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Invited Editorial

Language: the elusive milestone

Language is, together with encephalisation and tool use, the hallmark of our species. From the naïve talking-machines of the past to the complex programs simulating speech through algorithms and neural networks, humans have at all times acknowledged the crucial importance of language in characterizing our own species as "different". We seem to have an innate fascination toward the ability to talk. At any point in time a parrot saying "hello" is more charming than the incredible complexity of cranial morphogenesis, or the amazing organization of the unicellular organisms. Unfortunately, after centuries of scientific debate on language and its evolution, we still ignore where this evolutionary milestone is positioned along the way. A vast amount of research has not succeeded in defining even the basic steps of its evolution. Opinions still diverge on gradual versus abrupt hypotheses on its origin. Comparative studies have proved unsuccessful in clarifying whether or not our language and language neural components have homologous counterparts in other species. The question of whether fossil hominids had some kind of language is still unresolved, and the available proposals are almost invariably based on personal interpretations more than on crucial scientific evidence. Several reasons may explain why, despite its relevance and the volume of studies, this topic is still so elusive. First of all, its complexity. Regardless of the calls for a multidisciplinary and holistic perspective, our science is still firmly based on reductionist approaches, and on a persistent separation between different fields. This contributes to making a comprehensive approach to language a distant hope. A second problem is represented by the exclusivity of language in terms of phylogeny. Scientific hypotheses need to be tested, and, in the context of evolution, this means a comparative approach aimed at describing and quantifying processes and phenomena. At present, the available sample of species with language is pretty reduced, having an N = 1 (that's us!), which hampers any robust statistical statement. Being the only species with language, we can only represent a "point" in an analytical framework, a situation incompatible with any verification of trends or patterns.

The past 10 years have seen advances in various fields such as paleoanthropology, paleogenetics, theoretical linguistics, and cognitive neurosciences that have convinced some of their practitioners that the time has come to exploit these findings and try again to shed light on language and its evolution. The essential questions and challenges remain unchanged, but we perceive an awareness of the limitations of previous approaches and a willingness to transcend disciplinary boundaries in an attempt to exploit new kinds of information that may lessen the severity of the obstacles that vitiated past research. Across a broad spectrum of persuasions, there is definitely an attempt to apply Darwin's logic to language, and decompose our object of study into component parts that render comparative studies more manageable. Although we may be the only species that has language, there is a clear attempt at showing that many of the components of the toolkit we call language can be traced back to the natural abilities of other species. Decomposing language into primitive component parts also promises to render more fruitful the necessary interactions between language specialists, traditionally focused on the mind, and the brain scientists. Building concrete, testable linking hypotheses between mind and brain is an unavoidable step towards the formulation of models that can then be interpreted by geneticists and paleoanthropologists. Skipping the brain step, as linguists have done for over 50 years, has contributed significantly to the failure of evolutionary studies in the context of language.

It is still the early days, and the moves made across disciplines are only baby steps towards an eventual synthesis. The aim is not easy, because decades of isolation of the disciplines involved have generated barriers which are difficult to remove. In many "multidisciplinary" meetings we can easily

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realize that differences in assumptions, methods, targets, and terminology, are so strong that most integrative attempts fail and, instead of generating amalgamation between fields, they simply reproduce their isolation in the small scale of a single congress. All too often the jargon and research habits of the various fields involved prevent scholars in adjacent disciplines from grasping the significance of the results coming from next door. There is also the natural tendency to turn our innate fascination with language into a belief that we know what language is, and we can proceed without paying serious attention to the hard-won conclusions experts have arrived at. But while things are still far from ideal, our sense is that they are a lot better than a decade ago. There are historical moments in which disciplinary boundaries open, reshaping their limits to adapt their contents and methods according to new perspectives. Usually, when a new configuration of the field is set, a new cycle begins and the discipline undergoes another period of relative isolation. Now that fields in linguistics are looking for integration, we should do everything we can to convey the message and make progress before the window of opportunity that opened to us closes again.

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