More than nature needs: Language, mind, and evolution. By DEREK BICKERTON. Cambridge, MA: Harvard University Press, 2014. Pp. 324. ISBN 9780674724907. $35 (Hb).

Reviewed by JAMES R. HURFORD, *University of Edinburgh*

Derek Bickerton, now in his eighties, after distinguished and controversial contributions to creole studies, has for several decades turned his attention to the origins and evolution of language. There are still too few linguists thinking about language evolution,[1] it being deemed speculative and/or demanding a serious grasp of the principles and findings of neighboring, often quite technical, disciplines, such as neuroscience, genetics, and paleoanthropology. And nonlinguists thinking about language evolution tend to pay insufficient attention to the genuine intricacies and peculiarities of language. B is remarkably energetic, writes very well, and steers a tactical course between lively defense of his own previous theories and working out new (to him) ways of viewing language evolution. If you have a story to tell, market-conscious publishers will usually allow you up to about 400 pages to do so. Add to this the conventional strictures of a balanced chapter plan, with about thirty pages per readily identifiable theme, and you have a reader's and publisher's template for a good book. B is a prolific and accomplished author, and he writes good marketable books, according to this template.

Like any biological phenomenon, the language faculty has evolved, so we cannot avoid questioning how it happened, which inevitably begs the question of what exactly the language faculty, the evolved phenomenon, is. Considering language as an evolved phenomenon, that is, language in the light of evolution, forces us to adapt our views of what language is. This is a difficulty other evolutionary theorists do not face. It is clear, for example, what the structure of the mammalian eye is, and building an account of its evolution can proceed with a solid target in mind. The distinction between language 'in the narrow sense' (FLN) and language 'in the broad sense' (FLB) is a product of this lack of consensus about what exactly the evolved language phenomenon is, and there is still disagreement about whether one can even separate the evolution of FLN from that of FLB. This book is at least as much about the basic, and preliminary, question of what language is as it is about what events may have happened, and when, in the prehistory of our species: 'if there is any kind of [universal grammar (UG)], it must have evolved, and we know that much of what has been proposed for UG is extremely unlikely to have been produced by evolution' (38).

This review follows B's train of thought through his proposed three-stage story. I do not have sufficient space fully to acclaim what seem to be valid conclusions, or to criticize problematic points, except in the skimpiest fashion. To anticipate my conclusions here, putting it metaphorically, B has managed to construct an edifice worth taking seriously in its broadest outlines, even though some of its argumentative foundations are questionable or erroneous. Somehow, despite going off the rails in places, B's onward momentum carries his journey on to conclusions coinciding broadly, but not in detail, with a consensus that a majority of other thinkers have begun to arrive at recently. The book has nine chapters, organized expertly to develop B's main argument.

The necessary introductory chapter, 'Wallace's problem', sets up B's theme in a nontechnical way. (There is a growing movement to give Alfred Russel Wallace more credit for expounding natural selection, along with Darwin.) What B dubs 'Wallace's problem' is the fact that humans have massively more brain power than we need to survive and reproduce, and this capacity is costly in energy. B briefly adumbrates his solution to Wallace's problem here: it was the advent of symbolic language that transformed our cognitive powers.

The second chapter is a nice review of the course of generative theorizing over the past fifty years. This brisk historical account reasonably divides the course of the research program into three stages: standard theory (1957–1980), principles and parameters (1981–1994), and the min-

imalist program (1995–present). B steers a politic course between the exasperation many non-generativists feel at the complex abstractions of syntactic theorists over the years and appreciation of the genuine discoveries the generative enterprise has stimulated: 'The attempts of linguists to grapple with syntactic complexities have given rise to an arcana of opacity, a plethora of technical terms guaranteed to turn off all but the most dedicated inquirer' (37). By contrast, 'the generative movement has had profoundly beneficial effects on our understanding of language' (37).

The third chapter, where B begins to come to grips with his main theme, 'The "specialness" of humans', is contentious and provocative, attacking several of the basic assumptions that have been current in theorizing about language evolution. He rejects a 'component features approach' of language as consisting of various components that have evolved separately. He also rejects a 'primates and precursors' approach. A summary of a central point in this chapter is 'the existence in other species of phenomena similar to some found in language tells us nothing of significance about how language evolved in humans' (59). I am not alone among language evolution theorists in finding B's rejections here deeply problematic, to say the least. Having in the first chapter emphasized Wallace's problem, that humans alone have communication systems more complex than appears necessary, B does not deny that humans are in this sense special. The specialness that he argues against here, actually a straw man, is that no special laws of evolution should be invoked for humans alone. Of course, no serious researcher has explicitly argued that humans are exempt from the processes that affect all other animals. But B argues that some commonly held assumptions tacitly imply that processes unique to humans have applied in the evolution of language. I do not see that he is right.

The fourth chapter sets out the first of three relatively discrete phases that B claims for language evolution. Two of these phases are initiated by biological changes; the third proceeds by purely cultural changes. This first stage is summed up in the fourth chapter title, 'From animal communication to protolanguage'. B's idea of protolanguage, long promulgated by him and widely accepted, is of a form of public communication using individual words, possibly in short sequences, but not grammatically structured. A protolanguage, though without syntactic organization, may have an extensive vocabulary, far more than the restricted communicative repertoires of (wild) nonhumans. B attributes this to the growth, in humans uniquely, of off-line thinking, the ability to conjure up a mental representation of a situation or class of objects in the absence of direct external stimuli, as in daydreaming or planning. This neglects the ample evidence that many nonhuman species are capable of planning, envisaging past or future scenarios. Many nonhuman animals can also mentally represent classes of objects, rather than just particular individuals, as B incorrectly insists. B argues that off-line thinking in prehumans was promoted specifically by the demands of exploiting the niche of territorial scavenging thrust on them by the change from a forest to a savannah habitat. An early Homo finding a carcass had to run and fetch help, somehow indicating what he had found to those who had not experienced it. The recipients of the message had to figure out that whatever he was doing was in fact signaling something: as B puts it, 'the notion that the world might consist of nameable objects', which 'was literally inconceivable to animal minds' (88). The territorial scavenging scenario is no less of a just-so story than, for example, mutual sexual selection, or gossip about one's fellows, beneficial in negotiating alliances. B envisages a period of perhaps a million years during which protolanguage vocabularies slowly expanded, the forms gradually became less iconic or indexical, and ultimately became truly symbolic, with concomitant drastic shift from a life entirely responsive to immediate environmental pressures to a mental life responsive to the meanings of symbols: 'from their first to their last breaths all humans inhabit a world drenched in symbolism' (93).

The fifth chapter, 'Universal grammar', outlines B's idea of the next stage in language evolution, after a perhaps million-year protolanguage stage. Here he sets out his own stripped-down version of what is innate in human language production. He accepts the minimalist version of bottom-up construction of sentences by a recursive operation. He proposes an asymmetric 'Attach' operation instead of the usual symmetric Merge. From the protolanguage stage, B assumes that two classes of lexical items have sorted themselves out, one denoting objects and the other denoting actions or events. Phrases and clauses, respectively, are built around these proto-nouns

and proto-verbs by successive applications of Attach. This assumption of a primitive linguistic ontology of nouns and verbs is common, but arguably wrong, an alternative account in terms of Topic and Comment being at least equally plausible. B's whole account of sentence production is very intuitively driven, with little reference to the psycholinguistic literature on it. That's it: that is B's UG—Attach, plus an instinct to build both phrases and clauses. This UG evolved, he claims, due to brain-internal pressures for efficient production. It was made possible by the connections between lexical items that come with the use of public symbols, and made efficient by routinization of frequently used protolanguage sequences. B argues in some technical detail that his version of UG eliminates the need for several abstractions long discussed by generativists, such as c-command, island constraints, and the interpretation of empty categories: 'Attach, Close and the phrase and clause algorithms constitute, on the present account, the totality of Universal Grammar in the sense of specific computational mechanisms for generating syntax' (147); 'The UG presented here is radically underspecified. There are whole areas of grammar, such as word order, agreement, and functional categories, on which it remains silent' (149). B mentions no timing, but implies that the evolution of this much UG, driven by brain-internal pressures, happened quite quickly around the time of the emergence of our species some 200,000–150,000 years ago: 'Storage of symbolic units in brains made possible an orders-of-magnitude change in thinking processes, and the rest is, quite literally, history' (116). The claimed brain-driven processes certainly need more neurolinguistic justification.

The sixth chapter outlines cultural processes by which the great variety of today's language structures evolved. The variety is permitted by the radical underspecification of UG, and is driven by humans' need to clarify their messages. Thus, for example, case markers emerge to clarify who did what to whom, and complementizers emerge to signal clause boundaries, and so on. Without such devices, long assemblies of content words (already present in the protolanguage stage) made by the recursive Attach operation (made possible by the allegedly brain-driven processes of the previous chapter) would be intolerably ambiguous. Here B goes along with much of grammaticalization theory, albeit without much acknowledgment.

The seventh and eighth chapters set out the implications of B's views for the fields of language acquisition and creolization, respectively. On language acquisition, in Ch. 7, B claims to steer a novel course between extreme nativism and extreme empiricism, the views that nothing is learned or that everything is learned. No one actually holds such extreme views, and the debates over the decades have not been about the whole of any language, but about how much of a language is learned or comes naturally. B argues, quite plausibly I think, that the course of language acquisition, in different languages, is driven by how many words have been learned by the child at any particular stage, and by the inherent oddities of the target language. English negation and question formation, for instance, pose more learning difficulties than corresponding constructions in other languages. B's picture of language acquisition may be described as a commonsense view, with nothing especially mysterious happening, certainly no maturational stages or reliance on abstract principles of acquisition. In the eighth, penultimate chapter, B is on his home turf, creolization. He withdraws from some of his earlier claims about the language bioprogram, specifically that it contains innate specifications of the role and position of tense, aspect, and modality markers. But he also staunchly defends an earlier position, that substrate effects are not responsible for properties of Hawaiian Creole English. The ninth and final chapter starts with a reprise of the three-stage model, and ends with abstract speculation about the interaction of displaced reference, symbolism, and the kind of complex thought that only humans can manage.

B's rhetoric in many passages is obstreperous. An innocent reader might get the impression that B is the only sensible person in a field of fools or thoughtless intellectual conformists. Academics know from experience to treat with caution any claim to have found a revolutionary theory or solved an age-old problem. Subtract such claims from this book and you have a story that is possibly true in its starkest outline. There probably was a long protolanguage stage, and the cultural processes of grammaticalization have played a part in developing the complexity of modern languages. But in between that ancient stage and these recent processes, the importance of territorial scavenging is only one of several possible selective pressures, and the claimed brain-driven

mechanisms sprouting full syntax from symbolic beginnings need much fuller neurolinguistic consideration, if they are to be confirmed at all.

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The Routledge handbook of historical linguistics. Ed. by Claire Bowern and Bethwyn Evans. London: Routledge, 2015. Pp. xviii, 757. ISBN 9780415527897. $225 (Hb).

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Numerous collaborative handbooks of particular subfields of linguistics have appeared in the past couple of decades, and all are useful.[1] This one is exceptionally useful because of its unusually wide coverage. Among its welcome innovations are discussions of: language change in terms of compositionality, modern computational phylogenetics, the stability of typological features of grammars, syntactic change and reconstruction (from more than one viewpoint), change in signed languages, the relation between language acquisition and language change, and several other topics. The contributors have typically illustrated their discussions with a wide range of examples, many of them unfamiliar to most linguists—a welcome change from the old-fashioned reliance on familiar textbook examples.

I have neither the expertise nor the space to discuss all thirty-four contributions individually; I thus discuss those that I have some hope of evaluating.

Paul Kiparsky's overview (Ch. 2) should be required reading for anyone currently working in historical linguistics. Kiparsky manages to discuss or mention an astonishing range of current lines of work in historical linguistics. Many lines of work are reported without comment or evaluation, but the comments that Kiparsky does make are thought-provoking; a typical example is his observation that the transfer of Turkish verb morphology into two dialects of Cappadocian Greek almost certainly occurred when the dialects were moribund and can be accounted for by that fact (p. 87, n. 8).

The other overviews are interesting because they are unconventional. Roger Lass's discussion of the history of historical linguistics shows that tracing a single thread that leads to modern theory and practice does not have to be tendentious. Nigel Vincent focuses on the intersection of language change and compositionality, a topic that, as he notes, has been almost entirely overlooked.

Because the comparative method (CM) is central to the methodology of historical linguistics, every handbook needs a chapter that explains it in terms accessible to nonspecialists and illustrates it with a broad range of examples. Michael Weiss's contribution meets that need admirably. Mark Hale's complementary chapter does not call the fundamentals into question; it does show, however, how a naive understanding of the CM, or of uniformitarianism, can lead to apparent paradoxes and other problems.

Chs. 6 through 8 on the processes of language diversification are extensive, and rightly so. Alexandre François discusses models of diversification in great detail, especially in light of Malcolm Ross's seminal work, and illustrates his discussion with interesting original research. He points out that networks are a better model of language diversification than trees in a large majority of instances, but I think he misses the one advantage of the *Stammbaum* model: it is clearly falsifiable, which makes it a good initial scientific hypothesis, even though one soon