

Interaction promotes cognition: The rise of childish minds

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Abstract: Life history shaped language as, cascading in time, social strategies became more verbal. Although the insight is important, Locke & Bogin (L&B) also advocate a code model of language. Rejecting this input-output view, I emphasize the interpersonal dynamics of dialogue. From this perspective, childish minds as well as language could be derived from the selective advantages of a total interactional history.

For Locke & Bogin (L&B) childhood and adolescence changed the genetic underpinnings of human talk. Rejecting a learned/innate contrast as simplistic, they posit that our vocal-verbal behavior draws on the sum total of selection advantages. Development has created resources that transformed brains and behavior. L&B's achievement is to have shown why the evolution of language must use the whole of life history.

In L&B's model, childhood and adolescence take on a major role in language evolution. Defending this, they acknowledge that structure, pragmatics, and performance fall "under the same theoretical roof" (sect. 12, para. 4). With Hauser et al. (2002), mastery of human languages depends on a "biological capacity" (sect. 12.). Vocal-verbal signaling is purposeful, pragmatic action used in managing how people act and attend. Going further, L&B in section 4.1, endorse Linell's (1982) attack on the "long tradition of analyzing only written language." Turning from exclusive focus on sentences, linguistic capacities reconnect with action. In facing life's challenges, selection history favors "foundational behaviors" (sect. 2) for persuasion, pragmatics, and attention management. Not only does language require the whole of modern ontogeny but, with Hogan (1988), later behavior "automatically credits relevant developments in earlier stages" (sect. 10, last para.). Evolution thus has *cascading* effects. Today, an infant's cognitive armory includes behaviors whose selection derives from later phases of life. We are psychobiological systems whose lived environment reflects a history of, for example, how children seek nurture and adolescents struggle for status. Language uses the ways in which, in evolutionary time, development links strategic activity with the use of verbal forms. For L&B, language is based in "soft tissues" (sect. 14). So far so good!

L&B nonetheless think that, as early as age 36 months, the "basic components of a functional communicative system are operative" (sect. 2.2). Since language is code-like, speech is merely a "preferred modality" (sect. 2). Taking what Sutton (2004) calls an *expressivist* view, with Fodor, Pinker, and the younger Chomsky, performance depends on linguistic knowledge. Given cascade effects, I fail to understand why L&B commit to this input-output view. Instead, they might argue that, as interactional dynamics changed, language transformed child cognition. Were life history a source of cognitive effects, the evolution of development would have radical consequences. First, it could be argued that, as language is based in soft-tissues, talking uses a total history of social behavior. Second, it could be claimed that, even today, cognitive dynamics emerge both internally and in public language. With Hauser, Chomsky, Fitch, Linell, and many others, we would reject expressivism. The broad faculty of language might be seen to arise from infant use of resources for persuasion, attention-management, and pragmatics.

Anti-expressivists like Carruthers (1996), Clark (1997), Dennett (1991), Linell (1982), Love (2004), and Ross (in press) provide diverse reasons for rejecting code-models. Although taking contrasting views on the "computational core" (sect. 12) of language, all see *thinking* as intrinsic to verbal events. Specifically, Linell (in press) rejects code views because language, mind,

and brains are dialogical. Such a perspective, I think, enhances the life history view. Intentional activity, vocalizing, and attention management come to depend on systems of neural control. With the evolution of *total* development, selective advantage goes to individuals who are skilled in sustaining dialogue. Instead of interrogating such views, however, L&B stick with the input-output picture. This conservatism shows especially in relation to humans under three years of age. Not only are infants seen as largely untouched by childhood or development, but L&B have no interest in how they use attention, affect, and nonverbal expression. Indeed, L&B's life history model ignores the use of cultural norms (Cowley et al. 2004; Trevarthen 1988), joint activity (Tomasello 1999), the narrating self (Dennett 1991; Fogel et al. 2002; Nelson 1996), and how brains accommodate silent thinking (Wheeler 2004). Instead of asking how interaction shapes talking persons, infants are taken to become human when an inner faculty starts to operate on linguistic forms.

Beyond selection due to nature, kin, and sexual choice, L&B emphasize that social sensitivity may be augmented by selected parental abilities. Given commitment to code views, however, no role falls to *cultural* selection. Even though using parental beliefs, human infants differ from other primates only because "social stimulation" gives "quality" (sect. 2.1) to their lives. Indeed, for L&B, cross-specific comparison makes it appropriate to define infancy as lasting to the age of three. By this stage, as noted, the structure of language is thought to be "laid down" (sect. 2.2). Although "some degree of integration" (sect. 12) occurs between pragmatics, performance, and structure, selection sensitizes only parents to expressive biomechanics. This is odd in a theory where code-models are linked with writing and vocal-verbal signaling with primate abilities. It is even more so in cognitive science where, today, many trace verbal forms to social evolution (see Kirby & Christiansen 2003) and grammar is increasingly seen as cultural (Deacon 1997; Tomasello 2003). For L&B, however, the evolution of development benefits infants through mechanisms like trickle-up phonetics, an instinct for inventiveness, and increased parental sensitivity. Cascading facilitates them neither in assessing and managing adults, nor in using affect to shape interaction.

L&B's linguistic individualism blemishes the life history model. If the evolution of development cascades onto modern infants, we would expect sensitive reaction and response to adult dynamics. Given cultural selection, infants would gain from linking verbal patterns with resources used in pragmatics, performance, and attention management. With Skinner, Bruner, Tomasello, and Hauser (among others), interaction might be a crucial *locus* of learning. Torn from an input-output model, indeed, life history might be used to interrogate how dynamics alter human cognition. For example, adults may design interactional events to prompt infants in using selected natural and cultural resources. Learning to talk may draw on how, in real time, adults use verbal patterns to construct social events. No purely internal language faculty could exploit the fluidity of interaction. Accordingly, L&B do not link life history with cognitive dynamics. Instead of challenging linguistic individualism, they focus on a modest goal. Even if we adopt a code-model, they show, the evolutionary process will use the whole of life history.

The phylogeny and ontogeny of adaptations

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Abstract: Locke & Bogin (L&B) rightly point to the absence of ontogeny in theories of language evolution. However, they overly rely upon ontogenetic