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Review of Unravelling the Evolution of Language

Reviewer: Edward McDonald
Book Title: Unravelling the Evolution of Language
Book Author: Rudolf Botha
Publisher: Elsevier Ltd
Linguistic Field(s): Linguistic Theories, Anthropological Linguistics
Issue Number: 16.1497
Review:
INTRODUCTION
Rudolf Botha has set himself a difficult challenge. In this slim but dense volume he sets out to shed some light on current debates over the evolution of language. Focusing on a decade of debate in the interdisciplinary journal Behavioral and Brain Sciences and other forums both print and oral in the 1990s, he attempts to disentangle preconceptions and pin down what is being made by various competing theoretical proposals. The situation he reveals is one of considerable conceptual confusion. On neither the "entities" nor the "processes" involved in language evolution -- the topics of Parts I and II of the book respectively -- is there any consensus. And as for the status of "evidence and argumentation" -- the specific topic of Part III but which Botha documents throughout the book -- none of the participants in the debate can be shown to be even anywhere near the "restrictive theory" that he claims would be necessary for making genuine progress on these problems.

SUMMARY
Botha’s account starts with what he calls the "core finding" of his study. Contrary to what might be thought to be the main problem with language evolution studies, i.e. "a paucity of factual evidence", Botha claims instead that "the main obstacle to gaining a better understanding of central aspects of the evolution of language is a poverty of restrictive theory." (p.7) He defines a "restrictive theory" as a "theory T of something... S... which makes it possible to discriminate in a non-arbitrary way between S and things whose properties don’t match those of S in respects that matter" (p.7). In relation to the problem of language evolution, such a theory will provide "restrictive characterizations" of a number of things: the entities and processes involved in language evolution, the correlations between these linguistic entities and related developments such as brain shape and cognitive abilities, the evidence -- including indirect evidence -- for language evolution, and the status of arguments put forward for language evolution (p.8).

Part I of the book examines the debates over language to identify the "entities" involved in language evolution, see how the different participants define the entity that
have evolved into language and what they see as preceding it. In a situation Botha characterizes as one of "terminological profusion" (p.13) "the entity whose evolution is believed to be at issue" (p.45) in these debates, covers at least the following wide range (p.45):

(a) "language as hard-wired competence",
(b) "language as speech",
(c) "language as an activity",
(d) "language as a sort of contract signed by members of a community", and
(e) "language as syntax".

In order to make sense out of this conceptual confusion, a "well-founded linguistic ontology" is needed, in other words, a theory which "unambiguously identifies and restrictively characterizes" the following things (p.44):

(a) the basic linguistic entities -- objects, states, events and so on -- that occur in linguistic reality,
(b) the distinctive properties of those entities, and
(c) the ways in which those entities are interrelated.

Part II moves on to the processes of language evolution: i.e. how it was that the entity or entities, however defined, evolved into what we would now characterize as human language, again however defined. Here again there are a range of possibilities which have been put forward with analogies to different kinds of physical evolution: co-optation or exaptation -- as in the evolution of the snail's brooding chamber; preadaptation -- as in the evolution of birds' feathers; and natural selection -- as in the evolution of the vertebrate eye. The first model is associated with the work of Stephen Jay Gould (e.g. 1991), in which he argues for a type of adaptation he calls "e defined as "fitness enhancing characters... that enhance their present role but... were not built for this role... by selection" (p.51). An example would be the snail's brooding chamber, which arose "as a by-product of a biological process of the winding of a tube around an axis" (p.49). On this argument, also put forward speculatively by Chomsky, the evolution of language can be explained as an exaptation of changes in brain structure. (p.56).

The preadaptation model has been put forward by Philip Lieberman (1991), on the analogy of the evolution of bird's feathers having first developed as "adaptations for insulation" (ex-apted in Gould's terms) for insect catching, and then further adapted by natural selection for prey-catching for flight" (p.67). How this model applies in the case of language is explained by Lieberman as follows (p. 68, Lieberman 1991: 4):

"The brain mechanisms that control speech production probably derived from ones that facilitated precise one-handed tasks. Through a series of perhaps chance events they eventually allow us to learn and use the complex rules that govern human language."

The natural selection model is put forward by Pinker and Bloom (1990), drawing on arguments given by Darwin for the
slow stages of a "complex design for an adaptive function" — e.g. the vertebrate eye (p. 93). Pinker and Bloom argue as follows for language also having evolved in this way (p. 94):

"... human language, like other specialized biological systems, evolved by natural selection. Our conclusion is based on two facts that we would think would be entirely uncontroversial: Language shows signs of complex design for the communication of prepositional structures, and the only explanation for the origin of organs with is the process of natural selection."

After detailed discussion of these different models and the critiques that have been made of them, Bloom draws the following pessimistic conclusion (p. 115):

"The characterizations used in some of the most detailed accounts of the processes by which language is claimed to have evolved are ad hoc and arbitrary in various ways. The main cause of these characterizations has its main cause in the fact that they rest on informal assumptions about evolution which do not form a general theory of evolution that is restrictive enough and well enough founded... Accounts of the processes by which language entities evolved will remain as ad hoc and arbitrary as they are at present, unless their informal foundational assumptions of what evolution is about are replaced by restrictive theories of preadaptation or exaptation, and adaptation."

Part III returns to the various arguments examined in Part II and critiques them as arguments, from the point of view of their testability (pp 121-140), their use of indirect evidence (pp 141-156) and plausible evolutionary stories or "just-so stories" (pp 173-190), and what Botha politely terms "non-empirical argumentation" (pp 157-172), i.e. rhetorical sleights of hand. In summing up the status of argumentation on this topic, Botha restates his "core-finding":

"... poverty of restrictive theory is... the root cause of the involved in identifying what linguistic entities were affected by evolution, in discovering by what processes these entities evolved, and ensuring that accounts of language evolution have scientific substance."

CRITICAL EVALUATION

Professor Botha’s book is not an easy read. Partly because of the complexity of the subject matter, but also because of the "meta-meta" nature of its argument, which attempts not just to compare different theories of language evolution but to see how they measure up as scientific theories. Given the range of the arguments he covers, and the critical acuity with which he lays bare their inadequacies, his conclusion is oddly unambitious and rather disappointing:

"... to arrive at a better understanding of what the evolution of language involved, we would need to make substantive progress in developing restrictive theories of the kinds touched on in this book."
I have two "explanations" for my disappointment, one rather speculative, the other which takes a historical perspective on the topic. To air the speculative one first, I wonder whether it is possible to succeed at the task Botha has set himself without at the same time putting forward a theoretical proposal oneself. If we take an instrumental view of theory, in other words that a theory is unavoidably shaped -- and restricted -- by what it sets out to do, then theories are usable and useful for particular purposes point in asking whether they are "true" or not, or even they are true. Thus the fact that Botha's meta-theorising takes no particular stance in relation to the subject matter of language evolution, apart from evaluating the different theories put forward to explain it, seems to render his account rudderless. At the end of this 200 page book filled with discussion, I felt more informed certainly, but no more enlightened about the basic issues involved than when I started out.

My second, historical, explanation relates to the type of linguistics Botha both critiques and calls on in his critique. It seems to me that, despite being the author of trenchant critiques of Chomskyan linguistics (Botha 1981, 1989), the linguistic universe this book remains firmly circumscribed by Chomskyan preconceptions. This is problematic on two counts. Firstly it means that language meaning is largely sidelined in favour of language structure, not only in the work of the scholars Botha critiques, but in his own argument. The second is that Chomsky's own pronouncements on language evolution, a topic which admittedly he mostly stays away from, seem negative at best and oracular at worst. The Botha quotes from Chomsky's opinions on language evolution come across to this reader as highly-crafted pieces of rhetoric which raise vague possibilities without committing themselves to. For these pronouncements to form the baseline of a discussion of language evolution, as in effect they do in Botha's book, seems to condemn the argument to circle around the main issues without ever really coming to grips with them.

Looked at even from the relatively narrow perspective of twentieth century linguistics, formal linguistics -- to give it the most inclusive characterization -- has several striking features which particularly unsuited for the sort of project treated in this book. These features may not stand out for many of the participants in the debates on language evolution, from both within and outside linguistics, for whom formal linguistics has become something like common sense. The work of the late Charles Hockett provides a salutary perspective on this tradition, coming as it does from one whose career spanned the high point of the previous (neo-)Bloomfieldian tradition of American linguistics in the 1940s and what was arguably the high point of the Chomskyan tradition in the late 1960s. His work The State of the Art provides a devastatingly insightful critique of the philosophical bases of formal linguistics by a scholar who knows well -- and indeed helped shape -- the previous developments which it in part extended and in part reacted against. And twenty years later, his call for Refurbishing Our Foundations (Hockett 1987) is a clarion
call for some serious reevaluation of the basic assumptions of the whole discipline from one who spent a professional lifetime reflecting on both its achievements and its blind alleys.

While I can do no better than recommend all the participants in the language evolution debate to read these two short and highly readable monographs, the issues may become clearer if we move away from language for a moment and consider the topic of the evolution of music. A collection of papers of much the same vintage as the ones Botha considers, The Origins of Music (Wallin et al. 2000) provides an interesting sideline on the topic of language with many of the papers in this collection -- e.g. Bickerton specifically comparing the two; Brown (2000) actually combined "musi-language" evolutionary model for both music. Many of these discussions specifically refer to influential generative model of music (Lerdahl & Jackendoff which demonstrates with admirable clarity both the advantages and disadvantages of the formalist tradition. A forthcoming paper of my own (McDonald in press) critiques this model, and by formalist models, as setting up a number of dichotomies, with many of the papers in this collection -- e.g. Bickerton specifically comparing the two; Brown (2000) actually combined "musi-language" evolutionary model for both music. Many of these discussions specifically refer to influential generative model of music (Lerdahl & Jackendoff which demonstrates with admirable clarity both the advantages and disadvantages of the formalist tradition. A forthcoming paper of my own (McDonald in press) critiques this model, and by extension many formalist models, as setting up a number of dichotomies, with one side of each dichotomy assigned to the uninteresting or uninsightful: mental vs. material psychological vs. social structure vs. meaning system vs. text.

What this leaves us with, in relation to the exploration of systems like music or language, are models in which the main aim in effect, pattern recognition, with little or no cognizance of how structural patterns relate to their expressive meanings.

In essence I would see the same criticism as applying to the arguments discussed in Botha's book. It is important to realize that these are in fact arbitrary choices of one side over another or rather dichotomies more usefully seen as complementarities. The decision to see them as dichotomies is to a great extent shaped by the particular historical circumstances in which formal linguistics arose (see Hockett 1968, Ch.1). And the fact that this tradition is mostly unselfconscious about its own historical precedents means that it largely remains locked within the assumptions.

This unselfconsciousness often also extends to formal theories as theories, in other words, tools developed for specific purposes. This means that the arguments documented by Botha turn on a particular divergence in the theories held by specific participants whether one holds to the "modular" Government & Binding formal linguistics or the simpler "Minimalist Program" model. Apart from the implication that such claims need to be rethought every time in line with even minor changes in the model, from an interdisciplinary point of view, they operate on far too specific a level. It should surely be possible for linguistics to be useful and enlightening in extra-linguistic questions in terms of the overall conception of language rather than in the minor details of a particular
So all in all, the picture of scholarship on the evolution of language as shown in this book is a rather depressing one. Some serious "refurbishing of our foundations" in Hockett's terms, and a greater appreciation of the historically contingent nature of the current linguistic mainstream, would seem to be necessary before any even preliminary consensus on the issues of language evolution can be reached.

REFERENCES


Edward McDonald has taught linguistics and semiotics at the National University of Singapore and at Tsinghua University in Beijing; he is currently working as an English editor at Chinese Central Television. His research interests lie in the areas of the grammar of modern Chinese, ideologies about language, and the semiotics of language and music.