Reviews

Social Perspectives of Language Evolution

The Evolutionary Emergence of Language: Social Function and the Origins of Linguistic Form, edited by Chris Knight, Michael Studdert-Kennedy & James R. Hurford.Cambridge: Cambridge University Press, 2000; ISBN 0-521-78696-7 paperback, £16.95 & US$27.95 & ISBN 0-521-78157-4 hardback, £45 & US$74.95, xi + 426 pp., ills.

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The evolution of language could not have occurred without the co-option of highly complex anatomical and neurological systems to a degree not seen elsewhere in the animal kingdom. Much recent work has been carried out on nonhuman primate vocal communication systems, on human brain evolution, and on the evolutionary anatomy of human speech. But language, more than that, is also a social tool, and this context must be considered to be at least as important when determining the selection pressures for its emergence. This book is a very useful compendium of new approaches to that social context.

The first of three sections focuses on the evolution of co-operative communication. Comprehension, not production, for Burling dictates that the progress of language development as a symbolic signal can only be successful if the target party understands it, giving rise to an 'iconic' syntax. Using game theory and computer simulations, Noble rejects the evolution of communication outside the cooperative sphere. Moreover, cheap signals will only be used when both parties stand to gain a high payoff from effective communication. Knight's contribution states that in representational or conceptual thinking, signals can be exchanged with no cost involved through 'play' vocalizations. Such a social–bonding mechanism may allow for the creation of capacities for detecting and producing signal variations, and so

generate a setting where signals could be intentionally manipulated at little social cost.

The benefits of strategic communication are expanded by Jean-Louis Dessalles, for whom 'relevance' assumes a political role: individuals use language to advertise their competence in producing relevant information, the most competent being the ones best able to contribute to coalitionary success in political competition. This theme is continued by Power, for whom it is the ritual status of a piece of information that dictates relevance, rather than the specific nature of the information itself. Trust and reliability in gossip is established through costly signalling displays that strengthen and demarcate social boundaries.

The second section focuses on the evolution of the phonetic elements that enable trans-generational linguistic transmission. Vihman and Depaolis build on Merlin Donald's concept of mimesis, which accounts for a preverbal stage of symbolic culture. A child's phonetic capacity and 'phonological loop' allows him or her to produce identifiable words before being able to reflect on a situation, to compare or choose between competing vocal choices or to generalise words on the basis of semantic categorisation. This gradually familiarizes the child with particular segmental patterns in human speech. MacNeilage and Davis look at increasing complexity in speech production through the frame / content theory of language acquisition. This suggests that the initial rhythmic babbling stage of infant speech, with its emphasis on cyclic motor regularity, is how speech started to evolve. The subsequent frame / content stage marks the point at which sound inventories and serial complexity are increased in frequency and so differentiates human speech from the signalling systems of other primates.

Our communicative separateness from the rest of the animal kingdom is highlighted by Studdert-Kennedy through the study of the particulate principle, in which 'discrete units from a finite set of meaningless elements are repeatedly sampled, permuted and combined to yield larger units that are higher in a hierarchy and both different and more diverse in structure and function than their constituents' (p. 161). He proposes that articulatory gestures are the basic units of spoken language from which phonetic segments and syllables are formed. Phonetic form is hence removed and dissociated from semantic function through imitation. Hominid vocal imitation may at first have been holistic.

Simulations run by de Boer on vowel systems indicate that it is possible for coherent and realistic sound systems to emerge as a result of local interactions in a population of imitators. His finding effectively rules out the need to determine an evolution-based explanation for the universal tendencies of vowel systems, as the characteristics become manifest through self-organization under constraints of perception, production and learning. Livingstone and Fyfe have simulated communities of agents of varying abilities negotiating and using language successfully, with kin selection favouring individuals who are more language-capable. The Baldwin effect states that learning can influence evolution, as individuals most capable of successfully adapting to their environments will be more likely to contribute to future generations. Vocalizations and speech provided a selective advantage that led to the exaptation and adaptation of aspects of human physiology to support an improved language capacity.

The third section focuses on syntax, and the role (if any) of adaptation in its emergence. David Lightfoot presents a tight linguistic analysis of the conditions under which subjects may be extracted from sentences. He demonstrates that elements of Universal Grammar are spandrels, and that there is no reason to assume that they are adaptive. Newmeyer claims that the earliest human language had a rigid Subject-Object-Verb word order, which invalidates the idea that the constraints of Universal Grammar arose via the genetic assimilation of processing principles.

Those two papers are concerned with narrower aspects of linguistic competence, but other papers in this final section relate to the 'big picture' of the use, history and evolution of language (as well as to the specifics of the Language Acquisition Device). Carstairs-McCarthy believes that the structure as well as the use of language evolved under the pressure of cheap signals and mistrust. Analysis of this could show whether it could have been different and more efficient. The evolution of syntax is believed by Bickerton to have occurred fully by around 200,000 years ago. Until that point our hominin ancestors were using a structureless protolanguage, which could not develop into a true (syntactical) language because the brain could not reach an adequate level of signal coherence. As soon as this was overcome, the Baldwinian effect incorporated these changes into the human genome.

Our evolutionary background of primate social intelligence is responsible for the fact that many language features arise not from the restrictions of an innate language apparatus of the brain but from the evolution of word feature structures (memes) under the selection pressures of use, according to Worden. The holistic nature of human language has not fully disappeared, according to Wray, and serves to manipulate the hearer in favour of the speaker. As ho-

listic language is present in chimpanzees, it suggests it was a feature of protolanguage.

Kirby uses computer simulations to show the emergence from randomness of simple yet language-like syntax in a population that is not constrained to learn only a compositional language — an example of true linguistic rather than biological evolution. Hurford continues this: his model shows that the mechanism of social transmission of language adds an extra filter, or selection principle, to the processes giving rise to generalization that are characteristic of natural languages.

Overall, this book serves as a useful introduction to the social conditions of language evolution. The field is clearly no longer the exclusive domain of Chomskyan linguists. There is, however, very little reference to the archaeological record of the evolution both of social systems, and of language capabilities. This is a weakness. Recent models of language-social system co-evolution make very contrasting predictions, and these can surely be tested using anthropological and archaeological data. Our own recent review of social models of language evolution (Buckley & Steele 2002) has suggested that three extreme variants can be proposed, which focus (respectively) on the social correlates of hominin life-history strategy, of intensified mate competition, and of increased group sizes. Our review of the anatomical and archaeological markers of social evolution suggests that neither intense mate competition nor the management of affiliative ties in very large co-residential social groups were the drivers of language evolution. We are left with the hypothesis of life-history strategy as the prime mover, and co-operative foraging and provisioning as the selective context for spoken language abilities. A future synthesis of such a perspective with those contained in this book would give the theories it develops a firmer empirical basis.

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Reference

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