Storming the language barrier

The Simian Tongue: The Long Debate about Animal Language
by Gregory Radick
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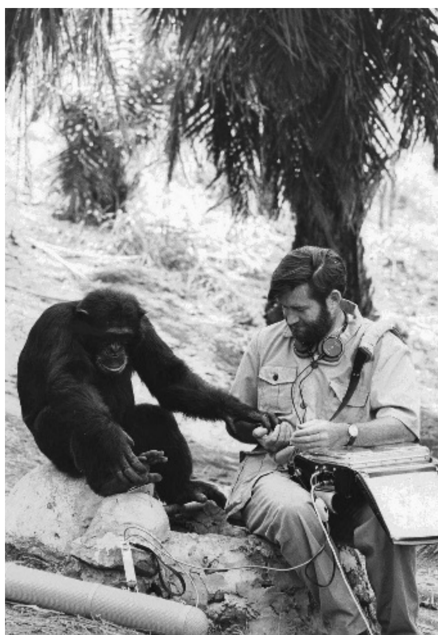
People sometimes view the scientific community through rose-coloured glasses. I recall a presentation by a management trainer who was seeking to contrast the world of science with that of business. He showed a table with a 'business' column with characteristics, such as 'competitive', 'seeking money' and 'back-stabbing'. Next to it was a 'science' column, which included 'cooperative', 'seeking the truth' and 'open communication'.

The Simian Tongue is a good corrective to such naivety. A key theme in the quest for the animal origins of language is the lengths to which scientists will go to disagree with and discredit each other. Gregory Radick, a British science historian and philosopher, leaves no quarrel unexplored in the saga that began around 150 years ago when German-born philologist Friedrich Max Müller declared: "No process of natural selection will ever distill significant words out of the notes of birds or the cries of beasts."

Language requires thought and thought requires language, argued Müller. Given that animals obviously lack thought, he said, what would be the point of debating the animal origins of language? This position still reverberates with modern followers of Noam Chomsky's theory of universal human grammar, who rarely bother to mention animal communication. Radick contrasts this assumption of abrupt 'saltationist' evolutionary change with a darwinian view of continuity.

The hero of Radick's tale is the American Richard Lynch Garner (1848–1920) — probably the only investigator to have conducted a captive study in the wild. This former schoolteacher objected to the received wisdom that language is what separates us from the beasts. But he was so afraid of the tropical animals that he wanted to investigate, such as gorillas, that he locked himself into a metal cage in the French Congo with two guns and 2,000 rounds of ammunition to watch them from safety. His exploits read like a Jules Verne tale (indeed, Verne put a Garner-like explorer in his novel *The Aerial Village*).

Garner's recordings of primate calls with Thomas Edison's new phonograph, and Edison's financial support, made him famous. Things took an ugly turn when a duplicitous missionary, who didn't care for Garner's darwinism, tried to lose him or cause him to catch a deadly fever in the jungle, and when a British tabloid newspaper spread false rumours that Garner had spent hardly any time in his cage. By the end of his life, the misunderstood scientist complained: "No one but myself can take a monkey seriously."



Peter Marler recorded primate calls and showed that they alter depending on who is listening.

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Of course, it is a rather anthropocentric enterprise to scrutinize animals to understand human language. Current scholars of primate vocalization follow the dictum of ethology (the biological study of animal behaviour) — that animals should be studied for their own sake. One such ethologist, Peter Marler, figures as Garner's modern counterpart. Like Garner, Marler believes that the answer to the language question will come from recording primate calls in the field and playing them back to gauge reactions. He and his students have made a persuasive case that vocalizations provide listeners with detailed information about social relationships and the environment, such as in the predator-specific calls of vervet monkeys on the plains of Kenya.

But *The Simian Tongue* is not the book for those wanting to learn what primate communication is all about. Its focus is the human primate: the personalities behind the research, the ideas they develop and the battles they fight. These lively stories contain enough context to illustrate the larger shifts in theoretical perspective. And as such, it is an instructive read for anyone interested in the language barrier, or absence thereof, between humans and other animals.

My only complaint about *The Simian Tongue* concerns a general flaw of contemporary English science writing; it invariably locates the epicentre of science at British and North American universities. The debate about the evolution of language would have taken a completely different turn were it not for the following: the rise of ethology in continental Europe; the nineteenth century discoveries of brain areas by Broca and Wernicke (a Frenchman and a German, respectively); and the development of modern primatology, which owes much to Kinji Imanishi's school in Japan. Of these contributions, Radick makes scant mention.

Imanishi's student, Jun'ichiro Itani, suggested that the evolution of speech would have required a decoupling of vocal production from the emotions. He thus highlighted a concern that many experts have with the simian tongue as a forerunner of human language. Primate vocalizations are somewhat modifiable (Marler himself was one of the first to show audience effects), but seem to be under limited voluntary control. The abject failure to teach articulate speech to apes illustrates their limited vocal control, in contrast to the ease with which apes learn gestures, such as American Sign Language. Our primate relatives have excellent control over their hands and gesture with remarkable flexibility in their natural communication. This gestural modality ought to be part of any debate about language origins.

It is nonetheless fascinating to follow the shifts in questions and approaches throughout the time that Radick chronicles. Garner, for example, looked for animals with human-like language and humans with animal-like language because he lived in an era when human languages were still ranked from primitive to advanced. In those days, language hypotheses went by bizarre names such as the 'bow-wow', 'pooh-pooh' or 'ding-dong' theory, depending on the role they assigned to sounds, emotions or concepts. Modern scientists, by contrast, deem all human languages to be equally complex. They focus instead on the 'design features' of language, believing that some or all of these features are present in other species, although it is also evident that language as we know it is limited to just one species.

Many see the future of this field as a closer integration between naturalistic approaches to animal communication and cognitive neuroscience. It would be unrealistic, however, to expect this to lower the temperature of the debates. If the recent exchange between Patricia Churchland and Steven Pinker in this journal's pages (see *Nature* **450,** 788; 2007) about the connection between language and thought is any indication, adding the brain to the mix will only introduce another fertile layer of potential discord. ■

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