other nerve cells. In other words, the growth of weight in the brain is not in the wiring, but rather in the wiring insulation (the myelin). It is the differentiation and discrimination of brain cells that makes brain weight growth, and it is this growth that makes possible the differentiation and discrimination of signals, enabling further growth.

[16] See Footnote 11.

the cortex, which makes it independent, unless the excitation which emanates from the thalamus is also transmitted to the corpus striatum. The main purpose of the corpus striatum is the simultaneous implementation of static functions of the brain, the regulation of muscular tonus, the inhibition and regulation of functions in the globus pallidus, and the regulation of timeliness in the inhibition and disinhibition of the whole complex of agonist and antagonist, on the synergy of which depends the correctness of all motion. This same system is related to primary automatisms such as facial expressions, gestures, expressive movements, and so on.

The transition to the third epoch is marked above all by the maturation of the cerebral cortex and the cooperation of its functions in the regulation of behavior and motorics. The latter circumstances find expression in two facts of capital importance: (1) in the development of higher nervous activity, that is, complex systems of conditional reflexes, and (2) in the intellectuallization and gradual acquisition of motions of an expedient character. In the newborn, myelination is only in the so-called primary areas of the cerebral cortex which are linked to organs of perception and themselves constitute their receptive spheres. Cortical development, according to the data of P. Flechsig,[17] consists in the fact that these primary areas are bound to the intermediate and final areas that are covered by a myelin sheath only gradually over the course of the first half year.

The most reliable indicator of cortical development is the development of conditional reflex activity. The basic laws of development of its development during the age of infancy are as follows. (1) In the newborn baby there are no conditional reflexes; in him we observe innate reactions of the dominant type.[18] (2) The development of conditional reflexes does not happen randomly, haphazardly, or without order, but is subject to the process of the emergence of a dominant reaction. There

[17] Paul Flechsig (1847–1929) was the German neuroanatomist who discovered the lateness of myelinzation in the infants. Flechsig first became famous because of Daniel Schreber, a respected judge, who woke up one day with the idea that it would be pleasant to have sex with a man. Since Judge Schreber was male, and a highly respected jurist, he decided this idea could not possibly have come from himself, and so he sued poor Flechsig, accusing him of implanting women's thoughts in him under hypnotism and trying to turn him psychologically into a woman using a secret "nerve language." Freud valiantly defended Flechsig, diagnosing Schreber as a repressed homosexual. This probably saved Flechsig's career, which is today most remembered for his work on myelination. Flechsig divided the cortex into (1) the "early" myelination zone (motor, visual, and auditory), (2) the "intermediate" myelination zone that borders it, and (3) "association," that is, working memory. These are the areas that Vygotsky refers to above.

[18] As we saw earlier with the scratching reflex, Vygotsky is using the vocabulary of Ukhtomsky on the "dominant," which underlies Vygotsky's own theory of development as a sequence of neoformations. Ukhtomsky had observed that a cat which was about to defecate could not be distracted with an electric shock; far from diverting it, the shock actually increased cat output. He generalized his observation into a theory in which each period of human life was governed by a particular "dominant" excitation—one that absorbed and even blocked all other forms of excitation, so, for example, the neonate period is governed by the unconditional (instinctive) reflex. Ukhtomsky, who was a Russian orthodox monk as well as a physician, believed that the purpose of life was for humans to develop to the point where the needs of others become their dominant. He died in besieged Leningrad in 1942, probably of starvation.

is a definite dependency on the dominant processes in the formation of a conditional reflex in the central nervous system. Only within the receptive areas can a conditional reflex be formed, under the influence of which there arise functional interactions with the character of the dominant. (3) The time and order of formation of the genetically earliest conditioned reflexes corresponds to the time and order of the emergence of dominants: since there exists in the newborn only a feeding dominant and a positioning dominant, the first conditional reflexes can only be formed in the sphere of these reactions, (4) much later there arise in the child visual and auditory dominants, and consequently the capacity for conditional reflexes linked to these areas. (5) As the dominant reaction is linked to instinctive localized activity in the subcortical region, the formation of primary conditional reflexes is not limited to cortical processes but points to the critical role of the subcortical centres in their formation, and consequently, the dependence of this process on instinctive activity.

The intellectualization of movements and their acquisition of a goal-oriented character appear much later in the development of the infant than the formation of the primary conditional reflexes. This intellectualization is manifested in the manipulation of objects by the child and in the primary acts of his instrumental thinking, that is, the simplest use of tools. The most primordial manifestations of this activity are observed in the beginning of the second half year. The formation of conditional reflexes is beginning to emerge from the sphere of direct influence of the subcortical dominant in this same period. Thus, the primary conditional reflexes are observed from the second month of life, and although they indicate, to all appearances, the role and involvement of the cortex, there is still, however, no systematic process of accumulating of personal experience nor any evidence of significant involvement of cortical functions in the behavior of the infant.

Consideration of the three epochs clearly confirms the basic laws of construction of the central nervous system presented above. Pallidal motorics do not vanish with the maturation of the corpus striatum, but are included in its function as a subordinate instance. In just this way, the movements which inhere in the striatal epoch are an important part of the activity of higher psychomotor mechanisms. This is confirmed by the fate of a number of reflexes which are observed in a mature age only with lesions of the brain. Such reflexes as the Babinsky reflex and others, pathological in adult humans, are at the same time completely normal physiological phenomena in the age of infancy. In the development of the child they cannot be elicited by themselves, as they are included as subordinate instances in the activity of higher centres and they act independently only in cases of pathological brain injuries (under the law of the emancipation of the lower centres).

Now we may proceed to consider those consequences that follow from the picture of the organic and nervous development in the age of infancy sketched out above. Above all, these consequences are detected most easily in the area of sensory and motor functions of the child, characterized mainly by his perception and behavior, that is, two basic aspects of relations with the external world.

The first thing that is shown to us by the study of the sensory and motor functions in the newborn and in the infant: the initially indivisible linking of perception and behavior. The link between sensory and motor functions is one of the fundamental

properties of psychic activity and of the nervous apparatus. It was first imagined that the sensory and the motor functions were separate and isolated one from the other and only in the course of development was there established an associative link between sensory and motor processes. In fact, the relative independence of both arises only in a long process of development and characterizes the high level reached by the child. The initial moment of development is characterized by an inseparable link, forming a genuine unity, between the one process and the other.

In this way, the problem of the relation of perception and action is put in contemporary psychology in a completely inverse manner to the way in which it was put before. Previously, the problem was how we can explain the association of perception with action. Now the problem consists of explaining how the initially united sensorimotor processes in the course of development become relatively independent of each other and enable new, higher, and more flexible and complex integrations.

The initial answer to this question is given by the study of a simple reflexive movement. Every innate reflex represents in itself a sensorimotor unit, in which perception of stimuli and responsive movement represent a unity of dynamic processes; its motor part is simply a dynamic continuation of its perceptive part.

From the facts of the formation of conditional reflexes, we know that reflex arcs are mutable: the perceptive segment of one arc can be linked in a unitary apparatus with the motor part of another arc, and here it becomes clear that flexible, free, and to a high degree multivarious cointegrations between whatever perceptions and whatever movements are possible. Therefore, the aspiration arose on the part of many scholars to explain through the mechanism of conditional reflexes the whole development of sensorimotor processes. But this attempt proved fruitless for two reasons: (1) from this point of view may be clarified only the first part of the question, namely the unity of sensorimotor processes, but in no way can the second part of the question be clarified, that is, in what manner arises the relative independent and autonomy of each process from the other, already seen very clearly in action in the second half year of life. (2) This explanation would only be sufficient in cases if the whole of the behavior of the infant were exhausted by reflexes; in fact, separate reflex movements constitute only an insignificant and more or less incidental portion of the system of behavior in newborns and infants. Obviously, the explanation given does not exhaust the problem as a whole, but only covers a specific part of the sensorimotor processes, which is related to the group of unconditional and conditional reflexes.

For an explanation of the link between sensory and motor processes in the first year of life, it is necessary to take into account two other circumstances: (1) the holistic, structural character which distinguishes these two processes, and (2) the character of the central link between them, which is more complex than the one that takes place in a simple reflex arc.

Let us turn to the first circumstance. Even now we sometimes have to confront the claim that the movements of the infant present us with an aggregate of separate, disparate, isolated individual reflexes which are only slowly and gradually merged into a linked, whole dynamic process. Nothing could be more incorrect than this representation. The path of motoric development runs not from the addition of

individual partial movements into holistic motor acts—not from the part to the whole—but from the mass, the group, the movements which cover the whole body, to the differentiation and individuation of separate acts of locomotion and then their recombination into a new unit of a higher order—from the whole to the parts. Such, in any case, are the instinctive movements which prevail in the infant. Therefore, the problem of the genetic relationship of instincts and reflexes remains a problem of prime importance for the whole of the study of the age of infancy.

There are two opposing solutions to this problem. According to one of them, the reflex is the primary phenomenon, and an instinct is nothing more than a simple mechanical chain of reflex actions in which the culminating moment of each reflex is at the same time the stimulus, or the starting point, for the subsequent one. According to another view, what is genetically primary is the instinct, and the reflex is a more recent phylogenetic formation which arose by way of differentiating the instinctive movements and isolating their individual components.

All the facts which are known from the study of instinctive activities of animals and infants compel us to admit the correctness of the second theory and to reject the first as not corresponding to reality. Let us illustrate this with two examples. We take the feeding with milk by the mother as a typical sample of instinctive activity. According to the first theory, the initial excitation (hunger or sensation of the maternal breast) only laid down an impulse for an initial reflex—movements of search for the nipple. Arising as a result of these movements, the contact between the nipple and the mouth causes the reflex of grasping the nipple with the lips, which as a new excitation results in sucking movements. The flow of milk into the baby's mouth with the help of these movements is the new stimulus for a swallowing reflex, and so on. The whole process of feeding seems a simple mechanical chain of separate reflex acts.

A genuine study of this typical instinct shows that what we have before us is a whole process endowed with a defined sense and direction, leading in a goal-oriented way to meeting the need that has arisen, rather than a mechanical aggregation of individual reflexes each of which, taken by itself, has neither meaning nor value but which acquires them only part of the whole. The instinctive action presents a complex, objectively goal oriented, and appropriate address of biological needs, and, because of this, the process is objectively meaningful as whole, each part of which, including each of the constituent reflex motions, is determined by the structure of the whole. The process of feeding never takes place in a mechanical, stereotypical repetitive sequence of each separate motion. Separate elements may be changed, but the entire process as a whole retains the sense of the structure. Watching the infant satisfy hunger, we can never predict that it is now a mechanical necessity that he will perform this or that motion which is the next link in a chain of reflexes. At every moment in the process, however, it is possible to predict with

confidence that there will be one of the possible motions which must be carried out in the function for the next stage of the development of the whole process.[19]

In this way, we must acknowledge that instincts and not reflexes constitute the initial form of the child's activity and that development of motorics in the infant is above all characterized by the absence of isolated, separate, and specialized motions of one organ or another and the presence of massed movements activating the whole body *en masse*.

One and the same holistic character distinguishes the perception of the newborn and the infant. We have already given the proposition of K. Koffka,[20] which characterizes the perception of the newborn as a holistic perception of the situation, where against an amorphous background there appears an insufficiently defined and amorphous quality. All studies agree in showing that the initial moment of development in perception consists not of a chaos of separate impressions nor of a mechanical aggregation of impressions, or of a mosaic of different sensations, but of holistic complex situations, structures, brightly colored by affect. In this way, the perceptions of the infant, like his motorics, are characterized by an initial wholeness. And the path of their development lies likewise in the perception of the whole to perception of parts, from perception of situations to perception of separate moments.

This structural, holistic character, identically distinguishing sensory and motor processes, allows us to arrive at an explanation of the link which brings together the sensory and motor processes. The link between them is structural. This must be understood so that perception and action present an original, structurally indivisible, process, where the action constitutes a dynamic continuation of perception, with

[19] Note that "with sense" is used as an antonym of "mechanical": a machine has structure, but does not by itself alter the sequence or disposition of its parts, or understand the meaning of the whole. Vygotsky says that elements of the process may be changed and the whole will retain/maintain a "structure with sense," that is, the way the baby is held, the person feeding the baby, and even a bottle substituted for the breast can be changed and the baby will still understand the aim. Below, Vygotsky demonstrates this with the experiments of Volkelt.

[20] Kurt Koffka (1886–1941) was a student of Carl Stumpf and a central figure in Gestalt psychology, along with Max Wertheimer and Wolfgang Köhler (see Footnote 15 in Chap. 2). He wrote a monograph called *Growth of the Mind* (Koffka, 1925/1980) in which he argued that most early learning was simply sensorimotor learning. Unlike his Gestaltist colleagues, and rather like Vygotsky, Koffka believed that this sensorimotor learning was qualitatively different from later learning, which he called "ideational," and which he recognized was dependent on language. But unlike Vygotsky, Koffka considered the naming process all important; for Vygotsky, learning to name is only the beginning of learning concepts.

When Koffka came to the USSR to participate in Luria's Uzbekistan excursion, Vygotsky served as his translator (and Koffka remarked that Professor Vygotsky's Russian translations always took far longer than his German original). Koffka wrote a paper on the expedition that came to the very opposite conclusion from Luria's—Luria had found that uneducated Uzbek peasants scored differently on tests of lower skills such as perception as well as on higher skills such as syllogistic reasoning. Koffka reanalyzed Luria's data and showed that there was no big difference between Uzbeks and others on the perception tests, but there was a difference in syllogistic reasoning. Note that Koffka's interpretation is actually closer to what Vygotsky's theory would have predicted, as well as more consistent with the division of the brain into higher centres and lower centres (Harrower, 1983).

which it is integrated into an overall structure. In perception and action as two non-autonomous parts are found general laws for building a unified structure. Between them there is an internal, essential, sense-laden, structural link.

With this we come to the second important moment linked to the resolution of the given problem. We have found that both the sensory and the motor processes have essentially the same emergence of structures common to both of them. But the formation of structures is a function of the central apparatus. As shown by studies, such a central process that links sensory and motor functions and leads to the formation of a single central structure, consists in the age of infancy of drive, need, or, more broadly speaking, affect. Perception and action are linked through affect. This explains to us the most essential problem of the unity of sensorimotor processes and gives us the key to understanding their development.

We give two examples to illustrate this proposition.

In experimental studies on the discrimination of forms in the nursing child, a pattern directly related to the question has been found that is extremely interesting to us. The nursing child learns to recognize different forms: rectangles, triangles, ovals, and the form of a violin, identical when viewed in two-dimensional profile.[21] The child is presented with four milk bottles, different in form but absolutely identical in relation to other properties. In only one of the four teats covering the bottles was there a hole through which the child was able to get milk. As a result, nearly two-thirds of the 29 children between 5 and 12 months old who were studied learned to choose for themselves by its form a bottle with a teat that could give milk. The researcher, H. Volkelt,[22] was convinced again and again that the children without hesitation and with confidence chose a bottle from two or even a whole series of bottles. An especially strong impression was made by a number of supplementary critical experiments in which the bottle of the particular form perceived by the child as his own was never placed in the field of vision. In these cases, the behavior of the nursing child completely changed and gave the impression of an adult behavior: it appeared that he did not have his bottle; and he appeared to be looking for it (frustration and inhibition in all motions, a wandering gaze, and no reaching or grasping with the hands).

Analysis of these experiment, in Volkelt's words, shows: the success of the method rests, obviously, on the fact that the child seems to be drinking "triangular"

[21] This appears to mean that the bottles are the same when viewed from the side, that is, they have differently shaped cross sections but the same length, breadth, and presumably the same volume of milk.

[22] Hans Volkelt (1886–1964) was the son of the celebrated neo-Kantian philosopher Joachim Volkelt (see Footnote 15 of Chap. 2). Vygotsky cites his work on "pre-concepts" in spiders (e.g., when a spider will attack a fly in the web but run away from a dead fly on the ground). This was the basis of Volkelt's PhD work at Leipzig and his subsequent work demonstrating similar prelogical and nonintellectual "pre-concepts" in infants. Thanks to enthusiastic participation in the Nazi party and a popular article advocating "Aryanization" of preschools, he became head of the Froebel society and edited the journal *Kindergarten* under Hitler.

or "oval" milk. In other words, there is a holistic process of *perezhivanie,*[23] linked to feeding from a bottle of a particular form, a very strong link emerging in the nursing child between the quality of the attracting excitation with the *perezhivanie* of satisfaction (i.e., the quality most essential to life, in as much as the basic feeding product of the nursing child consists of milk) on the one hand, and the complex of qualities which correspond to a particular form of bottle, on the other. Thus, both are as yet still undivided, diffuse feelings, despite the separateness of their qualities from the point of view of the adult.

The experiment worked for Volkelt only in those cases where the researcher was able to create a kind of primitive whole. Only then would the *perezhivanie* caused by the experiment be adequate for primitive consciousness. It was in those cases that went in sufficient measure toward the propensity toward holistic perception which characterizes the primitive living being that success in the production of the experiment could be expected. Only in this way would the experiment of Volkelt, which created a primitive whole of milk and form, lead to an indubitable orientation toward the aspect of form. The same can be expressed otherwise, more to the point: only this mutual fusion of both sides of the *perezhivanie*, corresponding to the primitive consciousness of grasping form and taking in milk, makes it possible to demonstrate that the nursing child can distinguish forms, Volkelt concludes.

We see from these experiments that the emergence of a link between perception of a definite form and a definite action is possible only if the child has these processes included in same unified, undivided structure of affectively colored needs.

Another example relates to the area of the already mentioned processes of forming conditional reflexes. As we have seen, the basic pattern of the development of conditional reflexes in the nursing age consists of this: that the priority and the sequence of their development are subject to the order in which the basic dominants emerge. Furthermore, in the beginning stage such dominants are dominants of a subcortical, instinctive character that determine the sphere in which all new links between sensory and motor processes become possible. Consequently, the formation of conditional reflexes confirms the proposition that only the presence of a single dominant, which is nothing other than the physiological substrate of affect, provides the capacity for new conditional links between perception and action.

We may as a result of our review formulate a highly important and substantial proposition on the psychic life of the infant: it is characterized by the complete nondifferentiation of separate psychic functions, the exclusive reign of primitive

[23] Like the word "concept," the term *perezhivanie* can mean a perception or an experience in a very everyday sense, and that is how Vygotsky uses the term here and in the next paragraph. Also like "concept," the term can have a restricted, technical sense (e.g., in Chapter Four of *L.S. Vygotsky's Pedological Works Vol. 1: Foundations of Pedology* (2019)). Of course, the two senses are not completely unrelated: like Volkelt's preconcepts and true concepts, they are linked as well as distinct: in both cases, *perezhivanie* is a unitary moment of consciousness. Both meanings are given in the psychological dictionary published in 1931 by Varshava and Vygotsky: see Варшава Б. Е. и Выготский Л.С. (1931, p. 128).

holistic *perezhivanie,* and can generally be defined as a system of instinctive consciousness, developing under the ruling influence of affects and drives.

The latter proposition requires substantial reservation, as it has often led and leads to a completely incorrect interpretation of the entire course of psychic development in the child. Correctly noting the exclusive reign of the affects and drives linked primarily to the subcortical mechanisms of consciousness and behavior in the infant, many researchers conclude from this that affects characterize in general only a primitive, lower position on the ladder of psychic development and that with the progress of development the role of the child's affective tendencies retreats further and further into the background, so that the degree of affective behavior can be made into a criterion of the primitiveness or psychic development of the child. This is completely incorrect. The initial and primitive stages are not characterized by an enormous significance of affective tendencies, which extend throughout the whole of the development of the child in themselves, but rather by two other moments: (1) the reign of those affects that are most primitive in nature, immediately linked to instinctive drives and impulses, that is, the lower affects, and (2) the exclusive reign of primitive affects alongside the underdevelopment of the rest of the psychic apparatus, linked to sensory, intellectual, and motor functions.

The presence of affective impulses—an indispensable companion of each new stage in the development of the child from the lowest to the highest. We can say that affect opens up the psychic development of the child and the construction of his personality and closes the process, completing and crowning the development of the personality as a whole. In this sense, it is no accident that the affective functions show an immediate link to the most ancient subcortical centres which first develop and which lie at the base of the brain, as well as with the newest, specifically human, area of the brain (the frontal lobes) which develop the last. By this fact, we see an anatomical expression of the circumstance that affect is the alpha and the omega, the beginning and the final link, the prologue and epilogue of all psychic development.

Taking part in the process of psychic development from the very beginning to the very end as a qualitatively crucial moment, affect takes a complex path, changing with each new step in the construction of the personality, entering into the structure of the new consciousness which inheres in every age, and showing at each new stage profound changes in its psychic nature. In particular, affect carries out a complex development even during the course of the first year of life. If we compare the initial and final stages of this period, we cannot but marvel at the profound changes that occur in the affective life of the infant.

The beginning affect of the newborn constricts his psychic life within the narrow limits of sleep, feeding, and crying. Already, in this first stage of the age of infancy, affect takes on the basic form of receptive interest in the outside world, so that in the second stage of this age it gives place to an active interest in surroundings. And finally, the end of the infant age immediately confronts us with the crisis of age 1, which, like all the critical ages, is characterized by the rapid development of affective life and marked by the first appearance in the child's affects of his proper personality—this is the first step in the development of the child's will.

K. Bühler[24] proposed an extremely useful schema that allows the systematization according to genetic relations of the basic forms of behavior in animals and humans. Bühler gives his schema a universal significance, applying it to animals, children, and adult humans. He is trying to put this very scheme into the basis of an entire theory of infancy. Below, we shall critically consider the potential and the legitimacy of such a forcible extension of the interpretation of this scheme. But, as often happens, a construction which is extended unjustifiably beyond its limitations and, naturally, found to be ineffective, turns out to be quite adequate for the facts of a given, delimited, area of phenomena. So it is with the scheme of Bühler. It flawlessly reflects the development of behavior in infancy.

If we begin to consider, Bühler says, all meaning making, that is, objective, goal-directed modes of action in animals and people, we will see that, from the bottom to the top, there is a very simple and clearly distinct construction of three stages, which may be called instincts, entrainment,[25] and intellect. Instinct is the lowest level and at the same time the soil from which all that is higher springs. And in people there is not a single area, not one form of spiritual activity, which is not in some way reliant upon instinct.

These three stages, going from the bottom to the top, as we have already said, are true and consistent with reality and reflect development in the age of infancy. The first stage in infant behavior is governed by the instinctive form of activity. This differs from the same animal activity in the insufficient readiness of these hereditary forms of behavior. Indeed, the pathetic helplessness of the newborn human stems from a lack of ready instinctive mechanisms. In humans too, certain inborn elements of motivation and tensions sustain life, and in them all of higher spiritual organization stems from a blind pursuit of sustenance, of activities for welfare and for happiness. But everything is left quite undefined and sketchy, and all of it requires supplementation through entrainment and intellect. Compared with the strictly regular lives of insects, the instincts of humans seem vague, weak, diffusive, and rich with vast individual differences, so that we may wonder in one case or another whether it is the same natural apparatus or not.

In the incompleteness of instincts in the newborn, there clearly emerges a definite genetic sense. Human instincts, unlike the instincts of animals, do not include

[24] For a footnote on Karl Bühler, see Chap. 2, Footnote 19.

[25] Vygotsky uses the term дрессировка, *dressirovka*, literally "dressage." In English the term dressage refers to competitive horse training; but in Russian it has a much broader meaning and can include any kind of animal or even human training by conditional responses (i.e., by carrot, stick, and repetition). Bühler's categories, then, correspond to innate unconditional responses which are the product of phylogenetic adaptations, learned conditional ones which are the result of ontogenetic adaptations, and intellectual responses to novel situations. As Vygotsky points out, these do not exhaust the types of human behavior by any means—all of these behaviors are present in infancy and much of more mature behavior is neither innate, learned, or particularly intelligent, but it is free and voluntary behavior nonetheless (see Vygotsky, 1997, the *History of the Development of the Higher Mental Functions*, Chapters 3 and 4, for his immanent critique of this schema). We have translated дрессировка as "entrainment," but it should be understood as incorporating the rote learning of skills or habits through a system of rewards, punishments, and repetition.

almost finished and complete mechanisms of behavior. Instead, there are a given system of drives and certain premises and starting points for further development. This means that the specific weight of the instinctive form of behavior is much less in the child than it is in animals. Even such a process as walking, which the duck and the chicken master in a finished form immediately on hatching from the egg, arises in the child relatively late, as the result of a prolonged development. It is not a new idea that man's amazing plasticity and versatility in ability is achieved precisely by throwing off innate mechanisms. The chicken is well able to go on two legs immediately, but later it cannot learn to climb, to dance, or to skate. K. Bühler is right when he says that human instinct in its pure form can be seen only in severe idiots, those unfortunate beings who do not appear amenable to entrainment.

The second stage is characterized by the reign of acquired, personal experience, built on top of inheritance by means of learning, exercises, and entrainment. The first half year in the life of the child is essentially taken up with the acquisition of the art of ostension, sitting, crawling, and so on. All of this training, self-learning in play, takes place as a gradual exercise. The formation of conditional reflexes, habitual motions, and skills presents similar forms arising by way of learning and entrainment in relation to the second stage.

The third stage in the development of infant behavior is characterized by the beginnings of intellectual activity. Bühler was the first to demonstrate that by the end of the age of infancy there emerges in the child the simplest manifestations of practical intellect, visual-motor thinking, completely similar to the actions of chimpanzees in the famous experiments of W. Köhler. Therefore, Bühler proposed to call this phase of child life the "chimpanzee-like" age. At this age, the child makes his first inventions, of course very primitive but in a spiritual sense extremely important. The substance of the manifestation of intellect in the child consists of the first rational and expedient, noninnate, and not rote learned, but in the given situation newly emergent, actions of the hand which are associated with the simplest use of detours and the utilization of tools. The child shows the ability to use a rope to pull a distant object, to use one object as a tool with which to fetch another, etc. In his experiments, Bühler was able to show that a child without the beginnings of speech goes through stages of practical intellect or instrumental thinking, that is, grasping mechanical couplings and thinking through mechanical means to mechanical final ends. Even before speech, in the child develops subjectively meaningful, that is, consciously purposeful, activity.

In the experiments of Bühler, the first manifestations of practical intellect were located in the tenth or twelfth month of life. As we have already said, the actual development of the first utilization of tools goes beyond the age of infancy, but the beginning manifestations of this capacity undoubtedly occur in the second stage of infancy. A preliminary stage in the development of the use of objects in this direction may be observed already in a 6-month-old child. In a 9-month-old, these manifestations are observed in their deployed form. They can be taken as the first attempts to establish mechanical dependencies.

A preliminary stage in the development of this capacity is observed in a child of 6 months in the specific form of the manipulation of objects. The child is not

satisfied with playing with only one object. He acts on one object, using it as an extension of his hand and, holding it, moves it to another immoveable object, hitting it, impacting it, just as a 4-month-old baby did previously only using the hands. This use of items is a preliminary stage of the use of tools. At 7 months we find the first traces of new activities with objects that are new in principle, namely changing the form of objects through compression, through crumpling, and through tearing. In these initially destructive activities are already the first methods of formation and transformation. Positive formation appears in the attempt of the 8-month-old child to insert one object into another. This manipulation of fixed objects with the help of moveable objects, this impact of one object upon another, the change of form of objects, and the first rudiments of positive formation can be correctly seen as the preliminary stage in the development of instrumental thinking. All this leads to the simplest use of tools. Using tools will create for the child a completely new period.[26]

In order to finish the consideration of the genesis of the basic neoformation, we must still speak of the development of social behavior in the infant.

We have already spoken regarding communication in the newborn. It is characterized by the lack of specific social reactions. The relationship of the child to the adult is so fused and inseparably interwoven in its basic life operations that differentiated reactions cannot be singled out. Specific social impressions and reactions occur in the second month of life. Thus, it has been established that a smile appears only as a social reaction at first. It is followed by other reactions which leave no doubt of this: we are dealing with differentiated specific social manifestations by the child. Between the first and second months the child will react by smiling to the sound of the human voice.

By the end of the first month, one child's cry, as we pointed out, causes a similar cry in another. At 2 months, the child's cries will almost always die down if anyone approaches. Finally, at 2–3 months, the child meets the gaze of an adult with smiling. At this same time, there appear a large quantity of forms of behavior from which it is already possible to judge that the child has joined into a social relationship with those adults who care for him. The child turns toward a speaker, listens for the human voice, and takes offense when one speaker ignores him. A month-old baby greets one who approaches with sounds or with smiling. He already shows a willingness to communicate. C. Bühler notes two exceptionally important factors which influence the development of beginning forms of sociability. First—this emanates from adult activeness. The child is essentially reactive at the very beginning. Adults care for the child and play around with him. From adults come all that the

[26] The word "tool" is perhaps slightly misleading: Vygotsky does not mean that there is a direct line between this instrumental thinking and child labor. The Russian word орудие is more general and less immediately work related than "tool"—it includes guns, kitchen utensils, and—here—children's toys. For example, many Soviet writers on infancy stressed how children learn to use a spoon (e.g., Zaporozhets et al., 1964/1971, p. 223; Leontiev, 1936/2005; 1981, p. 306). Using a spoon is linked to labor and life in an obvious way, and it also appears to be a good example of how tool use can be taught through collaboration (or, as Western writers like Bruner say, through scaffolding).

infant receives at this stage of his life: not only the satisfaction of his needs but also all of the amusement and excitation brought about by changes of position, by movement, by play, and by coaxing. The child is more and more reactive to the world of *perezhivanie* created by adults, but he is not yet brought into communication with other children staying in the same room in another crib.

The second condition for the *perezhivaniya* of communication consists in this: that the child must be in control of his own body. In certain positions and states, when the child has had its needs satisfied, the child masters enough surplus energy. In such a state his senses may be at least marginally active. At such moments he is capable of actively listening and looking around a little. If the comfortable and secure position in which the child found himself is changed to another which he has not yet mastered, then the whole energy is directed at overcoming the inconvenience. In the child there is no more energy to smile or to share a glance with a speaker. For example, children who cannot completely manage their bodies in a sitting position will be less active in sitting. The limits of activeness are reduced still more at the time when they are learning to sit, stand, and walk. In the supine position, the infant can communicate more easily than when sitting. The obstacle to communication in these cases is the deficiency in activeness on the side of the child.

At about 5 months, in this respect, there usually comes a turning point in the progress that children make in mastering their own bodies, their posture, and their movements, leading to this: 5- to 6-month-old infants are already seeking contact with peers. In the second half year, between two infants there have developed all of the basic social interrelationships that characterize this age. They smile at and babble the one to the other, they give and take back toys, and they flirt with one another and play together. In the second half year, the child develops a specific need for communication. We can very confidently assert that the positive interest in people is brought about by the fact that the needs of the child are being met by adults. The active pursuit of communication is expressed in the second half year in this: the child looks for other people, smiles at them, babbles, reaches for people, clasps them, and is displeased when he is disengaged from them.

In the works of C. Bühler and her coworkers, the inventory of these basic features of social behavior is specified for the first year of life. It is seen that the first phase of social displays by the child is characterized by passiveness, reactiveness, and a predominance of negative emotions (crying and dissatisfaction at the departure of the adult). The second phase is marked by an active seeking of contact not only with adults but also with peers and by the joint activity of children and the most primitive relations of domination and subordination, protest, despotism, obedience, etc.

What should interest us here is first of all two factors, closely related to each other and directly influencing the genesis of social displays at this age. The first is the common root from which the development of the social manifestations of the infant originates. Secondly, there is the unique character that social communication takes on in the age of infancy that separates the sociality of the infant from the sociality of an older child.

The common root of all manifestations of sociality in the age of infancy consists in a unique situation of development of which we have already spoken. The infant from the beginning is confronted with a situation where his behavior is intertwined and interwoven with the social. His path to things and to the satisfaction of his own needs must always pass through a relationship with other people. That is why the social relations of the newborn still cannot be differentiated or isolated from the general shared situation with which they are intertwined. Later, at the beginning of differentiation, they continue to maintain their primeval character in this sense: communication with adults remains the basic path through which the activeness of the child himself is displayed. Almost all of the personal activeness of the infant flows into the mainstream of his social relations. His relations to the external world are always relations through other people. For this reason, if we can say that in the individual behavior of the infant everything is intertwined and interwoven into the social, the reverse proposition is also true: all the displays of sociality of the infant are intertwined and interwoven with his concrete, actual situation, forming with it a shared and indivisible whole.

The effect of the specific, uniquely infant, sociality that results is primarily evident in this: that the social communication of the child has not yet stood out from the whole of the processes that connect him with the outside world, with the things and processes that meet their life needs. This communication is still without the most basic means: human speech. This wordless, pre-speech, visual-action communication brings to the first plane such relationships as are not readily found in later child development. It is not so much communication based on mutual understanding as emotional expressiveness, the transfer of affect, negative or positive reactions to a change of central moment in any infant situation—(e.g.—Trans.) the appearance of another person.

An adult person is the centre of every situation in the age of infancy. It is natural, therefore, that the mere proximity or distancing of a human immediately means for the child a sharp and radical change in the situation in which he finds himself. If we do not shrink from figurative expressions, we may say that the simple approach and distancing of the adult arms and disarms the child's activeness. In the absence of an adult, the infant falls into a situation of helplessness. His activeness in relation to the external world seems to be paralyzed or, in any case, to a high degree limited and constrained. It is as if his arms and legs were immediately taken away, along with the capacity of movement, of change of position, and of the grasping of objects that he needs. In the presence of an adult, for the activeness of the child, the most common and natural path through another human opens up. That is why another person is to the infant always the psychological centre of every situation. This is why the sense of every situation for the infant is defined in the first place by this centre, that is, its social content, or, speaking more broadly, the child's relationship to the world consists in, depends upon, and derives its value from his most direct and concrete relationship to an adult person.

The Basic Neoformation of the Age of Infancy

Now after considering separately the major lines of development in infancy, we can answer the main question related to the basic neoformation of the age of infancy and in this way approach the analysis of the most important theories of the beginning period of child development. So, what that is new arises as a result of the complex process of development in the age of infancy?

We have already seen that the major aspects of child development reveal an inner unity, as each one of them receives its sense, its meaning, only by being included in a single unitary process of development of the basic neoformation of the age. Infant helplessness is linked to the still incomplete skeletal formation, to undeveloped musculature, to the predominance of the more mature vegetative organic functions, to the reign of the more ancient parts of the brain, to the immaturity of all the centres which define the specifically human forms of activeness, and to an instinctive consciousness centered around the most important necessaries of life—this helplessness not only constitutes a starting moment for defining the social situation of development in the infant but also points to two factors which are directly related to the basic neoformation: (1) a gradual growth in the energy resources of the infant as a necessary prerequisite of all the higher situated lines of development and (2) a dynamic changing of the primary relationship to the world in the course of infant development.

P.P. Blonsky singles out three main stages in infant development from the point of view of the interrelationship between energy resources and communication with the environment.[27] The helplessness of the child determines his place in the surrounding environment. During the childhood stage of absolute toothlessness, the child is a feeble being, lying in bed and needing care. From the child's side, social stimuli are mainly in the form of cries in reaction to pain, hunger, and discomfort. The interrelationship between him and his environment is based primarily on food.

[27] Where Zaporozhets, Elkonin, and Leontiev located a crucial turning point in infant development in the use of the spoon (see Footnote 26), Blonsky took a less culturally bound and more biologically based view. The relationship between the child and the environment, he reasoned, depends in a direct way on the child's energy resources, and this in turn depends on the child's ability to take in food, which depends on the child's teeth. (There is some basis for this in the history of early man because the ability to eat meat seems directly related to the ability of humans to undertake long journeys.) Accordingly, Blonsky divides childhood into three periods: in toothless childhood, the child is entirely dependent on milk and has very little energy as a result: the child can only lie down and sit up. In the period of incisors, the child is starting to move around. And by the age of 1, the child is the equal of an adult, so long as they are not outside, but in a quiet room doing nothing. Vygotsky agrees that the child's attention and ability to communicate depends on having enough energy. He even agrees that as soon as man has built walls and no longer depends on hunting and gathering, child and adult can concentrate on social communication, and when we are talking about social communication, the child and the adult are indeed peers if not equals. But of course Vygotsky does not agree that teeth are the essential neoformation: when communication is the main activity, teeth cannot be the main means.

It is utterly clear that most of all he at this time is linked to the mother, in nursing and nurturing.

With the eruption of the incisors, when the child is already a being moving about in bed, the interrelationship between him and the environment becomes incomparably more complex. On the one hand, the child seeks to utilize the power of adults for his own movement and to attain desired objects. On the other hand, he begins to understand the behavior of adults and has established a psychological, connection with them, albeit an elementary one.

In the second year of life, the child proves, in a sedentary room environment, equal to an adult, and relations of collaboration have been established between them, however, elementary and simple their collaboration may be. Thus, according to the three energy stages, we may distinguish three stages of communication with the environment.

Describing the social development of the child above, we have already pointed out that, on the one hand, the moment of energy which determines the greater or lesser capacity of activeness of the child constitutes the basic prerequisite for the development of social displays and communication with adults. Thus, the genesis of the basic neoformation has its roots deep in the most intimate inner processes of organic growth and maturation.

On the other hand, the social situation of development created thanks to the helplessness of the infant determines the orientation in which is realized the activeness of the infant, an orientation through other people toward the objects of the surrounding world. But if the child were not a growing, maturing, and developing being, if he did not change during the age of infancy and remained in the beginning state in which we found the newborn, the social situation of development would define the day-to-day life of the infant as a rotation in the same circle, without any possibility of moving forward. Then the life of the infant would be reduced to countless reproductions of the one and the same situation, as is the case in pathological forms of development. In fact, the infant is still growing and developing, that is, modifying his being, and therefore his life from day to day resembles not so much revolving and returning to one and the same situation as it does a spiral upward movement linked to qualitative changes in the situation of development.

In the course of development, the activeness of the infant grows, his funds of energy increase, his motions are perfected, his arms and legs are strengthened, new, younger, and higher sectors of the brain mature, and new forms of behavior and new forms of communication with his surroundings emerge. Thanks to all of this, on the one hand, the sphere of his relationship to reality expands, expanding and diversifying his use of paths through adults, and on the other there is more and more of an increase in the basic contradiction between the increasing complexity and diversity of social relations of the child and his inability to communicate clearly with the help of speech. All of this cannot help but lead to the basic neoformation of the newborn period—instinctive psychic life—changing in the most emphatic and radical way. The easiest way to understand this change is if we take into account the two basic features which set apart the newborn psyche: first of all, the child still not only does not single out himself but also does not single out other people from the shared

situation arising on the basis of instinctive needs; secondly, for the child in this period there does not yet exist anything or anybody; rather what he experiences is more of an internal state than a definite objective content. Both features disappear in the neoformation of infancy.

This neoformation can be defined if we take into account the basic direction in which the whole development of the infant is going. As we have seen this direction consists in this: that the activeness of the child opens only one way to the outside world—the path which runs through another person. Therefore, it is quite natural to expect that, first of all, his joint activity with another person in a concrete situation should differentiate, stand out, and take shape in the infant's *perezhivanie*s. It is natural to expect that the infant does not distinguish in his consciousness between himself and his mother.[28]

If the child is physiologically separated from the mother at the moment of birth, then biologically he is not separated from her until the end of infancy, until he learns to walk; and his psychological emancipation from his mother, the detachment of the self from the primordial commonality with her, comes only past the end of the age of infancy, in early childhood. It is for this reason that the main neoformation of the age of infancy can best be denoted with the aid of a term which originally appeared in German literature for the psychological commonality of the infant and the mother, commonality which serves as the starting point for the further development of consciousness. The first thing that arises in the consciousness of the infant might best

[28] In this paragraph, Vygotsky foresees not only the "false belief" problem posed by Simon Baron-Cohen and other researchers in the 1980s but Vygotsky also foresees a solution that does not rely on "egocentrism" but instead on the infant "Ur Wir;" the idea that the world of consciousness is shared in much the same way as the world of perceptions can be. This "Ur Wir" is the true neoformation of infancy.

Baron-Cohen's "false belief" task was this: Anne has a covered basket. Sally has a covered box. Sally takes a chocolate and puts it in her covered box. She then goes to the toilet. While she is in the toilet, Anne takes Sally's chocolate out of Sally's covered box and puts it into her own covered basket. When Sally comes back from the toilet, where will Sally look for her chocolate? Children as old as 4 years will answer that Sally will look in Anne's basket, and not in her own box. When you ask why, they answer that she will look there because that is where the chocolate is. Of course, that is correct—but that is not where Sally thinks the chocolate is.

Vygotsky says that the newborn sees, hears, smells, and feels the world, but only as a general condition, an overall situation, a state of being rather than seeing or hearing people and smelling and feeling things. The newborn feels hunger or fear or warmth or cold, but only as a condition, and not as a desire for objects such as a bottle or a blanket or a mother's arms. The newborn has yet to discover the world of objects, the world of people, and the world where objects come to you through people.

But the infant is different. The infant understands that objects come through other people. Because the child's "path to the outside world" is always through others, the first phenomenon to be differentiated from the newborn consciousness of the world as a general condition is a shared activity. The infant understands that other people have minds or else shared activity like peekaboo and social smiling would be impossible. But to the infant, worlds are always shared worlds, shared activities, and so on, and shared minds as well. This "shared mind" is the main neoformation of infancy, and it distinguishes the infant both from the neonate and from the speaking child at 1.

be identified as an "Ur-wir," that is, a "proto-we."[29] This is the initial consciousness of the psychic commonality which precedes the emergence of conscious personality (i.e., consciousness which has differentiated and singled out an "I") that constitutes the consciousness of a "we," but not the shifting, complex "we" which already includes the later consciousness of an "I" occurring at a later age. This initial "we" is related to the later "we" as a distant ancestor to descendants.

That in the infant there emerges a "proto-we" consciousness ruling all throughout this age can be seen from two facts of fundamental importance. The first one was illuminated in the studies of H. Wallon[30] on the development in the child of ideas about his own body. As the study shows, the child does not at first single out his own body from the surrounding world of things. He arrives at an awareness of external objects earlier than he learns about his own body. In the beginning, the child regards the limbs of his own body as alien objects, and long before he is conscious of them as his own, he unconsciously learns to coordinate his hand motions with his eyes, or both little hands. In this way, the infant, who does not yet know his own body—relates to his own limbs as if to alien objects—cannot, of course, have any idea of his self.

G. Compayré[31] beautifully defines this feature of psychic life as lacking its own centre of consciousness or personality. Strictly speaking, this psychic life cannot yet be called conscious. Actually, Compayré says, we cannot speak in the first days of life of consciousness in the strict sense of the word, that is, of self-awareness, which allows us the capacity of appreciating our existence. Of the child it may be said: he lives and he is not conscious of his life. But if there is no self-consciousness, there exists, undoubtedly, from the very first days, vague feelings and therefore conscious impressions. Compayré is quite right when he characterizes the primordial consciousness of the infant as passive. If we understand this word in the signification that it was given by Spinoza in distinguishing between passive and active, receptive and effective, mental states. It can be rightly argued that the primordial consciousness of the infant is still deprived of all active psychic states, that is, states that are

[29] The "Ur-wir" is the German expression for Vygotsky's central neoformation of infant consciousness. Vygotsky, who like most psychologists of his day used German as the main language of science communication, glosses the "Ur-wir" in Russian as a пра-мы, and we have followed him by glossing it in English as a "proto-we." But, as he says at the end of this paragraph, Vygotsky also has in mind something grander, a grandparent of the "we" that existed long before the differentiation of a paternal "you" and a child "I."

Perhaps the best way to understand the "Ur-wir" is neither a primitive "proto-we" nor a grandiose "grand we," but a "we" that is the analogue in interpersonal life of Goethe's Ur-phänomen, the invisible archetype of the phenomenon to be uncovered by a holistic science, for example, the whole system of colors and the way that human consciousness responds to color that can lie hidden from the eye in apparently colorless light, a system which is only partially uncovered by the painter or by the prism.

[30] For a biographical footnote on Wallon, see Footnote 3.

[31] Jules-Gabriel Compayré (1843–1913) was an educator and a moderate politician in the French Third Republic, where he served as a deputy from southern France. He completed a doctorate in philosophy (on David Hume) but he is most famous for a series of books on Rousseau, Pestalozzi, Herbart, and other as well as other "grand educators."

internally defined by the personality. In this sense, we can say that a child passes in a specified period through an animal stage of development which is characterized by the absence of consciousness of his own activities, his own personality.

If the first fact characterized the inability of the infant to single out his body from the surroundings and be aware of his own body and its independent existence, the second one speaks above all about how directly for the child social relations and his relations to external objects are merged. An illustration of this fact is found in the studies of S. Fajans[32] on the influence of spatially distal objects and the affective attraction to them of the infant and the preschooler. Studies showed that optically distancing of objects signified as well a psychic distancing proportional to the distance between the object and the infant; first there was a weakening of the affective attraction of the object. Along with the spatial removal, the contact between the infant and the goal was also suspended. The world at a distance appears nonexistent to him. His goals in the physical sense lie in the immediate vicinity.

The data given by Fajans show that in 75% of cases the affect for the object turns out to be significantly stronger if the object is situated nearby. In only 25% of the cases does removing the object not cause noticeable changes in affect, and never was there any strengthening of affect alongside the removal of the object. In the toddler in early childhood, in 10% of the cases, there was an increase in affect with the removal of the object. In 85%, there was no change in affect depending on the proximity or removal of the object, and only in 5% was the affect for the proximal object more than for the removed one. This was, of course, due to the narrow life limits of the infant.

The observation of Fajans requires, however, two addenda. If we look at the development of ostension, it is easy to see that the child initially grasps at an object that touches his hand. At a later age, the child gropes for the object even when it is far away. Instead of the primordial, directly acting, excitation, we now have a specific reaction to the perception of the object itself. C. Bühler places this fact together with the fact that the child develops a new relation to the object at a distance thanks to which all of his needs are now met by adults, thanks to increased social communication.

In this way, we see that social development in the child impacts not only the direct and immediate increase in his social displays but also in changing and complicating his relationship to things, in the first place to the world at a distance. The remote object is now the object of an affective desire to obtain it (despite the fact that it now falls beyond the sphere of reach), the object is included in the social situation of grasping through others.

Confirmation of this we find in other factual observations with which we would like to supplement the data presented above. We saw that the infant sets himself

[32] Sara Fajans-Glück was a student of Kurt Lewin and published her dissertation on Lewin's idea of "force fields" acting on small children. She and Kurt Lewin published a paper on this subject based on her dissertation, in 1933 (*Die Bedeutung der Entfernung für die Stärke eines Aufforderungscharakters beim Säugling und Kleinkind*), and Vygotsky seems to be citing this paper. So, this part of the manuscript was probably written in the year before Vygotsky's death.

only physically proximal goals and for the child the optical removal of the object is equivalent to the psychic distancing and the disappearance of it and of the affective impulses which attach him to the object. This distinguishes the infant from the small child. The second, more important, difference is that with the removal of the object and the inability to obtain it, the situation is easily changed for the child of early age: the object-related situation between the child and his goal is transformed into a personal social situation between him and the experimenter. In the age of early childhood, the social and the object situation are already sufficiently differentiated. Therefore, we observe the following curious phenomenon: the nonsuccess and incapacity to obtain the goal transforms the object situation into a social one.

For the infant, this is still not possible. For infants, the social situation and the object situation are still not separated. When an object is moved away, as we have seen, in the majority of cases the affective attraction disappears for the infant. But when an infant has already ceased to reach for a distant object, it is very easy to refresh his efforts and once more arouse a lively affect and a lively address to the object, if an adult is located in the direct vicinity of the goal. It is remarkable that renewed attempts to get the object are directed not to an adult, but rather to the goal. This new address to the object appears in an identical degree whether the goal is proximal or distal. One might think, the experimenter says, that the approach of an adult to the object arouses in the child a new hope or that a simple spatial proximity of an adult significantly enhances the intensity of the field surrounding the goal.

The toddler has the same or an even stronger reaction to another person in the situation of his own helplessness, but his reaction is of a differentiated character. When incapable of obtaining the object by his own efforts, he does not turn to the goal, which remains unreachable, but rather to the director of the experiment. The infant reacts completely differently. He continues to seek the unreachable goal, even though the object situation has not changed at all.

It is difficult to imagine a clearer experimental demonstration, first of all, that the centre of any object-related situation for the infant is another person, changing its meaning and sense, and secondly, that the relation with the object and the relation with the person have not been separated by the infant. In itself, the object at a distance loses its powers of affective attraction, but this power comes back to life with the same intensity as soon as next to the object, in immediate proximity to it, in the same optical field with it, there is a person. From a number of experiments we know the influence of the structure of the optical field on perception of an object in animals and in infants. It is known that the object perceived changes its properties depending upon the structure into which the object enters, depending on what is near to it.

Here, we encounter a completely new phenomenon: in the object situation nothing has been changed. The child perceives the object as remote and as inaccessible as before. He is not even to the smallest measure aware that he must seek the help of an adult to get the goal which is unattainable for him. But the affective urge for the object located at a distance depends on whether this object lies in the same field

in which the child perceives the person or not. An object near a person, even if it is unreachable and located at a distance, exerts the same affective motivating force as objects which are located in immediate proximity to the child and attainable by his own effort. This could not be clearer than in what the experiments of Fajans show: the relationship to the external world for a child is completely determined by relations through another person, and in the psychological situation of the infant, its object-related and social contents are still merged.

Both considerations—(1) the child not knowing his own body and (2) the dependence of his affective attractions to things on the possibility of sharing *perezhivanie* of the situation with other persons—wholly and thoroughly confirm the dominance of a "proto-we" in infant consciousness. The first shows clearly and immediately from the negative side that the child does not yet have any consciousness of his physical "I." The second shows from the positive side that the simple affective desire flares up in the child in no other way than in the contact between the object and another person, in no other way than as the condition of psychic contiguity, in no other way than as the condition of "proto-we" consciousness.

Usually, the course of social development in the child is sketched in the opposite way. The infant is presented as a purely biological being, not knowing anything other than the self, wholly absorbed in the world of his own inner *perezhivanie,* unable to contact surrounding people. Only slowly and gradually does the infant become a member of a community, socializing their desires, thoughts, and acts. This presentation is false. According to it, the undeveloped psyche of the child is maximally isolated and minimally capable of social relations and of the environment, reacting only to primitive excitations of the outside world.

Everything which is known to us about the psyche of the infant impels us to categorically reject such a presentation. The psyche of the infant from the first moment of life is included in a common existence with other persons. The child does not initially respond to separate sensations but to surrounding people. The child reacts variously to a loud sound just as to a thermal excitation or an injection. Even at this time, the child responds differently to the affective coloration of the human voice, to a change in facial expression. A loud sound, if we consider it as pure energy, is far more imposing than the human voice, and despite this the child is as if deaf in relation to the first, more severe excitation but responds sensibly and in a differentiated way to the much weaker and more difficult to perceive excitation coming from the people in his surroundings. The child is not responding to excitations as such but to the facial expressions of the living people he is exposed to. In the early stages of psychic development, children show a preference for those impressions that are related to their psychic links with living people. The child is in contact, not so much with the world of lifeless external excitations, as through and over them though a much more internal, although primitive, commonality, with other personalities surrounding him.

W. Peters[33] beautifully defines the uniqueness of the *perezhivanie* which is particular to this stage. He says that the child perceives the world not in its objective categories, as something separate from his "I" but from the beginning knows only his own kind of "we" within which "I" and the other form a unitary, coherent structure and are, as it were, mutually constitutive. And, thus, since the child does not know at first his own "I" he, as F. Schiller[34] puts it, lives in another rather than, objectively speaking, in himself. But, and this is the most important, in the other, the child lives in the way we live our "I." Even in later ages, there persists in the child a trace of this inadequate isolation of his own personality from the social whole and from the surrounding world. To this discussion we shall return when considering the theories of the infant age.

W. Peters, we think, completely correctly explains imitation in infancy and in early childhood as that primordial peculiarity of a consciousness of psychic commonality. The child is much earlier on capable of true imitation than of the repetition of motions which arises in a purely associative way. Commonality as a psychic fact is an inner motive, an imitative act on the part of the child. It merges his proper activity in an immediate way to those he imitates. The child never imitates the movements of inanimate objects, such as a swinging pendulum. Evidently, his imitative activity rises only when there is a personal commonality between the infant and those whom he imitates. That is why so little imitation develops in animals and why it is so closely linked to understanding and intellectual processes.

We may take, alongside Peters, the vivid comparison of the activeness of the child standing on this stage in the development of consciousness with a group of close playmates playing with a ball: in the ball game, we have a full fusion of "I" with "thou" in a unitary action of inner "we."

Indeed, imitation may, to all appearances, be attributed to a number of specifically human characteristics. Already the research of W. Köhler has shown that imitation in the ape is limited to the narrow confines of his proper intellectual capacities. Imitation of complex, rational, and expedient action is never possible without understanding of the structure of a situation. In this way, chimpanzees can only

[33] Wilhelm Peters (1880–1963) completed his doctorate under Wilhelm Wundt on color perception in 1904. He then joined the Würzburg School, where in 1915 he published the work on the correlation of school grades; Vygotsky is quite critical of this study, which concludes that intelligence is largely hereditary because there is a significant correlation in school grades between generations. Like many German intellectuals (including Marx and Mendelssohn) he was from a Jewish family that had converted to Christianity; this meant that he lost his job during the Nazi years. He went to London and then Istanbul, and returned to Wurzburg after the war, where he worked for learning disadvantaged school children.

[34] Friedrich Schiller (1759–1805), together with his friend Goethe, constituted the "Ur-wir" of modern German literature, and the "proto-we" of German nationhood. Today his plays are best known through operas (e.g., Verdi's "Don Carlo," Rossini's "William Tell," Puccini's "Turandot," and Donizetti's "Mary Stuart"), and his poetry is best known through Beethoven ("Ode to Joy"), but to his own generation he was well-known as a critic. Vygotsky is probably referring to his criticism of sentimental and naïve poetry, where he remarks not only nature but children who make us feel both ashamed and superior in their lack of self, for example, when a child offers his father's wallet to a needy stranger.

imitate such actions as those that lie within the zone of their own intellectual capacities. All studies of imitation in the ape show that apes "ape" poorly. In them, we not only do not observe the propensity for imitation without measure made famous in fables, but the best possible imitations even among the higher apes are still immeasurably narrower than those of a human. The imitation of an animal is different in principle, in the limited zone of its own capacities. For this reason, the animal can learn nothing that is new with the help of imitation. The child, in contrast, with the aid of imitation, gives rise to a new behavior, never previously experienced.

Having uncovered the basic neoformation of infancy, we may proceed to a concise and concentrated review of some basic theories of this age.

Basic Theories of Infancy

Reflexological Theory[35]

According to this theory, the initial moment of development in the infant presents us with a creature of unconditional reflexes. All the maintenance and the development of the personality in the age of infancy, including its psychic and its social sides, are exhausted by the process of forming conditional reflexes, in their differentiation, in their complex coupling, and combining with each other and in the construction of ever higher and still higher superreflexes from the primary conditional reflexes. With this explanation, reflexological theory attempts to exhaust all the actual complexity of the process.

The development of higher nervous activity, in particular the process of the formation of conditional reflexes, presents without a doubt one of the most important aspects of development in the age of infancy, which for the first time lays a basis for the personal experience of the child. But this process is in a sense intermediate, in that it is due to other, more complex processes of development which act in the role of prerequisites in relation to the development of conditional reflex activity. And this itself, in turn, acts as a prerequisite for more complex and higher forms of psychological and social development of the child. Therefore, reflexological theory may appear adequate for the explanation of the concept of one intermediate aspect of development, but it inevitably leads to the simplification of development as a whole and to ignoring the independent regularity of higher processes of

[35] The Russian *Collected Works* has a long footnote here on the history and membership of the reflexological school, but for contemporary readers it is not really long enough. Reflexology was cofounded by Pavlov and his now forgotten rival Bekhterev. From Vygotsky's point of view, Bekhterev had the advantage of recognizing consciousness and mental states as legitimate objects of study. Bekhterev himself died suddenly and mysteriously after a visit to the Kremlin in 1927, and Pavlovism eventually became the official psychological science of the USSR. The Russian footnote lists, among the prominent reflexologists, N.M. Shchelovanov, M.P. Denisova, N.L. Figurin, and also N.I. Kasatkin, who was earlier cited to disprove Vygotsky's claim that newborns are not capable of imitation.

psychological and social development. By its very essence it is not adequate for the explanation of these aspects of development insofar as, on the one hand, it ignores psychological development of the child and, on the other, it deals with the development of social relations in the child from the point of view of laws relating the body to its physical environment. It is, therefore, inevitable that it allows the reduction of higher laws to a lower and a mechanistic account of development. This mechanism is sharply manifest in the fact that the theory we are considering is not able to specify the difference between social development of the child and animal development.

The Theory of the Three Stages[36]

This theory, the content of which we set out above, is distinguished by the same shortcoming as the previous one: it too attempts in one law to encompass the development of both animals and humans. To speak of the essence, it is a modified and supplemented reflexological theory since, on the one hand, it is not limited to the purely objective consideration of behavior but introduces into the circle of analysis inner psychic activity linked to instincts and skills and, on the other, introduces above the stage of entrainment another, third, stage—intellect, qualitatively distinct from the stage of skill formation.

This theory is also only adequate in application to the narrow area of the development of reactions in the age of infancy. It of necessity places in one stage the intellectual actions of apes and all of the higher manifestations of human thinking that develop in the child in the course of childhood. Its tendency to equate human intellect with animal intellect finds a clear manifestation in the designation of the last stage of infancy as the age of chimpanzeehood. The root and source of this error consists in ignoring the social nature of man.

We have only just seen that what occurs with infants is impossible in the animal world and, in principle, impossible in the chimpanzee's relation to the situation. Even a simplest relation to the situation, as we attempted to show with the example of the experiments of S. Fajans, in the infant is determined and conditioned by the social content of the situation. Neglecting this, the theory of the three stages shuts off any possibility of finding for itself the extant profound and principled distinction between child intellect and chimpanzee intellect, in spite of their outward resemblance. The differences stem from the socially mediated relation of the infant to the situation.

[36] According to the Russian *Collected Works*, the theory of three stages is that of Bühler: the three stages are, as Vygotsky pointed out earlier, instincts (innate, unconditional adaptations to the environment), skills/habits (learned, conditional ones), and intelligence (unprecedented adaptations to novel problems). Like reflexology above (and Gestalism below), these three stages cannot account for qualitatively human development because the *social* situation of development is not the starting point, so all three stages are already present and accounted for in animals.

The Structural Theory[37]

The structural theory of the age of infancy, as we have seen, correctly marks the starting point and not a few of the major features of the development of the infant. But it neutralizes itself when it is confronted with the problems of development as such. The beginning and initial moments of development are structures already. In the further course of development, structures complexify, become more and more differentiated overall, and penetrate one another. However, from this point of view, it is impossible to explain how in development generally there can arise anything new. From the point of view of the structural theory, the starting and ending points of development, as with all the intermediate ones, are equally subject to the law of structure. As the French proverb says, the more it changes, the more it is the same thing.

The structural principle in itself is not yet capable of giving a key to understanding the course of development. It is not surprising, therefore, that the structural theory appears more productive and capable of delivering a scientific explanation when it is attached to the most elementary, primitive, and primordial moment. The structural theory, like the two previous ones, attempts to explain on the basis of a general principle the development of animals and humans which turns out to be equally structural in the light of this concept. Therefore, although the theory is most productive in its application to infancy, it reveals its insolvency as soon as it is applied to the development of higher, specifically human properties of the child. Indeed, inside the very age of infancy it is powerless to explain the central problem of anthropogenesis, which in general is unsolvable from the point of view of theories which encompass with a single principle the development of animals and humans.

[37] When Vygotsky talks of "structuralist" theories, he is referring to Gestaltism, the holistic psychology of his friends and co-thinkers in Germany, notably Kurt Lewin. As we have seen, Vygotsky thinks that the Gestalists are correct in the way they delimit the period of infancy and also in the way they note features like perception, imitation, and social smiling as developmental milestones; Gestaltism is the trend of contemporary psychology which is most closely related to Vygotsky's own.

But close relatives sometimes quarrel more than distant acquaintances. Vygotsky's main criticism is that in Gestaltism, the means of development does not itself develop. The child is born with a Gestalt (a structure of perception), and the infant has the same Gestalt (perception). When the child begins to use tools, the Gestaltists explain this as a matter of perceiving the tool and the goal in the same field. Even language is seen as being a "structure" made of sound and meaning, rather than a cultural-historical practice which the child learns by mastering the acts of thinking involved in word meanings. In Gestaltism, everything changes—but nothing develops: some of the Gestaltists were aware of these criticisms, and as we shall see, Lewin tried to address them by distinguishing between intrastage structure and interstage structure.

The Theory Comprehending the Age of Infancy as a Subjectivistic Stage of Development[38]

According to this theory, the newborn presents a completely insular being, fully absorbed in its own subjectivity, and only slowly and gradually establishing contact with the objective world. The content of development in the first year of life is reduced to the transition from a state of complete absorption in subjective experience to intensive focus on objects and to the first perception of objective links. The dynamics of this epoch present a movement from "I" to the external world. Naturally, from the point of view of this theory, objective relationships are perceived by the child initially as a relationship of duty, not a relationship of being. Therefore, in speaking of this epoch, we should speak not so much of the perception of dependencies, but of establishing relations between objects.

The basic thinking behind the theory of the complete subjectivity of the age of infancy, of the path of development of this epoch from the inner core of the personality, from "I" to the external world, as we shall see, is represented even more clearly in the following theory, which we will discuss next. Our critique of it will be relevant to this theory as well.

The Theory of Solipsism as Inherent in the Age of Infancy

This theory is linked, on the one hand, with the previous theory taken to an extreme position and, on the other, with the theories of the age of infancy which have been developed by the school of psychoanalysis (S. Bernfeld).[39] The theory under consideration presents something of a synthesis of these two conceptualizations. In its most complete and consistent view, it is developed by J. Piaget, who says that infant consciousness is for us a mystery. One of the pathways for penetrating his consciousness consists of the pathway of regression. We know, Piaget says, what is the most significant feature that marks off the behavior and thinking of the child from that of an adult person—that is, egocentrism. It increases in measure as we descend the rungs of the age ladder. In the person of 18 years, egocentrism is expressed differently than in a person of 10, and in a 6-year-old yet another way, and so on. At 4 years, egocentrism occupies nearly all of child thinking. If we consider that the

[38] The *Collected Works* attributes this theory to Kurt Koffka, but this seems unlikely on two counts. First of all, Koffka was a Gestaltist, that is, a structuralist, and would therefore belong in the previous category. So in fact many of the arguments summarized in the previous category can be found in Vygotsky's Проблема развития в структурной психологии ("The Problem of Development in Structural Psychology," in the Russian *Collected Works*, Vol. 1, 1982, p. 195–238), which is translated simply as "Preface to Koffka," 1997a, pp. 195–232). Secondly, Koffka's book, "Growth of the Mind," which Vygotsky is very familiar with, is by no means subjectivist and includes ample discussion of the child's social relations—always within the Gestaltist paradigm of figure-ground structures. It seems more likely that Vygotsky has Stern's personalism in mind, particularly since Vygotsky seems to be ordering the theories from objectivistic to subjectivistic.

[39] For a biographical footnote on Bernfeld, see Footnote 2 in Chap. 5.

limit of egocentrism, Piaget believes that absolute egocentrism inheres in infancy, which can be defined as the first year of solipsism.

Logical thinking, for Piaget, develops late in the child. It always comprises something of the social. It is linked to speech. Without words we would think oneirically: in images, combining with vague feelings and having totally individual and affective meanings. This thinking, as opposed to socialized, logically mature thinking, we observe in dreams and in some patients. It is called autistic thinking. Autism and logical thinking—two poles—: one, purely individual, and the other, purely socialized. Our normal mature thinking constantly oscillates between these two poles. In dreams and in a few mental illnesses, a person loses all interest in objective reality. He is immersed in a world of his own affects, which finds expression in figurative emotionally colored thinking.

The infant, according to this theory, also lives as if in a dream. S. Freud speaks of the narcissism of the infant as if he has no interest in anything other than his own self. The infant takes all of the surroundings as his own self, just as the solipsist does, identifying the world with his own ideas of it. Further development of the child consists in the gradual decline in solipsism and a gradual socialization of thinking and of consciousness in the child, who is accessing an external reality. The egocentrism which is peculiar to the child of later ages consists of a compromise between the original solipsism and the gradual socialization of thinking. The degree of egocentrism can, therefore, measure the progress of the child on the developmental path. From this point of view, Piaget interprets the series of child reactions which he observed in experiments as proximal to the type of behavioral forms often manifested in the age of infancy, for example, magical relations toward things.

Even from this simple exposition of the theory it is easy to see that it presents an attempt to depict development in the age of infancy from a viewpoint that is inside out. This theory is the direct polar opposite of the conceptualization of infant development we have presented. We saw that the very beginning moment is characterized by the fact that all the life manifestations of the infant are intertwined and interwoven into the social, that the elongated path of development unfolds in the child a "proto-we" consciousness, and that the consciousness of an inseparable psychological unity, the lack of the possibility of self-separation, constitute the most distinctive properties of the infant's consciousness. The theory of solipsism asserts that the child is a presocial being, completely immersed in the world of his own dreamlike thinking and subordinated to self-contained affective interests. The fault which lies at the foundation of this theory, as with the theory of Freud, consists in the incorrect counterposition of two tendencies: (1) that of satisfying needs versus (2) that of adaptation to reality, that is, the pleasure principle versus the reality principle, and autistic versus logical thinking. In actual fact, the one and the other do not present polar opposites but forms closely linked with one another. The tendency toward satisfying needs is in essence merely the other side of the tendency to adaptation. Pleasure also does not exclude reality. Not only do they not exclude each other but in the age of infancy they nearly coincide.

In just the same way, logical and autistic thinking, affect and intellect are not two mutually exclusive poles, but two inseparable psychological functions whose forms

are closely linked to one another, acting in each age level in inseparable unity while embodying new and ever newer relations between the affective and intellectual functions. This question is genetically answered from the point of view of to what extent autistic thinking may be taken as primary and primitive. Freud, as we know, defended this point of view. Contrary to it, E. Bleuler demonstrated that autistic thinking is a late developing function. He countered the thinking of Freud that, in the course of development, the mechanisms of pleasure are primary, that the child is isolated by a shell from the external world, living an autistic life, and hallucinating the satisfaction of his own internal needs. Bleuler says that he sees no hallucinatory satisfaction in the infant; he sees satisfaction only with an actual meal of real food. Observing the older child, he also does not see that the child chooses an imaginary apple over a real one.

The newborn responds in all of his drives to reality and to the spirit of realism. Nowhere can there be found or even imagined a living entity, which does not respond in the first place to reality, which does not act on it, that is completely oblivious of it, no matter how low its stage of development is.

E. Bleuler has pointed out that the autistic function requires maturation of complex preconditions in the form of speech, concepts, and memory capability. The autistic function is not so primitive as simple forms of the realistic function.

In this way, the psychology of animals, as well as the psychology of the infant, knows only the reality function. The autistic thinking of the child makes major successes following the development of speech and the most important steps in the development of concepts. In this way, autistic thinking not only does not coincide with the unconscious and nonverbal, but is itself based on speech development. It turns out to be not the original, but the derivative, form. Autistic thinking is not a primitive form of thinking; it can develop only after that thinking which works with the aid of remembered imagery, takes precedence over the unmediated psychic reactions to actual external situations. Ordinary thinking—the reality function—is primary just as necessary to every viable psychic living being as actions that correspond to reality.

There have been efforts made to limit the use of the theory of solipsism to only the neonatal period. Supporters of this version have explained that the stage of solipsism does not last very long in the infant and already at 2 months has lost its absolute character. The first breach takes place at that moment when the child begins to answer the voice or smile of an adult with an overall animation or with an answering smile. In general, in the light of the known data on the sociability of the infant, it is difficult to accede to a conception relating to a child of more than 2 months. It is applicable, according to our definition, in full measure to children who are severely retarded and to idiots.

This second thesis of Piaget's[40] in relation to infant autism also applies more to oligophrenics than to normal children. This compromise point of view, strictly

[40] What exactly does Vygotsky mean when he says: "Piaget's second thesis on child autism?" The English translation of the *Collected Works* translates this vaguely as "Another of Piaget's statements", but this is simply wrong: the text clearly says that there is a second assertion. The first

speaking, does not contradict but confirms Piaget in his idea of the primacy of autistic thinking. Moreover, one cannot but agree with Bleuler, who demonstrated that precisely the primitive stages of development exclude any possibility of nonrealistic thinking. Beginning with a particular stage of development to the original realistic function is joined an autistic one and this develops alongside it. The imbecile, says Bleuler,[41] constitutes the true realistic politician. In him, autistic thinking is simplified along with realistic. In recent times, K. Lewin showed that imagination—one of the most striking manifestations of autistic thinking—is extremely underdeveloped in mentally retarded children. From the development of a normal child, it is known that this function only begins to develop noticeably in him from preschool age.

We think therefore that the theory of solipsism should not merely be limited but replaced by its opponent, as all of those facts which are presented in its favor have their true explanation from the opposing point of view.

So, W. Peters demonstrated that on the basis of egocentric speech and egocentric thinking in the child lies not in autism and not in willful isolation from contact, but is precisely opposite in psychic structure. Piaget who, according to Peters, stresses the egocentrism of children and makes of it the cornerstone that explains the originality of the child psyche, has yet to determine that when children talk to each other they do not listen to each other. Of course, outwardly it may seem as if they do not attend to each other, but this is precisely because they retain still to some extent traces of unmediated contact which is the dominant feature that characterized at one time their consciousness.

In conclusion, we wish to just show that the facts cited by Piaget find their true explanation in the light of the above teaching concerning the main neoformation of the age of infancy. Piaget, analyzing the logical operations of the infant, anticipates the objections that his theory may evoke. One might suppose, he writes, that the

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assertion appears to be that autism and self-observation is primary. This is really not satisfactory to Vygotsky from a genetic point of view: where did this self-observing-a-self come from? Piaget derives it by going backwards from the egocentrism of older children. Vygotsky says this kind of "primacy of autism" may occur, but not in normal children: the primacy of the autistic function is a sign of a severe developmental pathology.

So the second assertion appears to be Piaget's assertion that the coefficient of egocentrism is an index of development. The more egocentric the child is, the less developed he is. Here, Vygotsky says this is ALSO not true of normal children. With normal children, egocentric or "autistic" thinking develops along with logical thinking (and after the child acquires speech, we see a zig-zag path from logical, epistemic thinking to autistic, deontic thinking). It is only with anomalous development (e.g., brain damage), when children cannot develop culturally, that we can say that the more egocentric the child is the less developed the child is.

[41] Paul Eugen Bleuler (1857–1939) was a Swiss psychiatrist, Freud's student and Piaget's teacher. He was, as a doctor, a biologically oriented psychologist, he was also an enthusiastic champion of psychoanalysis, responsible for the concepts of "schizophrenia," "autism," and the idea of "ambivalence" (e.g., loving and hating your parents at one and the same time). As Vygotsky notes in the second chapter of *Thinking and Speech*, Bleuler fell out with Freud over the concept of "hallucinatory satisfaction." Freud did not respond to criticism very well, and Bleuler left the International Psychoanalytic Association in 1910, complaining that it was more like a religious cult or a political party than a scientific institution.

infant employs an action to get a result simply because he believes that his parents will fulfill his wishes. According to this hypothesis, the method which is employed by the child for the purpose of operations on objects only amounts to a sort of language, employed by them to make contact with persons in proximity; this is not magic, but requesting. In this way we might suppose that a child of 1½ or 2 years resorts to his parents when he requires anything and simply says "Please!", unconcerned with specifying exactly what he wants, so convinced is he that his wishes are known by his parents. But, in Piaget's words, if this hypothesis might seem plausible for a child who is already beginning to speak, then until that moment it is absolutely unsound. As one of the basic arguments against this hypothesis, as the best proof that the primitive behavior is not social and the behavior of 1-year-old cannot be regarded as social, Piaget considers the following circumstance: the child does not yet distinguish between persons and things. Therefore, Piaget holds, at this age we may speak only of solipsistic, and not about social, behavior.[42]

However, as we have seen, in the child of 2 months, there is already all of the subsequently developing and increasingly complex specialized reactions of a social nature (to the human voice and to the expression on a human face), the active seeking out of contact with other person, and other symptoms which without a doubt demonstrate that even a child of the age of infancy distinguishes a person and a thing.

We have seen from the experiments of Fajans that the child's relation to the object is wholly determined by the social content of the situation in which the object is given. Is it possible to say of the child's behavior in these experiments that he does not distinguish people from things? What is true in Piaget's thinking is only that for the infant the social and object content of the situation is not yet differentiated. Unlike a child of 2 who has mastered speech, the infant is not able to differentiate between a request for aid to an adult and a direct action on an object. As we have seen in experiments with distant objects, the child who has already given up reaching for an unattainable goal will again, with the vivid enthusiasm, renew his attempts once in the vicinity of the goal there appears a person. True, the child does not turn to the experimenter for aid, but continues to reach directly for the object, and this gives the impression of magical behavior. But the experiment unmistakably shows that this appearance of magical action emerges in the child only under the influence of a situation with an unreachable goal which suddenly becomes reachable in way that is ordinary for the child, through another person. The child is not yet conscious of this path and does not know how to employ it deliberately, but only in the presence of this path are his quasi-magical actions actualized. A careful analysis of the

[42] Recent evidence shows that infants as young as 3 months old (and even cats, dogs, and magpies) do understand object permanence. So, as with Piaget's observations of self-directed speech we cannot explain Piaget's results with Piaget's explanations. But, as with Piaget's observations of self-directed speech, Vygotsky can explain them; he explains the child's propensity to look away from an object that cannot be seen and to talk to objects that are too far away to reach in the same way—it is not the "magic" of egocentrism, but rather the child's knowledge of, and even overgeneralization of, sociality.

experiments of Piaget would also have shown that the child reacts with magical actions not to the situation with the object that has disappeared, but to the situation the centre of which is the path to the object, which runs through a relationship to another person. In this way, the solipsistic behavior of the infant turns out, in fact, to be social behavior characteristic of the "proto-we" of infant consciousness.

References

Brodal, P. (2016). *The central nervous system*. Oxford University Press.
Bühler, C., Hetzer, H., & Tudor-Hart, B. (1927). *Soziologische und psychologische Studien über das erste Lebensjahr*. Fischer.
Bühler, Ch., Hetzer, H., & Tudor-Hart, B. (1927, published in Russian 1931). *Soziologische und psychologische Studien über das erste Lebensjahr*. Jena and Moscow.
Elkonin, D. B., & Zaporozhets, A. V. (Eds.). (1964/1971). *The psychology of preschool children*. MIT Press.
Harrower, M. (1983). *Kurt Koffka: An unwitting self-portrait*. University Presses of Florida.
Koffka, K. (1925/1980). *The growth of the mind*. Transaction Books.
Leontiev, A. N. (1936/2005). Study of the environment in the pedological works of L.S. Vygotsky. *Journal of Russian and East European Psychology, 43*(4), 8–28. https://doi.org/10.1080/10610405.2005.11059254
Leontiev, A. N. (1981). *Problems of the development of the mind*. Progress.
Lhermitte, J. (1925). *Les fondements biologiques de la psychologie*. Editions Gauthier-Villars. Science et civilisation.
Vygotsky, L. S. (1997). *Collected works Vol. 4*. Plenum.
Wallon, H. (1943). *De l'acte à la pensée*. Flammarion.
Wallon, H. (1949). *Les origines du charactère chez l'enfant*. Presse universitaires de France.
Zaporozhets, A. V., Zinchenko, V. P., & Elkonin, D. B. (1954/1971). Development of thinking. In D. B. Elkonin & A. V. Zaporozhets (Eds.), *The psychology of preschool children* (pp. 186–254). MIT Press.
Варшава Б. Е. и Выготский Л.С. (1931). *Психологический словарь*. Мособлполиграфа.