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The Language Organism: The Leiden Theory of Language Evolution*

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1. Language is an Organism

Language is a symbiotic organism. Language is neither an organ, nor is it an instinct. In the past two and a half million years, we have acquired a genetic predisposition to serve as the host for this symbiont. Like any true symbiont, language enhances our reproductive fitness. We cannot change the grammatical structure of language or fundamentally change its lexicon by an act of will, even though we might be able to coin a new word or aid and abet the popularity of a turn of phrase. Language changes, but not because we want it to. We are inoculated with our native language in our

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infancy. Like any other life form, language consists of a self-replicating core. The units of this self-replicating core are memes and their neural correlates.

The Leiden theory of language evolution was developed in the early 1980s by Kortlandt (1985) and is further developed in my handbook of the greater Himalayan region (van Driem, 2001b). Meaning is the basis of language. The nature of meanings, understood in terms of the intuitionist set theory or constructivist mathematics developed by L.E.J. Brouwer, is a function of their neuroanatomy and their behavior as units in the Darwinian process of neuronal group selection. The Leiden conception of language evolution provides a linguistically informed definition of the meme (van Driem, 2000a, 2000b, 2001a). Previous characterizations of the meme by Dawkins (1976), Delius (1991) and Blackmore (1999) fall short of identifying the fecund high-fidelity replicators of extra-genetic evolution. The Leiden approach to linguistic forms as vehicles for the reproduction of meaningful elements in the hominid brain differs fundamentally from both the functionalist or European structuralist conception of language, whereby linguistic forms are seen as instruments used to convey meaningful elements, and the formalist or generative approach, whereby linguistic forms are treated as abstract structures which can be filled with meaningful elements. Naming and syntax can be shown to be two faces of the same phenomenon.

2. A Meme is a Meaning, Not a Unit of Imitation

What precisely is a meme? The *Oxford English Dictionary* defines a meme as 'an element of culture that may be considered to be passed on by non-genetic means, esp. imitation'. This is a British lexicographer's recapitulation of Richard Dawkins' original coinage:

> I think that a new kind of replicator has recently emerged on this very planet. It is staring us in the face. It is still in its infancy, still drifting about in its primaeval soup, but already it is achieving evolutionary change at a rate that leaves the old gene panting far behind. The new soup is the soup of human culture. We need a name for the new replicator, a noun that conveys the idea of a unit of cultural transmission, or a unit of *imitation*. (1976: 206).

This Oxford definition of the meme is incomplete and linguistically uninformed. Charles Darwin came closer to the Leiden definition of the meme when he wrote that 'the survival or preservation of certain favoured words in the struggle for existence is natural selection' (1871, I: 60-61). By contrast, Susan Blackmore's memetics is essentially a linguistically naïve view:

> Whether a particular sound is copied because it is easy to remember, easy to produce, conveys a pleasant emotion, or provides useful information, does not matter. . . . There is no such problem as the symbolic threshold with the memetic theory of language. The critical step was the beginning of imitation. . . . Once imitation evolved, something like two and a half to three million years ago, a second replicator, the meme, was born. A spoken grammatical language resulted from the success of copyable sounds. (1999: 103–104, 107)

Language is more than just copyable sounds. A unit of imitation is a mime, and a mime does not meet the criteria of fecundity, high-fidelity replication and longevity required to qualify as a successful life-sustaining replicator. There is an essential difference between pre-linguistic mimes, such as the rice washing of Japanese macaques, and post-linguistic mimes, such as music, clothing fashions and dancing styles, which are able to evoke a myriad of associations in the realm of memes. However, the theme of Beethoven's 9th symphony is a mime, not a meme.

Language exists through meaning. The Leiden school defines memes as meanings in the linguistic sense. Grammatical memes, i.e.

the meanings of grammatical categories, are the systemic memes of any given language and are demonstrably language-specific. The meanings of words, morphemes and fixed idiomatic expressions are lexical memes. Some lexical memes are systemic and structural for a given language. Some are free-wheeling and parasitic. Some occupy an intermediate status. The idea that America is one nation under God, indivisible with liberty and justice for all, is not a meme. It is a syntactically articulate idea composed of a number of constituent lexical and grammatical memes, and this idea and its constituent parts are subject to Darwinian natural selection.

Researchers in the field of Artificial Intelligence fail to address the problem of meaning when they resort to the propositional logic developed by the English mathematician George Boole. The adequacy of this approach is claimed as long as the variables are 'grounded'. By grounding, logicians mean that there is some determinate way in which variables or symbols refer to their referents. Yet natural meaning does not obey the laws of Aristotelian logic or Boolean propositional calculus. A meaning *thrives* by virtue of its applications, which cannot be deduced from its implications. The implications of a meaning must be derived by its applicability, rather than the other way around. By consequence, a meaning has the properties of a non-constructible set in the mathematical sense.

The behavior of the English meaning *open* is such that 'The door is open' can be said of a shut but unlocked door, in that the door is not locked. Likewise, of the same door it can be said that 'The door is not open', for it is shut. It is a cop-out to postulate polysemy to clarify such usages because the meaning of English *open* remains unchanged in either case. The same situation can be truthfully referred to by a linguistic meaning as well as by its contradiction. Yet there is no way of formalising a contradiction in traditional logic because of the principle of the excluded middle, i.e. *tertium non datur*. This principle, which dates back to Aristotle, renders classical logic a powerful tool and simultaneously makes classical logic a mode of thought which is at variance with the logic of natural language. The insight that meaning operates according to

the mathematics of non-constructible sets was set forth by Frederik Kortlandt in 1985 in a seminal article entitled 'On the parasitology of non-constructible sets'. The insight that human language operates independently of the principle of the excluded middle was appreciated by the Dutch mathematician L.E.J. Brouwer when he developed intuitionist set theory in the first quarter of the 20th century. Brouwer rejected the principle of the excluded middle for language and went as far as to warn mankind that linguistically-mediated ideas and language itself were inherently dangerous.

3. *Tertium Datur*

The fact that meanings have the nature of non-constructible sets does not mean that meanings are fuzzy. Rather, meanings correspond to sets which are indeterminate in that there is no *a priori* way of saying whether a particular referent can or cannot be identified as a member of a set. If a homeless person in Amsterdam calls a cardboard box a house, that box becomes a referent of the word *house* by his or her very speech act. The first bear most children are likely to see today is a cuddly doll from a toy store and not a member of a species of the *Ursidae* family. Errett Bishop, chief proponent of the school of constructivist mathematics which grew out of intuitionist set theory, also rejected the principle of the excluded middle. He observed that 'a choice function exists in constructivist mathematics because it is implied by the very meaning of existence' (1967: 9). Even though Willard Quine adhered to the principle of the excluded middle throughout his life because of its utility as 'a norm governing efficient logical regimentation', he conceded that this Aristotelian tenet was 'not a fact of life', and was in fact 'bizarre' (1987: 57).

Classical logical analysis requires the identifiability of distinguishable elements as belonging to the same set. In the case of an extensional definition, it presupposes a sufficient degree of

similarity between the indicated and the intended elements. In the case of an intentional definition, it presupposes the applicability of a criterion, which depends on the degree of similarity between the indicated property and the perceptible characteristics of the intended objects. The constructibility of a set is determined by the identifiability of its elements. Language does not generally satisfy this fundamental requirement of logic.

Ever since Gottlob Frege, logicians have focussed on problems of truth in their attempt to understand meaning and language, but this approach has been inherently flawed from the very outset. Once Frege had defined a *Gedanke* as something which can be subject to logical tests of truth (1918: 64), he was inexorably led to disregard grammatical sentences in language which cannot be reinterpreted as logical prepositions and therefore embody no *Gedanke* (1923: 37). The inadequacy of classical logic for coming to terms with linguistic meaning underlies the failure of both the earlier and the later Wittgenstein to understand the workings of language. Instead, he remained perplexed by the nature of linguistic meaning throughout his life and saw the whole of philosophy as a battle against the bewitching of reason by language (1953: 47).

The nature of meaning is a direct function of its neural microanatomy and the way neurons branch and establish their webs of circuitry in our brains. The parasitic nature of linguistically mediated meanings does not mean that there is no such thing as invariant meanings or *Gesamtbedeutungen* of individual lexical and grammatical categories within a given speech community. Invariant meanings are functionally equivalent within a speech community and can be empirically ascertained through Wierzbickian radical semantic analysis. Language began to live in our brains as an organismal memetic symbiont when these brains became host to the first replicating meaning. The difference between a meaning and a signal such as a mating call or the predator-specific alarm calls of vervet monkeys is that a meaning can be used for the sake of argument, has the properties of a non-constructible set and has a temporal dimension.

4. Syntax is a Consequence of Meaning

Syntax arose from meaning. Syntax did not arise from combining labels or names for things. Syntax arose when a signal was first split. Hugo Schuchardt had already argued that the first utterance arose from the splitting of a holistic primaeval utterance, not from the concatenation of grunts or names. He argued that the first word was abstracted from a primordial sentence and that the first sentences did not arise from the concatenation of words (1919a, 1919b). First-order predication arose automatically when the first signal was split. For example, the splitting of a signal for 'The baby has fallen out of the tree' yields the meanings 'That which has fallen out of the tree is our baby' and 'What the baby has done is to fall out of the tree'. Mária Ujhelyi has considered long-call structures in apes in this regard. The ability to intentionally deceive is a capacity that we share with other apes and even with monkeys. In using an utterance for the sake of argument, the first wordsmith went beyond the capacity to deceive. He or she used an utterance in good faith, splitting a signal so that meanings arose, yielding a projection of reality with a temporal dimension.

Since when has language resided in our brains? The idea that the Upper Palaeolithic Horizon is the *terminus ante quem* for the emergence of language dates back at least to the 1950s. The sudden emergence of art, ritual symbolism, glyphs, rock paintings and animal and venus figurines 60,000 to 40,000 years ago set the world ablaze with new colours and forms. The collective neurosis of ritual activity is an unambiguous manifestation of linguistically mediated thought. However, rudimentary stages of language existed much earlier. What the Upper Palaeolithic Horizon offers is the first clear evidence of the existence of God. God is the quintessential prototype of the non-constructible set because it can mean anything. This makes God the meme almighty. The British anthropologist Verrier Elwin quotes the Anglican bishop Charles Gore:

> I once had a talk with Bishop Gore and told him that I had doubts about, for example, the truth of the Bible,

> the Virgin Birth and the Resurrection. "All this, my dear boy, is nothing. The real snag in the Christian, or any other religion, is the belief in God. If you can swallow God, you can swallow anything." (1964: 99)

The brain of our species has grown phenomenally as compared with that of gracile australopithecines or modern bonobos, even when we make allowances for our overall increase in body size. Initially the availability of a large brain provided the green pastures in which language could settle and flourish. Once meanings began to reproduce within the brain, hominid brain evolution came to be driven by language at least as radically as any symbiont determines the evolution of its host species. Language engendered a sheer tripling of brain volume from a mean brain size of 440 cc to 1400 cc in just two and a half million years. At the same time, the increasingly convoluted topography of our neocortex expanded the available surface area of the brain.

The role of innate vs. learned behavior in the emergence of language is an artificial controversy when viewed in light of the relationship between a host and a memetic symbiont lodged in its bloated brain. In the past 2.5 million years, our species has evolved in such a way as to acquire the symbiont readily from earliest childhood. Our very perceptions and conceptualization of reality are shaped and moulded by the symbiont and the constellations of neuronal groups which language sustains and mediates.

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Taxonomy, Typology and Historical Linguistics

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1. Introduction

The past decade has witnessed a renewed interest in historical linguistics, as the various controversies surrounding Amerind, Nostratic, and even broader proposed taxa well attest. Yet this renewed interest seems to have revealed as much the current state of confusion within historical linguistics as the validity of any of the newly proposed families. I will argue here that the comparative method was misunderstood by historical linguists in the twentieth century, with the result that the discovery of new genetic relationships among languages effectively ground to a halt — with the significant exceptions of the work of Joseph Greenberg and the Nostraticists. What is equally distressing is that the borders between three distinct fields — taxonomy, typology, and historical linguistics — have become blurred. Each of these fields has its own goals and its own methodology, and they are not the same. This in no way implies that these fields are completely disconnected from one another. Certainly Greenberg's enormous knowledge of diachronic typology informed his classification of Eurasiatic languages in many ways, most spectacularly in the explanation of the origin of the