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John L. Locke and Barry Bogin

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Title:
The Phylogeny and Ontogeny of Adaptations

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Abstract:
Locke and Bogin rightly point to the absence of ontogeny in theories of language evolution. However, they overly rely upon ontogenetic data to isolate components of the language faculty. Only an adaptationist analysis, of the sort seen in evolutionary psychology, can carve language at its joints and lead to testable predictions about how language works.

Locke and Bogin begin their paper by describing the recent history of scholarship in language evolution. The key point they draw out is that ontogeny has been largely ignored, and their aim is to rectify this omission. What they do not state is that most of the work has been on phylogeny; research has predominantly focused upon the evolutionary transitions that may or may not have led to human language as it is now.

Mapping out phylogenies is not the only use for evolutionary theory. Evolutionary psychology (EP) is in the business of individuating traits through adaptationist analyses, such that organisms are looked at in terms of the ecology in which they live and predictions are made about the kinds of psychological adaptations (mechanisms) required to meet ecologically relevant task demands (Andrews et al., 2003; Dickins, 2005). Sometimes this is done against a backdrop of hypothesised environments of evolutionary adaptedness, and such hypotheses are generated from, among other things, comparative data. This kind of functional analysis provides key constraints for subsequent discussion of proximate mechanisms.

If we accept that language has evolved, and there is little reason not to, we can then apply EP reasoning to the subject matter – language itself. By carefully thinking through the adapted functions that language delivers we can begin to individuate components of this faculty. Then, once we have an EP theory of language we can, perhaps, begin to think about its phylogeny, for we know what has been selected for. This is a long project, and not without methodological problems, not least the absence of fossil evidence; but anything else would run the risk of generating just-so stories. However, once the EP project has been completed it is hard to imagine what use phylogenetic hypotheses could be put to other than to demonstrate that the already isolated adaptations could have evolved.

Ontogenetic hypotheses can be used slightly differently from phylogenetic ones, in that they can be tested in the laboratory and, in so doing, aid in the individuation of psychological adaptations. None the less, before one goes into the lab one needs to propose a sound evolutionarily based hypothesis about how ontogeny would pan out. Again, adaptationist analysis should come first.

Locke and Bogin appear to have operated a somewhat mixed strategy, but one that mostly falls in line with the tradition of speculating on phylogenies. Their initial observations about what language is clearly originate from thinking about its adapted functions. So, as with much contemporary EP, they see language as fulfilling a variety of social signalling tasks. What is more, they move away from the traditional Chomskyan focus upon grammar and content, and note that language is a many stranded communication system. They rightly point to the qualities of voice, pragmatic inference and verbal fluency, among many other things, as sources of signal and information. However, they only use this insight to broadly define the aspects of language they are interested in. After this, Locke and Bogin go on to outline various key features of language development, which they in turn use to speculate about phylogeny. So, they note that as we develop from infancy to adulthood social contexts become more complex and this is matched by increased communicative sophistication. In particular, they claim that adolescence is a period of near adult social complexity in which the rules of adult life can be learnt and to some extent implemented without the cost. During this period, language develops such that grammar becomes more sophisticated, speech is more fluent, more and more pragmatic communication is engaged in, and the native language is modified. Adolescence sees the onset of gossiping about others, as well as "joking, deceiving, mollifying, negotiating, and persuading, with increases in the use of sarcasm" (p.x). In brief, the social uses of language become more prevalent.

Locke and Bogin discuss the possibility that human infancy has been foreshortened by natural selection, in order to allow maternal resources to be diverted to new offspring more rapidly, and that this in turn led to childhood. Children are semi-independent and require less care, and importantly for Locke and Bogin, are able to engage in verbal interactions with adults that will shape their linguistic development. It is during this period that what could be referred to as a Chomskyan basis for linguistic communication is established. Locke and Bogin further hypothesise that the social practice functions of adolescence were directly selected for and this allowed for the emergence of the other strands of linguistic communication discussed above.

Locke and Bogin have essentially married detailed observations about language development with a loose thesis about the phylogeny of ontogeny, and without

engaging in a detailed adaptationist analysis. They are undoubtedly right that ontogeny is a product of natural selection, and their life-history approach which looks at maternal trade-offs makes evolutionary sense. But it is unclear what predictions we can now make about the kinds of proximate mechanism underlying language that we could not make prior to this argument. One reason for this is the slight circularity of the adolescence argument. By observing how adolescents use language, and assuming that this life-stage is a product of natural selection, Locke and Bogin suggest that the social complexities of adolescence drove selection for the social signalling functions of language. But it is equally possible that social complexities were able to emerge as a consequence of social signalling abilities. There is nothing in the current argument that can resolve this, and no obvious testable predictions are made.

The paper concludes by stating that the various strands of language "were stitched together in evolution, as they are in modern times, by the whole of human ontogeny" (p.xx). This is a different claim from their predominant one that developmental stages were selected for, indeed, this is a claim for a role for ontogeny in phylogeny, and is perhaps the main point Locke and Bogin wish to make. But it does not follow from any of their observations. Developmental and stages, as Locke and Bogin have discussed, are the consequence of evolution through natural selection. Any developmental 'decision' made by natural selection will have consequences that in turn may provide selection pressures and lead to phenotypic change, but this is not coded into the developmental process. In this way, ontogeny does not stitch together various capabilities in phylogeny, but rather specific ontogenetic pathways are selected for and this establishes further selection pressures, the outcomes of which are readily observable in contemporary development.

Locke and Bogin are right to discuss ontogeny and right to think about the multiple strands of language, but they should have moved away from historical speculation and toward EP if they wished to have made substantive and testable claims about the nature of the language faculty.

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