It Takes More Than Mean-End Differentiation to Intentionally Communicate in Infancy. A Semiotic Perspective on Early Communication Development

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Intentional communication, including early gestures produced by infants, implies sharing meanings about the communicative referent. Despite this general assumption, intentional communication in infancy is majorly apprehended as an instrumental activity consisting of using others in order to obtain a goal (i. e. social tool-use, Bates, 1976). Relying on an inferential model of communication, we support that communicative understanding in infancy is possible through meanings concerning the communicative referent that are being shared between the infant and her communicative partner. Situated in Vygotsky's framework of mediated psychological functioning, the approach of Object Pragmatics (Moro & Rodriguez, 2005) permits us to consider a type of meaning that is being shared in infancy. Short examples of gesture production by infants help us highlight that sharing meanings of how objects should be used allow successful communication.

Keywords: intentional communication, infancy, shared meaning, object use, mean-end differentiation.

Bates and colleagues' influential model of the emergence of intentional communication in infancy suggests that infants' first gestures *instrumentalize* the other in order to obtain a desired goal (Bates, 1976; Bates, Benigni, Bretherton, Camaioni & Volterra, 1979). Relying on Piaget's concept of mean-end differentiation, Bates et al. argued that intentional communication in infancy functions as a *social tool use*, in analogy to tool use that represents a major psychological achievement in the preverbal stage (Bates, 1976; Bates et al., 1979). In this article, we claim that apprehending intentional communication uniquely from an instrumental perspective does not allow accessing the cognitive processing required for successful communication. Relying on an inferential model of communication (e. g. Grice, 1957; Lewis, 1969), we support that communication involves accessing the other's communicative intention in order to determine the meaning of his or her communicative acts. We use Clark's concept of 'common ground' (1996) in order to account for the process that allows protagonists to access their respective communicative intentions. Common ground being the pool of meanings and experience shared between protagonists, they become able to rely on such shared knowledge in order to access each other's communicative intentions and thus reach successful communication. In quest of a model which accounts for the role of shared meanings in early psychological functioning, we addressed the cultural-historical theory by Vygotsky and particularly the key concept of semiotic mediation of the psyche (Vygotsky, 1935/1987). However, as it will be further developed, Vygotsky did not apprehend the preverbal development as semiotically mediated. It is in the approach of Object Pragmatics (Moro & Rodriguez, 2005) — relying and extending Vygotsky's hypotheses — that we found a theoretical account of how meaning is being constructed and shared in the preverbal stage. This approach and its key concept of 'conventional use of objects' represent the theoretical framework underlying the semiotic perspective on intentional communication in infancy that we suggest in this article. Our argumentation in favor of such an approach is illustrated by two short examples of gestures produced respectively by a 12- and a 16-months old child in order to communicate intentionally to an adult.

Mean-end differentiation and intentional communication as social tool use

Developmental psychologists have amply shown that the foundations of psychological development, including communication, are laid in the preverbal stage. Far from being a period of blooming and buzzing confusion, the psychological development in the preverbal years is determined by its own systematicity and regularity. Theoreticians and empirical researchers working in the domain of infant and child development highly agree that the mechanism underlying early psychological functioning is the mean-end differentiation. As Bruner puts it "[m]uch of the cognitive processing going on in infancy appears to operate in support of goal-directed activity. From the start, the human infant is active in seeking out regularities in the world about him. The child is active in a uniquely human way, converting experience into species-typical means-end structures" (Bruner, 1983: 24). It is essentially during repetitive surefire prediction that infants construct behavioral contingencies. This in turn allows them to develop understanding of intentional, goal-directed behavior, including communicative behavior, which represents a key achievement in psychological development before the advent of speech.

Piaget's mean-end differentiation

One cannot discuss the cognitive development in infancy without referring to the genetic epistemology suggested by Piaget (1970). In his theoretical account based on observations done on his own children, Piaget argued that the most important mechanism underlying the appearance of the first intelligent structures is the development of *logic of action* (French: logique d'action). Of particular importance for our point here are the 4th and 5th sub-stages of the sensorimotor stage of development. During the 4th sub-stage (9—12 months of age), called "first intelligent behaviors" the infant becomes progressively able to seek for a mean in order to achieve a goal. An example is given by Piaget consisting of hiding an object under a pillow in front of the infant-the infant is able to remove the pillow and seize the object. Piaget thus claimed that by this age, the infant attests of her first intentional, goal-directed behavior. During the next sub-stage called "discovery of new means by active experimentation" (12—18 months), the infant develops progressively more complex means in order to achieve progressively more complex ends. At this point, the infant is able to differentiate the end and construct a mean in order to achieve it. Importantly, infants start making use of tools in order to achieve their ends such as when they pull a tablecloth in order to reach a distant object on the table.

Without oversimplifying a complex and complete developmental theory, these are the major terms in which Piaget apprehended cognitive development in the preverbal stage. Importantly, understanding *intentionality* is considered to emerge from intentionality in the child's own sensorimotor behavior; once the child learns how to use means in order to obtain goals, the child could apply similar reasoning to other's actions (i.e. try to infer the goal behind the other's mean). This brings us a bit further in our reasoning concerning theoretical accounts of intentional communication in infancy.

Bates' theory of intentional communication in infancy

Since the burgeoning of gesture studies, we know that infants from about 9—10 months of age start referring to objects and events first with gestures before mastering the spoken words for the same referents (e. g. Bates, 1976; Bates et al., 1979; Greenfield & Smith, 1976). The most influential account of the underlying mechanisms of early gesture production is Bates and colleagues' one relying on the mean-end differentiation suggested by Piaget (1954). According to what they call social tool use, Bates and her colleagues argued that by their first gestures, infants use adults as means in order to achieve goals according to their needs or desires (i. e. performative gestures, Bates et al., 1979). The authors supported Piaget's claims about the importance of the interaction between the child and the material world-particularly the material objects-in the construction of intelligence. Extending Piaget's theoretical claims, they suggested that before the 5th sub-stage of sensorimotor development (i. e. the discovery of new means by active experimentation), the schemes allowing the infant to interact with objects are kept separate from the schemes allowing interacting with adults. However, by the age of 12 months, these two schemes combine in order to allow the infant to use another person in order to achieve a goal (i. e. the concept of social tool use). The typical example that is being given is the pointing gesture to a distal object in order to make the adult give it to the infant (a proto-imperative gesture).

It should be emphasized that Bates' account of the advent and early development of intentional referential communication is being by far the most influential in the domain of early communication development. Resting upon the mean-end differentiation of Piaget and in line with the theoretical spirit of the 1970s, Bates and colleagues provided a powerful account of the mechanisms underlying early gesture production.

Importantly, their theory converged with another dominant conceptualization in the domain of linguistics and particularly in the domain of philosophy of language, namely the Speech Acts theory proposed by Austin (1962) and the pragmatic categories suggested by Searle (Searle, 1975; Searle & Vanderveken, 1985). Simply put, these pragmatic theories aimed to describe what is being done by what is being said. Influenced by the category of so-called *performatives*, Bates proposed the first theory of developmental pragmatics stating that the gestures that infants produce accomplish two functions: a proto-imperative and a proto-declarative function. The proto-imperative function is accomplished by gestures that instrumentalize others or, in other words, that use others as means in order to achieve a goal (cf. the example of a pointing gesture above). The proto-declarative function is realized by a gesture that aims to direct the other's attention to an external object or event such as when the infant weaves an object in the adult's line of sight in order to attract her attention. An important aspect of Bates' account of infants' gestures functions is that it focuses on the mentalizing processes between protagonists, namely *how the other's mind is being influenced*.

This aspect is essential for the point we would like to make in this paper-communication involves more than instrumentalizing others and beyond asking how the child influences the receiver's mind, it is crucial to ask why the child wishes to influence the other's mind. We argue that this latter question could only be answered if the communicative acts produced by infants and young children are apprehended as meaningful. We suggest now turning to some elements from Bates' theory of intentional communication in infancy that we would like to question. This will allow us to reconsider the primacy of the mean-end differentiation mechanism and to suggest an alternative conceptualization of intentional communication in infancy.

Communication is more than instrumentalization. Inferential model of communication

Discussion of Bates' theory of intentional communication in infancy

Since the works of Bates and colleagues on gesture production and more vastly, in developmental pragmatics, research had continued to study early communication from a mentalizing perspective. In a recent book titled "The shared mind", Brinck suggested the following definition:

Intentional communication may be defined as the nonverbal, spontaneous, and purposively produced social interaction between (typically) two agents relative to a distal object in a common space. Its primary use is to establish joint attention to a third entity, typically for some further purpose, according to the sender's needs and desires (Brinck, 2008: 120).

This definition allows us to point to two central points:

1. Since establishing joint attention is required, intentional communication involves understanding that the other possesses a mind different from one's own mind and furthermore it involves accessing the other's mind. This point highlights the importance of *mind-reading* involved in any communicative dynamic;

2. The object towards which attention converges is the element allowing the social meeting of minds. Whether the attention converges to an object or an event, the *referent* is the key element allowing for communicative understanding which is possible if and only if protagonists share meanings and experience regarding it;

Simply put, intentional communication requires determining a) to WHAT the attention is being directed to (i. e. the *referent*) and b) WHY the attention is being directed to this referent (i.e. the *communicative* intention) (Tomasello, 2008).

After exposing the key elements involved in the concept of 'intentional communication', we would like to go back to Bates' functional categories of young children's communicative gestures. Bates and colleagues (Bates, 1976; Bates et al., 1979) suggested two pragmatic categories-the proto-imperative and the proto-declarative one. Considering the proto-imperative function (i. e. make the other do something), we are brought to question how does the recipient of the communicative gesture know what the sender wants her to do? In other words, how does the recipient determine the communicative intention of the sender? For example, if I hold you out a bottle and you take it, how could you access my mental state in order to determine my communicative intention? Similarly, if we consider the proto-declarative function of gestures (i. e. make the other see something), we can ask similar questions: once I manage to attract your attention to a particular object, how would you know why I wanted you to look at this object. As an example, we can imagine me showing you a pair of glasses on the table in front of us. How could you access my communicative intention and determine the meaning of this simple gesture?

The questions that we raise help us highlighting that Bates' model of intentional communication does not allow consideration of how communication functions and succeeds. Accounting for a complex process such as mind-reading involved in communicative understanding could not rely only on the mechanism of mean-end differentiation. We do not state that mean-end differentiation is not crucial for the cognitive processing in early communicative dynamics but rather that it is not sufficient to account of the complexity underlying the process of successful communication. Considering early intentional communication only in terms of social tool use comes down to regarding communication as an instrumental act, regardless of the other person and the meaning and experience that are being shared.

In the definition of intentional communication, we observed the importance given to the necessity to *determine the communicative intention* of the sender. Despite the indisputable contribution and importance of Bates' and colleagues model of intentional communication, the elements to which we pointed allow us to conclude that other mechanisms should be considered when accounting for intentional communication in infancy. We argue that such mechanisms are related to meaning-making and meaning-sharing. We suggest in the next section to expose the model of communication to which we align which, in turn, will help us to come to our main argument.

The inferential model of communication and the concept of common ground

In the previous section we gave two examples of gestures-a showing gesture and a giving gesture-and it became clear that it is impossible to determine the communicative intention of the producer of these gestures relying only on the form of the gesture. Such deictic gestures are inherently ambiguous and therefore polysemic. In the same way, linguistic communication is often characterized by imprecisions, ambiguity, versatility, flexibility, negotiation, etc.

Unsatisfied by the code model of communication according to which communication is achieved by encoding and decoding messages (cf. Shannon & Weaver, 1949), linguists and philosophers of language rapidly converged to a pragmatic model of communication characterized by an interpersonal process of inference and interpretation of *meaning* (e. g. Austin, 1962; Grice, 1957; Wittgenstein, 1953). The following citation from Sperber and Wilson sketches well the main point of what has been called *'the inferential model of communication':* "Communication is successful not when hearers recognize the linguistic meaning of the utterance, but when they infer the speaker's 'meaning' from it" (Sperber & Wilson, 1986: 22).

After the proliferous studies of language pragmatists that allowed agreeing that communication (both verbal

and non-verbal) involves meaning that is not always literal, it became important to answer whether communication is possible at all and if so, then how. In other words, considering that a communicative act may have different and numerous meanings, the next question was: How do protagonists succeed to narrow down the possible inferences from a given utterance in order to determine the communicative intention and thus communicate successfully?

Without providing an exhaustive account of the various problematics encompassed in the theorization of communication, it is of major importance for our argument to mention the concept of 'common ground'. Suggested by H. Clark and colleagues (Clark, 1996; Lewis, 1969; Schiffer, 1972; Stalnaker, 1978), common ground is determined by the pool of meanings and experience shared between protagonists. Importantly, common ground implies that protagonists know that they mutually know what is being shared and thus requires a 3rd order mentality (i.e. I know that you know that we mutually know X; Zlatev, 2008). The concept of common ground represents the major theoretical contribution that linguists provided in order to account for how protagonists access each other's mental states in order to determine the intention and meaning of their communicative acts.

Given that the concept of common ground has been majorly influent in linguistic communication between adults, several recent studies examined the child's ability to rely on elements from the immediate context in order to understand a communicative act (i.e. common ground as perceptual co-presence; Ganea & Saylor, 2007; Liebal, Behne, Carpenter, & Tomasello, 2009; Moll, Richter, Carpenter, & Tomasello, 2008). In these studies, an experimenter first shared with the child some experience concerning one object and then, in presence of other objects, the experimenter referred to the first object in an ambiguous way (e.g. "Oh there!", "Can you pass it to me?", etc.). Results revealed that from early on (14 months of age), children are able to rely on previous experience with another person in order to disambiguate her communicative act and respond appropriately to it.

However, communicative dynamics, even the ones in early communication, often entail a level of complexity of shared experience and meanings beyond perceptual co-presence. Clark (1996) described a second type of common ground, namely common ground concerning a broad range of conventions, rules, norms, codes, etc. that are being shared within a specific society, culture and historical epoch (i. e. conceptual common ground). Despite the major importance of such shared meanings, conceptual common ground has not been studied in relation to communication in infancy. It is as if infants communicate only about things they see but not about things they *understand*. In line with our arguments so far, we claim that intentional communication from its very beginning is a process involving *meanings* that are being shared between communicative partners. We thus defend a semiotic perspective on intentional referential communication in infancy. Relying on the assumption that meaning is essential for psychological functioning including communication, in the next section we present the theoretical framework in which our reconsideration of intentional communication in infancy is situated.

In quest for 'meaning'. Vygotsky's cultural-historical theory and its limits

Influenced by Marx' dialectical materialism, L.S. Vygotsky (1935/1987) suggested that higher order functions are the product of an 'artificial' development-a development mediated by the signs of culture. Undoubtedly, the main Vygotskian thesis is that the relation between man and reality is not direct and immediate but is rather socially and culturally mediated. The sign is in-directed-it is interiorized by the subject. Once cultural signs are interiorized, they radically modify the structure of the existing psychological functions and thus allow the emergence of new, more complex culturally mediated psychological functions. The interiorization of signs allows the construction of culturally shared meanings and thus the establishment of a culturally shaped consciousness.

In his quest for a unit of analysis of thinking and speech, Vygotsky focused his theoretical (and to a lesser extent, empirical) works on the *meaning of the word*. More precisely, the author focused on the analysis of the meaning of the word because it concentrates and allows articulating the functions of communication and of meaning given that it belongs equally to the sphere of language and of thought (Vygotsky, 1935/1987). By emphasizing the importance of the meaning of the word, Vygotsky argued that the human psyche is essentially mediated by the *linguistic signs*, which represent the entry into the world of culturally shared meanings.

Taken from a developmental perspective, Vygotsky's claim about semiotic mediation appears to be applicable only for children who start to enter into language, approximately at 2 years of age. Indeed, in a chapter called "Genetic roots of thinking and speech", the author states that, during the preverbal stage, speech and thinking develop independently (Vygotsky, 1935/1987: 101—120). Knowing that the author supports that early mediation of the psyche is possible only through the appropriation of *linguistic* signs, Vygotsky's theory does not directly support that semiotic mediation is possible in the preverbal stage.

Rather, the development in the first two years of life, namely the development of what is called 'preverbal intelligence', is characterized by instrumental and mechanical thinking necessary for the establishment of mean-end connections. In order to expose and strengthen his argument, in this same chapter, Vygotsky relies on Köhler's experiments with chimpanzees. He argues that:

Kohler's experiments demonstrate clearly that the rudiments of intellect or thinking appear in animals

independent of the development of speech and are absolutely unconnected with the level of speech development. The 'inventions' of the higher apes, their preparation and use of tools, and their use of indirect paths in the solution of problems, clearly constitute an initial *pre-speech* phase in the development of thinking (Vygotsky, 1935/1987: 101).

Vygotsky and Piaget developed the concepts of instrumental intelligence and of mean-end differentiation almost synchronously and with a surprising resemblance. Knowing that Piaget focused primarily on the solitary relationship of the child with the material world (i.e. world of objects), it is not surprising that he did not suggest a theoretical account of the development of communication. However, Vygotsky's cultural-historical theory is *par excellence* cultural and social which leaves us puzzled as to why he put little emphasis on the development of communication in the preverbal years. The author acknowledged that preverbal children communicate but insisted on the fact that such communication could not be considered as "true" communication:

That understanding between minds in impossible without some mediation expression is an axiom for scientific psychology. [...] Communication by means of expressive movements, observed mainly among animals, is not so much communication as spread of affect... Rational, intentional conveying of experience and thought to others requires a mediating system, the prototype of which is human speech (Vygotsky, 1962: 6).

For Vygotsky, the preverbal stage of development is characterized by instrumental intelligence. Preverbal thinking cannot be considered as semiotic because only the interiorization of linguistic signs sets the development of (higher-order) psychological functions allowing for communicative understanding. Arguing for a separate and independent development of thinking and speech, Vygotsky claims that:

[...] the most important event in the development of the child's thinking and speech occurs at approximately two years of age. It is at this point that the lines representing the development of thinking and speech, lines that up to this point have moved in isolation from one another, cross and begin to coincide. This provides the foundation for an entirely new form of behavior, one that is an essential characteristic of man (Vygotsky, 1935/1987: 110).

Despite Vygotsky's restraint concerning preverbal communication, literature supports that infants and young children do communicate intentionally beyond the initial expression of affect (Bates, 1976; Bates et al., 1979). As we will exemplify it below, the first communicative gestures that the infant comes to understand and manages to produce are gestures related to mean-end pairings concerning object use. However, discussing Bates' categories of gestures, we already emphasized that even the simplest communicative gestures, such as deictic gestures, involve a level of mind-reading. Such complex processes allow determining the intention of a communicative gesture, which is possible only through shared meanings and experience about the *object of reference*. In order to apprehend early intentional communication from a shared meaning perspective, we were not able to rely entirely on Bates' theory. This brought us into considering Vygotsky's cultural-historical theory and particularly his concept of semiotic mediation by cultural signs. However, we could not entirely rely on Vygotsky either because of the sparse theoretical and empirical evidence concerning semiotic mediation in the preverbal period.

Supporting that 1) infants and young children do communicate intentionally before the advent of speech (i.e. with gestures) and 2) that intentional communication involves not only a mean-end differentiation but requires a process of intention-reading which is possible through shared meanings (i.e. common ground), our next step was to question what meanings do infants construct and start sharing with their communicative partners? In the next section we present a theoretical approach that allows considering a type of meaning that is being shared in infancy. Relying on the importance of such meaning-construction and meaning-sharing, we will present, in the final section, our semiotic approach to the development of intentional communication in infancy.

Object pragmatics-semiotic mediation in the preverbal period

It is essentially in the approach of Object Pragmatics suggested by Moro and Rodriguez (2005) that we find a theoretical account of semiotic mediation in the preverbal years. The authors defend that semiotic mediation redefines early psychological development as culturally oriented. They support a social construction of psychological functions in the preverbal stage relying on Vygotsky's theses of mediation of the psyche. Such observations are also made by Cole who states that:

[Vygotsky] underestimated the extent to which the cultural and natural lines of development — cultural history and phylogeny, in my rendering — have interpenetrated each other well before the acquisition of language. The metaphor of the intermingling of two multistranded ropes, rather than two (implicitly homogenous) lines, would have more accurately embodied his basic insights (Cole, 1996: 218).

Contrary to Vygotsky, Moro and Rodriguez insist that the construction of the human psyche as socially and culturally mediated is unfolded within early social interaction between the infant, the adult and the environing objects. In order to account of how meanings are being shared between the infant and the adult, the authors highlight the importance played by the object in early development. Objects are an integral part of early interaction since adults use them in order to engage and maintain infant's attention and action (Eckerman & Whatley, 1977). Furthermore, objects promote the development of key abilities in early psychological functioning such as secondary intersubjectivity (Trevarthen & Hubley, 1978), joint engagement (Bakeman &

Adamson, 1984), and joint attention (Tomasello, 1995). Beyond their physical properties, objects are characterized by their specific use that is culturally and socially determined (for a brief review see Dimitrova, 2010). As Bloom (1996) puts it, despite the fact that the use and functionality of an object are constrained by its physical properties, these constraints do not allow one to determine the specific function of a given artifact. Indeed, depending of cultures, societies and historical epochs, the conventional use of objects differ. Contrary to members of a given society or culture, infants and young children do not share the conventions related to the use of object-artifacts.

The studies of Moro and Rodriguez (2005) specifically explored how infants come to develop the conventional use of objects through the active participation in triadic (i. e. infant-adult-object) interactions. The authors nicely described how adults *transmit* the conventions associated with objects (i. e. the meanings of objects) and how progressively infants start *appropriating* these conventions. They found that 7-months old infants do not depict any kind of conventional use of objects. Instead, they perform a broad range of undifferentiated actions on objects, such as banging, throwing them away and mouthing them. However, when the same infants were 13 months old, they mastered most of the (simple) conventional object uses (e.g. using a hairbrush to brush hair). Overall, the results of Moro and Rodriguez (2005) indicate that even in the preverbal period, a process of transmission-appropriation of cultural conventions is taking place. Furthermore, the approach of Object Pragmatics suggests that semiotic mediation through cultural signs is possible even before the advent of language.

Relying on Moro and Rodriguez' (2005) approach, we argue that the conventions of object use that infants start appropriating and mastering within triadic interactions represent a type of meaning that is being constructed and shared in the preverbal period. This major postulate brings us to our final section in which we expound our argumentation in support of a semiotic perspective on early development of intentional communication.

Semiotic perspective on early development of intentional communication

In what follows, we would like to present a perspective on early development of intentional communication in infancy that accounts for the way shared meaning allows infants and their partners to communicate with gestures. In order to present the arguments that support our proposal, we suggest relying on four major premises:

1. Infants from about 9—10 months of age start communicating intentionally via gestures (e. g. Bates, 1976; Bates et al., 1979; Greenfield & Smith, 1976). They start referring to external entities-mostly objects such as toys-first with gestures before mastering the spoken words for the same referents. Importantly, *objects* represent the privileged referent of infants' early gestures; therefore the semantic content of infants' gestures is related to the object to which they refer;

2. Aligning with the inferential model of communication (e. g. Grice, 1957; Lewis, 1969), we support that communication involves a process of intention-reading required in determining the meaning of communicative acts (both verbal and non-verbal). Successful understanding of the communicative intentions of others involves assuming that their actions have meaning as well as making efforts to discover it. Since most of communicative acts do not reveal a literal meaning but are rather characterized by ambiguity and polysemy, such intention-reading necessitates that communicative partners rely on a pool of shared meanings and experience, generally called 'common ground'. Given that the referent of early communicative dynamics is essentially an object, in order to apprehend how communication succeeds in infancy, it is essential to account for how infants start constructing and sharing meaning about it;

3. Objects are characterized by their use, which is culturally determined (i. e. conventional use of objects). In the last quarter of their first year and during their second year, young children interacting with adults and objects learn how to use objects according to their conventions. Knowing that the conventions related to object use is a type of meaning shared by the members of a given culture and society, the appropriation of the conventional use of objects by the child represents an appropriation of a type of cultural signs. Extending Vygotsky's theorization of semiotic mediation to the preverbal period, the approach of Object Pragmatics (Moro & Rodriguez, 2005) highlights that a certain type of meanings are being shared between young children and adults;

4. The meanings about the referent of early intentional communication that young children share with their communicative partners allow them to access the intention conveyed by their respective communicative gestures and thus to reach successful communication.

In order to illustrate our reasoning, let us give two examples of a communicative gesture produced by a young child. These examples are taken from data collected for our dissertation study consisting of video-recorded longitudinal observations of semi-experimental triadic interactions between a mother, her child and toys provided by the experimenter[1]; observations were performed every other month between child age 8 to 16 months.

In the first example, a 12 months-old child produces a gesture without being able to convey a communicative intention in a clear and explicit way. The infant takes a

[1] In the first example, the object with which the child and the adult interact is a toy consisting of a sorter game in the shape of a house with different shaped holes in which corresponding blocks fit into. The toy included also a set of keys that open the different doors of the sorter-house. In the second example, the object of interaction is baby doll with a dinner set consisting of plastic dishes, forks, spoons, knives, cups and a saucepan.

block from the floor and establishes eye contact with the mother sitting next to her. The mother invites the child to perform the conventional use of the block (to insert it in the sorter) both verbally ("Ahum, put it inside") and non-verbally (points inside the opened house). The child responds by holding out the block to the mother, thus failing to respond to the mother's communicative intention in a relevant way. In response to the child's gesture, the mother takes the block; however, she appears to be puzzled. She first says "Thank you" and then asks if she is supposed to insert the block into the sorter. The child does not respond which prompts the mother to complete the interaction by performing the conventional use of the object, namely putting the block into the sorter.

This example allows us to highlight three important things. First, by the gestures that both the mother and the child produced (i.e. the mother's pointing gesture inside the sorter and the child's gesture of holding out the block), we can see that the referent of gestures produced in early communicative dynamics is an object from the immediate physical environment. Second, this 12-months old child still has difficulties using this object and does not master its conventional use (i.e. inserting the block into the sorter). Third, the lack of mastery of the conventional use of the object reveals that the child does not share with the mother meanings about this communicative referent. The communicative dynamic fails since the child does not show an understanding of the communicative intention of the mother's gestures (i.e. the child does not respond relevantly to the mother's pointing gesture inviting her to insert the block into the sorter) and additionally the child does not convey an explicit communicative intention by her own hold-out gesture.

This last aspect brings us to the discussion of Bates' categories. The child's hold-out gesture is certainly a proto-imperative one since the child visibly wants the mother to do something with the block. However, without considering the meanings about the referent that are shared between the communicative partners, it is not possible to account why actually this utterance fails. We argue that only a semiotic perspective on early communication allows apprehending the dynamics involved in the communicative process.

In order to strengthen our point, let us present the second example. In this example, a 16-months old child interacts with her mother and the doll with the dinner set. The child holds in her hands a closed saucepan and tries to perform a conventional use with the object, namely to remove its lid. She vocalizes in a way that underlies her unsuccessful attempts to perform this conventional use. The child then gazes at the mother and emits another vocalization, which expresses her discontent. After the initial attempt to open the saucepan, the infant holds it out to the mother. The response of the mother to the infant's gesture is relevant and direct-she takes the held-out closed saucepan and opens the lid.

In this example, we observe again that the referent of the gesture being produced is an object. Here, the 16-months old child visibly has a clear idea of the conventional use of the object (at least, one of the conventional uses of this object) but lacks some motor adjustment in order to seize the handle of the lid and remove it. She then holds out the object to the mother. The mother who witnessed the child's attempt to remove the lid responds directly and without any hesitation to the child's hold-out gesture. Relying on the mutually shared common ground concerning this referent, the mother accesses the child's communicative intention and determines the meaning of the child's gesture (i.e. a demand to remove the lid). In both this example and the previous one the child produced a hold-out gesture. In terms of Bates' categories, both gestures are proto-imperative. However, the examples differ radically since in the first one the child is unable to make her clearly understood whereas in the second example the child is being understood straight on.

These two examples encompass a multitude of other important aspects involved in such typical early communicative dynamics. We focused only on three of them in order to illustrate our argument in favor of a semiotic approach to early intentional communication, namely that 1) objects are the referents of early gestures, 2) that once children start mastering the conventional use of objects they start sharing a type of common ground with their communicative partners and 3) that sharing common ground about the object of reference allows communicative partners to access each other's communicative intentions and determine the meanings of their respective communicative acts.

Concluding remarks

The various theoretical elements that we brought forward aimed to support our argument in favor of a semiotic perspective on early intentional communication. This alternative approach reconsiders the importance given to the mean-end differentiation as being the only mechanism underlying intentional communication in infancy. Unquestionably, the infant's instrumental intelligence represents a major factor underlying intentional communication; however, intentional communication involves sharing meaning, which prompts for an account of how meaning about the communicative referent is being constructed and shared in infancy. The meanings associated with objects' use are definitely not the only type of meaning that infants start sharing with their communicative partners; however, such meanings are related to the privileged referent of early communicative acts, which is the object, and thus allow for communicative understanding. Considering the development of intentional communication in infancy from a shared-meaning perspective implies studying the social origin of psychological functions in the preverbal period or, to borrow Bruner's famous formula how 'culture shapes the mind' (1996).

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Больше, чем «цель/средство»: взгляд на развитие общения в раннем детстве с точки зрения семиотики

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Целенаправленное общение, в том числе первые жесты, наблюдаемые у младенцев, подразумевает наличие общих смыслов касательно того, что составляет предмет общения. Несмотря на это, целенаправленное общение в раннем детстве понимается в большинстве случаев как орудийная деятельность, состоящая в использовании других людей для достижения целей (см., например, использование социальных орудий у Бэйтса, 1976). Опираясь на инференционную модель коммуникации, автор показывает, что в раннем детстве возможно коммуникативное взаимопонимание, опосредованное общими смыслами, разделяемыми ребенком и его партнером по общению. «Прагматичный подход к объектам», разработанный Моро и Родригез (2005) в русле концепции Выготского об опосредованном характере психических функций, позволяет рассматривать определенный тип общих смыслов, характерных для младенческого и раннего возрастов. Примеры детских жестов, приведенные в статье, помогают лучше понять, как, благодаря наличию общих смыслов касательно использования предметов, становится возможным полноценное общение.

Ключевые слова: целенаправленное общение, раннее детство, общие смыслы, использование предметов, категории «цель/средство».