

“Symbol and Structure: A Comprehensive Framework for Language Evolution”
by David Bickerton

Bickerton begins his article by explaining that he approaches the evolution of language as a linguist and that linguists should have addressed it much earlier. Humans are unique as a species because of our creative behavior and language. Because human behavior is most likely a result of language, we must understand the linguistic properties of language (whether essential or accidental) in order to explain human evolution.

But most writers have tried to explain language evolution by using a certain selective pressure, such as grooming or manipulation. Bickerton dismisses these claims as ignorance of language and linguistic theory. Six major fields of study involve language evolution (linguistics, paleo-anthropology, neurology, psychology, primatology, and evolutionary biology) but too often, researchers from one field will not have an adequate knowledge of the other fields. Bickerton believes this shouldn't be the case, however, as an interdisciplinary approach to language evolution is entirely possible. Yet he also believes "the biggest obstacle to understanding the evolution of language is thinking of it as 'the evolution of language'" (80).

In the next section, Bickerton discusses the three main components of language, all of which evolved separately: modality, symbolism and structure. Modality includes both speech and sign, of which the latter is most often forgotten or ignored. Comprehension must have existed before the components of language developed as humans tried to determine intentional meanings. But language probably began as speech and sign, and not one or the other, because both are used to convey meaning. Gradually, this "capacity to transmit information was what selected for improved speech capacity, and not vice versa" (81). Therefore, modality was dependent on the other components and developed in response to them. Symbolism and structure can also be dissociated from each other, as non-human animals can understand symbolic representations, but only humans can understand syntax. In fact, this leads to two issues that must be addressed in order to explain language evolution as a whole: the evolution of words or signs and the evolution of syntax.

Symbolic representation must have been cultural rather than biological because the potential for it exists in a wide variety of other animal brains as well. This suggests an analogous, and not homologous, development. The iconic and indexical associations of symbolism may have existed for 2 million years, which most people disregard when thinking of symbolism because it is a primitive form and unlike the symbolism we use today. Furthermore, there is a disbelief that animals would fail to use language for communication if they had the ability to do so. But "such a view ignores the essential unreliability of language" (83) and this is why body language is more useful and prevalent in animals.

Bickerton suspects that modality and motivation are lacking in other species and that motivation is the larger problem. "Solitary species do not need to communicate. Other social species get along fine with non-linguistic methods" (83). But humans were more interdependent than other primates and the threat of starvation and predation required them to trust each other to find food and survive. So symbolism is a cultural phenomenon rather than biological because it benefited both groups and individuals.

The early symbols of pre-humans were thought to be similar to the early symbols of modern-day infants. But this assumption has been challenged recently with the notion that the earliest linguistic utterances were holistic and equivalent to the meaning of a sentence today. But problems with this approach involve comprehension, since an understanding of intentions from behavior does not extend to linguistic behavior. Humans have a history of learning the meanings of

words, with referents to the whole rather than parts. Yet the connection between the word and the referent is not always easily understood since the word could refer to something else in the same place or another event occurring at the same time. Additionally, "problems of understanding are compounded infinitely if the initial utterances of a language do not correspond to anything tangible or easily identifiable, but refer to some set of circumstances that may or may not be apparent from the surrounding context" (85).

The holistic approach to our ancestors' language can be discredited by two explanations. "One is that the units that would eventually dissolve into discrete words already contained regularities within the holistic utterance" (86) which would mean that the utterances were essentially the equivalent of words, so holophrastic units in the beginning would be unnecessary. On the other hand, if sequences were completely holistic, it would be impossible to understand each individual symbol. "But perhaps the biggest problem with the holistic approach is that it doesn't explain anything worth explaining" (87). It can't answer the questions of symbol evolution that are necessary to explain language evolution. Yet the symbols most likely existed from the beginning of language, and when they began to be put together in a certain order or fashion, syntax arose.

Syntax is what makes language uniquely human. No other species has it. Yet syntax has been continuously ignored in studies of language evolution or oversimplified as just word order. But in order for language evolution to be explained, syntax evolution must be explained first. "It should therefore be the task of anyone seriously interested in the evolution of language to work at either one end or both ends of the mystery: finding out the most parsimonious descriptions of syntax that will satisfy the syntactic facts, or trying to determine (through neuro-imaging or any other available means) how the brain actually puts sentences together" (89).

Bickerton reduced syntax to only three components, which can be derived from semantics, a schema of who did what to whom, and the way the brain processes information. Hurford expresses doubts that this system can account for all possible sentences, especially those in which an asymmetry exists between subjects and objects. But Bickerton's "surface minimalism" can explain the grammaticality and ungrammaticality of these sentences. Final attachments (or arguments) mark the boundaries of phrases and clauses, and if these attachments are moved, the boundaries become less clear.

Lastly, the question of when syntax emerged is addressed. Bickerton provides two arguments against a gradual emergence. First, the principles involved "apply everywhere, to all structures. At any given time, either they were in place or they weren't" (91). Second, the cognitive development of our ancestors seemed to stagnate for two million years, and then suddenly our species appeared and flourished. It seems likely that syntax is the reason for the transition and that syntax developed in our species and only our species. However, another problem with the timing of the emergence questions why there was a period of 80,000 years between the emergence of humans and the explosion of human culture. The answer lies in the fact that "syntacticized language enables but does not compel" (92). Language allows us to develop and advance in the ways we want. But it only empowers, and doesn't require, this change.

In this article, Bickerton attempted to explain the processes that made language unique to humans. The driving force was survival, and humans had to exchange information to do so. Symbols were invented and adapted for social use, but structure could only develop with more neurons and connections in the brain. Once this happened, language was able to develop rapidly and humans became the sole species to combine words and ideas.