ALTRUISM AND THE ORIGIN OF LANGUAGE AND CULTURE

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It is argued that altruism, language and culture form an autocatalytic set of interdependent developments that coevolved and emerged simultaneously. We will examine the possibility that culture, like language, evolved as an organism that was easy for the human mind to grasp and as a result gave rise to Universal Culture just as language evolved in such a way as to give rise to Universal Grammar.

1. Introduction

The focus of this study is to understand the relationship of language, culture and altruism (or social cooperation) and how the origin and evolution of these three aspects of human society affected each other. We will attempt to show that the origin of altruism, language and culture do not represent three distinct mysteries but that they emerged together leaving us with a single mystery. A second hypothesis to be examined is that the universality of culture can be explained by treating culture as an organism like language that evolved in such as way that it could be easily acquired by the human mind.

2. The Interdependence of Altruism, Language and Culture

It is claimed that these three aspects of the human condition are interdependent. Language is an explicit part of culture and it is also the medium for the transmission of culture. Culture, on the other hand, is the medium for the transmission of language. Altruism or social cooperation is a necessary condition for the emergence of both language and culture. Brinck and Gärdenfors (2003, p. 492), for example, claim "that a major reason for the evolution of language is that it enhances co-operation. Language is the tool by which agents can make their imaginations, desires, and evaluations known to each other." One can just as easily claim that a major reason for the evolution of culture is that it enhances co-operation.

Language and culture share one other parallel property in addition to promoting co-operation, namely they are both symbolically based. All of the words of a language are symbols. Culture, on the other hand, has been described by a number of anthropologists (Geertz 1973, p. 8; Boyd and Richerson 1985, p. 34; Durham 1991, pp. 8-9; and Johnson and Earle 1987, p. 322) as basically the social transmission of symbolic patterns of behavior.

In the Extended Mind model of the origin of language Logan (2000 & in press) posits that language emerged as the bifurcation from perceptual thinking to conceptual thinking in which words served as our first concepts serving as strange attractors for all the percepts associated with the particular concept represented by the word. Durham claims, on the other hand, that culture maybe regarded "as a system of symbolically encoded conceptual phenomena." Thus both language and culture lead to symbolic conceptual thinking and are intimately intertwined.

3. The Autocatalysis of Altruism, Language and Culture

Having argued that language, culture and altruism are interrelated I would now like to turn to address one of the primary theses of this paper, namely that

1. language, culture and altruism coevolved, and

2. the mystery of the origin of these three unique features of Homo sapiens is not three separate mysteries but can be simplified to a single mystery because language, culture and altruism form an autocatalytic set of ideas. Another way of expressing this is to say that human language, culture and altruism form a complex adaptive system or are a set of ideas that have a positive feedback loop.

We cannot at this stage of our understanding of these three phenomena, describe the process by which they emerged and interacted with each other. There are, however, a number of interesting analyses from linguistics, child psychology vis-à-vis language acquisition, hominid archaeology and cultural anthropology which points to a strong interrelation between these three facets of human existence suggesting that they may form an autocatalytic set of human behaviors.

Let me begin by cataloging the results of the research of others that led me to postulate my hypothesis and perhaps later try to synthesize or weave together these different strands into a coherent argument. By way of the history of these arguments I would like to mention that these ideas which had been kicking around in my head congealed at the Evolang 5 Conference in Leipzig in March 2004 where within the space of three days I was exposed to a number of fascinating results that led me to conclude that altruism was an essential factor in the emergence of language and culture.

Let us begin with the work of Tomasello (1999) and his co-workers in which they have shown that children starting at about one year of age begin to understand

> persons as intentional agents, which enables skills of cultural learning and shared intentionality. This initial step is 'the real thing' in the sense that it enables young children to participate in cultural activities using shared, perspectival symbols with a conventional/normative/reflective dimension—for example, linguistic communication and pretend play—thus inaugurating children's understanding of things mental (Tomasello, M. & Rakoczy, H. 2003, p. 121).

Tomasello also reported evidence at Leipzig that children will engage in joint attention activities and that they will show things to their parents or caregivers not only to obtain something they want, which they do but also just for the pleasure of doing it because they want to share interest (Tomasello 2004). Human children as opposed to nonhuman primates understand communicative intentions. They readily engage in joint actions and joint attention to such a greater extent than nonhuman primates that this quantitative difference becomes a qualitative one. Apes can follow someone reaching for something but they cannot understand why a human is pointing at something, an ability that dogs possess even as puppies unexposed to humans. In other words, although apes can understand the intentions of conspecifics, such as the desire of a conspecific to obtain some food, they are unable to understand communicative intentions. Children understand what adults want and they want to help the adult achieve their objective. They collaboratively engage in joint actions, which is something that apes are not capable of. In other words, they understand the adult perspective (Tomasello 2004). All of these abilities of children are indicative of their innate altruistic or collaborative attitude.

The innate desire to share interest and to be collaborative is a prerequisite for language and cultural transmission because without the motivation to share there is no motivation to communicate. What cannot be teased out of this argument, however, is whether the motivation to share motivates communication or vice versa, does the desire to communicate motivate sharing. Perhaps sharing and communicating both motivate and support each other and as a result altruism and language emerged together.

Chris Knight (1998, p. 75) points out that according to the Darwinian view that if language is "a system designed for communicating good information to trusting listeners" then "this implies that speech has been co-operative from its inception." He goes on to observe that,

> in accounting for the necessary honesty, it is tempting to draw on Darwinian reciprocal altruism theory (Trivers 1971): if you lie to me, I'll never again listen to you–so be honest. But even

> accepting this, we need to explain why the dynamic did not lead to volitional, conventional signaling among those apes, which appear cognitively capable of reciprocal altruism.

Tomasello and Donald independently provide the same answer namely apes lack an understanding of the intentionality of others. “This capacity (understanding of the intentionality of others) seems to be absent in apes (Donald, 1998, p. 56).” “Nonhuman primates are themselves intentional and causal beings, they just do not understand the world in intentional and causal terms (Tomasello 1999, p. 19).” This being the case it is understandable why apes never developed reciprocal altruism–they could not conceive of a conspecific having the intention to treat them kindly.

Knight (1998) makes his argument for the relationship between altruism and “communicating good information” by referring to Trivers’ (1971) work. More recently Laland, Odling-Smee and Feldman (1999) have critiqued Trivers approach arguing persuasively that altruism is better accounted for by understanding the role of niche construction. Even if they are correct Knight’s point is still valid—language and altruism are interconnected whether altruism arises from reciprocity or niche construction,

Ulbaek (1998, p. 41) also connects reciprocal altruism and social communication,

> The function of language in modern Homo sapiens and in the species' language using ancestors is to communicate thoughts...language evolved in the Homo lineage not because of superior hominid intelligence, but because of special social conditions: the development of reciprocal altruism as a way of gaining fitness by sharing and helping.

We have argued that humans as opposed to apes are capable of altruistic behavior because they are capable of understanding of the intentionality of others but perhaps this argument is circular. One can equally argue that humans are capable of understanding of the intentionality of others because they need to collaborate. We therefore need to list some reasons that might have motivated genus Homo to be collaborative and hence capable of understanding of the intentionality of others. Bickerton (2002, p. 209) suggests three, namely, group foraging, predator avoidance and the instruction of the young. To these following the work of Donald (1991) I would add:

1. tool making and the sharing of that skill,
2. the maintenance of the hearth once the control of fire was mastered,
3. the need to live harmoniously in large groups sharing the hearth
4. large scale coordinated hunting
5. mimetic communication

Another area that links altruism and language, is understanding the connection between altruism and encephalization. Although the exact link between language and encephalization is not known there is much evidence that there is some sort of correlation between language and encephalization from work in neuroscience and hominid physical archaeology. When this correlation is coupled with the evidence from archaeological studies of hominid settlement sites of a connection between encephalization and food sharing, a form of cooperation or altruism one has another link between language and altruism. James Aiello and Wheeler (1995) and Kaplan et al. (2000) have persuasively argued from energy consideration that in order for the brain to have grown in size it was necessary for the gut to have become smaller because the human brain which only represents a small percentage of body weight uses up 20% of the body’s energy resources. The diet of early hominids was made up of low quality foods such as leaves, ripened and unripened fruits, insects and small game which required large guts and a lot of energy devoted to digestion. With an improvement in diet due to the inclusion of large game animals hominids were able to devote more energy to servicing a larger brain and less to digestion

Archeological records show that more advanced hominids emerged where there was a large quantity of game. This enabled smaller guts and there was energy left over to service a larger brain. As hominids included large game in their diet a positive feedback loop was initiated. The more intelligent the hominids were the more they could succeed at finding large game, which would in turn promote greater encephalization and in turn greater intelligence and a better diet and so on and so forth. Food sharing, a

form of altruism and cooperation or collaboration, was essential for reducing variance in the high quality foods essential for brain growth. Through group selection, food sharing and altruism as well as encephalization would be selected for. Steele (2004) presented evidence for food sharing from analyses of animal bones that were found at hominid archaeological settlement sites. Analyses of early Paleolithic sites seem to indicate that they accommodated a small kin group of probably less than 100 people. It is surmised that as groups exceeded this number they would split off to keep the size of the group not much larger than 100.

Another connection between language, encephalization and high quality food is the following: In acquiring large game the range of the animals becomes quite vast which requires good communication between the hunter as well as the need to conduct large-scale coordinated hunting.

Still another connection between language, encephalization and high quality food has been developed by Buckley and Steele (2002). They tested three evolutionary ecological models for the emergence of language against existing archaeological and paleontogical data and concluded that the following model provides the best explanation of the data:

> The first set of models emphasizes the stabilization of kinship networks and the extension of provisioning effort for the rearing of offspring to include both males and female kin (e.g. 'grandmothers'). In this model, the effectiveness of alliance networks enables a mother to rely on other individuals, envisaged as close kin relations, to assist in the provisioning and nurturing of the female's offspring. The supposed benefit of such a situation is to ensure the gene survival over multiple generations. Language serves both to optimize the task of co-operative food search and to enforce social contracts linking provisioning effort to reproductive success.
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> The most plausible social explanation for the evolution of language is intensely negotiated co-operation within small stable groups, based on family or kinship ties. Language enhances efficiency in co-operative foraging tasks…Language also enables the negotiation of food sharing… Social stability is reinforced by the symbolic development of classificatory kinship terms that discriminate between degrees of relatedness and therefore degree of co-operation. Language is consequently vital to distinguish between members of the kinship group and the importance of their relatedness to an individual– and the social contracts that are entailed in the relations between individuals of defined kinship categories.

Another direct link between language and altruism is suggested by Dessalles (1998, pp. 130-31) who claims that "relevance is a requirement of language" from which it follows that language conveys "valuable information, and thus… any relevant utterance is potentially altruistic." "Sharing information, like sharing food, is altruistic (ibid., p. 135)." But this presents a paradox for Dessalles, which requires an explanation because he claims, "if it is altruistic, the communicative behavior of human beings should not exist, unless we are able to show that some cheating detection device is systematically employed by talking people." But, in fact, all human societies do have a system for detecting and punishing cheaters. It is one of the cultural universals of human society. The ability to detect cheaters allows reciprocal altruism (Trivers 1971) or niche-constructed altruism (Laland et al. 1999) to emerge, which according to Ulbaek (1998, p. 41) allows

> information sharing (to) take place without loss of fitness to the speaker. In the human lineage, social co-operation based on obligatory reciprocal altruism has evolved, a system, which rewards people for co-operating and punishes them (morally and physically) for cheating. In such an environment language is finally possible.

We have just learned that the emergence of speech required a system for detecting cheaters but that such a system would have in turn required a system of speech to detect cheaters. This leads us to the conclusion that speech, reciprocal altruism and the detection of cheaters must have coevolved and emerged together as an autocatalytic system.

Dessalles does not invoke the universality of justice systems to explain the paradox he has formulated. Rather his approach is to explain the motivation to share information comes from the desire of the speaker to forge a collaborative relationship with the persons with whom he or she shares information and that linguistic behavior "is a form of trade: relevant information is given in exchange for status (Dessalles 1998, p.146)." The status obtained is instrumental in forming collaborative alliances that obviously have a survival advantage. The instinct to form collaborative alliances is something we might have inherited from our nonhuman primate ancestors who regularly create such alliances.

> In the social domain, primates, but not other mammals, understand something of the third-party social relationships that hold among other individuals; for example, they understand such things as the kinship and dominance relations that third parties have with one another. Thus, primates are selective in choosing their coalition partners, selecting as an ally, for instance, an individual who is dominant to their potential adversary– indicating their understanding of the relative dominance ranks of these two individuals. (Tomasello 1999, p. 17)

4. Culture as an Organism

Because culture is essentially symbolic—a set of ideas, beliefs and knowledge, its acquisition by the human mind like that of language must be simple and straight forward if it is to be transmitted and hence survive. It is therefore logical to posit that culture like language evolved in such a way as to be easily acquired by humans. I am therefore tempted to extend Christiansen's (1994) idea that language is an organism to culture itself and suggest that culture is also an organism. If we accept this hypothesis then it follows by analogy that many of the conclusions Christiansen reached regarding language would apply to culture as well.

I have taken the liberty of transforming a paragraph of Christiansen, Dale, Ellefson and Conway (2001) that I quoted in Chapter 8 by replacing the word "language" with the word "culture" to arrive at some interesting thoughts about the nature of culture and its evolution. By making this substitution I have generalized and expanded Christiansen's (1994) notion of "language as an organism" to the idea that culture can also be considered as an organism in the same metaphorical sense.

> *Culture* exists only because humans can learn, produce, and process them. Without humans there would be no *culture*. It therefore makes sense to construe *cultures* as organisms that have had to adapt themselves through natural selection to fit a particular ecological niche: the human brain. In order for *cultures* to "survive", they must adapt to the properties of the human learning and processing mechanisms. This is not to say that having a *culture* does not confer selective advantages onto humans. It seems clear that humans with superior *cultural* abilities are likely to have a selective advantage over other humans... What is often not appreciated is that the selection forces working on *culture* to fit humans are significantly stronger than the selection pressures on humans to be able to use *culture*. In the case of the former, a *culture* can only survive if it is learnable and processable by humans. On the other hand, adaptation toward *culture* use is merely one out of many selective pressures working on humans (such as, for example, being able to avoid predators and find food). Whereas humans can survive without *culture*, the opposite is not the case. Thus, *culture* is more likely to have adapted itself to its human hosts than the other way around. *Cultures* that are hard for humans to learn simply die out, or more likely, do not come into existence at all.

The above quote is from Christiansen, Dale, Ellefson and Conway (2001, pp. 144-45) and has been altered by substituting the word *culture(s)* for *language(s).* It suggests that culture like language can also be regarded as an organism that evolved to be easily acquired and preserved.

5. Universal Culture

There is still another interesting (and I might add highly speculative) consequence that I would like to explore as a result of extending Christiansen's (1994) metaphor of language as an organism to culture.

Christiansen (1995, p. 9) argued that language in order to survive had to evolve in such a way as to adapt itself "to fit the human learning and processing mechanism." He then argued that this was the mechanism that led to the universality of the characteristics of human language or to Universal Grammar (UG) as first identified by Chomsky. If natural selection acting on language as an organism led to the UG then we should expect natural selection acting on culture as an organism should lead to a universal set of rules that govern the social interactions within a culture which we might wish to call Universal Culture (UC), i.e. the set of universal elements which characterize all human cultures. The universals include such elements as: language, marriage, kinship relations, gossip and taboos.

The notion of Universal Culture has certain parallels with Universal Grammar as pointed out by Robin Fox (1989, p. 113):

> The parallel search by linguists had some important lessons: the search for substantive universals seems barren; if there were universals they were at the level of *process*….They (cultures) may be unique at the level of specific content—like languages—but at the level of the *processes* there are remarkable uniformities—like language again….Each outcome of a universal process can look very different. But it is nowhere written that universal processes should have identical outcomes.

6. A Catalogue of Cultural Universals

Brown (1991, pp. 130-41) has attempted to catalogue all those aspects of human culture which are universal or in his words are "near-universal." He asks, "what do all people. all societies, all cultures, and all languages have in common? (ibid., p. 130)" He attempts to provide an answer in terms of what he calls "the Universal People (UP)."

> The UP are aware of this uniqueness (their possession of culture) and posit a difference between their way—culture—and the way of nature. A very significant portion of UP culture is embodied in their language, a system of communication without which their culture would necessarily be very much simpler. With language the UP think about and discuss both their internal states and the world external to each individual....With language, the UP organize, respond to, and manipulate the behavior of their fellows....UP language is of strategic importance to those who wish to study the UP. This is so because their language is, if not precisely a mirror of, then at least a window into, their culture and into their minds and actions (ibid., p. 130).

Brown (1991, pp. 130-41, 157-201) lists over one hundred items that human cultures right across the planet share in common on a universal or near-universal basis.

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