Wars of Words

Human Evolution, Language and Mind
William Noble & Iain Davidson (1996)
Cambridge: Cambridge University Press
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Language and Human Behavior
Derek Bickerton (1995)
Seattle, WA: University of Washington Press/UCL Press.
180pp. ISBN 0-295-97457-5 Clothback
ISBN 0-295-97458-3) Paperback

The Language Instinct
Steven Pinker. (1994)
New York, NY: William Morrow & Co., Inc
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A critical review by

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In 1866, seven years after the publication of Darwin's *Origin of Species,* the Linguistic Society of Paris imposed on its members a ban on all discussion of the evolution of language. We may now be witnessing an opening of the floodgates after more than a century of damned-up speculation, although, as Bickerton points out in one of the books under review, linguists themselves remain curiously reluctant to join the swim.

Part of the reason for the revival of interest is the ever-increasing claim for language-like behaviour in other species, culminating in Savage-Rumbaugh's work on a pygmy chimpanzee called Kanzi, who is alleged to have a capacity for language approximating that of a two-year-old human child (Savage-Rumbaugh & Lewin, 1994). Yet most linguists, and cognitive psychologists for that matter, remain unwilling to concede language to any species other than humans, and this is one point on which the authors of the three books under review find agreement. But the books are really more interesting for their differences than for their similarities, for it is clear that ideas about language evolution remain as diverse and speculative as they were when our forefathers saw fit to impose the ban.

Pinker's book is the most readable of the three, and was for a time on best-seller lists in the United States, although it must be said that this owed at least something to aggressive marketing rather than to the intrinsic merit of the ideas expressed. Even so, it is a wonderful book, full of humour, insight, and scholarship. As its title suggests, Pinker argues strongly that language is biologically determined. He is particularly severe on what he calls the "language mavens" —people like William Safire of *The New York Times Magazine* and others of his ilk who write columns telling us how we should write or speak, and he also takes a swipe or two at the attempts of the politically correct to control our language. Since language is a biological heritage, there is no way that it can become corrupted or go wrong, short of brain damage or a genetic mutation. Let the people speak like they want, it won't do nobody no harm.

Pinker rejects the idea that sexist language is responsible for sexist thinking, and unashamedly uses he to refer to a generic person. The campaign against sexist lanauage, he says, is based on the "conventional absurdity" that thought is the same as language, but this is "wrong, all wrong" [p. 57]. He notes that much of our thinking is in the form of picture-like images, and that we often have thoughts that we cannot express in words. We think in what he calls "mentalese", a code that he regards as quite unlike spoken, written, or signed language. Bickerton, on the other hand, believes that the uniquely human capacity for "off-line" thinking, even when it involves imagery, is dependent on language. He points out that mentalese, at least as described by Pinker, is much more language-like than Pinker himself seems to recognize. Bickerton's view certainly has the advantage of parsimony, since it implies that it was but a single invention, language, that endowed us with our ability to escape the present, to reminisce about the past and plan the future, and to communicate these matters to others. Noble and Davidson share the view that human symbolic thought and ability to plan are dependent on language. My sympathies lie with Bickerton and with Noble and Davidson on this point, but what is really

remarkable is that present-day scholars can remain so sharply divided on one of the oldest and most critical questions about the human mind.

Pinker owes much to his MIT colleague Noam Chomsky, the high priest of modern linguistics and arguably one of the most formidable intellects of the century. Chomsky has argued that there is a "universal grammar" underlying all natural human languages, and Pinker takes this argumnent a step further by suggesting that there are uniquely human genes for grammar. His enthusiasm for this view allows him to accept, too uncritically in my view, claims of an inherited grammatical deficit among a family recently studied in England (Gopnik, 1990). But Pinker is not totally subservient to the master, and takes issue with the Chomsky-inspired claim that language is so totally different from any form of animal communication, so unlike anything that must have gone before it, that it must have emerged fully fledged, perhaps as the result of a genetic shuffle (e.g., Piattelli-Palmarini, 1989). We may call this the Big Bang theory of language evolution. While maintaining that language is indeed uniquely human, Pinker nevertheless argues that it evolved gradually over the five million or so years that separate us from our common ancestry with the chimpanzee, through natural selection. This issue is reminiscent of the debates in the nineteenth century over the evolution of the mammalian eye, which anti-evolutionists claimed was too perfectly formed to have evolved in the piecemeal, incremental fashion implied by natural selection. There is now little doubt that the evolutionists were right, and I think it will be surprising if Pinker is not also right, although he may have exaggerated the uniqueness and specificity or language.

Unlike Pinker, Bickerton is firmly in the Big Bang club. He does concede that Kanzi and other "linguistic apes" are capable of what he calls "protolanguage", which they share with children under the age of two, speakers of pidgin, aphasics, and drunken teenagers (a category contributed by Premack, 1986). True language, however, is distinguished by the emergence of syntax, which not only lent enormous flexibility and sophistication to human communication, but transformed human thought. It gave us unique forms of intelligence and consciousness "not merely unknown among other species but utterly remote from anything we can find in other species [p. 156]." Yet in Bickerton's view this momentous change in our biology was the result, not of gradual evolution, but of some "single catastrophic event." Although Bickerton would no doubt be horrified at the thought, it is difficult not to see this as a form of creationism.

The problem lies in what might be called a brain-mind paradox in hominid evolution. In the roughly five million years since the split of the hominids from the apes, there was little evidence of any significant change in brain size or mental sophistication until the emergence of the genus Homo a little over two million years ago. Homo is associated with the appearance of stone tools, and the size of the brain relative to the body began to increase, reaching its maximum with the appearance of archaic Homo sapiens about 500,000 to 700,000 years ago. Some have argued that the manufacture of tools heralded the emergence of syntax, but this idea has lost favour, in part because chimpanzees have demonstrated tool-making skills roughly comparable to those of early Homo, and in part because tool artifacts suggest very little change for tens of thousands of years at a stretch. Indeed, the explosion of manufacturing technique that might suggest language-based computational and symbolic abilities does not really become apparent until **after** the emergence of anatomically modern Homo sapiens some 150,000 years ago. The evidence suggests that the Neanderthals, who died out only about 30,000 years ago, may have had slightly larger brains than the technologically more sophisticated Homo sapiens who replaced them. The paradox, then, is that while brain size increased gradually from about two million to about 500,000 years ago, the mind, at least as expressed in cultural artifacts, seems to have burst on the scene only in the last 70,000 years or so.

This is why Bickerton is forced to conclude that the brain of Homo sapiens somehow stumbled upon syntax, giving this species an inherent advantage in communication, manufacture, consciousness, and understanding of nature. This allowed them to prevail over their larger-brained but smaller-minded contemporaries. But how might a brain suddenly stumble onto a configuration that turns it into "an inference engine powerful enough to make possible the totally unprecedented cultural explosion of the last fifty millennia [p.84]"? Bickerton suggests that the ingredients for syntax were already present in different brain areas (including, interestingly, the cerebellum), and that all that was needed was a link to connect them. He likens the situation to a factory lying idle because a crucial electrical connection is missing. Just as a single electrical miqht restore activity to the factory, so a single mutation might create the link required to establish syntax from circuits that had evolved for different functions. But if ever there was a "Just So" story for human evolution, this is it. Bickerton's "link" is the weak link in what is otherwise an argument of impeccable logic.

Noble and Davidson suggest an even later emergence of language, sometime between 100,000 arid 70,000 years ago. Their book is the least readable of the three, but provides an excellent source reference on

current knowledge about hominid evolution as expressed in skeletal remains and cultural artifacts. It tracks the evolution of language from stone tool manufacture, through throwing, pointing, and gesturing, to tracing, in which some activity leaves its mark in a plastic medium. Examples of traces are footprints, or the by-products of cutting or scraping on bone or stone, leading to more deliberate examples such as hand-made ornaments or cave drawings. The understanding that traces stood for other objects or activities led to the conscious use of symbols, and the ability to plan, which Noble and Davidson consider the essential ingredients of human thought and language. Although they argue that language must have evolved recently, a limiting date is the arrival of Homo sapiens in Australia some 60,000 years ago, since this could only have been achieved by boat, and must have involved planning.

Unlike Bickerton and Pinker, Noble and Davidson argue that the discovery of language was behavioural rather than biological, although it required biological changes, such as bipedalism and the increase in brain size, to set the stage for language to emerge. The dominance of Homo sapiens over the Neanderthals was therefore not really a matter of biology, given that the Neanderthals may have actually had an advantage in terms of brain size. Rather, it was the invention of language, and the noncomitant ability to plan and to manufacture more sophisticated tools and weapons, that led our forebears to prevail over the hapless Neanderthals, just as it was guns, tanks, bombs, and computers, not biological brain power per se, that has led to subsequent armies defeating their rivals. But whether the "big bang" was biological or behavioural, both Bickerton and Noble and Davidson are vague as to what underlay the progressive increase in brain size over the last two million years. It is difficult to believe that language had nothing to do with it.

How, then, are we to resolve the mind-brain paradox? If we focus on the brain, we side with Pinker: The evolution of language would encompass the progressive increase in brain size, although Pinker suggests that it may go back even to the early australopithecines four or even five million years ago well before the brain showed any enlargement over that of present-day apes, and he also suggests that the emergence of cerebral asymmetry may have been as important as brain size *per se*. This approach leaves us wondering why human-like behaviour as reflected in cultural artifacts does not appear until **after** the emergence of anatomically modern humans, some 70,000 to 100,000 years ago. If we focus on cultural artefacts, on the other hand, we side with Bickerton, or even Noble and Davidson, but we are left wondering why all those anatomical changes occurred, especially if language is as central to human thought, and indeed to human **uniqueness**, as these authors suggest.

I think there **is** an answer to this paradox, but it is virtually ignored in all three books. It was long ago suggested that the origins of language may lie in manual gestures rather than in vocalization (Condillac, 1746/1947), and the idea has recurred (e.g., Armstrong, Stokoe, & Wilcox, 1995; Corballis, 1991, 1992; Degerando, 1800/1969; Givon, 1995; Hewes, 1973, Kendon, 1991). Apes themselves provide one source of evidence. Attempts to teach apes to talk have failed miserably. It was probably not until the emergence of Homo erectus, and perhaps even later, that changes to the vocal tract permitted the full range of speech sounds that we now enjoy (Duchin, 1990, Lieberman, 1991). The seventeenth-century diarist Samuel Pepys may have been the first to suggest that better success in teaching language to apes might be achieved with manual signs, and he was right; chimpanzees and at least one gorilla have been taught hundreds of different manual signs. Pinker is scornful of this work, noting that the apes appear to be relying on gestures in their natural repertoire rather than learning arbitrary signs, but this fact alone suggests that language may have originated **naturally** in gesture rather than in vocalization. The gestural theory has been greatly boosted by the realization that the sign languages invented by the deaf are as "natural" as spoken languages. They exhibit the same kind of syntactic structure, and children learning them go through the same basic stages.

The idea that language may have originated in gesture can also help resolve the question of how our forebears managed to construct a language system in which the symbols are essentially arbitrary; the great majority of spoken words bear no relation to the objects or actions they represent. However, gestural language, as developed by deaf communities, is much more obviously "iconic", and it is not difficult to understand how it might have emerged in the early bipedal hominids as a largely pictorial or mimetic form of communication. More abstract elements would be added later, and by the time spoken symbols came to dominate, the conversion to an abstract code would be more or less complete (Armstrong et al, 1995).

If language began as a system of manual gestures, then this might well have **impeded** the manufacture and development of tools, which would explain why tools developed so little during the two trillion years preceding the emergence of Homo sapiens. But gestural language may well have evolved gradually, as Pinker suggests, with concomitant increases in brain size. At some point, manual language may have given way to vocal language—a hand-to-mouth conversion. Of course, early manual language was probably punctuated by

grunts and other vocalizations, just as present-day vocal language is embellished by gesture, but at some point the balance must have tipped. I have suggested that this happened with the emergence of anatomically modern Homo sapiens some 100,000 to 150,000 years ago (Corballis, 1991, 1992). A predominantly vocal language would have freed the hands and arms for the further development of tools, and for the elaboration of other "human" activities such as art and music. Vocal speech would have had the added advantages that it permits communication at night or when obstacles prevent speakers from seeing each other, and that a person could verbally explain manufacturing or artistic techniques while simultaneously demonstrating them.

It was therefore not language *per se* that led to modern human "behaviour", as Bickerton and Noble and Davidson assert, but rather the conversion from a primarily manual to a primarily vocal mode (Corballis, 1991, 1992). There is recent evidence, reported with the intriguing title "Did Neanderthals lose an evolutionary arms race?", that the bone structure of the Neanderthals implied greater activity of the arms than in anatomically modern humans (Gibbons, 1996). Perhaps they lost the arms race precisely because they still used the arms for communication, allowing the marauders to out-do them with arms of the other sort.

Another "Just So" story? Probably. One of the characteristics of those who write about the evolution of language is that they each believe themselves to be privy to the truth, and are impatient with those who disagree. Try as I might, I cannot myself escape this belief. Perhaps it is time for another ban.

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