

THE LANGUAGE ORGANISM: PARASITE OR MUTUALIST?

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'When I use a word,' Humpty Dumpty said, in rather a scornful tone, 'it means just what I choose it to mean — neither more nor less.' 'The question is,' said Alice, 'whether you *can* make words mean so many different things.' 'The question is,' said Humpty Dumpty, 'which is to be master — that's all.'

Language is an organism

The idea that language is a life form in its own right was popular amongst Indo-European linguists in Germany in the early 19th century. Friedrich von Schlegel described language as 'ein lebendiges Gewebe' (1808: 64), and Wilhelm von Humboldt spoke of the 'Organismus der Sprache' (1812: 8). Later, inspired by Ernst Haeckel's popularisation in Germany of Darwin's 1859 book *On the Origin of Species*, August Schleicher formulated a lucid statement on the organismal nature of language. Some have misinterpreted the conception of language as an organism as no more than a metaphor. Yet Schleicher's statement about language as a life form was unequivocally literal: 'Die Sprachen sind Naturorganismen, die, ohne vom Willen des Menschen bestimmbar zu sein, entstunden, nach bestimmten Gesetzen wuchsen und sich entwickelten und wiederum altern und absterben; auch ihnen ist jene Reihe von Erscheinungen eigen, die man unter dem Namen »Leben« zu verstehen pflegt' (1863: 6-7).

The conceptualisation of language as an organism remained popular, but the notion was reinterpreted by historical and comparative linguists in ways that differed from the intimations of more semiotically inclined thinkers. In retrospect, the thinking of the latter group blazed the trail for the Leiden school of language evolution. Victor Hugo wrote that 'le mot, qu'on le sache, est un Être vivant' (1856, I: l. 675), and Gottlob Adolf Krause professed: 'Für mich ist jedes Wort ein sprechendes Lebewesen' (1885: 257). The indologist Max Müller and later the mathematician Bertus Brouwer had profound and often disturbing insights into the nature of linguistic meaning and the effects of language. Müller and Brouwer can be identified as Kortlandt's intellectual precursors. In the early 1980s,

Kortlandt's tutorials led to the growth of the Leiden school of language evolution, with Jeroen Wiedenhof and myself as disciples. His now famous article on the language parasite, which appeared in 1985, explained that the nature of the organism stems from the fact that meanings are non-constructible sets in the intuitionist mathematical sense. Kortlandt's view was a radical departure from earlier views on language as an organism, for his semiotic approach cut to the chase in identifying meaning and its behaviour as the crux of linguistics and language evolution.

In Kortlandt's Leiden school, the inherently dynamic character of meanings is seen as a direct function of their neuroanatomy, as modelled by Hebb (1949) and later elaborated by Changeux (1983) and Edelman (1987). Brouwerian semantics dovetails with neuroanatomical reality and the observable behaviour of categories of meaning as units in the Darwinian process of neuronal group selection. In the wake of Kortlandt's writings, i.e. (1985, 1998, 2003), his Leiden students have begun to contribute to the discussion, e.g. Wiedenhof (1996, 1998, 2000, 2001a, 2001b, 2002, 2003a, 2003b, 2003c, 2003d, 2004, this volume), van Driem (2000a, 2000b, 2001a, 2001b, 2003, 2004a, 2004b, 2005). Some critics have noticed that the Leiden school is not a single coherent view of language evolution, but three coherent views of language evolution, albeit largely congruent ones. This essay is an attempt to clarify a difference which some readers have perceived between Kortlandt's view of language and my own.

Pessimistic vs. optimistic linguistics?

The perceived difference between Kortlandt's view of language and my own has often been phrased, even by Kortlandt himself, along the lines of the master viewing language as a parasite, whereas his pupil sees language as a symbiont. Part of the confusion is terminological in nature, for technically a parasite too is a symbiont. Symbiosis is when two phylogenetically distinct organisms live together in some sort of intimate relationship. Symbiotic relationships abound in nature and take on many forms. The most far-reaching form of symbiosis is a relationship in which both organisms cannot live without the other and effectively become as one life form. Most life forms on the planet today originated as symbiotic relationships. An early understanding of the role of symbiosis in evolution dates back to the same period in the history of biology that evolution by natural selection first came to be understood by Charles Darwin and Alfred Russel Wallace.

Pierre Joseph van Beneden, professor at the Catholic University at Leuven, adopted the term *mutuellisme*, brandished by the French social

reformer Pierre-Joseph Proudhon for his ostensibly benign variety of communism, to apply to mutually beneficial relationships between species. The Belgian marine biologist later popularised the idea in his 1876 book *Les commensaux et les parasites*, which also appeared in German and English translations that same year. He distinguished various types of symbiotic relationship, i.e. parasite, free-living commensal, resident or obligate commensal and mutualist. Van Beneden stressed that beneficial reciprocity was as prevalent as commensalism. He described in detail how commensalism and mutualism contrasted strongly with the deleterious effects of parasitism and likewise carefully distinguished between various forms of commensalism and the intimate and reciprocally beneficial interdependency which characterised mutualism.

Van Beneden's work inspired the German botanist Heinrich Anton de Bary, who in 1879 popularised the word *Symbiose* 'symbiosis', an already extant term of Greek origin, in a public address to German biologists and physicians at Cassel as a cover term to designate all forms of 'Zusammenleben ungleichnamiger Organismen', i.e. the living together of organisms with different names, viz. belonging to differently named taxa. Symbiosis included 'der vollständige Parasitismus' (viz. full-fledged parasitism, which de Bary held to be the 'most exquisite' form of symbiosis), various types of commensals, and 'van Beneden's Mutualisten', which were neither parasitic nor commensal. De Bary's most fascinating examples were lichens. All lichens are symbioses of fungi known as ascomycetes with either algae or cyanobacteria. His description of these fascinating symbioses made lichens the emblematic classroom example of symbiosis.

Friedrich Schmitz, professor of botany in Bonn, observed that the chloroplasts of eukaryotic algae, along with their associated starch-accumulating structures called pyrenoids, were not fabricated anew in the cytoplasm, but reproduced independently by division within individual cells (1882). Schmitz first made this observation in 1880 'für eine Anzahl von Algen... während eines Aufenthaltes an der Zoologischen Station zu Neapel', but within two years he had established that the independent reproduction of *Chromatophoren* or chloroplasts was a feature of all eukaryotic algae. This observation regarding the autonomous nature of chloroplasts in eukaryotic algae inspired botanist Andreas Schimper, who in 1883 showed that *Chlorophyllkörper* or chloroplasts in green plants too 'nicht durch Neubildung aus dem Zellplasma, sondern durch Theilung aus einander entstehen' (1883: 106). This discovery led Schimper to venture that all green plants had originated through an original symbiotic association of two unlike organisms: 'Möglichsterweise verdanken die grünen Pflanzen wirklich einer Vereinigung eines farblosen Organismus

mit einem mit Chlorophyll gleichmäßig tingierten ihren Ursprung'.¹ In a similar vein, the botanist Albert Bernard Frank (1885) soon afterwards recognised mycorrhiza too to be a symbiotic relationship between terrestrial plants and subterranean fungi which subsist on their roots and provide these plants with essential nitrogen and minerals.

It was in Russia that the term *symbiosis* began to acquire a new anodyne flavour. Andrej Sergeevič Famintsyn studied the ontogeny of chloroplasts in green plants (1889, 1893, 1907). His studies inspired Constantin Mereschkowsky to make the same observation in 1905 that Schmitz had made in 1880 and Schimper in 1883, namely that chloroplasts are not assembled from scratch in the cytoplasm, but are cytoplasmically inherited and replicate themselves autonomously within the host cell. Mereschkowsky went a step further than Schmitz and Schimper, however, in claiming that chloroplasts remained genetically independent of the nucleus. Mereschkowsky also argued that '*Cyanophyceae*' or cyanobacteria, which until relatively recently used to be called blue-green algae, were basically free living chloroplasts that had not entered into the cytoplasma of a host cell, where they had taken up a reduced symbiotic existence and rendered the host cell autotrophic. For the genesis of a new life form through symbiosis, Mereschkowsky coined the term *symbiogenesis* in 1909.

Famintsyn felt that the term *simbioz*" should be reserved for relationships that were mutually beneficial, i.e. that *simbioz*" be used in the sense of van Beneden's mutualism rather than in the sense of de Bary's symbiosis. Famintsyn's symbiosis therefore excluded parasitism, which de Bary had considered to be the 'most exquisite' form of symbiosis. Since then, numerous types of symbiosis have been identified and analysed, and an elaborate terminology has evolved to designate different types of symbiotic relationship, e.g. parasymbiosis, social parasymbiosis, phoresy, inquilinism, symbiotrophism (Henry 1966, Margulis and Schwartz 1988). This rich arsenal of precise terminology contrasts with the feel-good 'New Age' flavour which the term *symbiosis* has acquired today in popular lay usage. Not all symbiotic relationships are mutually beneficial, but in lay parlance and even sometimes in biological discourse *symbiosis* is used to refer to mutually beneficial relationships. This connotation can be traced back to Famintsyn, who gave the term a favourable twist and thus set in

¹ Recently, gene sequencing has provided the first genomic evidence that all plastids form a monophyletic group and that a single endosymbiotic event gave rise to a unified but highly diverse phylum comprising all primary photosynthetic eukaryotes, viz. green plants, red algae and glaucophytes (Rodríguez-Ezpeleta *et al.* 2005)

motion a shift in meaning away from de Bary's original usage of *Symbiose* as a cover term for all forms of intimate inter-species relationship.

Recapitulating, the label 'Symbiotic Theory', which I introduced for the Leiden model of language evolution, can be applied to both Kortlandt's view of language and my own. Besides using the term *symbiosis* strictly in its original Flemish and German sense, i.e. free of value judgment, I have discussed the language organism whilst knowingly suggesting the originally Russian, now popular pleasant connotation of *symbiosis* as mutualism. Kortlandt, however, has insisted that language is a parasite. A terminologically more precise rephrasing of the difference between Kortlandt's view of language and mine, therefore, would be whether language is a parasite, and thus an organism deleterious to its hominid host, or a mutualist, and so a partner in a mutually beneficial symbiotic relationship. What I hope to show in the following section is that even this paraphrase represents an over-simplification of our views and of any real or perceived difference between them.

The nature of the beast

The beast in the brain is a complex organism in its own right and has a high degree of autonomy. 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 infancy. Like any other life form, language consists of a self-replicating core. The units of this self-replicating core are the isofunctional neuronal correlates of signs in the sense of Ferdinand de Saussure, i.e. of meanings and of their associated phonological forms. So, is language a parasite or a mutualist? The architecture of language and the intricate dynamics of the relationship between the biological host and its memetic symbiont make the answer a complex one.

Our species has overrun the planet. A conventional measure of success for a species is reproductive fitness, and ours has manifestly been enhanced by language, whilst at the same time language thrives through us. By this criterion, therefore, language is a mutualist symbiont. If language were to be a parasite, then why has it not led to the extinction or at least attrition of our species? As Kortlandt has darkly hinted in this context, time will tell. Moreover, he stresses that language is our own undoing even now, for throughout history and in each of our daily lives our most vexing problems derive from language. Language remains largely impervious

to the well-being of man, and it colours and even stunts the perceptive faculties of its hominid host. Certainly, from the perspective of language, human brains are tools for the reproduction of language. Our grey matter has been recruited for the propagation of linguistic signs through the relentless proliferation from host to host of isofunctional neural constructs. The idea that language exerts an unfavourable effect on perception itself and blinds us to reality is an old idea already espoused by Bertus Brouwer and Frederik van Eeden. Language shapes our conceptual reality, yet there is a complex relationship between language as such and language-borne ideas. Whether or not the capricious nature of non-constructible sets portends our doom as a species, two other issues are relevant to an understanding of how the relationship between language and man straddles the distinction between mutualism vs. parasitism.

One issue is whether or not language actually debilitates its hominid host. We humans are inoculated with language at birth. Language infests our brain and stays with us until we are entirely brain-dead. Our brains teem with linguistic signs, and each time a linguistic form with its associated meaning is activated in our brain, a Darwinian generation time has elapsed in terms of the neuronal group selection which characterises the rapid life cycle of linguistic signs. By analogy with biological models, my contention has been that language itself is a mutualist, whereas not all meanings borne by language are mutualists. As in any symbiotic relationship, models predict that categories of meaning which are vertically transmitted from the parent host to his or her infant offspring are more likely to be mutualistic in nature. Such are the grammatical categories of a language and much of the core vocabulary which is structural to a given language. These constellations of meaning construct our reality and shape our perceptions in pervasive and insidious ways. Yet by and large the grammatical and lexical core of the language acquired in infancy collectively enhances the reproductive fitness of the hominid host.

By contrast, categories of meaning that are acquired subsequently and that are readily horizontally transmitted from host to host within a single host generation are less likely to be beneficial. Whereas some linguistic signs may be highly salubrious, others may be lethal to the host and devastating to the host community at large. Jihad, racial purity, proletariat, religious tenets and various brands of political correctness are obvious examples of pathological ideas, but in fact all horizontally transmitted thoughts are potentially dangerous and parasitic. We live the myths and ideas that impinge upon us and that wash across our societies. The distinction between the grammatical and lexical core of a language with which an infant human is inoculated and all the language-borne notions

that the person acquires later in life is no sharp dichotomy but a fuzzy gradient. Applied to the language organism, the point of the distinction between the vertical and horizontal propagation of linguistic signs from host to host is merely that language-borne notions of reality such as *infidel*, *Ahnenpaß* or *kosher* will have a greater likelihood of being malevolent than meanings such as the present perfect tense, the zero morpheme for singular number in nouns, or lexical items such as *mother*, *hungry* and *water*. Meanings and syntactically articulated constellations of meanings may be wholesome, indifferent to the well-being of the host, or debilitating. This can only be judged by the effects of linguistic signs, certainly not by their appeal, which is no more than an index of their contagiousness and is no indication of their truthfulness.

The second issue is whether we are at the mercy of language. In his seminal article on the language parasite, Kortlandt stated: 'The view of language as a tool of the human species is less well-founded than its converse. The question is, in Humpty Dumpty's words, which is to be master' (1985: 478). I agree that we are at the mercy of language, but just who are we? Certainly, we are not just the hominid host, as the sad example of feral children teaches us (Ball 1880, Burnett 1784, de la Condamine 1755, Dresserus 1577, Itard 1801, 1894, Mason 1942, Singh and Zingg 1942, Sleeman 1858, Squires 1927, Rauber 1885). These soulless children are not fully human, though they are no doubt entirely hominid. We are not just flesh and blood, we are what we believe. We are symbiomes of body and soul. Our body is that of a particular variety of greater ape with all its social primate propensities, equipped with a brain which has grown bloated in a long process of coevolution with language. Our soul is the language organism which resides within our skull along with everything inside our brain that is mediated by language. The moment on the 5th of April 1887, when suddenly and heart-rendingly 'the mystery of language was revealed to' her, Helen Keller would subsequently describe as her 'soul's sudden awakening' (1905: 23). We are incomplete without language. The colonisation of an australopithecine brain by language was the symbiogenesis that yielded the first human beings.

The controversy about parasitism vs. mutualism boils down to the question of what makes us human. On the matter of our identity as a species, Wilhelm von Humboldt observed: 'Der Mensch ist nur Mensch durch Sprache' (1822: 244). The issue of whether the language organism or its hominid host has the upper hand begs the question of our very identity. When Humpty Dumpty asks who is to be master, how much does it really matter? If it feels good to live in a linguistically constructed reality, can this opium really be so bad for us? Of course, whenever we are

driven to immolate ourselves for some abstract ideal, or to kill ourselves and murder others for the sake of some belief system, then this question becomes more pressing. We are as much our essentially linguistic soul as we are its corporeal hominid host. Being healthy involves keeping both components of a symbiome happy. Our brain houses a consciousness which sustains the illusion of a thinking self with a free will. In reality, our feelings, thoughts, yearnings and behaviour are the outcome of the jostle and interplay of the biological propensities and lust for creature comforts of the human host in symbiotic association with a capricious linguistic symbiont which serves as the vehicle for the ideas waging war within us. So when we speak, who is doing the talking?

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