Kanzi: A new beginning

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Ape language research has been marked by constantly shifting demands made by those who feel that only human beings can acquire language. Kako (1999) continues in this tradition, but his paper marks a significant shift. For Kako concedes that Kanzi possesses rudimentary syntactic skills; but he questions whether Kanzi possesses morphosyntax. Rather than searching, yet again, for some linguistic element that Kanzi has not mastered, we feel it would be more productive, for reasons we explore, to focus now on what exactly Kanzi can do and how this came about.

The history of comparative studies in animal learning and behavior has been marked by the constantly shifting demands made by those who want to preserve some species-specific attribute that will distinguish human beings from all other primates. Thus, it was argued that only man uses tools, plays games, exists in a complex social structure, and knows that other members of his species possess minds. In recent years, it has been argued that only man possesses language—that is, that *grammar*, in the sense defined by Chomsky, is part of the human birthright. Edward Kako's (1999) "Elements of Syntax in the Systems of Three Language-Trained Animals" (1999) continues in this tradition; but Kako's argument takes a significant step forward—a step that, perhaps, marks a turning point in these debates.

Whereas earlier discontinuity theorists had insisted that Kanzi's performance on both comprehension and production tasks "provides no evidence . . . that he was attending to even so simple a syntactic feature as word order" (Wallman, 1992, p. 104), Kako concedes that Kanzi has amply demonstrated this ability. In other words, Kako concedes that Kanzi does indeed possess language, in the sense of grasping the basic properties of syntax. Hence, the point of bifurcation between animals and man, he feels, comes down to the more precise question of which *components* of language are *species-specific*. But unlike earlier critics of ape language research, Kako does not approach this issue dogmatically. Instead, he raises the possibility of performing certain experiments to decide whether Kanzi and his younger sister, Panbanisha, possess specific sub-systems of language, such as morphosyntax.

On the surface, this is an intriguing idea, and one that should not, in principle, be too difficult to investigate. But even if we demonstrate that Kanzi and Panbanisha understand the use of morphological endings, it would be rash to suppose that this would finally lay to rest the discontinuity thesis. To see the force of this point, one need only consider the debate currently raging about the so-called *language gene*. Myrna Gopnik has argued for the existence of such a gene on the grounds that the affected members of the KE family, an extended family in which, over the past three generations, 15 of 37 family members have suffered from specific language impairment (SLI), all demonstrate the same genetic mutation (see Fisher, Vargha-Khadem, Watkins, Monaco, & Pembrey, 1998; Gopnik, 1990). Thus, as with other nativist attempts to subsume various linguistic disorders (e.g., Williams syndrome, autism, aphasia) under a generativist umbrella (see Pinker, 1994), Gopnik approaches SLI as a way of validating the thesis that universal grammar is part of the human birthright.

Gopnik's basic problem, however, is that 20%–50% of the children diagnosed with SLI recover fully. Because she is postulating an irremediable mechanical breakdown, she must convince us that these subjects only appear to contravene her thesis. Her solution is that "although the language-impaired subjects sometimes appear to produce the 'correct' surface form, further analysis of their performance as a whole shows that these forms are produced not by a hierarchically organized system of abstract rules operating on grammatical categories but rather by very specific compensatory strategies, including memorization of inflected forms as unanalyzed lexical items and the conscious application of learned explicit rules" (Gopnik, Dalakis, Fukuda, & Fukuda, 1997, p. 115).

This argument represents an extension of Pinker's (1994) *dual mechanism* hypothesis that, whereas in the case of the normal child, the mastery of regular inflec-

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tional forms involves the acquisition of an implicit rule (that is applied unconsciously), and irregular forms are learned (memorized) on a case-by-case basis (and applied consciously), in the case of SLI, the subject learns all verb forms using the latter process. In other words, while the normal subject is able to extract morphological rules for regular inflectional endings from the language that they hear, the SLI subject is unable to construct *implicit* rules for morphological processes on the basis of the input they receive. All inflectional forms are learned by the latter strategy. Whereas the normal child acquires these abstract rules without any formal instruction and applies them unconsciously, automatically, and effortlessly, the SLI subject can only acquire them from formal speech-language therapy. Thus, they use memorization as a compensatory mechanism—that is, the subject stores inflected forms as unanalyzed wholes (for regular as well as irregular forms).

One can safely assume that, even if we showed that Kanzi and Panbanisha can indeed demonstrate their mastery of the *subcomponents* that Kako has identified, this would do nothing to silence the determined discontinuity critic of ape language research. For it is always open to such a critic to fasten on to some aspect of the apes' performance (e.g., reaction time latencies in their responses) to argue that, contrary to the enthusiastic reports of their "language-trainers" (sic), their behavior is not *linguistic*, for they *cannot* acquire grammar. Rather, they, too, must have memorized inflectional endings on a case-by-case basis as unanalyzed wholes, or performed some other cognitive feat that gives the illusory appearance of language use.

The problem here is that such objections place the emphasis on the wrong issue. Rather than focusing, yet again, on some putative linguistic element that Kanzi may or may not have mastered, it would be more interesting, and more productive, to focus on the question of what Kanzi can do and how this came about. But in addressing this question, we quickly come up against the fact that Kako's argument proceeds from a generativist preconception about the nature of language, a preconception that leads him inexorably to search for some species-specific component of language. For Kako accepts from the start the view that language is an autonomous, decontextualizable biplanar code and the interrelated telementational view that language serves as a vehicle to transmit ideas from the mind of one agent to that of another.

This picture of language and linguistic interaction has been subjected to intense scrutiny by functionalist and integrationist linguists. Yet nowhere does Kako consider the significance for his argument of the point that "language is always contextually embedded and that this contextualization is always open to change" (Toolan, 1996, p. 13). Not only does this integrationist view force us to look at the linguistic skills that Kanzi has acquired from a different perspective, but it also radically alters our understanding of the manner in which he developed these skills (see Savage-Rumbaugh, Shanker, & Taylor, 1998).

Generativism subscribes to the view that such-and-such an ability (e.g., the ability to use regular inflectional endings automatically and unconsciously) is determined

by such-and-such a neural structure. But Kako is apparently unhappy with the nativist view of an innate language module. (For example, on p. 2 of the article, he seems to be suggesting, contra nativists—and thus, the poverty of the stimulus argument—that the principle of structural dependency is something that the human child learns.) Hence, the overall question that Kako raises at the end of his paper is whether the primate brain in general is sufficiently *plastic* that, should the organism be exposed to human language input at (or before) birth, the neural structures required to process the various subsystems of language would form, and if not, which structure/subsystem relationships lie beyond the processing capacities of the nonhuman primate cortex. But this way of framing the problem runs the risk of collapsing back into the modularity thesis—that is, of supposing that the brain contains distinct language-processing centers and that language is a hierarchical system that is composed of distinct subsystems. But the more we learn about neurobiological development, the more we begin to understand the significance of dyadic interaction for a child's—or a nonhuman primate's—socioaffective, communicative, cognitive, and linguistic development (see Greenspan, 1997; Schore, 1994).

What is perhaps most significant about Kanzi's upbringing is precisely the fact that he was *not* "language-trained." On the contrary, Kanzi was raised in a human environment in which he received the type of enriched attention that a child with regulatory problems receives if she is fortunate enough to be diagnosed early. And like such a child, Kanzi has developed linguistic and cognitive skills that far surpass anything that our earlier preconceptions about nonhuman primate capacities led us to expect. In this respect, Kanzi does not represent the *end* of a story in animal research that began with the work of the Kellogs and the Gardners; rather, he represents a beginning in our understanding of the importance and the complexity of the interplay between neural and environmental factors in primate development.

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