Presentation

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A few questions

Since the two of us have been very interested in the language-thought relationship for a long time, we decided we should start working together somehow, and we proposed the idea of a special issue to *Theoria*. Our specific interest in this classic problem is trying to avoid a purely philosophical approach (i. e., the attempt to identify and solve some of the numerous problems by only using conceptual analysis). In addition to conceptual analysis, which is always needed in dealing with notions so difficult and elusive as language and thought, we wanted to look for approaches that were characterized by the explicit effort to take into special consideration some form of empirical evidence. With this goal in mind, we invited philosophers who have been working on the problem with an eye on empirical results, and scientists whose publications showed not only relevant results for the problem, but also philosophical interest. The stature of the authors who accepted to participate in the project is so remarkable that we must start by expressing our gratitude to all of them here.

The aspects of the relationship between language and thought we are mostly interested in should be first understood within the usual framework, so we proposed the following list of questions to our authors: Is language mostly expression of thought? Is thought mostly independent from language? (affirmative answers to these two questions provide the essentials of the expressivist view of language). What are the main influences of language over thought, if any? Is language able to not only influence thought, but also constitute it? (a positive answer to this question is the heart of linguistic relativity). What kinds of arguments should be used to establish the most relevant positions?

These are the classic questions in the field of blank that philosophers have considered and attempted to answer for centuries. So we added other questions pointing to a more empirical direction: What sort of empirical evidence should be considered to answer those questions, if any? The experiments on the linguistic relativity hypothesis have been clearly relevant, especially in the last decade, but should the evidence coming from the ontogenetic and philogenetic investigations also be used to decide the relevant questions? In addition, how does the evidence coming from the experiments about teaching primates a complex language relate?

Finally, we could not avoid asking some questions related to the dominant ideas since the "cognitive revolution" took place in the sixties: are the hypotheses of an innate, universal grammar (common to all possible human languages) and a language of thought (that concepts pre-exist the actual learning of any language) still relevant to

this classic controversy? In general, is the cognitivistic, nativist paradigm still useful to integrate the new results coming from so many different fields? And if not, how could we even figure out an alternate paradigm?

The following papers have all addressed at least some of these questions, often from very different viewpoints, but always in a clear and very interesting state of the art fashion, and also taking into explicit consideration the empirical evidence available, so we believe our goals have been satisfactorily achieved.

We will first introduce our main authors —in alphabetical order— to readers by describing their past work as it relates to our field. Lastly, we will indicate the way in which their present contributions can be inserted into that general framework.

A few answers

Andy Clark

Though it is not a widely spread attitude among contemporary philosophers of language and mind, some philosophers openly reject both the language of thought hypothesis and the expressivist view of language. One general pattern which this opposition has been fit into, made popular by Daniel Dennett (*Darwin's Dangerous Idea*, 1995), has it that words, and language in general, far from being means of expressing concepts and thoughts pre-existing in the speakers' minds, have to be conceived as tools that augment our cognitive abilities and generate contents otherwise out of their reach. Clark has shared this insight and given it his own hallmark in his recent publications. His influential paper "Magic Words: How Language Augments Human Computations" (1998) propounds a view of language as an external artifact designed to function as a complement of those biological capacities we humans share with other animals. Specifically, Clark underlines the ability of labeling, that is, of using words to tag things and their properties and relationships, and the deep computational impact this resource has on basic learning capacities. Labeling allows to selectively attend to the organism's environment and to reduce the descriptive complexity of the scene.

In his contribution, Clark persists in his supra-communicative view of language. However, it seems evident that he is moving beyond the idea of language as an external artifact. Language provides humans with a rich collection of tools that sculpts and modifies the processes of selective attention in substantial ways. Linguistic rehearsal is now acknowledged as having a central role in understanding consciousness by bringing along resources to self-monitoring and self-control. However, the main novelty Clark contributes is the idea that language performs a disciplinary function. This means that language stabilizes the flux of ever-shifting and contextually dependent modes of encoding and representing reality in the service of learning, reasoning and self-control and that dampens its affect valence by creating a mediating space between our immediate urges and the needed responses. In anchoring our own experiences and trains of thought, we open the way to inspect old ideas and to critically value and extend them and manage to manipulate our neural endowment. Language, Clark argues, is like the beaver's dam in being a part of the world which has been collectively con-

structed, and it deeply differs from the beaver's dam in helping to create a cognitive niche, a symbolic creation that promotes learning, reason and controlled action.

Terrence Deacon

The Symbolic Species (1997) is doubtless the single most important contribution regarding the problem of the origins of language. Deacon's detailed approach in this work takes into consideration every relevant angle and question and brings them to another level. Among the numerous new arguments contained in Deacon's work there is one which is usually regarded as the most challenging against the nativist conception of language: the universal grammar hypothesis. After Chomsky's scepticism about any evolutionary explanation of universal grammar, Pinker and Bickerton attempted to supply such explanation through the so called Baldwin effect, which stipulates that every species able to learn can acquire new adaptive behavior ontogenetically, then assimilate that behavior philogenetically through genetic mutations. Enter Deacon: since the formal traits of universal grammar have no empirical existence —they are compatible with many different surface representations— they cannot be learned, so only a miracle could "explain" how they might have been genetically "assimilated" by a whole species. Since the Baldwin effect seems to be our better candidate to explain the origin of language there must be other traits, common to all languages, which might have played the empirical role needed for genetic assimilation and transmission. Language and brain co-evolved together, and language, as the most formidable adaptive instrument, was the motor of brain expansion and finally of the further anatomic changes which characterize our species. This should serve as an illustration of the main ideas brought forward in the 1997 work.

Since then Deacon has been refining some of his original arguments, and the paper appearing in this issue is a sample of his more recent efforts. He now argues that there cannot be a correspondence between the linguistic models assumed by universal grammar and the structural/functional traits of our brain, since they are common to other non-human primates, so our language processing is carried through the same structures/functions used by other primates. The logic of linguistic analysis is the reverse of the logic of evolution: language is an evolved, social phenomenon following biological laws. Its logic is the logic of the brain micro-evolution: self-organized and emergent. The basic linguistic units are not atoms of analysis but final products of a cognitive process, so a new analysis of the speech act is provided within a socio-communicative framework by using the formidable concepts of neuroscience. Language is simply a neurologically emergent function produced by the interaction of a variety of biological systems, which take place through different levels of neural differentiation.

Christopher Gauker

Gauker's crusade against expressivism (i.e., the primary role of language is to enable speakers to convey the contents of their mental states to their listeners) goes back a long way. His books, *Thinking Out Loud* (1994) and *Words Without Meanings* (2003) both argue forcefully and at great length against this doctrine and elaborate on an

original alternative. His conviction is that any notion of thought is worthless if understood regardless of the norms of discourse that guide conversation. Even the postulation of mental states, like beliefs and desires, to make sense of human behavior is worthless if they are severed from the linguistic institutions of assertion and command, respectively. Thus, Gauker takes a belief to be something you attribute to *S* to make an assertion on *S*'s behalf. Analogously, he takes a desire to be something you attribute to *S* to make a command on *S*'s behalf. Very few authors in the current philosophical scene, with the possible exception of Robert Brandom, argue along the same path as Gauker. Although he does not share Brandom's inferentialism, Gauker also thinks representational theories of linguistic meaning and mental content confront insurmountable difficulties.

Expressivism is, however, a philosophical doctrine present both in theory and practice of Cognitive Psychology. It has been explicitly applied in explaining how is it possible for children to learn concepts independently of their ability to acquire language. In his contribution Gauker examines in detail an experimental paradigm developed by Paul C. Quinn and Peter Eimas, who hold that concept learning consists of forming a representation of a mental category. Gauker argues that their experimental results could be accounted for by resorting to an understanding of concept learning that combines the ability to carry out similarity judgments ('*x* is represented as more like *y* than *z*') with the requirement that the similarity spaces that support those judgments have boundaries that only get stabilized in language use. Therefore, Gauker rejects the view of adopting language which focuses on the association of those concepts one articulates *in propia experientia* with the words found in people's mouths. To learn the meaning of a word cannot consist of associating the word to a previously identified concept, because concepts are not in the mind ready to be tagged. On the contrary, we gain an understanding on our concepts in the course of learning to use words.

John A. Lucy

Lucy's celebrated publications in the 1990's somehow supposed the revival of linguistic relativity —the effect of linguistic diversity on thought, which had almost disappeared from the public eye for decades, after the Chomskyan nativist wave invaded the academic territory. They provided us with the best available analysis of the theoretical framework of the existing contributions to the Sapir-Whorf hypothesis. Even more importantly, they contained a very detailed case study whose methodological lines were destined to definitely overcome the usual suspicious attitude before the possibility to scientifically test the actual influence of language diversity over thought. Much beyond Whorf's usual method of comparing the grammar of two languages, then launching hypotheses about the different thinking systems involved, Lucy required four independent steps: (i) comparing two linguistic *communities*; (ii) stating an external reality as a pattern for calibrations; (iii) using a reference category with important significance to those languages; (iv) evaluating the cognitive predictions, made on the basis of the comparison, through the non-verbal performance of the testing indi-

viduals. By applying this pattern and comparing English and Yucatec he showed that the concept of similarity is language-dependent: in English it is associated to the external form of the objects considered, while in Yucatec it depends on the material substance they are made of.

The Lucy paper appearing here discusses the present state of linguistic relativity in the light of the last 20 years of fruitful research, mostly by delving deeper into its relationship with language diversity —the way language differs in rendering the same reality. I.e., into the relation between the interpretation of reality encoded in particular languages and the way the speakers of those languages think about reality. Most of the research can be classified into two approaches: domain-centered and structure-centered. In the first approach a particular domain of experience is selected (color, time, space, etc.) then its consequences for the partition of reality are investigated. The second approach selects a grammatical structure (number, gender, etc.) then investigates how different "realities" may emerge from that structure in terms of thinking. Lucy favours the second method, where his research regarding the concept of similarity is inserted, since the first is more difficult to test. In reviewing his latest research, several important theoretical questions are raised, mostly about the influence of culture rather than language, and about whether there is a "real" linguistic relativity. The paper ends with a general discussion of the whole resulting picture.

Sue Savage-Rumbaugh

Kanzi the bonobo is probably the most famous ape in the history of science. Through Savage-Rumbaugh's publications in the 1990's we learned that apes can understand and use our natural languages to an impressive degree of performance. In a comprehension test, where Kanzi had to follow hundreds of orders through sentences never heard before, he exhibited the correct behavior more than 70% of the time. He also learned the English language in the exact same way children do: by listening to English speaking people in a context of communication, and with no specific training. In addition, he showed that the critical period for learning language is not a unique attribute of humans, nor is it specifically linguistic, since adult bonobos cannot learn in the same way, despite much training. His ability to master the English language was, and still is, simply astonishing: Kanzi is able to use multitude of words and sentences in a full and meaningful way through a sophisticated keyboard. There is no longer doubts that he understands the syntactic aspects involved in many different linguistic usages, as well as many complex subordinate clauses, pronouns, adverbs, etc. These are well-established facts that cannot be ignored.

In the paper contained in this monographic issue, Savage-Rumbaugh, and some other members of her team, go a step further, and state that it is precisely a shared *culture* with humans which make it possible for bonobos to develop forms of higher cognition. It is through an interactive life that both humans and apes learn about shared emotions, intentions, perceptions, norms and even mythologies. The paper offers three well documented instances of culture prefiguring cognition: imitation, theory of mind and language. Imitation is not a precondition for culture: certain shared cultural

traits raise the bonobos' desire to imitate. Also, the paper clearly shows bonobos to have a very developed theory of mind: they are able to understand and recognize other bonobos/humans as individuals with emotions, desires, beliefs, will, etc., which is proven through linguistically mediated tests. As for language, after the tremendous success of the bonobos' performance, which includes extensive use of language between bonobos, involving a complex variety of goals, the paper defends the hypothesis that a new concept of language is needed, as language is an integral aspect of cultural practices. Thus, shared enculturation changes the bonobos' cognitive capabilities for the better, and no limit can today be even envisaged.

Stuart Shanker

Shanker's publications as they relate to our field are numerous, but perhaps his philosophical analysis of the implications of Kanzi's linguistic capabilities for our understanding of the human mind is the most well-known. The rejection of Cartesianism is one of the consequences. More recently, Shanker started collaborating with Stanley Greenspan, a very distinguished child psychiatrist from the US, and the two of them published a remarkable book: *The First Idea: How Symbols, Language and Intelligence Evolved from our Primate Ancestors to Modern Humans* (2004). This is a very original and certainly ambitious work, whose main thesis is twofold: (i) philogenetically, language did not appear due to mechanisms related to genes and natural selection, but mostly to cultural practices developed and transmitted over millions of years; (ii) ontogenetically, children develop language through a series of steps based on the emotions raised in the social interchanges with caregivers, mostly involving gestures, body language, and reading of facial expressions. The resulting regulation of emotions gives place to the formation of ideas by converting the raw emotive materials into signals with cognitive value. This bold approach is called the functional-emotional view of language, which is developed throughout the book in a variety of rich and suggestive sections.

The collaboration of Shanker and Greenspan extends to our present paper, which takes the kernel of the argument in the former book a step further, through recent research in language development. Language acquisition should be explained, not in terms of the usual nativist activation of a pre-wired universal grammar, but in terms of the same socio-cognitive and learning processes appearing in many different sorts of cultural learning. There is no sudden appearance of language, but a gradual transition from pre-symbolic forms of communication to full language. Affect is the main catalyst of the success of that transition, since it avoids that the otherwise correct usage-based approach, and other useful socio-cognitive views, may be seen as exhibiting a mentalist character. The pleasant relationships with caregivers are transformed into the source of cognitive development through a "joint attentional frame" that is created and maintained thanks to affect, which makes the communicative process of gestures, expressions, tones and postures possible. All this is inserted into the framework of a variety of recent empirical studies in the field, then a final section points to a whole field of future research where the functional-emotional approach is shown as a promising tool.

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