19.8 The Relation between Language and (Mimetic) Culture
Morten H. Christiansen on Donald

Which came first, language or culture? On the one hand, language seems to be woven into the very fabric of every human culture and to such an extent that it is hard to imagine what human culture would be like without language. Indeed, most myths about the origin of humanity—whether religious or otherwise—seem to suggest that humans had language from the very beginning. On the other hand, what use would humans have for language if they didn't have something to talk about? Living in groups governed by highly intricate social interactions would seem to provide an endless amount of possible discussion material. Yet, many other primate species also live in complex social groups, but notably without the benefit of humanlike language. Some sort of shared culture would seem to be a plausible additional component as a necessary prerequisite for language.[14]

Donald (vol. 2, ch. 14) argues for the latter scenario, proposing a "culture-first" theory in which the prior emergence of a mimetic adaptation provides scaffolding for the subsequent evolution of language. A set of domain-general cognitive skills is suggested to have evolved in early hominids, allowing rudimentary knowledge to be shared across individuals in a nonverbal manner. The selective advantage of such information exchange would then exert pressure toward improving communication, leading to the emergence of language as an efficient system for sharing cultural knowledge. Although this perspective provides suggestions regarding a possible origin of language, it tells us little about the subsequent evolution of language into its current form. Here I will seek to put Donald's account in relief[15] by discussing possible cognitive constraints that may help explain why language has evolved into the form it has today.

14. Thanks to Chris Conway, Rick Dale, and Gary Lupyan for their helpful comments on an earlier version of these comments.

15. It should be noted that the account of the *evolution* of language presented here is not dependent for its validity on the merits of Donald's account of the *origin* of language. Rather, it is an independent account of language evolution that is compatible with Donald's theory of language origin, but is not theoretically intertwined with it.

19.8.1 Mimesis and Language Evolution

The cornerstone of Donald's theory is *mimesis*, an evolved cognitive capacity unique to humans. The concept of mimesis is perhaps best understood when compared with the related notions of mimicry and imitation. Mimicry refers to a deliberate reduplication of a perceived action without attention to the possible purpose of the event, such as when a child parrots the speech of one of its parents. Imitation denotes a more abstract reduplication of action in which more attention is given to its purpose, such as when children imitate adult behavior and responses when playing "house." Finally, mimesis involves the reduplication of action sequences for the purpose of social communication, such as when a child stamps its foot to communicate its disagreement with some decision made by its parents. In this account, mimicry, imitation, and mimesis, rather than being categorical distinctions, correspond to points on a continuum of increasingly more abstract and socially informed reduplicative actions.

Whereas mimicry and to a limited extent imitation, can be found in nonhuman species, Donald argues that the capacity for mimesis has evolved only in the *Homo* lineage, starting some two million years ago. The emergence of mimesis is seen to have involved a series of adaptations primarily to the motor systems. This would have provided an expressive repertoire of motor actions upon which a nonverbal communicative culture could slowly emerge. This mimetic culture then formed the basis for the origin of language, first entering the evolutionary stage as a protolanguage encompassing one- and two-word utterances, and then gradually evolving into its current complexity through processes of cultural transmission.

19.8.2 Mimesis and Sequential Learning

An underlying assumption of Donald's view on the origin of language is that the first protolanguage must have relied on preexisting primate capabilities. Elsewhere he has thus suggested that "there might have been a dramatic discontinuity of *function* in the evolution of language, but there could not have been any discontinuities of *mechanism*" (Donald, 1998, p. 44). This continuity perspective becomes particularly important when it comes to explaining how various evolutionary changes in primate brain circuits may have affected the emergence and evolution of language.

A key component of the mimesis theory is the ability to memorize a social series of experienced events, or "episodes." As such, mimesis is crucially dependent on our ability for sequential learning; that is, the ability to encode and represent the order of discrete elements occurring in a temporal sequence. In line with the continuity perspective, hominid evolution does

appear to have involved important refinements of sequential learning. A recent review by Conway and Christiansen (2001) of sequential learning in nonhuman primates indicates that these primates share with humans good abilities for learning fixed sequences (such as a fixed string of sounds making up a word) and simple statistically governed structures (for example, one can segment the strings "funny robot" into "funny" and "robot" because these two syllable sequences statistically occur more often together than does "nyro"). However, when it comes to the learning of hierarchical structure, monkeys and apes fall short of young children. Hierarchical learning appears to be crucial for syntactic processing, in which words are combined into phrases that can be combined with other words or phrases to form new phrases that in turn can be combined with yet other words or phrases, and so on. Not only would a preadaptation for hierarchical learning seem to be a precondition for Donald's nonverbal mimetic culture, but also—and perhaps more important—it would seem to be a prerequisite for the evolution of complex syntactic language.

19.8.3 Language Learning and Evolution

Donald suggests that the human brain has evolved to be maximally flexible and plastic so as to better be able to acquire the intricacies of human culture. As for language itself, he has suggested that "much of the replicative information needed to perpetuate language is stored in culture, not in the genes" (Donald, 1998, p. 50). However, if culture were the only constraint on language, this perspective would suggest that we should find few commonalities among languages (and cultures). Yet the languages of the world, despite their many differences, also share many systematic similarities in their structure and usage, which are sometimes referred to as linguistic universals. Although the space of logically possible ways in which languages could be structured and used is vast, the world's languages occupy only a small fraction of this space. For example, of the world's languages, more than 50% have a subject-object-verb word order whereas only 0.25% at most have an object-subject-verb word order (Dryer, 1989).

Donald's perspective does not allow us to explain the existence of such universal linguistic patterns; it cannot tell us why language is structured the way it is or why language is so readily learned. To answer these questions we need to go beyond the mimesis perspective (or at least augment it). Instead of asking why the human brain is so well suited for learning language, we need to ask why language is so well suited to being learned by the human brain. By turning what is often a standard question about the language evolution on its head, it becomes obvious that languages exist

only because humans can learn, produce, and process them. Without humans there would be no language (in the narrow sense of *human* language). This suggests that cultural transmission has shaped language to be as learnable as possible by human learning mechanisms (Christiansen, 1994; Christiansen et al., 2002).

In order for languages to be passed on from generation to generation, they must adapt to the properties of the human learning and processing mechanisms. This is not to say that having a language does not confer a selective advantage on humans. It seems clear that humans with superior language abilities are likely to have a selective advantage over other humans (and other organisms) with lesser communicative powers. However, what is often overlooked is that the pressures working on language to adapt to humans are significantly stronger than the selection pressure on humans to be able to use language. In the case of the former, a language can survive *only* if it is learnable and processable by humans. On the other hand, adaptation toward language 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 language, the opposite is not the case. Thus, language is more likely to have been shaped to fit the human brain than the other way around. Languages that are difficult for humans to learn simply die out or, more likely, do not come into existence at all.

This view of language as an adaptive system has a prominent historical pedigree. Indeed, nineteenth-century linguistics was dominated by an organistic view of language (for a review, see, e.g., McMahon, 1994). The evolution of language was generally seen in pre-Darwinian terms as a progressive growth toward attainment of perfection, followed by decay. In the twentieth century, the "biological" perspective on language evolution was resurrected within a modern Darwinian framework by Stevick (1963) and later by Nerlich (1989). Christiansen (1994) proposed that language be viewed as a kind of beneficial parasite—a *nonobligate symbiont*—that confers some selective advantage on its human hosts, without whom it cannot survive. Building on this work, Deacon (1997) further developed the metaphor by construing language as a virus.

The basic asymmetry in the relationship between language and the human brain is underscored by the fact that the rate of linguistic change is far greater than the rate of biological change. Whereas Danish and Hindi needed fewer than 5000 years to evolve from a common hypothesized proto-Indo-European ancestor into very different languages (McMahon,

1994), it took our remote ancestors approximately 100,000 to 200,000 years to evolve from the archaic form of *Homo sapiens* into the anatomically modern form, sometimes termed *Homo sapiens sapiens*. Consequently, it seems more plausible that the languages of the world have been closely tailored through cultural transmission to fit human learning, rather than the other way around. The fact that children are so successful at learning language is therefore best explained as a product of the adaptation of linguistic structures, and not as the adaptation of biological structures toward an innate endowment of linguistic knowledge (such as a Universal Grammar).

19.8.4 Constraints on Language Evolution

Although Donald acknowledges in his chapter that "cultures and languages must be assimilated easily by infants during development" (vol. 2, ch. 14, p. 291), it also seems clear that his account would suggest that the universal constraints on the acquisition and processing of language are essentially arbitrary. Given the emphasis on a cultural storage of the replicative aspects of language, linguistic universals appear arbitrary because it is possible to imagine a multitude of culturally useful, and equally adaptive, constraints on linguistic form. In the perspective on language evolution put forward here, linguistic universals are in most cases *not* arbitrary. Rather, they are determined predominantly by the properties of the human learning and processing mechanisms that underlie our capacity for language. The constraints on these learning mechanisms become embedded in the structure of language because linguistic forms that fit within these constraints will be more readily learned, and hence propagated more effectively from speaker to speaker.

This account of language evolution also has important implications for current theories of language acquisition and processing. It suggests that many of the cognitive constraints that have shaped the evolution of language are still at play in our current language ability. If this is correct, it should be possible to uncover the source of some of the universal constraints in human performance on sequential learning tasks. For example, in a series of studies that combined artificial neural network modeling and artificial language learning, we have shown how universal constraints on the way words are put together to form sentences, as well as the formation of complex questions across the world's languages, can be explained in terms of nonlinguistic constraints on the learning of complex sequential structure (for an overview, see Christiansen et al., 2002).

19.8.5 Conclusion

Donald proposes that the origin of language is rooted in a mimetic culture that evolved prior to the emergence of language. I have argued here that although mimesis may provide one possible explanation of the origin of language, it tells us little about its subsequent evolution, including why language looks the way it does today. I have suggested that we may obtain insights into these questions by asking why languages are so well suited for human learning, thus turning upside down the standard question of why human brains are so well adapted for learning language. From this perspective, language has been shaped by cultural transmission over many generations to be as learnable as possible by the learning mechanisms of human children. The specific cognitive constraints imposed on the process of learning through cultural transmission have then over time become "fossilized" in the languages of the world as linguistic universals.

Returning to the question of whether language or culture came first, it would seem that the linguistic adaptation account of language evolution is at least compatible with Donald's culture-first scenario. Nonetheless, the approach to language evolution presented here also suggests a possible third alternative, one in which language and culture evolved together in a spiral fashion, feeding on each other and constrained by the learning and processing mechanisms of early hominids. In this view, the issue of culture first or language first is of less importance. Instead, we can focus on the interplay between culture and language in hominid evolution, and how this interplay may have been constrained by the various cognitive mechanisms in the evolving hominid brain.

19.9 A Possible Confusion between Mimetic and Memetic
Susan Blackmore on Donald

The terms "meme" and "memetics" were used many times at the Royaumont conference on imitation, and they sound very similar to Donald's terms "mimesis" and "mimetic," so it may be helpful to distinguish between the two.

"Meme" was coined by Dawkins to give a name to a replicator that is copied by imitation. As examples of memes, he suggested "tunes, ideas, catch-phrases, clothes fashions, ways of making pots or of building arches" (Dawkins, 1976/1989, p. 192) and included scientific theories, poems, chain letters, and religious doctrines. He derived the term itself from the Greek word *mimeme* meaning "that which is imitated," abbreviating it to a

monosyllable that sounds a bit like gene. This choice itself was, as we now know, a highly successful meme. So the core meaning of "meme" is that which is imitated.

By contrast, Donald's (1991) term "mimetic" is part of his three-stage account of the evolution of human brains, culture, and cognition. These three stages are (1) the acquisition of mimetic skill; (2) lexical invention—the creation of words, spoken language, and storytelling; and (3) the externalization of memory, including symbolic art and the technology of writing, both of which allowed humans to overcome the limitations of biological memory.

We can easily see that the terms are very different. Donald's "mimetic" is closer to "mime" than to imitation, and he includes "gesture, body language, and mime, any of which can communicate an intention quite effectively, without words or grammars." He also includes representing an event to oneself as a form of mimesis and describes mimesis as "a necessary preadaptation for the later evolution of language" (Donald, 2001, p. 263). So mimesis includes internal representations and excludes language, storytelling, and writing. In contrast, memes are anything that is copied from person to person; in the modern world, the vast majority of memes are words and combinations of words, both written and spoken.

These are the most obvious differences, but if we pursue them a bit further, we find that these two terms exemplify two fundamentally different approaches to human evolution. First, for Donald "mimesis rests on the ability to produce conscious, self-initiated, representational acts that are intentional but not linguistic" (1991, p. 168). This means that mimesis is essentially a symbolic or representational act. This is not implied in memetics. Memes are simply the actions, behaviors, or statements that people make, and the artifacts they build. If these memes can succeed in being copied, they will thrive, and there is no requirement for them to be symbolic or representational, let alone conscious.

A second difference concerns the origins of variation and creativity. Donald argues that, as a purely replicative skill, imitation cannot generate much cultural variation and plays a limited role in cultural evolution, that it is more a transmission device than a creative one. This more traditional view is completely reversed by the memetic view, which might be stated like this: Imitation is the copying mechanism that made cultural evolution possible. Errors in imitation provide one source of cultural variation, recombination of old memes to make new ones provides more, and selection from the variants completes the process. Memetic evolution is a creative process in exactly the same way that biological evolution is, and depends

on imitation as its mechanism of heredity. In the memetic view, imitation is the key to all of human creativity.

Finally, the two approaches differ over the question, Who benefits? (Dennett, 1995). The main point of memetics, as conceived by Dawkins, was to illustrate that memes as well as genes can have replicator power. He argued that we should get out of the habit of always appealing to biological or genetic advantage because there may be other replicators that also drive evolution for their own advantage. Memetics is therefore the study of how the interests of memes affect human evolution and culture. By contrast, Donald sees mimesis as an adaptation, following the traditional view that the skill of copying gestures, actions, and mimes is of biological advantage to the people who acquired it, rather than being of advantage to the gestures, actions, and mimes themselves. We are far from knowing which theory, if either, is correct, but it may be helpful to realize how very different they are.