

BOOK REVIEW

Sub Specie Evolutionis: Four Books on the Evolution of Language

The Origins of Grammar: Language in the Light of Evolution.

By James R. Hurford (2011) Oxford: Oxford University Press. 768 pp. \$67.00 (hardback) ISBN 9780199207879

The Oxford Handbook of Language and Evolution.

Edited by Maggie Tallerman and Kathleen R. Gibson (2012) Oxford: Oxford University Press. 800 pp. \$150.00 (hardback) ISBN 9780199541119

Becoming Eloquent: Advances in the Emergence of Language, Human Cognition, and Modern Cultures.

Edited by Francesco D'Errico and Jean-Marie Hombert (2009) Amsterdam: John Benjamins. 295 pp. \$113.00 (hardback) ISBN: 9789027232694

Homo Symbolicus: The Dawn of Language, Imagination, and Spirituality.

Edited by Christopher S. Henshilwood and Francesco D'Errico (2011) Amsterdam: John Benjamins. 248 pp. \$149.00 (hardback) ISBN 9789027211897

"Only connect..." reads the epigraph to *Howard's End*, E. M. Forster's 1910 masterpiece. These two words apply under many circumstances, among which Forster surely did not mean interdisciplinary connections in science. Any fan of both Forster and academic interdisciplinarity, though, will immediately recognize its aptness in the latter context.

Interdisciplinary science has become all the rage in the last decade. At my own institution, as at most other research universities these days, it is very difficult to get funding for any position without a

solemn declaration of interdisciplinarity. Much of the call for interdisciplinarity is properly decried as yet another attempt by administrators to wrest control of the university from recalcitrant faculty, but interdisciplinarity science does sometimes work and, when it does, it follows Forster's dictum closely. Successful interdisciplinarity science does not require that one person be steeped in two or more fields. All it demands is that the members of the interdisciplinary enterprise do what Forster asked, connect, and make a real effort to understand and learn from each other.

Forster superbly chronicled the many obstacles to connection, most of them driven by our inability to sympathize with the other, which is only doubled in academia by our upbringing. The most successful academic disciplines form tight-knit communities that do not reward communication with outsiders and all successful academics are used to questioning, often stridently, as a prime mode of making progress. This combination of antagonism and clannishness makes interdisciplinary science much harder than it might appear to an outsider or an administrator. It also takes a long time for those who have steeped themselves in different fields to absorb and integrate the work of each other's discipline, even once they have let down their guard. But when open interdisciplinary dialogue happens, the results can be quite wonderful. In the case of the study of the evolution of language, after twenty-five years of struggle, we can now bring the good news that yes, it has worked, and it has transformed the study of language.

The occasion for this good news is two books recently published by Oxford University Press. The first is the capstone to a life's work by one of the founders of the field of language evolution, James Hurford. This is the second and final volume of his *Language in the Light of Evolution*, entitled *The Origins of Grammar* (The first volume, *The Origins of*

Meaning, was published by Oxford University Press in 2007). The second book is *The Oxford Handbook of Language Evolution*, edited by Maggie Tallerman and Kathleen R. Gibson. Both books bring together a broad range of work in a single volume. In Hurford's case, the entirety is distilled through the mind of a single person, while Tallerman and Gibson have commissioned dozens of well known experts from around the world to each summarize their views on a particular aspect of language evolution that lies at the center of their own research, usually in ten pages or less. Both books rest on a firm Darwinian foundation, accepting as axiomatic the twin tenets of uniformitarianism and gradualism that Lyell and Darwin championed. Language may be unique to humans, but that does not mean that we should appeal to saltational or exaptational accounts of its evolution any more than we should do so for such other apparently odd attributes as wings and echolocation. The general acceptance of these tenets by all parties is the great leap forward that has allowed for the remarkable progress documented in these books.

The last quarter century has witnessed the rebirth of the study of language origins, a topic whose discussion was famously banned by the Linguistic Society of Paris in 1866. The ban had cut linguistics off for over a century from any light that evolutionary thinking might shed on human language and, more importantly, had cut the field off from the influence of an evolutionary scientific mindset. In *The Origin of Species*, Darwin remarked that language change could profitably be viewed in evolutionary terms, and specifically that languages could be arranged into families using an evolutionary tree model of the sort that he went on to advocate for species. Darwin expressed other ideas on the origin of language in *The Descent of Man*, published five years after the Paris *fatwa*, but linguists did not listen to Darwin or to any other biologists for a very long time. Nor did most social

scientists, who may have accepted the tenets of evolutionary science in principle but persisted in ignoring it in their own study of human social and behavioral phenomena. The publication of E. O. Wilson's *Sociobiology* in 1975 engendered a new interest in using the tools of biology to study human behavior, but Wilson's claim that the bulk of human social structure could be analyzed in purely biological terms met with strong opposition from those who felt, justifiably, that this amounted to throwing out the baby with the bath water. Culture, they cried, is not biology.

A middle position arose in the early 1980s with the advent of the notion of cultural evolution in response to the criticism of sociobiology and similar attempts to explain human behavior in evolutionary biological terms alone, often lumped together under the general rubric of evolutionary psychology. Proponents of cultural evolution apply general evolutionary principles to human culture, but claim that cultural evolution is not biological evolution, ~~but~~ instead interacts with it. The first cultural evolutionary theory was proposed by Luigi Cavalli-Sforza and Marcus Feldman in the 1980s; its most accessible general exposition can be found in the work of Robert Boyd and Peter Richerson. There are competing accounts, but all share the acceptance of both biology and culture as distinct compatible evolutionary forces in the explanation of human behavior and its origins. It is this mutual acceptance, arising out of interdisciplinary conversation, this willingness to connect, that laid the foundations for the new study of language origins and language evolution, the results of which we find in these two books.

Hurford's overall title for his two-volume set, *Language in the Light of Evolution*, is an echo of Dobzhansky's famous dictum that "nothing in biology makes sense except in the light of evolution." Dobzhansky stated explicitly in his eponymous article that he was tipping his hat to Teilhard de Chardin's observation that "evolution is a light which illuminates all facts." Teilhard in turn was alluding to the Latin phrase *sub*

specie evolutionis, attributed to Julian Huxley and itself an echo of Spinoza's phrase *sub specie aeternitatis*. Understanding the long pedigree of this phrase is important because Spinoza believed that people are capable of attaining what he called "adequate knowledge," truths that have eternal value, *sub specie aeternitatis*. By adapting Spinoza's expression, Huxley, a major propagandist for the modern synthesis in biology, was thus suggesting that the modern theory of evolution was an eternal truth, an attribute of God and nature, which for Spinoza were one and the same. Teilhard and Dobzhansky, both devout Christians, may have appreciated the allusion to Spinoza's theocentric philosophy, though Teilhard, who was hounded for most of his life by the Jesuit hierarchy for his attempts to unify evolution and Christian theology, must surely have remembered Spinoza's excommunication by the Jewish community of Amsterdam for equating god with nature.

Hurford's greatest contribution to the study of language evolution has been to both accept the Dobzhansky-Teilhard-Huxley-Spinoza dictum for language and include cultural evolution as a separate force alongside biological evolution in explaining language. Language, it turns out, can be best understood as the product of both.

To properly understand this new picture of language evolution as an interaction between biology and culture, we must first tease apart two subtly distinct senses of the English word *language*. Other languages have separate words for these senses (e.g., Italian *lingua* and *linguaggio* or French *langue* and *langage*), but not, unfortunately English. There is the abstract term *language*, which designates what all human languages have in common. Language in this abstract sense emanates from something unique to our species that allows all normal human children to acquire a spoken or signed language when placed in an environment where the language is used in everyday interaction. This ability is variously termed *language capacity*, *language instinct*, *language organ*, or

universal grammar. For the present, it is best to remain neutral on the contentious issue of whether this instinct is specific to language, part of general human nature, or both. Though much energy has been expended on this issue, its answer does not really help in our understanding of language evolution. Then there is the use of *language* as a count noun that refers to individual languages: French, Tahitian, Cree, and so on. Thus the term *language* encompasses two quite distinct lexical senses: whatever the natural spoken or signed communications systems of each of the earth's seven billion inhabitants have in common as a result of their being human and the communication system that each individual acquires as a result of being part of a particular language community. The exact same ambiguity holds for the term *culture*. Culture in the abstract sense is characteristic of humans and is rarely found anywhere else in nature, but there are as many distinct cultures as there are human societies. What makes us human is the unity in diversity of both language and culture, something that Tylor recognized almost at the founding moment of the discipline of anthropology in the nineteenth century.

Once we have made this distinction between abstract language and individual languages, we can understand how the term "evolution" can be applied either to the larger language capacity or to the individual communication system. We can ask both how the human language capacity evolved and how individual languages evolved. We can think as well about the relation between the two. Did they co-evolve in a manner that is now familiar from such gene-culture interactions as lactase persistence in herding populations? Also, once we make this primary distinction, we can further differentiate two quite distinct sorts of cultural evolution of language. One is how individual languages have changed through their history, including how existing languages were related to one another in the past, descended from a common proto-language in ways similar to the descent of

distinct species from a common ancestor. This question sparked the earliest form of scientific linguistics, dating to the late eighteenth century. The historical reconstruction of ancestor languages was one of the great scientific successes of the nineteenth century. Darwin acknowledged that one of the initial inspirations for his tree model of biological evolution came from the manner in which the historical relations between languages were depicted in nineteenth-century historical linguistics.

But cultural evolution has another side to it besides change, which Hurford, for lack of a better word, calls “complexification,” a topic to which he devotes the middle and longest chapter of his book. From the beginning, modern theorists of language shied away from any discussion of complexity, concerned about being tied to notions of cultural complexity and progress that pervaded the nineteenth-century anthropological justification of imperialism. For most linguists, the equal complexity of all languages is axiomatic. In the last quarter century, though, various distinct threads of linguistic research have arisen that bear directly on the question of complexification.

The first is ontogeny, the way in which children in all cultures acquire their native languages. They always start small, with single words, then two-word utterances with little grammar or inflection, and build from there. If linguistic ontogeny recapitulates phylogeny even faintly, then this universal path might tell us something about how language and languages evolved. The second is pidgin and creole languages. Pidgin languages arise when two or more groups of people who do not share a language need to communicate or do business with one another (the word *pidgin* comes from the English word *business*). Pidgins have little or no grammatical structure, at least at first, but some, like Tok Pisin, now the national language of Papua, New Guinea, have been around for centuries and have become increasingly complex along the way. Again, both their original state and the ways in which pidgins evolve over time may

tell us something about the language capacity.

More recently, some linguists have begun to study the emergence of new sign languages, either in newly founded schools for the deaf, such as the one in Managua that brought together previously isolated deaf children from throughout Nicaragua, or in villages with a high percentage of congenitally deaf children, such as the village of Al-Sayyid in Israel. In these cases, it is possible to trace how a language begins from scratch almost in real time and to trace its complexification, some aspects of which proceed quite quickly, others more slowly. What all these types of evidence share is a demonstration of the strong human need to communicate, which separates us from all other creatures, for which Tecumseh Fitch, in his comprehensive and accessible textbook on language evolution, published in 2010, used the wonderful German compound word *Mitteilungsbeduerfnis*.

Hurford is a linguist, and his book, although directed at a wide audience, has a strong focus on modern linguistics. Linguists have long complained that theorists of language evolution coming from outside have little appreciation for the complexity of languages, so that their proposals are too simple to explain the phenomena under examination. Those outside the field have retorted that linguistic theory, especially syntactic theory, is so complex that it is difficult for an outsider to understand how it applies to the questions they are interested in. Hurford’s Solomonian solution is to concentrate on those aspects of syntax that are most relevant to the question at hand and to try to show how they shed light on the problem. These include the storage of large numbers of arbitrary symbols, hierarchical structure, and syntactic categories. Being an insider makes it hard for me to judge the success of this aspect of the book, but Hurford’s style is very clear and there is certainly no better introduction to linguistics around for evolutionarily inclined outsiders.

Hurford goes on to discuss how these properties might have evolved in a normal fashion. For example,

hierarchical structure is also found in every-day nonlinguistic human activities. Put this together with some fairly standard ideas about gene-culture coevolution applied to language and what we know about language change and you get an account of language evolution that, while still necessarily speculative, is not far-fetched. Hurford ends the book with a 100-page bibliography, which constitutes a major contribution by itself.

As the size of his bibliography suggests, and he himself notes in the preface, “this book... brings together a broad range of other people’s work” into a “broad synthesis” that is Hurford’s alone. In the *Handbook*, Tallerman and Gibson take an entirely different approach, one that admirably fulfills the promise that their title holds, which is to gather together 62 of the best researchers on language evolution and ask each to put down in a few pages (the articles average fewer than ten pages) what they know. Tallerman and Gibson have contributed a comprehensive introductory chapter that reviews the major issues, as well as shorter introductions to each of the five sections of the book: “Insights From Comparative Animal Behavior,” “The Biology of Language Evolution,” “The Prehistory of Language,” “Launching Language,” and “Language Change, Creation, and Transmission in Modern Humans.” All of their chapters are models of judicious exposition. A reader without the time or inclination to read the whole volume would do well to read just these, which together take up about 75 pages.

Many of the chapters constitute reviews of the literature. The best of these, for example, by Thomas Wynn on the Paleolithic record, bring together in a few pages the major findings and evaluate their significance in relation to the main question of the book. Other chapters are position pieces or summaries of the individual author’s work on a particular topic. These allow the reader easily to compare different points of view on the same issue, such as whether the earliest language was musical (Mithen), mimetic (Donald, Corballis, Harnad),

or vocal and rooted in mother-child interaction (Falk, de Boer, Locke). I have reviewed other handbooks in which many of the authors appeared to be talking past each other or never to have communicated at all, so that I came away from reading feeling that I knew less than I had beforehand. Here I have the opposite feeling: that I am reading the results of a long conversation and that both the participants and I have learned quite a bit from this massive exercise.

The two other books under review here are more specialized collections of articles, one arising from a conference, the other from a large collaborative research grant, but neither is as clearly focused as the two larger volumes. *Becoming Eloquent* presents results from a large but fairly loose-knit long-term project, "The Origins of Man, Language, and Languages," which incorporated 21 research teams from 12 European countries. While most of the 10 articles in the volume touch on language in some way (one is concerned with the diffusion of domesticated bovines), five of them, filling about a third of the pages, are devoted to the relation between genetic and linguistic diversity. While the study of this relation may shed light on deep historical questions about the migration of peoples, it does not contribute much to our understanding of language or language origins. The longest article in the book, by D'Errico and colleagues, recapitulates his argument from the archeological record that signs of modern human cognition can be found much earlier than the

50 kya that is cited by proponents of the European cognitive explosion. The article on primate vocalization by Zuberbuehler and coworkers is a welcome addition to the literature, which had previously downplayed this phenomenon and its relation to language. The one article that deals directly with human language (Kern and coworkers) is a detailed cross-linguistic study of the path from babbling to early language in four languages, in the search for general patterns. Unfortunately, the results were inconclusive, which might have been predicted from the small number of languages; the fact that three of them (French, Rumanian, and Dutch), are closely related genetically, culturally, and geographically; and the small number of children involved.

The last book, *Homo Symbolicus*, bears the subtitle *The Dawn of Language, Imagination, and Spirituality*. It comes out of a conference sponsored in part by the John Templeton Foundation, which must be partially responsible for its unusual focus on imagination and spirituality, neither of which has received much attention in research on human origins. The editors note in their introduction that "at first sight the chapters in this book may appear eclectic, but with further reading it becomes clear that there is a subtle thread that links these ideas together," though they do not try to clarify the nature of this thread. Most of the contributions are necessarily speculative, as indicated by the fact that 8 of the 11 chapters have one author, an ideal number for

homo speculativus. The one glaring exception to speculation is an article by Lynn Wadley, which has the intriguing title "Complex Cognition Required for Compound Adhesive Manufacture in the Middle Stone Age Implies Symbolic Capacity." This, which is one of the shortest chapters, recounts the author's attempts to replicate the manufacture of ancient glues, then draws conclusions from the exercise about what sort of cognitive capacities the manufacturers must have had. I had hoped for similar discussion of other aspects of the archeological record that might shed light on the issues in the book's subtitle, most notably special treatment of the dead, but unfortunately only a short section of one article by Paul Pettitt touches on that topic.

Overall, most researchers on the evolution of the human language capacity have achieved remarkable consensus on the nature of their enterprise over the last quarter century. This consensus is marked by acceptance of the major tenets of evolutionary biology, uniformitarianism and gradualism; the realization that, while cultural evolution and biological evolution are distinct, human behavior can be understood only through the interaction of the two; and that nothing in language makes sense except *sub specie evolutionis*.

Mark Aronoff
Department of Linguistics
Stony Brook University
E-mail: Mark.aronoff@stonybrook.edu