Bence Nanay (2000) Philosophical Questions in the Evolution of Language. Psycoloquy: 11(029) Language Gesture (3)

Volume: 11 (next, prev) **Issue**: 029 (next, prev) **Article:** 3 (next prev first) **Alternate versions:** ASCII Summary

Topic: Language gesture View Topic

Article: 3) Nanay 11(029) Philosophical Questions in the View Article

PSYCOLOQUY (ISSN 1055-0143) is sponsored by the American Psychological Association (APA).

PHILOSOPHICAL QUESTIONS IN THE EVOLUTION OF LANGUAGE
Commentary on Place on Language-Gesture

Bence Nanay
Department of Philosophy
University of California, Berkeley

nanay@uclink4.berkeley.edu

Abstract

This commentary is an analysis of how Ullin Place's target article relates to the most important questions in the evolution of language, such as: (1) the relation between the evolution of language and that of "theory of mind"; (2) the question of the role of group structure in human evolution; (3) the evolution of representational capacities needed for language; (4) the selective force of the evolution of language. I argue that not only does Place ignore the problems underlying these issues, but in most cases he also assumes different and sometimes contradictory answers to the questions, weakening his otherwise convincing conclusion.

Keywords

evolution, equivalence, gesture, homesigning, iconic, language, miming, pointing, protolanguage, referring, sentence, symbolic, syntax, vocalisation

1. There are two ways of combining philosophy with cognitive science. The first is to use philosophical arguments for answering empirical questions of cognitive science. The second is to regard philosophy as a theoretical framework for cognitive science research: it would clarify the concepts of cognitive science, and point to empirical problems that are worth examining. If philosophy is to be useful at all in cognitive science, it must fulfil the second kind of role.

2. The same could be said in the case of the problem of the evolution of language. Of course, pure empirical research is not possible for this topic, but a couple of disciplines, such as neurology, evolutionary biology, archeology, and primatology can be regarded as empirical sciences involved in the study of the evolution of language. Likewise, philosophy can have two basic roles here: it can give nonempirical arguments for answering empirical questions in any of these disciplines or it could provide a general theoretical framework for holding together these empirical disciplines.

3. It is not clear which strategy Place's (2000) philosophical approach uses. The structure of his target article suggests that the author wants to establish a general framework for the question of evolution of language and other evolutionary processes. I would like to argue, however, that all he does in this article is to give philosophical arguments for settling a question which empirical sciences could handle more effectively. Thus, notwithstanding the explicit aim of the article, it does not provide general principles for examining the philosophy of language, and, more importantly, it does not explain any of the crucial questions of the field.

4. Place's main thesis is that vocal language must have been preceded by an earlier language of gesture. There are two questions that are worth examining in connection with this thesis. First, how does he argue for this conclusion? and, second, what explanatory role does he attribute to this claim? Does it change any of our general knowledge regarding the theoretical questions in the evolution of language?

5. The arguments Place gives for the existence of a prevocal gesture- language are basically of three kinds. He uses findings of child development and infers the phylogenetic evolution of language from them. In other words, he infers phylogenetic development from ontogenetic development. As he puts it in paragraph 4, after noting correctly that phylogeny cannot be simply read off from ontogeny: "it is a reasonable assumption that the stages that are recognizable in the process of ontogenetic development correspond to stages that punctuated the phylogenetic development of the characteristic in question."

6. He does indeed follow this principle, for example, when he argues from the ontogenetic primacy of the "mand" (para. 12) to its phylogenic primacy (para. 57). However, evolutionary biology has shown that the relationship between phylogeny and ontogeny is a far more complex issue. Stephen Jay Gould argued at length in

an influential book against exactly the same kind of inference that Place uses (Gould 1977). To be clear, the problem here is not that the author infers phylogeny from ontogeny but rather that he does so without any reference to the constraints and limitations of this method. His arguments could be made plausible, but without any reference to the biological side of the connection between phylogeny and ontogeny they can be easily refuted.

7. The second group of Place's arguments is based on the behavior of adult humans. From character traits of human adults he infers the behavior of our ancestors. For example, the existence of gesticulation is an argument for the prevocal language of gestures. This pattern of argument shows up, for example, in paragraphs 37, 38, and 40. Place ignores all the theoretical issues concerning how a trait can be modified by evolutionary changes. In the case of language, the question is how our abilities for producing gestures were modified by the appearance of vocal language. He does not discuss how the ability to gesticulate could survive despite the fact that the appearance of vocal language made it obsolete. Did it undergo functional changes? Has it survived simply because of the inertia of evolution and because it was not selected against? These questions are discussed at length in both evolutionary psychology, and evolutionary biology (Pinker 1997, Buss 1995, Barkow, Cosmides & Tooby 1992, Maynard Smith 1958). Place's argument is weak without these biological clarifications.

8. It is worth noting, however, that both of these groups of arguments could be correct given a wider and more elaborate evolutionary biological framework. Without this, however, Place's arguments rest on shaky grounds.

9. The third group of arguments, however, cannot be regarded as an abbreviated version of a more elaborate answer: they are simply inconclusive. They use analogy to demonstrate something about human evolution. The most striking example is Place's line of thought concerning the general phenomenon of iconic signs always preceding symbolic signs (for example, in the history of Chinese pictograms and of American Sign Language). From this he directly infers that iconic signs must have preceded symbolic ones in the evolution of human communication as well. This argument shows well how Place ignores the complexity of human evolutionary explanations.

10. To sum up, Place's arguments supporting his thesis -- with the exception of his undoubtedly correct empirical, neurological arguments -- are mainly philosophical and inconclusive.

11. The second point to be examined in this commentary is whether or not Place's thesis, namely, the claim that vocal language must have been preceded by a language of gesture, sheds new light on the study of the evolution of language. I would like to argue that in Place's target article the thesis does not contribute to the solution of any of the crucial questions of the evolution of language.

12. What are these important questions? I examine four of them; these seem to correspond to the problems discussed most widely in the literature on the evolution of language. (1) What mental abilities and representational structures must have evolved to make language possible? The second is a special case of the first: (2) What is the relationship between the evolution of language and of the "theory of mind". (3) What are the levels of selection in the evolution of language? Fourth and perhaps most important: (4) What is the selective force of the evolution of language? was it adaptive, and why? This can in turn be subdivided into at least three subquestions concerning the selective force of our symbol-system, of the proto-language and of syntax.

13. Place does not explicitly consider any of these questions. Moreover, his arguments are often based on contradictory implicit views on some of them. His position on these questions is unclear, and this affects not only the explanatory force of his arguments but also their plausibility.

14. I begin with the problem of the selective force of the evolution of language. To put it differently, why was language adaptive? Place correctly points out that not every change that led to the emergence of language had to be adaptive (See Gould & Vrba 1982). Place argues for the importance of the role of exaptation in the case of referential pointing and vocal speech (para. 18). Nevertheless, he would have to account for why the evolution of language was useful.

15. Place gives a hypothetical scenario for the evolution of language, consisting of seven stages, the appearance of each of which was a mutation (para. 48-59). However, he does not show why these mutations survived. Without this, his explanation is by no means an evolutionary one. This applies to his explanation of the evolution of syntax, of proto-language, and of our symbol-system. Moreover, he does not explain the evolution of the language of gesture either. He does not show why it was adaptive for humans to have this form of communication.

16. Place does try to give some kind of explanation of why the appearance of these stages was useful. For this reason, he introduces the "principle of the progressive extension of referential scope" (para. 34). This is intended to show the continuous extension of referential scope in the evolution of language, but the argument is speculative. I doubt that evolutionary biologists could be persuaded that humans with more extended referential scope survived better. Place skips a logical step again: he should have shown why improved survival or reproduction required more extended referential scope. Otherwise, his explanation cannot be regarded as an evolutionary one.

17. Another question is whether the more extended referential scope is useful for the individual or for the group (see Sober & Wilson 1998, Wilson & Sober 1994, Wilson 1989). With this question we reach the problem of the levels of selection in the case of the evolution of language (see Brandon 1996, Boyd & Richerson 1985,

Williams 1966). Was the evolution of language useful for the individuals or for groups of individuals? Did those groups survive which developed better means of communication (Dunbar 1993, 1996) or those individuals who had language, regardless of the group structure they were living in (Dawkins & Krebs 1978)?

18. In the first part of his paper it seems that Place is more inclined to accept that the level of selection in the evolution of language is that of the group. He writes: "We must look for [...] a number of mutations [...] providing selective advantage for the group in which it occurs." (para. 17). On the other hand, in the second part of the paper and especially in his hypothetical scenario, he tends to imply that the level of selection is that of individuals. He is not clear about this key issue, which makes it impossible to handle the two related problems, that is, why and for what entity (the group or the individual) the evolution of language was useful.

19. The third problem discussed at length in the evolution of language literature concerns what changes in our mental abilities and representational structures were necessary for language to evolve. Place completely ignores this problem, which is indeed the core of practically all the current debates on the evolution of language. His omission is most striking in the paragraph where he argues that a good vocal apparatus is not enough for language, and that we must accordingly accept that the role of the hand was significant in the evolution of language.

20. Place tries to contrast humans with birds: both have good vocal apparatus, the big difference is the use of forelimbs. I quote the whole pertinent paragraph:

> "Many birds have a vocal apparatus as good as that of humans; yet they have not developed language. This suggests that the crucial difference between birds and humans in this respect may be that, while both are bipedal, the forelimbs of birds are still specialised for locomotion, rather than, as in the human case, for manipulation" (para. 36).

21. Of course, it does not follow that according to Place the only difference between birds and humans is the use of forelimbs. It does show, however, that the differences in the mental structure and representational abilities of humans and birds seem so unimportant for him that he could ignore them for the sake of this argument. The argument (one of the least convincing paragraphs of the article) is sound only if we presuppose that the representational structure of the mind of a bird and a human is basically the same.

22. Place overlooks the role of the representational capacities that make language possible in yet another instance. He claims that the difference between the symbol use of primates and humans is that humans use and learn symbols spontaneously, whereas primates can only be taught to use them (para. 55). Again, this implies that the only difference between the primates' mind and ours is spontaneity. Place simply does not take into consideration that there can be differences in the way we represent the world, and that the spontaneity of our symbol-acquisition could be

merely a symptom of those differences (See Tomasello & Call 1997, Cheney & Seyfarth 1990)

23. Finally, Place does not even mention the term "theory of mind", even though recently one of the most important questions in the evolution of language concerns the relationship between the evolution of the mental ability of theory of mind and that of language (see Carruthers & Smith 1996, Davies & Stone 1995, Perner 1991).

24. One could argue that all of this was not the aim of Place's target article: He only wanted to show that before the appearance of vocal language, there existed a language of gesture. He did not endeavor to draw further inferences from this fact, nor did he want to address the questions mentioned above. This is not a viable counterargument, for the following two reasons: First, if all Place wanted to do was to argue for a prevocal language of gesture, then this article is an example of introducing philosophical arguments for deciding empirical questions, a kind of connection between philosophy and cognitive science I earlier suggested was unproductive. More important, there is current work in cognitive science that argues for the same thesis but at the same time sheds new light on a number of important questions of the evolution of language.

25. Place's thesis is not new; it has been argued powerfully by several authors (recently by Donald 1991, 1993). Donald has more compelling arguments for the same thesis and puts it in a wider context. Place does not mention Donald. This leads us to the last point of the commentary. We can hardly find any references for recent theories of the evolution of language in Place's article (just to give some examples, he does not mention Deacon 1997, 1993, Dunbar 1996, Dawkins & Krebs 1978, Hurford, Studdert-Kennedy & Knight 1998, Lieberman 1984, 1998, Pinker & Bloom 1990, Mithen 1996, among others). That is definitely not what philosophers should do when examining a problem of an empirical discipline.

REFERENCES:

Barkow, J. H., Cosmides, L. M. & Tooby, J. (1992, eds.): The Adapted Mind: Evolutionary Psychology and the Generation of Culture. New York: Oxford University Press.

Boyd, R. & Richerson, P. J. (1985): Culture and the Evolutionary Process. Chicago: Chicago University Press.

Brandon, Robert N. (1996): The Levels of Selection. Hierarchy of Interactors. In: Brandon, Robert N.: Concepts and Methods in Evolutionary Biology. Cambridge University Press. pp. 124-143.

Buss, D. M. (1995): Evolutionary Psychology: A New Paradigm for Psychological Science. Psychological Inquiry 6 pp. 1-30.

Carruthers, Peter & Smith, Peter K. (eds.)(1996): Theories of Theories of Mind. Cambridge: Cambridge University Press.

Cheney, D. L. & Seyfarth. R. M. (1990): How the monkeys see the world. Chicago: Chicago University Press.

Davies, Martin & Stone, Tony (1995, eds.): Folk Psychology and the Theory of Mind Debate. Core Readings. Oxford: Blackwell.

Dawkins, R. & Krebs, J. R. (1978) Animal signals:Information or manipulation? In: Behavioural Ecology: an Evolutionary Approach. In: Krebs, J. R. & Davies, N. B. (eds.): Sci. Ltd. Oxford: Blackwell. pp. 282- 309.

Deacon, Terrence (1997): The Symbolic Species. New York: W. W. Norton.

Donald, Merlin (1991): Origins of the Modern Mind. Cambridge, MA.: Harvard University Press.

Donald, M. (1993). Precis of Origins of the modern mind: Three stages in the evolution of culture and cognition. Behavioral and Brain Sciences 16 (4): 737-791. http://www.cogsci.soton.ac.uk/bbs/Archive/bbs.donald.html

Dunbar, R. I. M. (1993). Coevolution of neocortical size, group size and language in humans. Behavioral and Brain Sciences 16 (4): 681-735. http://www.cogsci.soton.ac.uk/bbs/Archive/bbs.dunbar.html

Dunbar, Robin (1996): Grooming, gossip and the language. London: Faber and Faber.

Gould, Stephen Jay (1977): Ontogeny and Phylogeny. Cambridge, MA.: Belknap.

Gould, Stephen Jay & Vrba, Elisabeth S. (1982): Exaptation - a Missing Term in the Science of Form. Paleobiology 8 pp. 4-15.

Hurford, J. R., Studdert-Kennedy, M. & Knight, C. (1998): Approaches to the Evolution of Language. Cambridge: Cambridge University Press.

Lieberman, Philip (1984): The Biology and Evolution of Language. Cambridge, MA.: Harvard University Press.

Lieberman, Philip (1998): Eve Spoke. New York: W. W. Norton.

Maynard Smith, John (1958): The Theory of Evolution. Cambridge: Cambridge University Press.

Mithen, Steven (1996): The Prehistory of the Modern Mind. London: Phoenix.

Perner, Josef (1991): Understanding the Representational Mind. Cambridge, MA/London: Bradford Books/The MIT Press.

Pinker, Stephen (1997): How the Mind Works. New York: Norton.

Place, U. T. (2000). The role of the hand in the evolution of language. PSYCOLOQUY 11(007) ftp://ftp.princeton.edu/pub/harnad/Psycoloquy/2000.volume.11/ psyc.00.11.007.language-gesture.1.placehttp://www.cogsci.soton.ac.uk/cgi/psyc/newpsy?11.007

Pinker, Steven & Bloom, Paul (1990): Natural Language and Natural Selection. Behavioral and Brain Sciences 13 pp. 707-784. http://www.cogsci.soton.ac.uk/bbs/Archive/bbs.pinker.html

Sober, Elliott & Wilson, David Sloan (1998): Unto Others. Cambridge, MA.: Harvard University Press.

Tomasello, M. & Call, J. (1997): Primate Cognition. Oxford: Oxford University Press.

Williams, George C. (1966): Adaptation and Natural Selection. Princeton: Princeton University Press.

Wilson, David Sloan (1989): Levels of Selection: An Alternative to Individualism in Biology and the Human Sciences. Social Networks 11 pp. 257-272.

Wilson, David Sloan & Sober, Elliott (1994): Re-introducing Group Selection to the Human Behavior Sciences. Behavioral and Brain Sciences 17 pp. 585-608. http://www.cogsci.soton.ac.uk/bbs/Archive/bbs.wilson.html