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Action, Perception and Language

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Introduction to the special issue

The traditional view of concepts proposed that the mind is a mechanism to manipulate symbols according to syntactic rules (e.g., BURGESS & LUND, 1997; CHOMSKY, 1980; PINKER, 1994), similarly to an information processing device. In this framework, perception and action were conceived as peripheral and separated processes (PHYLYSIN, 1973; FODOR, 1998): the perceptual processes were supposed to take place in the same way, independently from both the interaction context and the required motor response. Consistently concepts were assumed to be fixed – i.e. autonomous from our specific body –, represented through abstract, arbitrary and amodal symbols (COLLINS & LOFTUS, 1975; NEWELL & SIMON, 1976; LANDAUER, MCNAMARA, KINTSCH & DENNIS, 2006).

In the last decade some scholars in the cognitive sciences opposed the idea of a disembodied Cartesian mind, arguing that the mind is embedded in our perceptual and motor system (e.g. BARSALOU, 1999; GLENBERG, 1997, 2010; LAKOFF, 1987). In this view, perception and action are directly linked and mutually influenced. *Embodied-situated theories* of cognition claim that objects are represented in terms of *perceptual* symbols (BARSALOU, 1999). As grounded on our actual interactions with the external world, perceptual symbols are dynamic, changeable and multimodal (PECHER, ZEELENBERG, & BARSALOU, 2003): conceptual information is distributed over modality specific domains (BARSALOU, SIMMONS, BARBEY, & WILSON, 2003; GALLESE & LAKOFF, 2005; MARTIN, WIGGS, UNGERLEIDER, & HAXBY, 1996). The multimodality of object concepts and the centrality of action information in their construction is demonstrated in a variety of experiments showing that visual stimuli activate motor information (see SMITH, 2005).

According to the embodied-situated theories, *words* mediating concepts also enhance the neural pathways involved in perceiving objects and interacting with them. Nowadays strong empirical evidence from fields ranging from psychology to neuroscience and cognitive linguistics (see BERGEN, 2005; GIBBS, 2003; PECHER & ZWAAN, 2005) provides support for the view that language comprehension results in embodied representations (GALLESE & GOLDMAN, 1998; ZWAAN, 2004; GLENBERG, & KASCHAK, 2002). Crucially much recent evidence suggests that the mental simulation we run is rather specific, as sensitive to differences pertaining intrinsic object properties – as shape, size, color – (e.g. ZWAAN, STANFIELD & YAXLEY, 2002; GLOVER & DIXON, 2002) as well as extrinsic ones – as orientation – (e.g. STANFIELD & ZWAAN, 2001). Moreover this simulation is quite detailed as actions seem to be represented and encoded both at a proximal and at distal level (see HOMMEL, MÜSSELER, ASCHERSLEBEN, & PRINZ, 2001), as shown by studies manipulating the effector the verbs refers to – i.e. hands, foot, mouth – (PULVERMÜLLER, HÄRLE & HUMMEL, 2001; SCOROLLI & BORGHI, 2007; BUCCINO, RIGGIO, MELLI, BINKOFSKI, GALLESE, & RIZZOLATTI, 2005), as well as the final goal expressed by the sentence (BORGHI & SCOROLLI, 2009).

The empirical studies (for a review see SCOROLLI & BORGHI, 2008) show that to understand language we recruit the same perceptual, motor and emotional systems used to interact with objects to perform action. Nevertheless the emphasis on words and their *referents* led embodied theories on language understanding to neglect the fact that being immersed in a linguistic context is a sensori-motor and social experience. This experience can modulate the way in which we represent words' meanings. The aim of this special issue of the *Italian Journal of Philosophy of Language* (*Rivista Italiana di Filosofia del Linguaggio*, *RIFL*) is to investigate language grounding from different perspectives, addressing new challenges, and providing insights into different problems.

THE ISSUE OF NEGATION

- One of the weak point within the Embodied-situated framework is the case of linguistic negation. The contribution by CLAUDIO FASCHILLI, *La negazione e le teorie simulative della comprensione linguistica*, addresses the issue of negation to disentangle whether concepts are composed exclusively of sensory-motor representations, or whether they could contain amodal and propositional representations. The author argues against a "strong" version of the simulation theory, by proposing a possible "dual" approach framework.

- In the same vein, MARCO TULLIO LIUZZA, MATTEO CANDIDI and SALVATORE M. AGLIOTI, *Non farlo! Negazione linguistica e simulazione delle azioni*, explore the issue of negation reviewing recent empirical evidence using neuro-investigation techniques to scrutinize the neural correlates of linguistic negation in the sensori-motor simulations involved in sentence comprehension. The authors discuss the possibility that action simulation processes during motor-related sentence comprehension are associated with the comprehension of whole sentences and are sensitive to the linguistic context.

THE ISSUE OF ABSTRACTNESS

- Another critical problem embodied views has to face with is the issue of how abstract words are acquired and represented. CARMEN GRANITO, *Where are abstract concepts from? Embodiment beyond the body,* reviews modal accounts for abstract concepts – the Metaphor Theory, the Motor Theory and the Situated Simulation Theory – and pluralistic approaches, involving modal and amodal representational systems – the Dual Code Theory and the Embodied and Dis-Embodied theory. A social extension of the embodied cognition view, accounting for abstractness without involving amodal formats, is proposed: the Words as Tools theory (WAT).

- This theoretical proposal, by ANNA M. BORGHI and FELICE CIMATTI, *Words are not just words: the social acquisition of abstract words,* holds that words are not just mere external signals of internal processes but also *social* tools that allow us to perform actions in the external world. In this view *embodied* experience cannot be enclosed inside the boundaries of our own body, but has to be extended to embrace social and linguistic experience. This proposal assumes the existence of multiple representations: combining embodied and extended approaches (see BORGHI & SCOROLLI, in press), WAT is based on the idea, that words are tools we use (WITTGENSTEIN, 1953; see also CLARK, 1998). The difference between concrete and abstract words is explained by WAT referring to the fact that, due to different acquisition mechanisms, the role played by actions performed through words – by linguistic information – is more relevant for abstract than for concrete words. Another consequence following from this view is that word use varies depending on the *spoken language* and on *culture*: their influence is particularly strong for abstract compared to concrete words (BORODITSKY, & RAMSCAR, 2002; CASASANTO & BORODITSKY, 2008)

UNNAMED OBJECTS

- The idea that language shapes to some extent speakers' perception of the world (e.g. GENTNER, 2003, MIROLLI, & PARISI, 2011) is discussed by ELENA KALMYKOVA, *Blanks in cognition: escape from the limits of language*. The author explores the structural differences between our language and our actions, analyzing how the way we cut the environment into objects - using language - does have consequences for our actions upon the world. As the wordings guide our actions, the "parts of objects" unaccounted by language, *unnamed*, are called *blanks*: we cannot directly and intentionally act upon them, except for new-spontaneous responses. To test the hypothesis it would be crucial to compare how different cultures and languages conceptualize the environment, and act in it.

BILINGUALISM

- The contribution by PAOLA BONIFACCI, GIOVANNI CAPPELLO and STÉPHANIE BELLOCCHI, *Linguaggio e cognizione: implicazioni dal bilinguismo*, examines bilingualism in its varieties, defined by the acquisition (simultaneous-consecutive / precocious-delayed), by the relation between the semantic and conceptual systems (coordinate-composite-subordinate bilingualism) and by socio-cultural factors (additive-detractive bilingualism). Despite of this variety, the so-called "bilingual advantage" seems to be a robust effect: the experience of early exposure and constant practice of two languages can improve cognitive skills such as selective attention, inhibition and cognitive control, with respect to non-verbal tasks. Interestingly these findings are consistent with results from recent trans-cultural studies, specifically focusing on religion. Empirical evidence shows that different religious systems, defined by explicit precepts, have specific effects on action control processes (HOMMEL, COLZATO, SCOROLLI, BORGHI, & VAN DEN WILDENBERG, 2011). Similarly to bilingualism (i.e. the practice of selecting the target language avoiding intrusion of the non-target language), the Calvinist religious training seems to affect action control: the common cause seems to be the relatively "exclusive" configuration of attentional control parameters.

MUSIC AS LANGUAGE

- As to different human languages, a particular kind could be considered the musical one. "Music is more mysterious than language because its *raison d'être* remains unsettled" (PERETZ, 2006, p. 2). Even if everyone "knows" what music is, the concept of music is difficult to define; as a matter of fact, some cultures use the same linguistic label for both dance and music, including them in the same category (PERETZ, 2006). In his contribution, *Linguaggio, azione e musica: Lacan e il gesto originario,* STEFANO OLIVA reviews both semantic and syntactic analyses of the relationship between language and music to finally underline the need for a *pragmatic* analysis. The problem of referent led to overlook the performative dimension of musical game, while the *rhythmic gesture* seems to be a possible candidate for the common original dimension of both musical expression and linguistic act. His reflection moves from the Wittgenstein's analysis of language-games and from the Lacanian interpretation of the Fort/Da game – the game played by an eighteen-month-old child, as described by FREUD (1920). While in the Freudian perspective this game stages and symbolizes the disappearance and reappearance of the object (mother) within the child's reach, in the Lacanian perspective the alternating Fort! Da! are interpreted as the binary mechanism of absence and presence. Avoiding to reduce language to a system of correspondence between a sign and a signified - that is, conceiving language in its performative dimension - the relation with music can be found in the rhythmic game, of linguistic act as well as of musical gesture.

FROM NATURAL TO CONVENTIONAL SIGNS

- The contribution by THOMAS ROBERT, *Les deux langages d'action condillaciens: corps, langage, connaissances*, explores Condillac's explanation of the origin and development of human knowledge, underlining the crucial role of the body sensations for both processes. The analysis of the transition between natural signs and conventional ones closely reminds recent hypotheses on the possible evolution of language from gestures and manual actions (e.g., CORBALLIS, 2002; PARISI, BORGHI, DI FERDINANDO & TSIOTAS, 2005; RIZZOLATTI & ARBIB, 1998).

ACTION AS PRACTICAL PRODUCTIVE ACTIVITY

- From a different perspective, the contribution *Tra lavoro e linguaggio: l'oggetto come segno*, by PIETRO GAROFALO, is aimed at bringing into question the idea - shared by different approaches in cognitive sciences - of world as a pre-given external reality. The object, traditionally reduced to its physical properties, actually sends back to something else, i.e. the activity from which it is produced. Consistently, to understand the symbolic dimension of some objects we have to refer to the practical productive actions that are intrinsically (but not only) linguistic. The supposed unidirectional relationship from the object – to be labelled – to the linguistic subject, and vice versa, is reframed in favour of a circular relationship between subjects, objects and signs allowed by action - conceived as work.

MOTILITY AND POTENTIALITY OF MEANING

- *Motilità, potenzialità, e infinito: un'ipotesi su natura e religione*, by MASSIMO LEONE, moves from the biological concept of motility – conceived as the capacity of modifying our own position relative to the context – to build a theoretical hypothesis on meaning. In the dialectic between human being's motility and the one of their own reality, human capability to conceive meaning as *potentiality* allows them to experience possible states of reality before their occurrence. In this view, life in itself could be redefined as the ability to navigate between alternative potentialities. Author explores this hypothesis focusing on both systems of religious beliefs and on non-genetic transmission of cultural information.

OBJECTIVE AND RELATIONAL MEANINGS

- Finally, the possible relation between "relational meanings" and the actual-objective "information-content" expressed in communication processes is investigated by ALFONSO DI PROSPERO, *Communication, action and inductive practice. The practical effects of inductive reasoning on the patterns of human relation*. The author addresses implicit knowledge as a result of an empirical and inductive learning, and explicit knowledge as the outcome of conceptual and deductive operations. After investigating the systematic involvement of these two forms of knowledge in our cognitive functioning, he finally puts forward the possibility that, in some circumstances, the pragmatic meaning of communication can be in contradiction with the linguistic content.

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