

D. Appleman, after Pieter Bruegel the Elder

FROM LANGUAGE TO LINGUISTICS AND BEYOND

Once condemned as heresy, the study of the origins of language has widened to encompass a quest for long-sought universal properties of the human mind

BY ROBERT J. TROTTER

"Knowledge of all kinds is good; conjecture, as to things useful, is good; but conjecture as to what it would be useless to know, such as whether men went upon all fours, is very idle." Thus did Dr. Samuel Johnson roundly attack the "strange speculations" of his 18th-century contemporary, Lord Monboddo. The worldly Dr. Johnson apparently had little time to waste on what he considered idle thoughts about the origin and development of the human race. But Monboddo did. He believed, like Pope, that "the proper study of mankind is man." Monboddo's major work, *Of the Origin and Process of Language*, anticipated Darwin by making an evolutionary connection between orangutans and humans and went on to

discuss the "natural history" of the human race through the development of language. "It is," he said, "by language that we trace, with the greatest certainty, the progress of the human mind."

Johnson may have scoffed, but great thinkers before and since have almost all found the question of the origin of language to be central to any understanding of the human species. The possession of language and speech, for instance, has always been considered the chief characteristic that distinguishes humans from all other animals, and language has always been bound up with fundamental questions about human nature such as intelligence, reason, thought, socialization and the possibility of possessing and passing

on knowledge. The most recent restatement and reworking of the question of language came this fall when the New York Academy of Sciences sponsored a conference on the origins and evolution of language and speech.

Johnson's complaint—too much conjecture—was a key issue at the conference. Since the dawn of intellectual history, attempts to explain the origins of language have been hampered by the lack of solid evidence. We can't go back a million years or so and watch our ancestors evolve, so a certain amount of conjecture and speculation will always be involved (possibly making the whole question even more intriguing). But a growing reliance on empiricism has also been a part of intellectual history, and bits and pieces of data are continually being added to the body of knowledge about language. The most recently found bits and pieces, and attempts to fit them together, made up the conference and help form our current understanding of the origin and evolution of language.

Hans Aarsleff of the English department at Princeton University opened the four-day meeting with a historical survey of the main theses and arguments that have been advanced to explain the origin of language and its connection with the nature of humanity. "Unlike Dr. Johnson," said Aarsleff, "we do share the 18th century's curiosity about these matters; if at all possible, we do want to know whether men ever went upon all fours, and especially whether the higher primates could learn to speak and why they don't."

One of the first known experiments with language was described by Herodotus nearly 2,500 years ago. An Egyptian king who wanted to find out which nation was the oldest on earth (hoping that his own would be) had two children isolated at birth from all speech. The idea was to find out which language the children would speak if left to their own devices. The king was disappointed. The first word uttered by the children was Phrygian, not Egyptian, proving to the king that the Phrygians were the oldest people on earth.

Similar experiments have been recorded, usually with the result that the first word the children said sounded like a word from the Hebrew language. As late as the 18th century, the same experiment was still being proposed. Though by then, it was generally admitted that such an experiment should not, for obvious reasons, be undertaken. Attention turned to the so-called wolf children, children who for some reason had been abandoned and had grown up with animals. (The most familiar case is probably that of The Wild Boy of Aveyron, subject of a recent movie.) But these examples, too, were fruitless, and no clues to a "natural language" were found. Eventually it was realized that if children don't learn to use language during their early years, they will probably never learn more than the

crudest forms of communication.

Another approach to language came from the Old Testament and Jewish mysticism, as found in the cabalistical tradition. In *Genesis* there are two important linguistic statements: Adam's naming of all the animals and the Babylonian confusion. Adam, before the fall, was supposed to be the archetypal or perfect man. Until the 17th century, it was even postulated that he was the greatest philosopher and greatest etymologist that ever lived. Therefore, when Adam gave names to the animals, he did so with perfect insight and nearly divine knowledge. The names he gave were thought to bear a natural relation to the animals. Each word he used was supposed to reveal the nature of the thing named (somewhat in the way a chemical formula does). The search for this "natural" or Adamic language was associated with the early search for essential knowledge.

The story of the Tower of Babel and the confusion of languages should have discouraged any search for the original elements of the pre-Babylonian or Adamic language, but it did not. Until the 17th century, it was still thought that determined etymological study might reveal the forms of the original language. There were people who made vast collections of words in the largest possible number of languages in the hope of discovering the original words. "This," says Aarsleff, "may seem nearly idiotic and few 17th century figures really put any trust in it, but the need to argue against this doctrine was fruitful." Arguments against it were involved in the development of what we now call science.

If the Adamic theory of language were correct, it would be possible to gain real scientific knowledge of the construction of things in nature by studying words and language. But this type of reasoning was directly opposed to what John Locke, the spokesman for the new mechanical philosophy (science) was saying—that knowledge cannot go beyond experience. The followers of Locke, many of whom argued against the mystical approach to language, helped set science on its feet in the 18th century.

Condillac, the leading exponent of Locke's principles in France, is best known as a psychologist (for his theory of empirical sensationism). But according to Aarsleff, "Condillac belongs in the great tradition of linguistic philosophy that began in the 17th century." Condillac asked: How have humans gained knowledge? He answered that language or the use of signs is the indispensable instrument without which humans would have remained in the condition of animals. The crucial element in the origin of human knowledge is the origin of language.

Condillac's account of the origin of language begins with natural cries or what he calls the language of action. This consists of natural or instinctive gestures—

with the head, hands, eyes and every other part of the body—that are the same in all humans. But most important in this language of action, he said, were the vocal gestures, those natural cries that gave expression to some inward passion (screams of fear, sighs of pleasure, etc.). Similar situations, he reasoned, would recur and with them the vocal gestures they (involuntarily) produced. The early human creatures would in time gain the power to recall a certain range of such gestures at will and reproduce them without relying on the triggering mechanism or inner passion. Such signs could be reproduced for the information of others. For instance, the sign indicating fright at the approach of a lion could, by a person who was not directly threatened, be reproduced to alert another who was in danger.

In such a manner, early humans would gradually, by very slow degrees and in the long process of time, as Condillac constantly emphasized, come to do by reflection what they had previously done by instinct alone. The deliberate use of a few simple signs would extend the operations of the mind and the facility of reflection. The signs would in time be improved, increased in number and be made more familiar. The mind and the use of signs would interact to the mutual advantage and progress of both. The further extension of this natural language would in turn suggest further extension to deliberately created arbitrary signs—language.

With Condillac and those like him, the tradition of linguistic philosophy came to a temporary dead end. During the 19th century, the study of the origin of languages was, at times, even prohibited for religious reasons. Since language was thought to be a gift from God, it was considered blasphemy to speak of the evolution rather than the divine origin of language. But after Darwin and by the 20th century, the study of language and its origin had begun to reestablish itself—this time as a science rather than as a philosophy. This science, linguistics (almost an abstract science like mathematics), was represented at the New York Academy's meeting on language.

Natural human languages, the logical diversity of languages, the nature of language and protolanguages (including a speculative universal protospeech of the Upper Paleolithic) were discussed in detail. The emphasis, however, was not on finding an Adamic language but on getting at the basic constituents of language. An explanation of these universals should, it is hoped, yield some insight into the workings of the human mind.

Noam Chomsky of the Massachusetts Institute of Technology explained one approach linguistics might take in this direction. "The language faculty," he hypothesizes, "may be regarded as a fixed function, characteristic of the species, one component of the human mind, a function which maps experience into grammar."

If this is so, then it might be possible, through the study of language and grammar, to eventually isolate this "fixed function." There might, for instance, be a specific property of grammar (Chomsky calls this "property *P*") that is unlearned and universal to all grammars, a precondition of learning. If a property *P* can be discovered, it would suggest the existence of a genetically determined human language faculty. It would suggest that language might have a partially determined structure as a matter of biological necessity, much as the general character of bodily organs is fixed for the species. "In my view," says Chomsky, "work of the past years has provided considerable support for a conception of the language faculty along these lines. . . . Thus it seems to me not unreasonable to approach the study of language as we would the study of some organ of the body."

There have been various attempts to find a property *P*. Notes Chomsky: "Part of the intellectual fascination of the study of human language derives from the fact that it is often necessary to devise intricate and complex arguments to support, or reject, the hypothesis that grammars must meet some condition *P* as a matter of biological necessity. This unavoidable contingency of inquiry in no way deprives the study of language of its empirical character, though it does bear on the force and persuasiveness of particular empirical theories."

So far, a property *P*, whose universality is accepted by all linguists, has not been discovered. But even in the absence of such proof, Chomsky concludes, "strictly linguistic investigation can lead us to some plausible general principles that we may hope to relate to the results of other lines of investigation into the nature of language."

Possibly because the science of linguistics is still rather speculative and abstract, it was these other lines of investigation that took up a major part of the New York meeting. Sessions were devoted to current research in a number of diverse fields: paleontology, archaeology, geology, anthropology, biology, animal behavior, brain science and psychology. Each offers clues to the origin of language.

The session on "perceptual and cognitive substrates" examined the sort of thinking ability that must underlie and precede language in both humans and animals. Emil W. Menzel and Marcia K. Johnson of the State University of New York at Stony Brook discussed the ability (human and nonhuman) to create, interpret and remember verbal and nonverbal signals. This ability suggests that humans and animals share a certain amount of perceptual and cognitive organization. Beneath the "deep structure" of human language and human thought are "deep-deep" structures that we share with other species, and, say the researchers, it is on these structures that our linguistic abilities

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are predicated.

Just what and how deep are these structures? The work of Richard Davenport of the Georgia Institute of Technology and the Yerkes Regional Primate Research Center in Atlanta may provide some answers. He is investigating cross-modal perception in apes.

Communication implies perception. Someone must be out there receiving what you send or there is no communication. Perception, however, is not a simple phenomenon. It comes in various forms or modes, and the human brain is able to integrate or coordinate inputs from all the senses. The existence of this type of cross-modal perception and the unity of the senses was graphically summed up by the Austrian musicologist von Hornbostel when he said, "It matters little through which sense I realize that in the dark I have blundered into a pigsty."

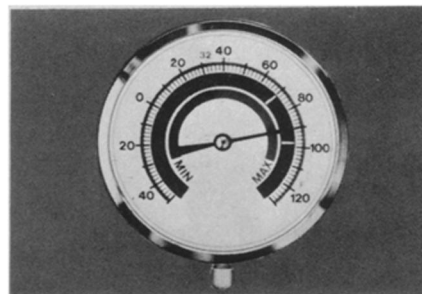
The existence of cross-modal perception is an essential part of human language and speech ability. Without it, it would not be possible to see an object and use a name for that object—an act that requires coordination between the visual and auditory modalities. To what degree do animals share with humans this cross-modal ability? Davenport has demonstrated, in apes, the ability to integrate visual and tactile inputs. The experimental setup he used allows an animal to see an object through a window and to reach through a slot beneath the window and feel two objects, one of which is similar to the one seen through the window. The chimps in Davenport's experiments were able to match the visual and tactile inputs with a great deal of regularity, suggesting a type of neurological organization once thought to be uniquely human and mediated only by language.

Monkeys, using the same procedures, showed no evidence of the ability after prolonged training. Neither apes nor monkeys showed any auditory-visual matching ability. So there appears to be an evolutionary cut-off point below which certain types of cross-modal ability do not exist.

Of what relevance is cross-modal perception to the origin and evolution of speech and language? It may have been among the first necessary neurological developments leading to the possibility of speech. This ability, says Davenport, may result in a more truthful and complete form of perception, and it may be the basis for higher cognitive functioning—leading eventually to the language ability.

Reconstructing the evolutionary process by examining the mental abilities and cognitive complexities of existing animals may answer some of our questions about the evolution of speech and language. Another approach is to reconstruct evolution by looking at the artifacts left behind by our ancestors.

(These and other approaches will be discussed in part 2).



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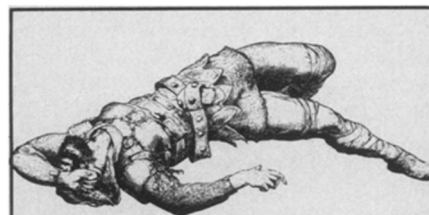
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