

Beyond the body: Towards a full embodied semiosis

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Abstract

The notion of embodiment has become very prevalent in current research in a number of disciplines associated with cognitive science such as philosophy, computer science, psychology, linguistics and semiotics. However, there is no unified theory of embodiment, only many different uses of the term, each presupposing different assumptions and conceptual frameworks. This paper reviews and discusses several of these theories, and the different conceptions of body each implies. It is claimed that for a fully embodied semiosis, able to account for the role body plays in our processes of giving meaning to experience, we will need to overcome static, biological conceptions of the body, and open up to a phenomenological understanding of it. This will imply taking into account crucial components of embodied experience not always accounted for within cognitive approaches so far, namely emotion, affect, subjectivity and intersubjectivity. To fully understand the role of the body in meaning-making processes, we will then have to, so to speak, go beyond the body itself.

Keywords: affect, constructivist perspective, emotion, enunciation, experience, intersubjectivity, Merleau-Ponty, Peirce, phenomenology, semiosis, Semiotics, situated meaning, subject, subjectivity

1. Body is not enough: the semiotic body

The notions of body and embodiment have become more and more prevalent over the last 20 years, in a number of disciplines associated with cognitive science such as philosophy, computer science, psychology, linguistics. Today, the centrality of the body in human cognition, meaning-making and experience is broadly acknowledged and this has provoked a huge quantity of research in this general area throughout a wide range of scientific domains.

This is certainly a more than welcome shift in our traditional Western research paradigm, since it can help free us from the old, seemingly unresolvable dualisms between body and mind, between the internal world of immaterial concepts and thoughts and the external world of objectivist reality. However, the present widespread use of the notions of body and embodiment across different fields and with different meanings makes it particularly important to develop a better understanding and clarification of these two notions, beginning with a rethinking of the first one, “body” which sometimes appears to be, paradoxically, the most misleading.

Body is often taken as a “natural” concept, and one which does not need any further elaboration. Apparently body is something easily accessible, objective and physically defined. The body seems to be “there”, possessing an immediate self-evidencing character which does not need to be explained.

But this is not the case. The body is not a self evident concept, but the result of the various discourses that construct it. If the phenomenological experience of the body can appear an immediate one, the concept of “body” certainly does not. Rather, it appears to be seen in terms of the construals made of it within any given disciplinary perspective. In other words, the various meanings attributed to the notion of body are the sum of the various effects on its sense of the different disciplines as they investigate and define it. The body as described by neurosciences is not the same body as the one described by psychoanalysis, or by experimental psychology, and so on. All these different “bodies” are not reducible to one another; on the contrary they produce a quite “heteroclitic” object, not very different from how language appeared to be when Saussure first started describing it. Many of the differences in the use of the very word “embodiment” that I will discuss in this paper depend on the different discourses that construct “body” in their respective ways as an object of research.

So, the first point to be made here is that there is no such thing as a body “in itself”, naively taken as a given, immediate object of inquiry. Body cannot be described outside of the different discursive practices that define it: to forget this implies the risk of hypostatizing the body, as if it were endowed with an inherent essence, independent of the different practices, discourses and cultures that shape it. No “hard” science can escape from this paradox: even the the body as it is described by the most sophisticated technologies – radiography, magnetic resonance imaging and spectroscopy, etc. – is not a more basic level of description that reaches some

more essential hypothetical “structure” of the body, but just another way of representing it.

Even the body as studied in medicine is a construal, so much so that different medical practices in different cultures construe as many different bodies as there are cultures: the “Western” body studied in our medical tradition is not the same as the body mapped by Chinese acupuncture.

This does not mean a denial of the very existence of bodies as material entities, but rather, within a radical constructivist perspective, one which would have appealed to Peirce, to recognize that we can only reach these bodies through different practices and discourses, i.e. through semiosis. “The” body in such a perspective becomes a kind of unreachably Dynamic Object, to use Peirce’s terminology, only approachable through a series of partial descriptions, depending on the particular perspective or disciplinary approach we decide to take. Such descriptions, which we can consider as forming part of an open set of Immediate Objects in Peirce’s sense, will not necessarily converge to form a completely homogeneous picture. Rather they may continue to remain highly divergent as, for example, in the case of the phenomenological body we perceive proprioceptively, and the body as it appears to us on the basis of the results of a laboratory experiment.

Body is, then, a semiotic construal, and this remains the case even when we attempt to describe its more basic, material levels of organization, such as neurons or brain synapses, which are certainly “real”, but are not *the body*. If we miss this point we risk a curious paradox, which could be defined as “embodiment without the body”. To understand the role the body plays in processes of producing and understanding meaning, i.e. in semiosis, we need much more than this.

In what follows I will discuss the issue of embodiment from a semiotic perspective, starting with a (very brief) look at some of the main contributions to be found in this theoretical field, then going on to review some of the different forms that embodiment has taken in cognitive science, and concluding with a look at what I believe still remains to be investigated.

That the body plays a major role in semiosis is not a total novelty in semiotic quarters. Semiotics, like all the other disciplines already mentioned, has in its recent developments begun to concern itself more and more with issues related to the body, and semiotic investigations have also been started into a related set of problems connected with the role that feelings, emotions, and sensory and perceptual elements play in meaning making processes – in a word: the embodied dimensions of meaning. If such a “corporeal turn” is only quite recent in the post structuralist tradi-

tion that gave birth to contemporary generative and narrative semiotics, this is not the case for the other main tradition in semiotics, i.e. interpretative semiotics, as it is commonly referred to today, which may be traced back to the work of the pragmatist philosopher Charles Sanders Peirce. This is not the place to enter into an in depth discussion of the complex philosophical approach advocated by Peirce; it will suffice here to mention just a few points that are relevant for our present purposes. Peirce is often remembered mainly for his cognitive semiotics, and for his important contributions to the logic of abductive reasoning. However I believe that in his phenomenology, which is perhaps less well known than his logic, an important theory of the role of the body in semiosis and a very innovative intuition regarding the nature of the body-mind relation can be found.

Although Peirce does not thematize in an explicit way the role of the body in semiosis, it is quite evident that for him, the body plays an important role: it would be enough to consider that at the very basis of the semiotic processes that enable us to make sense of the world there is, for Peirce, perception with its bodily based inferential processes. Perception, for Peirce, far from being an automatic record of external reality, is a highly constructive process, which requires exactly the same inferential and abductive devices as abstract forms of reasoning do, while being rooted firmly in the basic physiological functioning of our bodies. Therefore, semiosis begins in the body and in its perceptive and proprioceptive processes.

But this is not the only hint of embodiment we can find in Peirce's semiotics. Even more interesting is his theory of interpretants with its implications of a potentially endless process of sign production and interpretation that gives rise to meaning and sense. For Peirce all interpretation implies an interpretant, which is always a sign, produced from a first, preceding sign, as its effect. According to Peirce, there are several kinds of interpretants and more than one classification of these; interestingly enough the first two levels of interpretation, before arriving at the level of logical interpretant, which is the cognitive level of concepts, are the emotional and the energetic interpretants. The first is concerned with the emotions signs evoke in us, the second with the muscular bodily reactions they evoke. Now, all these three levels of interpretants remain active during the ongoing semiotic process, and this means that even in more cognitively oriented tasks, such as abstract reasoning, emotions and bodily reactions are always involved, although with different degrees of relevance with regard to the specific task and situation in hand.

More generally speaking, Peirce does not conceive the mind as something qualitatively different from the body or other forms of matter: there exists a fundamental continuity (referred to in his terminology as “synechism”) between these, since both share some natural common characteristics, as we can see from the following citation:

We ought to suppose a continuity between the characters of mind and matter, so that matter should be nothing but mind that had such indurated habits as to cause it to act with a peculiarly high degree of mechanical regularity or routine[...]. This hypothesis might be called materialistic, since it attributed to mind one of the recognized properties of matter, extension, and attributes to all matter a certain excessively low degree of feeling, together with a certain power of taking habits. (CP 6.277)

In this way body, mind and the world are not only connected, but fundamentally interdependent of one another in an endless process of sense making which reminds us of the dynamics of self organizing systems in an ongoing developmental relationship between organism and environment.¹ The classical dualistic relationship between mind and matter is overcome, as well as that between the internal and the external world, which are no longer seen as being dramatically and irreducibly separate from one another. There is mutual interpenetration in all directions.

If the role of the body forms the basis of Peirce’s notion of semiosis, then the same cannot be said for classical structural semiotics, rooted in the work of Saussure and Hjelmslev, where a formalistic approach to meaning was dominant. However in Greimas’ latest works, as well as in the most recent work by Fontanille² the mind-body question is reopened, in particular through a rereading of Merleau-Ponty’s phenomenology.

According to Merleau-Ponty, meaning is in the first place articulated in our body, through perception. Also for the French philosopher perception is not merely the simple and passive record of an external world, already structured and pre-given in its configuration; perception is rather the active construction of a world already endowed with meaning and intentionality. Through perception the subject meets the world in the first place and be-

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1. For an elaboration of this point, see Coppock (2002), where there is a criticism of simplistic naturalistic definitions of the notion of body. Also other forms of embodied mind as in culturally produced material artefacts, bodily borne protheses, communication devices or other types of new media technologies, all take part in the continuity of the body-mind-world complex.
 2. Cf. Greimas (1987); Fontanille (1999, 2004).

gins to give meaning to it. Phenomenological and perceptive meaning is transformed into linguistic meaning through the *corp propre* which founds, at one and the same time, the subjectivity of consciousness and the exteriority of the world. Here we can see another possible compatibility with Peirce's philosophy: in Merleau-Ponty's phenomenology, too, external and internal world are not separate and in opposition with one another, but related to each other via the mediation of the *corp propre* that operates, in a way, as the translator of perceptually constructed meaning into linguistic and conceptual meaning.

But the body is also the place where affect and emotion are rooted, as Freud and psychoanalysis have taught us, reminding us that the Ego is first and foremost a corporeal Ego. Recent developments in semiotic theory³ are insistent on the fundamental role emotions play on the very deep level of sense structuring.

The basic approach to the body that emerges from such a background is not always consistent with the way in which embodiment has been studied in other cognitively oriented research domains. What I shall claim in the present paper is that in order to fully understand the role that embodiment plays in meaning construction and semiosis, we have, so to speak, to go beyond the body itself. To develop a satisfactory theory of embodiment the body is not enough, and we will need to incorporate not only issues related to action and movement, but also those related to affect and emotion, a move that will force us to open up to the crucial issues of subjectivity and intersubjectivity.

At this point, however, it has become vitally important to look more closely at some of the basic tenets of the notion of embodied cognition as developed in various areas of the cognitive sciences, in order to see if we can discover some possible links, overlappings, or differences relative to a more semiotically oriented approach. In particular I would like to claim the following: 1) there are today within the field of cognitive studies many very different notions of embodiment, only some of which are of real theoretical interest from a semiotic perspective. It is therefore crucial to distinguish between these in order to specify which type of conception of embodiment might be most productive for semiotics; 2) embodiment is related in an important way to the problem of meaning processes, and it can help in a decisive way to reframe some of the most controversial questions in semantics. A context oriented, encyclopedic approach to meaning, which

3. Cf. Greimas and Fontanille (1991).

semiotics intrinsically offers, needs to take into account the role of the body; 3) as I already suggested, the notion of “body” is not a self-evident nor simple one, as is too often assumed in contemporary cognitive science; on the contrary the body is a constructed concept, and as such, cannot be reduced to purely neuro-physiological aspects nor to the brain. The kind of body we need to incorporate into our theory of embodiment is more complex than that; it has to be considered in its full phenomenological complexity, as the place where affect and emotions are articulated, and, maybe more importantly, it must to be tied in with the central issue of subjectivity and intersubjectivity, a topic not often addressed in cognitive approaches to embodiment.

But it is now time to have a closer look at what is exactly meant by “embodiment”, and how it might constructively be related to a more specifically oriented semiotic approach

2. Different embodiments

In very general terms we could say that the main idea behind embodiment is that mind derives and takes shape from the fact that we have a body that interacts with our environment. Such an assumption is generally seen as drastically opposed to classic representational cognitivism, which is based on functionalism and the computer-mind metaphor. According to functionalism, mind is independent from its material implementation, as the computer-mind metaphor suggests.

Implicitly connected to this position is a theory of concepts and semantic categories which is generally referred to as the “classic” theory, where it is claimed that it is possible to arrive at a precise definition of the semantic categories over and above, and independently from, their uses and contexts of application. In this perspective the body does not play an important role: it is essentially an output device, as often defined, merely executing commands generated in the mind through symbol manipulation.

In the embodied perspective, on the other hand, cognition is seen as depending in a fundamental way on the body and its perception and motor systems, as well as on bodily-based experience and our interactions with the world.

Before going on to discuss these matters, we must immediately point out that there is no such thing as a unique theory of embodiment. On the contrary, the concept of embodiment is a very polysemic one, and different

authors use it in quite different ways. Rather than referring to a single theory of embodiment, we ought to refer to different *theories* of embodiment, often highly divergent from one another, and sometimes having very little in common.

So let us now return to the issue of what might be considered the basic idea underlying the various approaches to embodiment. What exactly does it mean to say that the mind is embodied, and that it emerges and derives from the body? If we look more closely, we can see that there are many different readings of this same thesis, ranging from an extremely weak to an extremely strong, which is theoretically more interesting, but also more controversial. It will certainly prove useful to examine these various positions more closely, since, as has been stated, only some of them will turn out to be of interest from a semiotic point of view.

A first and extremely weak interpretation would simply imply that all cognitive processes have a material basis. This is such a generic option that it would be difficult to disagree with it, but at same time it is so generic that it is not very meaningful. A more interesting assumption would be to say that cognitive processes cannot *not* have a material basis or, in other words, that cognition is directly connected to the various structures and biological processes that implement it. A somewhat similar version, still rather weak, implies that in order to understand mental processes one cannot ignore the way the nervous system and the brain work. In the last few decades, both neuroscience and neuropsychology have made such a position highly popular, and also widely accepted: today there are probably very few researchers in cognitive science who would disagree with this position, with perhaps the exception of few more orthodox functionalists. From a semiotic point of view, however, this appears to be somehow a more background type of issue, since a semiotic analysis is not directly concerned with these more basic levels of description, but rather with the higher levels of sense organization.

A third interpretation, defined as “material” embodiment (Núñez 1999: 55), also takes into account – in addition to the idea that the mind depends on underlying neurobiological processes – the constraints imposed on cognition by real-time bodily actions performed by an agent in a real environment. This is a quite popular position today in robotics, where research is focused on low-level cognitive tasks such as visual scanning or motion. Since it has to deal with the construction of robots able to perform real actions in a real environment, robotics must necessarily develop models of vision, perception and movement constrained by genuine perceptual-motor

interactions with the environment. Here embodiment means essentially taking into account the spatial-temporal constraints implicit in real bodies, but it does not imply any strong theoretical assumptions. Lakoff and Johnson (1999: 37) distinguish here between *embodiment as realization* and *embodiment as shaping*.

Embodiment as shaping, often defined as full embodiment, or radical embodied cognition, is certainly the more popular position in contemporary cognitive semantics, and appears to be the one we should look at more closely from a semiotic point of view. According to this view, all concepts, even the most abstract ones such as those of mathematics⁴ are the result “of the way the brain and body are structured and the way they function in interpersonal relations and in the physical world” (Lakoff and Johnson 1999: 37).

Notice that in this quote from Lakoff and Johnson, brain and body are used as substantially interchangeable; this kind of overlapping is found in many fields of research on embodiment. According to Nunez, for example, embodiment explains concepts “in terms of the non-arbitrary bodily experiences sustained by the peculiarities of *brains and bodies*” (Núñez 1999: 56).

This is a crucial question, since there is a potential ambiguity in considering body and brain as equivalents – an ambiguity that could produce potentially dangerous levels of confusion. Body and brain are not the same thing, as the phenomenological tradition, both of Husserl and of Merleau-Ponty, has taught us, a tradition to which most researchers today seem to refer. So this would seem to be a vital issue if we want to incorporate an embodied approach in a serious way into semiotics.

The body is something quite different from the brain, and if the latter can be seen as an immediate object for scientific study, the body certainly is not, at least not in any direct and transparent way. Indeed, I have *already made* the opposite claim, i.e. that the body is not at all a self-evident concept, as it might appear at a first sight.

For the moment I just want to make salient one specific ambiguity of this kind which underlies most work on embodiment. While material embodiment refers to the properties of the brain, and, therefore, in this model the body may be described as a body-brain, when we are speaking of embodied concepts or embodied cognition, a quite different meaning of “body” is at stake, much closer to the notion of “corporeal schema” than to

4. Cf. Lakoff and Núñez (2000).

that of the brain. Although embodied cognition might well have a neural plane of implementation, we have here two different levels of description, which do not coincide, and it would be helpful to keep them apart. Semiotics, with its phenomenological tradition, might very well play an important role in clarifying these issues and distinguishing between these two conceptual levels, of which only the second is, as I have already mentioned, of real semiotic concern.

Within the field of cognitive science, the picture is even more complicated, however, since the new paradigm is pursued within different disciplines and by means of different methodological approaches, which do not all necessarily share the assumptions of cognitive linguistics, not to mention those of semiotics.

To simplify, three main research domains relevant for our present discussion might be designated: *connectionism* (and neo-connectionism), *robotics* and *cognitive semantics*. These domains do not necessarily share the same notion of embodiment.

For example, many of the neo-connectionist models which use a dynamic modelling approach are not at all necessarily embodied, in the sense of having systematic, continuous relations with their actual perception and motor referents. What we have here is rather a conceptual interpretation that has little to do with empirical perceptive states, as Prinz and Barsalou (2000) have shown. Connectionist nets do not guarantee embodiment, neither the radical embodiment of cognitive semantics, nor the weaker notion of material embodiment.

Situated robotics, on the other hand, as I have already pointed out, has necessarily to take into account actual bodily constraints, since, in order to be fully operative the cognitive system underlying a robot must have an efficient interface with perception and action data: a simple abstract computing system would not be sufficient.

Maybe the main lesson we can derive from situated robotics is that to perform perception and action we cannot use only the cognitive system itself, we need also to exploit the resources inherent in the body and the environment. As Clark (1997: 36) claims, intelligence is not based exclusively on cognitive abilities rather it evolves from the dynamic interaction between brain, body and world.

The concept of embodiment used in situated robotics is also different from the one used in the more theoretical fields of cognitive semantics and contemporary cognitive semiotics, which are crucially concerned with embodied experience. Both cognitive semantics and semiotics see human

experience as fundamentally bodily based: concepts and cognition emerge from our experience and are bodily grounded.

To conclude, there are probably more differences than similarities among researchers who explicitly refer to the notion of embodiment. For some, the “embodied” mind is still computational in a literal way, for others it is not computational at all. Some refute completely the concept of representation, generally preferring dynamic systems, others, like Barsalou, refute dynamic systems and still use forms of representation. For some, embodiment exists only in authentically living systems (and not in simulations, not even connectionist ones), for others this is irrelevant; finally for cognitive semantics and semiotics the crucial idea is that of phenomenological bodily experience.

What then do all these different approaches have in common? Well, probably the only real unifying aspect to be found is a *critical* one.

Embodiment theories are essentially a critical reaction to representational cognitivism, and in particular Fodor’s functionalism. Here, there are two points of criticism: first, the non-consideration of body-based “material” aspects of cognition; second, the reduction of cognitive processes to purely syntactic symbolic manipulation.

From this point of view, theories of embodiment appear to be a natural development of cognitive semantics and cognitive linguistics of the seventies and eighties. Theoretical antecedents can be traced back to cognitive grammars, especially Space Grammar and Mental Space theory⁵; research on space and language⁶ and Force Dynamics, the system of forces that Talmy (1988) posits as the ground of the linguistic system of modality, which is essentially derived from embodied structuring.

A fundamental antecedent is also to be found in the critical review of the classical category theory that goes under the generic name of prototype theory⁷.

Since these seminal works first arrived, research in this field has continued to advance, reframing in a radical way some of its key concepts, beginning with that of *representation*.

5. Cf. Langacker (1986); Fauconnier (1985).

6. See, among others, Talmy (1983).

7. It is impossible to provide even a very concise bibliography on this topic. For a critical reading of the theory, see Violi (2001).

3. Body and situated meaning

The anti-representational controversy is more properly a controversy against a particular type of representation: symbolic representation, in the Fodorian sense. Such a criticism, as we will see, is not at all contradictory to basic semiotic tenets, rather quite the opposite.

Rosch (1999: 62), for example, claims there is a need to distinguish between two types of representation: the first is a device that mediates between mind and world, close to Peirce's idea of semiosis, connecting the external and internal worlds; the second is based on a notion used in classical cognitivism, where symbols are seen as syntactic symbols – formal operations within the closed system of a machine (or a mind, which is nothing but a machine).

One of the most important differences between these two models is the different ways they offer for looking at context. Traditional cognitive science sees representations as stable, context-insensitive configurations that cannot be affected by contextual change. The so-called classical theory of categories was based on precisely such an assumption: a category might be a node, a network, a set of features, or a mental world, but it was in any case always a static and immutable entity. In other words the basic idea was that one and the same invariant structure represented one particular concept in all possible contexts.

Now such a conception of the matter seems highly problematic: there is little doubt that natural cognitive systems exhibit a high degree of variety, and that our functioning in the world is much more flexible than any fixed structure could describe. Both our behaviours and our mental states adapt continuously to changing contexts, responding in a highly flexible way to environmental modifications. The traditional concept of representation thus turns out to be radically inadequate.

This is not something new in semiotics: similar criticisms of the classical theory of representation have been developed within a semiotic perspective since the Seventies. Umberto Eco in his *A Theory of Semiotics* (1976) had already pointed out the fundamental incapacity of any kind of invariant, dictionary-like structure to represent meaning, and successively, in 1984, he elaborated further the general notion of the encyclopedia as the only viable alternative to dictionary based models. From this point of view, semiotic perspectives, at least those developed within a Peircian interpretative framework, and those of cognitive semantics based on prototype

theory, are certainly highly compatible, as I have discussed elsewhere (Violi 2001).

At this point, however, my thesis is that developing the issue of embodiment can help us to go even further and to develop a more sophisticated approach to meaning and semiosis, and their relation to context, an approach that is theoretically more radical than that presupposed in Eco's models.

Concepts are indeed sensitive to contexts because we are embodied organisms and we interact with the environment. Embodiment and interaction are basic features of our semantic system, and more generally, of the ways in which we make sense of all our ongoing experience.

Taking embodiment seriously in describing meaning can help a semiotic approach to overcome some of the limitations that can still be found in the encyclopedic model. Indeed the concept of encyclopedia, as elaborated by Eco, is a cultural construct that can account, in terms of a regulative hypothesis, for all possible cultural and social components of meaning. However, it has considerably less to say regarding the phenomenological side of our experience, although it does not in principle exclude it.

I believe that if something such as a cognitive semiotics is to be established as a field of study, it cannot avoid incorporating embodiment in its basic definition of cognition, and indeed taking this very incorporation of embodiment as its starting point.

Among the various embodied approaches we can already find some interesting suggestions in this particular direction. Rosch, for example, emphasizes the role of situation and context in an embodied perspective. According to Rosch (1999: 72), even when concepts appear to be universal and abstract, they always refer to specific and concrete situations. Real situations are events rich in information and should be the real object of study. Generally speaking, psychology tends to see contextual effects as negative elements that invalidate experimental work, but this perspective should be changed, and variations should become the main data for analysis.

Interestingly enough, the adoption of a strong contextualism of this kind parallels some recent positions in semiotics, where focus has been shifted from the system, and therefore from structural regularities, to process and text. The textual turn in semiotics implies making, and considering the text as the real unit of analysis; this is compatible with Rosch's positions, where the single situation is considered to be the correct object of analysis.

In both approaches we can find a common holistic component, which in some semiotic approaches appears to be extremely radicalized.⁸

Today, Rosch's broader assumptions regarding representations and the nature of concepts are quite different from her previous work on prototypes, and are embedded in a strongly holistic idea of the mind-world whole. Concepts are now seen as intrinsically non-representational: they do not have the function of representing the world in the mind, nor do they mainly have an identifying function, as is generally taken for granted in experimental research on naming tasks. Rather, concepts participate in situations.

"Concepts and categories do not represent the world in the mind, they are a participating part of the mind-world whole" (Rosch 1999: 72). Their participative nature derives from their being a natural mediation between mind and world, a mediation which is necessarily anchored into specific and locally defined situations.

Concepts are the natural bridge between mind and world to such an extent that they require us to change what we think of as mind and what we think of as world; concepts occur only in actual situations in which they function as participating parts of the situation rather than either as representations or as mechanisms for identifying objects. (Rosch 1999: 61)

Even those who do not share such a radical position would agree to not conceiving of representations primarily as structures that represent the external world, but rather as control structures for the regulation of interactions with the external world. This shift from mirror or encoding models to action-device models is quite common in current research on embodiment.

In robotics, for example, Clark describes representations as control structures: "The idea here is that the brain should not be seen as primarily a locus of inner *descriptions* of external states of affairs; rather, it should be seen as a locus of inner *structures* that act as operators upon the world via their role in determining actions" (Clark 1997: 47).

Representations become here oriented toward action, while at the same time describing aspects of the world and prescribing possible actions, in a fine balance between pure control structures and passive representations of the external world.

With respect to the issue of representation it is worth noticing how close an approach of this kind is to the basic tenets of Peirce's pragmatism.

8. Cf. Rastier, Cavazza and Abeille (1994).

cism. For the American philosopher, too, concepts (and representations) are always correlated with actions: while concepts, seen as habits of mind, have a regulative function in relation to the internal world, stabilizing the process of unlimited semiosis; on the other hand when operative as beliefs, they also constitute the basis for behavioral and communicative habits, which are nothing but regularities in actions. In this way the very same semiotic structures regulate both the internal world of concepts and beliefs and the external world of actions, acting as a bridging system between the two.

A similar idea can be found in the model for memory proposed by Glenberg (1997: 1–55), where memory does not primarily have a representative function “to store the past”, but is rather an embodied device for facilitating interactions with the environment.

Such a perspective, largely shared among embodiment theorists, focuses on the role of the larger environment and its interactions with the organism, and on the relation between external and internal worlds. This explains a growing interest in Gibson (1979) and his concept of *affordances*. For Gibson, too, representations and internal states that mediate the relationship with the external world are centred on action, or, to use Gibson’s words, connected to affordances. Affordances are nothing more than possibilities for action and use offered by the local environment to a particular type of embodied agent, equipped with specific bodily features. In this way perception is always contextualized and constructed: the world is essentially perceived by some given organism endowed with its own intentions in some given context, and is seen as affording opportunities for goal directed actions. Perception is therefore always connected to action, and both perception and action are always connected to cognition.

This is a crucial point, because the action-perception-cognition link is perhaps one of the most important acquisitions of embodiment theories. Perception is never seen as a passive recording of information, but is immediately connected to action potentials. Therefore any kind of rigid distinction between perception and cognition disappears, and they become highly integrated and overlapping processes. Not surprisingly, such an approach is very interested in results of neuro-physiological studies that show a connection, even at neuronal level, between perception, action, thought and imagination. Recent research on *mirror neurons* have shown that in primates, and also in humans, the same neurons fire both when a given action (like grasping a cup of coffee) is effectively executed by some individual, and when it is observed while being executed by an other, and

as well as when the subject merely thinks of executing it. Interestingly enough, this does not happen just for any kind of movement, only for intentional actions, finalized to a goal (such as grasping a cup), and thus only for intentional interactions with the environment, or, to use Gibson's words: interactions connected to precise affordances.

The existence of underlying schemas common to perception, action, language and cognition probably represents one of the most challenging acquisitions of work on embodiment, and it is one that semiotics cannot ignore, since it implies a highest possible level of integration between all these systems. Perception, action, language cannot any more be considered as totally autonomous and independent modules, they must become functional specifications in a common unitary configuration.

This is also the ground of metaphorical concepts, so central in cognitive semantics, in that they represent linguistic and conceptual projections of bodily configurations of various kinds (perceptual, motor, spatial, and so on). Metaphorical projections are always motivated; this is the second important lesson we can derive from embodiment studies. Together with the motivational aspect, this offers a radical challenge to the dominant view of language as a formal system, totally arbitrary and abstract. An important consequence of this work is a shift from the study of linguistic forms to the study of linguistic substances, a shift fully shared by contemporary cognitive semiotics. As Petitot suggests:

Il s'agit d'abord de rompre avec l'idéalisme sémiotique à l'œuvre dans les approches formalistes du sens qui auront dominé la grande période du structuralisme logico-combinatoire. (Petitot 2000: 84) [What is at stake here is a break with the semiotic idealism of the formalist approaches to meaning that dominated the heyday of logic-combinatory structuralism.]

Idealistic formalism has several important consequences: first of all it implies a totally disembodied approach to meaning :

Le sens perd tout rapport au monde naturel externe et au couplage perception-action qui fonde notre rapport écologique et ethologique à ce monde. (Petitot 2000: 85) [Meaning loses all relationship with the external natural world and the coupling of perception and action that grounds our ecological and ethological relationship with this world.]

Secondly, meaning is deprived of all self-organizing systemic principles and cannot but be purely logical and combinatory. A semiotic approach based on embodiment should pursue a double program that we could define at one and the same time as a *de-formalisation* and a *de-mentalisation* of

meaning and sense, reintroducing the study of *substance* as an essential part of its project.

4. Intersubjectivity and the embodied subject

The new field of embodiment has brought to light many interesting concepts and questions of central concern for semiotics. Firstly, there is a more realistic idea of the way human beings perceive and interact with their environment, and the way in which meaning emerges from these activities. Next, there is the interconnection between cognition, perception and action; the crucial relevance of situations and contexts, and a different and more articulated idea of the relationship between external and internal world. Finally, there is the central role of embodied structures in language and cognition, and the embodied nature of metaphorical mappings. All this points to a contextualist and pragmaticist conception of semiosis, in the Peircian tradition, allowing an anti-idealistic and anti-formalistic shift in semiotics, such as the one advocated by Petitot.

Embodiment allows and indeed requires a superceding of the purely logical and formal approach which had characterized semiotic structuralism in its initial period of development; meaning ceases to be a purely negative value, as it has been conceived in the Saussurian tradition, for it now acquires a living connection with our perceptual, phenomenological and emotional experience of the world. In this way world, experience, body and mind will all come to be seen as much more closely interconnected and strictly related to one another than before, in a way highly consistent with the Peircean tradition, as I have already indicated.

These are all very important acquisitions. However, there are still a few points which will need to be more carefully considered, and where I believe that semiotics will be able to contribute an important series of clarifications to the wider study of embodiment. Indeed, in research on embodiment, there are some possible “zones of confusion” that appear to be particularly crucial in our current situation. The first zone of confusion has already been mentioned and concerns the interchangeable use that is sometimes made of the terms “body” and “brain”. It is important to emphasize once again the complete lack of coincidence between these two levels: the body can certainly not be reduced to purely neural forms of activity. A “body-brain” of this kind would exclude the whole phenomenological di-

mension of experience, that live presence that Husserl called *Leib*, as opposed to the material *Körper*.

The second zone of confusion arises in relation to the distinction between *body* and *corporeal schema*. The confusion is more implicit than explicit, since corporeal schemas are rarely mentioned, although the notion might represent a crucial concept for the discussion of embodied experience. The concept of corporeal schema was first used by psychiatrists and neurologists towards the end of the nineteenth century, and was then further elaborated by Paul Schilder in the mid-1930s (Schilder 1935).

The corporeal schema is not only the general kinaesthetic experience we have of our body, but it is also the spatial dimension that is occupied by the body. According to Schilder, it is neither a sensation nor a mental representation, but rather something intermediate between these two things. Merleau-Ponty (1945) refers to the notion of corporeal schema in order to define the *corps propre* and its relationship with subjectivity. According to Merleau-Ponty the notion has a gestalt configuration and a dynamic character, implying an intentional dimension. The body is always endowed with a project in the world; it has its own goals deriving from its interactions with the environment.

The notion of corporeal schema seems crucial if we wish to investigate the embodied grounding of concepts, since at that level what is at stake is not the “body” as a material and natural object, but its schematic configuration, as has been well demonstrated in studies on spatialisation in language. On the basis of this type of embodied configuration, the body becomes the first place of meaning articulation, and its embodied schema are the basic structures that organize meaning, even before language, as I will discuss in a moment. However, to fully understand the role of embodied configuration in semiosis, we have first to discuss a very important issue, related to affect and emotion. Bodily states are always, and at the same time, pathemic states, endowed and infused with feelings and emotions. Body is where emotions have their primary space, and if we do not take this aspect of embodiment into account in our analysis, we miss a crucial dimension of meaning making, and risk ending up with a totally inadequate and reduced conception of the body itself.

Affect and emotion are in the body from the very beginning, in all our sensations and perceptions, which are always permeated by an affective-emotional tone. We do not only feel sensations of warmth or coldness: we feel pleasant, unpleasant, or unbearable temperature levels, and the same also holds for perception: what we see, hear, taste or smell is never “neu-

tral”, but always endowed with some sort of emotional reaction along the pleasure-displeasure scale. Body is, in other words, never pure “soma”, but always soma animated by certain affective and emotional states, in other words: soma and psyche are always simultaneously co-present. Here we can see that it is precisely the notion of psyche that enables the overcoming of body-mind dualism, unravelling the categorial distinction between the two terms.

But this switch from a naturalistic body to a somatic-psyche one also implies that we must enter into the domain of subjectivity and intersubjectivity. The whole issue of subject and subjectivity is almost completely absent in the North American tradition of work on embodiment. However we can in several cases quite easily find implicit reference to something that we more appropriately would have referred to as subjectivity, but which is not always recognized as such.

Let us take as an example the otherwise excellent article by MacWhinney (1999), where the author analyses some of the different forms in which language emerges from embodiment. According to MacWhinney “language comprehension and production are embodied processes whose goal is the creation and extraction of embodied meanings [...]. We can refer to these processes of active embodiment as the perspective-taken system” (MacWhinney 1999: 214).

The embodied perspectival systems operating in language are related to four levels: 1) affordances, where language and cognition are related to individual objects and actions through affordances; 2) spatio-temporal reference frames, which refer to “the set of competing spatio-temporal reference frames” (MacWhinney 1999: 215); 3) causal action chains, most centrally involved in the emergence of grammar and the different perspectives of nominative-accusative language or ergative-absolutive language; 4) social roles, where the perspectival system allows us “to adopt the social and cognitive perspectives of other human beings” (Mac Whinney 1999: 216).

What is of interest here is that all of these systems are not equivalent in their relations to the issues of embodiment and subjectivity. If the first level of affordances is certainly linked to the body and its grounding in the linguistic perspectival system, since all the properties we can think of in relation to an object are affordances grounded in the perspective of our own body, the same does not hold for the other three levels, where it is not so much the body that plays a role, but the point of view of the subject as represented in language. Consider the spatio-temporal reference frames.

MacWhinney explicitly mentions three alternative frames, an object-centred, a speaker-centred, and an environment-centred frame. These frames do not depend on the body, but on the way the position or perspective of the subject is framed within discourse. The same is true for the other two systems: both the perspective a given grammatical construction imposes on the action, and the perspective connected to interpersonal and social frames, refer to subjectivity more than to embodiment. What we have in these cases are traces left at the sentence level by the process of enunciation. The notion of perspective can be framed in the wider issue of linguistic subjectivity, which, in European post-Saussurian linguistics, has most convincingly been elaborated in the Theory of Enunciation.⁹ Such a theory unifies in one and the same framework a family of heavily interconnected issues, ranging from pronominal, temporal and spatial reference systems, to focalization, perspective, point of view, and so on.

So obviously the question is not whether or not we use enunciation theory as formulated in post-Saussurian linguistics, but the possible overlappings that may be found between two different issues, both of which are extremely important. However, they are not necessarily interconnected. Perspectival systems depend on the presence in every sentence of an uncancellable point of view which is the trace of the enunciation process. This is something quite different to embodiment, which is the existence, in semantic structures, of motivated configurations, all of which depend on embodied experience.

Given the extent to which these two issues are *not* the same, the theory of enunciation removes the issue of embodiment altogether, leaving only reference to a transcendental subject, completely deprived of any form of bodily qualification, gender difference or any other dimension which might be linked to individual subjects.¹⁰ Here we have a deeply paradoxical chiasmus: on the one hand there is a theory of embodiment without the subject, on the other a theory of the subject without a body.

In order to develop a fully embodied theory of semiosis we certainly need a bringing together of body and subject, and to do this we must develop an approach to subjectivity which is quite different from the transcendental Ego that is implicit in the classical structuralist framework. An alternative approach of this kind will need to be more firmly connected to the dynamic dimension of enunciative practices of subjects, and, above all,

9. Cf. Benveniste (1966, 1974).

10. Cf. Violi (1986).

to the interplay between the embodied subject and the relational dimension of intersubjectivity.

Subjectivity is not the emergence of a transcendental subject revealing himself (and here the masculine pronoun seems more than appropriate), but rather the emergence of a subjective dimension within a complex, relationally grounded interpersonal, social and cultural environment, in other words: the realm of intersubjectivity, in which all embodied organisms necessarily ground their meanings. This implies, in a way, going beyond the individual subject itself, which cannot manage to exist in any kind of isolated, solipsistic form, and even beyond the body itself, if considered merely as an encorporalisation of mind. An embodied subject is more than a body and more than an individual entity: it is a somatic-psychic organism, constituted by embodied affect and emotions and inextricably enmeshed in a complex world of intersubjective relationships.

To exemplify this last point, I will conclude with some, necessarily very brief, references to my current research on preverbal children. Working on video of interactions of young children (aged less than 12 months) with their mothers it becomes strikingly evident how meaning is inherently embodied, in that it emerges from embodied interactions well before it begins to manifest itself in language. Preverbal babies are already engaged in a complex work of building meaning on the basis of their interactions with their environment and the relationships they are involved in with the adults around them, especially the mother. Their gestures, gazes and movements can all be read as an already articulated kind of “language”, where the emotional and mental world of the child manifests itself, not yet through words but through embodied actions.

It is quite intriguing to notice in analyzing these materials the strong interconnections that can be seen to exist between the ongoing intermingling of intersubjective patterns – a kind of relational dance involving both mother and child – and different bodily responses on the part of the child. In order to understand the process of meaning construction at this very early developmental stage it would be quite misleading to look only at the body, without also taking into account the full range of intersubjective practices within which it is created. Meaning seems to emerge as a series of bodily and emotional responses to environmental interactions: a kind of coupling of embodied actions on the part of the individual subject to a wider pattern of intersubjective relations, a process which might be defined as a coupling of subjective and objective components of meaning.

From its very beginnings the embodied subject, far from being either a transcendental ego or a purely neural brain, will emerge as the unique way in which each individual body shapes emotions and feelings in the inter-subjectivity of relations with the other.

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