PROJECT MUSE®

Models, Signs, and Universal Rules

William C. Stokoe

Sign Language Studies, Volume 1, Number 1, Fall 2000, pp. 10-16 (Article)

Published by Gallaudet University Press

DOI: <https://doi.org/10.1353/sls.2000.0006>

➔ *For additional information about this article*

<https://muse.jhu.edu/article/31757>

Models, Signs, and Universal Rules

William C. Stokoe

IN *Signs: An Introduction to Semiotics*, Thomas A. Sebeok concludes that language with its grammar, possessed by only one species, is a secondary modeling device and that human culture is a tertiary modeling device. For Sebeok the primary modeling device is something we share with other species: All animals use their sensory systems and brains (if they have any) to interpret the world. The young of every species become adults and survive because of both instinct and experience, or learning. Therefore, what they “know” constitutes their world model. A frog survives with nothing we would call a brain, but we can infer from its behavior that to it the world is divided into wet and dry, small things that fly by and are edible, and large things such as herons that it had better avoid.

Sebeok argues that *Homo habilis*, the first member of genus *Homo*, “must have had a mute verbal modeling system lodged in its brain, but it could not encode it in articulate, linear speech.” He proposes (his italics) that “*language evolved as an adaptation, whereas speech developed out of language as a derivative ‘exaption’*” (1994, 124). My proposal is that by whatever name we call it, this system gets lodged in the brain because the brain is human, and modeling, representing, and communicating create connections in the brain.

Language As a Modeling Device

Sebeok’s view of natural history reminds us that communication is not the only purpose and function of language. Modeling is something that every creature must do if only to distinguish food from

William C. Stokoe was Professor Emeritus of English at Gallaudet University in Washington, D.C., and the founding editor of *Sign Language Studies*.

poison and friend and kin from foe. Many species also use signs to represent features of their world model. For instance, dogs and other canids produce and interpret signs rich in scent. Thus far I find myself in agreement with Sebeok, but I do not think human primary, secondary, and tertiary systems are as discrete as his classification implies. On the contrary, physical evolution entails a seamless continuity.

If we look at human infants and are not prejudiced by competing and conflicting psychological and linguistic theories, that continuity becomes clear. One of the first steps in a human infant's modeling of its world is understanding that it and its mother are united but separate beings. Soon after this comes the realization that things within sight and reach can be touched, grasped, smelled, and tasted.

Very soon, however, something more occurs. The first instances of an internally modeled world may not at first connect to signs that we can hear or see, but before long the infant is crying or making gestural signs to ask for food and certainly is gesturing to communicate its desire to be picked up or held. An object in sight but out of reach may still be reached for, but an unbiased observer can see that the infant is anticipating its capture: The child's reaching, pointing hand assumes the shape it would have if the object were within it. Infants also represent events within the nursery. Long before "Daddy gone" and similar observations emerge as an infant's early two-word utterances, a shift in gaze and a pointing, moving finger or hand have been visibly expressing the idea.

In all this, I believe, we can see (if we care to look) a smooth transition from the images formed within the infant's brand new but fast-growing brain to a visible representation of them. Soon, or at the same time, the infant also communicates wants and needs to a significant other. In this way much of the infant's environment, both substance (things, persons, and pets) and accident (things the infant sees happening that attract attention) receive their first internal representation (the percept becomes concept). But as soon as they are formed, these visible representations are deemed by others to constitute the first attempts at communication. It is unfortunate that usually our children get no credit for really communicating anything but the obvious ("I'm hungry"; "I'm wet") until they begin to speak.

Those few who look to infants with an open mind see much that is usually missed. For instance, professionals and parents in Irvine, California, and in Columbus, Ohio, are using “baby signs” to interact with infants. They take the gestures and meanings from the infants themselves, imposing nothing from “above,” and their efforts are being rewarded. Moreover, a careful search of the literature and their own research has convinced Virginia Volterra in Rome and Jana Iverson in Chicago (1995) that all infants, whether they can hear or not, use meaningful movements and gestures for months before they begin to use the parental language.

Nothing so far presupposes (or needs to presuppose) the innate presence in infant brains of “universal grammar.” Like other creatures, from birth onward human infants model their world, and like many others, they make overt signs that represent pieces of their models—the things and events they perceive and react to. Because they are human, our infants carry modeling and representing much further than do other animals, for evolution has equipped them to do this not only with a human brain but with human hands and uniquely human articulation of the joints from shoulder to finger ends (Wilson 1998).

An Alternative Explanation

The gestures of all infants under one year of age can hardly be called language, but Judy and James Kegl, their fellow investigators in Nicaragua, and Noam Chomsky and Steven Pinker in Cambridge, Massachusetts, find that the gesturing of young children in some of the new schools for deaf students in Nicaragua actually amounts to a new language the children have created. They claim that it is grammatical according to its own rules—the rules of universal grammar genetically embedded in human brains and that it proves language is innate (see Osborne 1999).

It may be difficult to convict these linguists of violating the law of parsimony, otherwise known as “Ockham’s Razor,” which tests explanations. Explanations more complicated than is necessary fail the test. The fact is we cannot know whether the rules of universal grammar are very complex or very simple; no one has ever seen them. Moreover, the contents of brains, apart from the gray and

white matter and synapses that neuroscientists find there, also remain unknown and at present unknowable. I would like to suggest a simpler explanation than the one in the *New York Times Magazine* story of what the Nicaraguan deaf children are doing (Osborne 1999).

In the first place, born and reared to school age or later in human families, these deaf children have been interacting, although mutely, with others ever since their birth, and so they have been visibly externalizing their model of the (visible) world just as all human infants do. The difference is that, because they cannot hear, they continue to use their gestures to make their needs, wishes, and reactions known. Recently they have been brought together in schools, where the Soviet scheme of fingerspelling in Spanish to them and other well-meaning interventions by teachers has had little or no effect. However, they are now living not with hearing family members in a community of hearing people but with others deaf like themselves. Among themselves, away from their hearing teachers, they are free to continue to model their world and to communicate about it by using visible signs—learning more and more about the world from one another. Discarding their infant gestures (dismissively called “homesigns”) as soon as they see signs that seem better to them, they are continually developing their gestural communicative skills.

Their gestures naturally—not mysteriously or because of grammar rules—resemble or point at things and express actions with manual movement. For example, they sign “tell” by moving the hand from the teller to the one told. Kegl hails this as “verb agreement” and proof positive that, without any grammatical input, these children have invented grammar and language on the spot. But signing “tell” as they do is hardly a strategy requiring grammar rules, universal or otherwise. After all, these children know as we all do that telling, like a Frisbee going from thrower to catcher, is action directed from one to another.

In the constant company of others who model their world and represent their ideas in the same way, the children in the Nicaraguan schools naturally refine and improve their representations of their world. (One can acquire and improve tennis strokes by oneself against a backboard, but with a selection of opponents across the net, play becomes not only more engaging but more fluent as well and

may continue to improve.) Of course, the language game is not tennis; it is the opening up and developing of the human mind. In a million years nature has found no better way to do this than through interaction with others.

Linguists from Chomsky to Kegl explain that rules innate in all human brains cause the grammaticality of the older children's sign language. However, an alternate explanation exists, one that does not require the presence of the still unfathomed complexities of universal grammar or the leap from phenomenon to imagined cause. What will be surprising to these linguists, although it is easily seen, is that basic syntax comes from the gestures these children use. The sign for "tell" described in the *New York Times Magazine* story starts with the hand near the teller's mouth, straight fingers held away from but opposite the thumb; then when the hand moves out to point at the one being told, the fingers close against the thumb. Kegl's parsing of this as "verb agreement" is too timid a step. The gesture is actually a transitive sentence: [Speaker] told [listener]. The nouns in brackets do not have to be "understood," as our eighth-grade grammar teachers used to tell us. "Speaker" is physically and very visibly right there where the hand starts its movement forward, and when the movement ends, one sees the listener (or the location the listener occupied earlier).

If the "tell" sign is at all typical of their output, these deaf children and adolescents are not using grammar rules but rather their vision, modeling, and representation to make transitive sentences. Intransitive sentences are even easier: The origin of the sign's movement points to or resembles what acted or changed, and the movement itself shows that action or change. More than that, the hand is used to point or to resemble (e.g., the hand opens and shuts like a mouth). The hand's action (motion from teller to told) takes its path and direction from the observed nature of what it represents; it is an index in Sebeok's classification of signs. Thus, in this and many other signs, the handshape with its action constitutes a sentence, but at the same time the handshape is a subject or noun phrase and the action is a predicate or verb phrase.

This finding of grammar in natural, constantly occurring, universal human manual actions is orders of magnitude simpler, more parsimonious, than positing rules and imagining that a near-miraculous

mutation implanted them in human brain cells. Human vision, with its separate brain networks to pick out details and to track movement, allows us (deaf or hearing, infant or adult) to model what we observe. The great variety of configurations the human hand can assume and the unique articulation and musculature of the human arm allow infants to make visible the common human model of our world (in which creatures move and act and objects are acted on).

Some may find it disappointing that this progression from observing to modeling to representing to grammar is so simple, straightforward, and natural. Like Ockham's Razor this explanation does without much that is nonessential. Yet it allows us to track language to its beginnings in the infant (and by extrapolation, in an earlier human species). It also resolves a seeming paradox: There cannot be a sentence unless words are sorted into nouns and verbs, but there are no nouns and verbs without sentences. One way out is to posit universal grammar and imagine that a mutation put grammar into human brains. An alternative explanation is that gestures made of nounlike hands and verblike hand movements are the first sentences. Brain scientists point out that this is precisely the way the brain works, not putting already-sorted things together by rule or otherwise. For example, "Diversity is continually being carved out of the existing unity" (Kinsbourne 1998, 243). Sentences and sentence parts carved out of existing gestures are appropriate instances of this generalization.

The "Out of Africa" theory of human origin and dispersion is supported by copious archaeological evidence, but it is still a theory that new evidence may disconfirm. However, the theory that language or universal grammar in the brain comes from Out of Nowhere (a linguistic "Big Bang") is unsupportable except *ipse dixit* (he has said it).

An alternate theory is that infant perception-action begins everywhere by representing things and events gesturally and in due time replaces many of the gestures with words (or signs) of the adult language. This theory is set forth fully in Armstrong, Stokoe, and Wilcox (1995), Armstrong (1999), and Stokoe (forthcoming). Good science examines alternative theories before proclaiming from the housetops and in the pages of the *New York Times* that only one theory merits our attention.

References

- Armstrong, D. F. 1999. *Original Signs: Gesture, Sign, and the Sources of Language*. Washington, D.C.: Gallaudet University Press.
- Armstrong, D. F., W. C. Stokoe, and S. E. Wilcox. 1995. *Gesture and the Nature of Language*. Cambridge: Cambridge University Press.
- Kinsbourne, M. 1998. Unity and Diversity in the Human Brain: Evidence from Injury. *Daedalus* 127–2:243.
- Osborne, L. 1999. A Linguistic Big Bang. *New York Times Magazine*, October 24, 84–89.
- Sebeok, T. A. 1994. *Signs: An Introduction to Semiotics*. Toronto: Toronto University Press.
- Stokoe, W. C. Forthcoming. *Language in Hand*. Washington, D.C.: Gallaudet University Press.
- Volterra, V., and J. Iverson. 1995. When Do Modality Factors Affect the Course of Language Acquisition? In *Language, Gesture, and Space*, ed. K. Emmorey and J. S. Riley, 371–90. Hillsdale, N.J.: Lawrence Erlbaum Associates.
- Wilson, F. R. 1998. *The Hand: How Its Use Shapes the Brain, Language, and Human Culture*. New York: Pantheon.