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LANGUAGE AND EVOLUTION

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Acknowledgments

The present volume is the outcome of a symposium on 'Language & evolution', which was organized as the First Annual Meeting of IOTa (Interfacultaire Onderzoeksgroep Taalkunde), a kind of Antwerp Linguistics Society in full expansion. The symposium took place on 18 April 2001 at the UFSIA campus of the University of Antwerp. With this meeting, we bring together linguists and other researchers working on the three campuses of the University of Antwerp and beyond. This and future meetings primarily deal with topics of an interdisciplinary nature, as we would like to reach as many scholars as possible, both within the various domains of linguistics and in neighboring disciplines of the humanities and social sciences.

The contributions contained in this volume constitute a large portion of the talks that were given at last year's symposium. We wish to thank all of the presenters included here, as well as the speakers who are not represented: Guy De Pauw and Johan van der Auwera, both University of Antwerp.

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Introduction*

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Recent developments in diverse but related disciplines like genetics, evolutionary anthropology, neurobiology, artificial intelligence, and cognitive psychology have led to a renewed interest in the question of the origin(s) of language(s). In this debate, it is especially the discovery of fossils and technological artifacts that has captured the imagination of laymen and scholars alike, in the latter case triggering new hypotheses concerning the relation between linguistic evolution and things like brain size and morphology, as well as the analogical structuring of grammar and complex tools (Ambrose 2001). Together with the formidable ideological appeal that neo-Darwinism currently seems to have on offer, these trends make for a distinctly biological interpretation of the problem at hand and of the topics that might be raised in the discussion. Evolutionary linguistics is, in fact, an essentially hybrid endeavor that nevertheless appears to revolve around one more or less central (if typically implicit) notion, viz., the idea that distributions of linguistic groups and of genetic diversities show a less than arbitrary correlation.

In the present volume, the biological basis of linguistic evolution is directly addressed in a number of papers, both from a relatively orthodox Chomskyan position and within computational and neurological models that provide important ‘corrections’ to certain key assumptions of the generative paradigm. However, attention is also paid to alternative ways of explaining the emergence of linguistic skills, in which social factors do not only play a major part in the creation and perpetuation of languages but also define the very nature of the process of transmitting linguistic knowledge as a cultural phenomenon. A wide range of interdisciplinarity is guaranteed by contributions coming from linguistics, biology, philosophy, semiotics, and literary criticism.

Social vs. cognitive bases of language

In 1866, the Parisian *Société de Linguistique* pronounced an explicit ban in its statutes on the investigation of the origin of language and the creation (conception?) of a universal language or grammar (Lock & Peters 1996: vii; see also Koch, this volume). The *Société* based this ban on its own pronouncedly ethnographic perspective on the scientific study of language and apparently judged these questions to be fundamentally incompatible with such a perspective. It is not that the questions were considered wholly nonsensical in themselves, but rather that they just did not fit in with the scientific goal of

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achieving a systematic understanding of speaking within the general context of meaningful behavior and its interpretation.

One would think, in retrospect, that both recommendations are indeed laudable and still deserve due attention today, even if the focus in much of contemporary linguistics and its interdisciplinary spin-offs has shifted towards a fully cognitive approach. In an ethnographic description, the analyst studies a group of people (or people in general) in reference to their collaborative social organization and practices, including the symbolic and material resources they have at their disposal to achieve such organization and praxis. This outlook necessitates an internal, participating stance on the part of the observer. Now, it is exactly this 'insider's view' that we are losing when venturing into the great unknown and asking ourselves what was there before language emerged. With Saussure, and actually long before him, linguistics is defined as a science of the symbol, and acts of meaning generation are always considered within the symbolic order established by language. But if we want to find out how the very establishment of that symbolic order came about in the first place, we are inevitably forced to leave language behind and concentrate on acts of semiosis that ultimately enable the dramatic transition from pre-symbolic, indexical or iconic, arrays to the symbol¹. At that point, we are looking at biological (physiological, neurological, etc.) constraints on the development of a cost-effective information processing system. This system is supposed to handle large portions of potentially ambiguous, i.e., nonspecific, signals of a particular hierarchical, yet linearly presented, structure, and associate these with features of the context in which the signals were produced. Such a processor, while an indispensable material substrate for the success of linguistic practices, does not look at language per se and actually does not even recognize language as a special type of input that needs a specific treatment of any kind. Information is not meaning, and vice versa. From the point of view of information processing, there is no learning in any mental sense of the word but only a continuous sequence of updating connections and their relative weights and of optimizing state spaces, and there are certainly no meaningful rules pertaining to language that necessarily enter into this process. This perspective, then, is irrecoverably removed from the linguist's talk about symbolic representations and conventionalized means of combining them.

The origin of language is the Big Bang of linguistics. Just like Newtonian physics stops being relevant for the description of what happened in those first few seconds of the world, so strictly linguistic categories and tools cannot possibly be related to pre-linguistic units and relations that operate outside the realm of symbolic meaning, regardless of how complex the actual properties of a hypothesized proto-language may get. These days, we are no longer thinking of primitive forms of speech as a means to coordinate hunting activities. It may

¹ This is not to say that there are no indexical or iconic components to language use within the symbolic order. On the contrary, it seems as if such components contribute significantly to the organization and the felicitous interpretation of linguistic structures. What should still be distinguished, however, is the way icons and indices function as special symbols within an otherwise nonnatural meaning system, versus the way they are being treated when they occur as natural correlates of certain phenomena that are at issue (as when, say, smoke 'means' fire).

be the case that the original vocalizations uttered by our hominid ancestors did indeed have no other (intended) effects than to court potential mating partners, to produce charm, or generally to maintain group cohesion (Dunbar 1996; see also Miller 2000). But these are not essentially semantic functions, if only because, for one, they are not primarily aimed at setting up any kind of reference or claim to truth. For an expression to single out a referent, or for a proposition to be assessed on its truth value, more is needed than the 'perlocutionary' effects that characterize simple expressive behavior (and that obviously still persist in symbolic communication, taxing the limits of traditional linguistic analysis). What needs to be added to an account of the change to language proper is exactly the same thing as what is required to explain the leap from locally structured gatherings of individuals with direct mutual interconnections among their members to the large-scale organization of more or less anonymous societies, viz., the concept of 'trust' (cf. Vandenabeele's, this volume, discussion of Davidsonian 'charity'). So it is trust, and not so much the size of the neocortex, that succeeds in bridging the gap between the proximally available means of verification and sanction of pre-linguistic times, and the often fictive (distal or displaced) constructs that language proposes in talking about the world or a person's internal makeup. And trust is, of course, a social institution that has no meaning outside the fully interpretive practices of members and the conventions of symbolic play they orient to – the realm of ethnographic analysis. What was in place before trust was installed (or rather, construed) among humans, is a difficult question to answer, and certainly one that eludes any linguist's authority by far.

The cognitive turn in the study of language has implied many things, but one of its most important repercussions must be the shift, at the level of defining the object of study for linguistics, from the social, ethnographic description of language use to the individual's 'competence' in (a) language. Thus, a grammar is no longer seen as a collection of conventionalized procedures taken recourse to by cultured speakers and hearers in the interactive construction of mutual knowledge, but as a meaningless set of algorithms performed by a genetically wired processor. The idea of a universal grammar residing in the heads of intelligent mammals like ourselves can only be the product of such a radically nativist conception of man's rationality, which is explicitly not seen as something that is constructed out of acquired or culturally transmitted experience. And the same turn has taken place in evolutionary linguistics, proffering the gene, and thus the individual, as the prime site where natural selection can be seen at work (Dawkins 1976), and discarding linguistic communities as mere mediums through which the products of selection and variation are disseminated. When Darwin put forward his impressionistic theory concerning the mimetic relation between early acoustic patterns and bodily actions or manual gestures (cf. de Roder, this volume), linguists have subsequently tried to substantiate, often to no avail, the exact mechanisms through which such primitive sounds could come to be associated with abstract ideas and actually stand as a name for them (see, for one of the more interesting attempts in this enterprise, Jespersen 1922). Now it seems that the time has come to forfeit and let nonlinguists, mostly cognitive scientists, do the job of finding the missing link between pure, unstructured, motor-driven expression and the full-fledged symbolic code that

defines language (and grammatical structure in particular; cf. the link between motor systems and grammar in Broca's area). They will have to look at multiple interactions, between physiological constraints on the vocal organs, the development in the brain of conventional memory and the structures appropriate for dealing with recursion, and the advantages of emergent cognitive skills for an individual struggling to survive in a hostile environment. None of these concerns can rightfully be considered linguistic, but in the end it does remain up to linguists to find out if the final outcome of such interactions is to be called language. Whether the correct answer to all of the outstanding riddles should make any difference to a bona fide linguist, is another matter entirely.

The one problem that remains hotly debated within this cognitive discussion is whether or not the biological processes that permitted the development of (a) language instantiate the classical mechanisms of evolutionary adaptation that can be postulated for most biologically transmitted traits. Adaptation ensures that natural or sexual selection directly favors certain – randomly generated – characteristics of an individual that enhance its survival value (Haverkort & Stowe, this volume). On this account, language offered a distinct advantage to its users, because it allows more effective ways of communicating among relatively large groups of members and, eventually, beyond the limits of the here-and-now, too (see, e.g., Pinker & Bloom 1990). An alternative explanation of the evolutionary advantage language has created refers to a process of exaptation (Gould & Vrba 1982), whereby the material prerequisites for the eventual emergence of language were installed, crucially within the brain's architecture, for other than communicative reasons. Now, this second view prompts researchers to explore singular, nonlinguistic functions that the 'typical' language-related cortical areas might have taken on (and which may actually have helped shape the original pressures leading up to the selection of such structures). This would mean, among other things, that the structures dedicated to dealing with grammar were not specifically designed for this and can hardly be interpreted in terms of autonomous modules à la Fodor (1983). On the other hand, many who believe in the more liberal conditions that the exaptationist hypothesis imposes on the functional range of brain regions do wish to maintain their claims of a meaningless syntax lying at the core of linguistic activity. In this, they still resemble their adaptationist colleagues, and of course both groups have every right to keep stressing this particular point. After all, they are looking into the brain, and at least since 1866 people have realized that 'meaning' is probably not going to be part of any biological lexicon.

The contributions

Though for the most part treating the neuro-anatomical and psychological conditions for the evolution of natural language, MARK NELISSEN ('The biological roots of language') also remarks, based on work by Dunbar, that almost 70% of the time spent on informal conversation goes to 'social topics' (gossip, basically). This fits in nicely with the idea that language primarily developed as a large-scale device for bonding, i.e., creating group cohesion, but it also evokes

Heidegger's (1962) conception of *das Gerede*, an activity type that is meant to constitute the actual praxis (performance?) of language in its most 'degenerate' manifestations – which is not identical to characterizing it as a 'shallow', 'depersonalized', or 'inauthentic' form of talk, as is usually done. In a way, then, gossip and related functions, such as the urge to entertain one's speech partners and be entertained by them, come first in the deployment of ordinary language, and acts of reference and truth telling are constructs devised to serve the anaphoric purpose of talking as a 'bottomless' form of life, where utterances conjure up other, preceding or following, bits and pieces of language. This is not to say that there are no denotational or otherwise representational functions to language use, but that such functions are secondary at best. In an analytical sense, they are far from necessary attributes to a code, like language, that is designed to meet human communicative needs.

If semantics is not an a priori structuring principle of language, then certain interpretive assumptions need to be made regarding the catastrophic leap to nonnatural meaning that is involved in the genesis of symbolic communication. This might be seen as one of the main points proposed by BART VANDENABEELE ('The importance of non verbal communication in first contacts between different cultures'), who typifies Davidson's (1984) concept of 'charity' as encompassing much more than the expectation of empirical verifiability which are generally bestowed upon our fellow language users' products. In Vandenabeele's eyes, other, moral dimensions of charity can be seen at work in so-called first-contact situations between different cultures, whereby a variety of signals, such as smiles and laughter, gestures, and posture, points to subtle nonverbal, yet decidedly linguistic, ways of jointly attuning judgments among (unfamiliar) speech participants. Other contributions take up these themes of 'mutual knowledge' and 'agreement' and try to develop them in more cognitive terms. Notably, LUC STEELS' paper ('Language as a complex adaptive system') refers to Wittgenstein's (1953) descriptions of 'language games' as the only sites where meaningful interaction can at all emerge. His discussion of the imitation, discrimination, and naming games that artificial agents are subjected to in the construction of symbolic (form-meaning) repertoires builds on the idea that, for language to arise, a community of users is needed that can be computationally represented in terms of a 'complex adaptive system'. The creation of a shared communication system thus crucially rests upon collective, instead of individual, problem-solving behaviors.

Both J.H. DE RODER ('Poetry: the missing link') and WALTER A. KOCH ('Consciousness, communication, speech') explore early Darwinian, mimetic theories concerning the links between primitive vocalizations and the (bodily) activities they were supposed to 'name'. The two contributions differ, however, in where they localize the innovations that are essential for the full conventionalization and implementation of oral language. Koch stresses the gradual aspect of this process (contra Bickerton 1999) and maintains that it is visual percepts, and not so much gestural actions, that are (iconically) translated into pre-conceptual, ultimately lexical, motor routines. De Roder, in contrast, sides with more traditional approaches in evolutionary psychology, claiming that language became possible as soon as the size of the neocortex allowed the adequate processing of recursive (and transformational) structures.

The latter argument is a purely formal one and unequivocally assumes the meaninglessness of syntax, which is judged to be reflected in ancient ritual procedures that exhibit the same structural complexity as any (proto-)language. In this, it is fully compatible with recent neurolinguistic accounts of the language faculty and of the systems it must contain, such as advocated by MARCO HAVERKORT & LAURIE A. STOWE ('The evolution of language'). On the basis of data gathered through modern neuro-imaging techniques, Haverkort & Stowe accept and defend the thesis of a complex grammar evolving only in the wake of a corresponding increase in processing capacity of the machinery wired to deal with grammatical structures, viz., the brain. But they add to this that such a view does not automatically lead to the acceptance of modularity in the brain (or mind), as the neuronal apparatus responsible for handling linguistically presented information may perfectly well have been put in place to attend to entirely different cognitive formats, including visual perception and motor planning. In this particular paradigm, the communicative function of language is parasitic upon its power to create 'empty' structures as well as the abstract representations with which to fill them.

Many alternative links between the various contributions can also be discerned. Thus, the debate between adaptationists and exaptationists surfaces in a number of different contexts, from Haverkort & Stowe's neurological take on questions of evolutionary biology to de Roder's formalist considerations of ritual and verse. The evolutionary relevance of principles of iconicity (and indexicality) features prominently in Koch's semiotic narrative of the natural displays underlying nonnatural meaning, but also, if negatively, in the strong refutations of poetry's allegedly mimetic character made by de Roder. In the latter case, the attribution of iconic motivations to sound and rhythm is expressly seen as imposing a semantic template on the interpretation, or rather the pure reception, of poetic language. Also, Dunbar's conception of grooming as a physical precursor to language's bonding function figures in both Nelissen's and de Roder's accounts. And, finally, the notion of co-evolution (through structural coupling), as one of the main principles involved in a human community's development of complex communication systems, is pointed out by Steels and Koch. Here, the idea is that the 'successful' discrimination of categories in perception and the use of corresponding word-meaning pairs in the formation of lexicon reinforce each other throughout evolution, yielding a situation where category construction and naming are optimally attuned to one another. Language users within a community exposed to this kind of process may, in other words, simply assume that they are talking about the same, or highly similar, things without resorting to telepathy or other forms of mind reading. And analysts researching this peculiar phenomenon (i.e., the very fact that people generally seem to understand each other) may do so without presuming the innately given availability of concepts and syntactic categories.

References

- Ambrose, Stanley H. 2001. Paleolithic technology and human evolution. *Science* 291.1748-1753.
- Bickerton, Derek. 1999. Catastrophic evolution: The case for a single step from protolanguage to full human language. *Approaches to the evolution of language*, ed. by James R. Hurford, Michael Studdert-Kennedy & Chris Knight, 341-58. Cambridge: Cambridge University Press.
- Davidson, Donald. 1984. *Inquiries into truth and interpretation*. Oxford: Clarendon.
- Dawkins, Richard. 1976. *The selfish gene*. Oxford: Oxford University Press.
- Dunbar, Robin I.M. 1996. *Grooming, gossip and the evolution of language*. Cambridge, MA: Harvard University Press.
- Fodor, Jerry A. 1983. *Modularity of mind: An essay on faculty psychology*. Cambridge, MA: MIT Press.
- Gould, Stephen Jay & Elisabeth Vrba. 1982. Exaptation: A missing term in the science of form. *Paleobiology* 8.4-15.
- Heidegger, Martin. 1962. *Being and time*. Translated by John Macquarrie & Edward Robinson. New York: Harper.
- Jespersen, Otto. 1922. *Language: Its nature, development and origin*. London: Allen & Unwin.
- Lock, Andrew & Charles R. Peters. 1996. Preface. *Handbook of human symbolic evolution*, ed. by Andrew Lock & Charles R. Peters, vii-x. Oxford: Clarendon.
- Miller, Geoffrey. 2000. *The mating mind: How sexual choice shaped the evolution of human nature*. New York: Doubleday.
- Pinker, Steven & Paul Bloom. 1990. Natural language and natural selection. *Behavioral and Brain Sciences* 13.707-784.
- Wittgenstein, Ludwig. 1953. *Philosophical investigations*. Translated by G.E.M. Anscombe. Oxford: Blackwell.