**Assignment: Annotated Bibliography**

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University of Maryland University College

WRTG391: Advanced Research Writing

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Bolhuis, J. J., Tattersall, I., Chomsky, N., & Berwick, R. C. (2014). How Could Language Have Evolved? *PLoS Biology, 12*(8), 1–6. <https://doi-org.ezproxy.umgc.edu/10.1371/journal.pbio.1001934>

The authors, Bolhuis et al. take an exclusivist approach and claim that language has a hierarchical structure that is missing from animal communication systems. The authors view the way our minds create language as being by “merging” elements which they call “atoms” (i.e. words, verbs, etc.). Merged elements can both continue indefinitely and apply to themselves, therefore being nested and in a sense, hierarchical. They further state that there’s no evidence that animals have conceptual “atoms.” They conclude that given the universality of language amongst humans, and the assumption that it has not evolved from animals, that it is this “merge” trait that effectively singlehandedly is responsible for the evolution of language in humans. They mention sign language as a counter argument that studying animal vocal communication is essential to understanding the evolution of language. Also interesting is the point that the unique nature of human language renders a comparison by shared evolutionary descent impossible. I found this article very useful for illustrating this particular school of thought and as a contrast to Fitch, 2019.

Donald, M. (2017). Key cognitive preconditions for the evolution of language. *Psychonomic Bulletin & Review, 24*(1), 204–208. <https://doi-org.ezproxy.umgc.edu/10.3758/s13423-016-1102-x>

The author, Donald claims that development of the use of tools to a degree complex enough that their use was culturally embedded and cross-generational was what drove the coevolution of language. Donald further claims that the opposite possibility, that language came first, is unlikely because the acquisition and use of language requires the ability to hone an intrinsically complex hierarchical skillset, as in complex toolmaking. The author does not seem to support this with any specific evidence, but reiterates his claims as a conclusion. I don’t think this is well argued but I agree with the premise that human cognitive capacities have been pushed to greater complexity out of the necessity to manipulate tools (I would say our environment) as much as interact socially. I would find this article useful as a jumping off point for this perspective but most likely not as a primary source.

Ten Cate, C. (2017). Assessing the uniqueness of language: Animal grammatical abilities take center stage. *Psychonomic Bulletin & Review, 24*(1), 91-96. https://dx.doi.org/10.3758%2Fs13423-016-1091-9

The author presents the “Strong Minimalist Thesis” that the essence of language is that we combine, or ‘merge’ elements. An element can be a noun, a verb, an article, a pronoun, etc.. She claims that the ability of a brain to search concepts and output behavior is not unique to humans, but that what is unique is the ability to “merge” concepts. She therefore concludes that arguments about the speech apparatus, such as location of the larynx and hyoid bone in apes vs. humans, are irrelevant to understanding the evolution of language. She also concludes that this ability to “merge” could have evolved very quickly without leaving any fossil evidence, which would be consistent with the fact there is a gap in the fossil record. I found a weakness to be that Ten Cate doesn’t deal with how this “merge” concept relates to other ideas about language (e.g. hierarchical structures, etc.) as well as repeating much of Bolhuis et al.’s earlier paper, even some diagrams. The writing itself is confusing and scattered and therefore less likely to be useful to me.

Tecumseh Fitch, W. (2017). Empirical approaches to the study of language evolution. *Psychomonomic Bulletin & Review, 24*, 3-33. <https://doi.org/10.3758/s13423-017-1236-5>

The author claims that severe global aphaisics despite not having the capacity to produce language nevertheless demonstrate complex thought. Broca’s area is the center of an extensive network where language syntax is generated. This area, and especially it’s connections to other areas is massively expanded in humans as compared to other primates. This is true even of newborn, and even premature human babies. He concludes that this clearly refutes the misconception that we know little to nothing about the neural mechanisms underlying language. I found the paper very clearly written and thoroughly referenced, which is useful for further research. One potential weakness is that it goes into so many other topics that it would be easy to get lost on interesting tangents.

Tecumseh Fitch, W. (2019, November 18). Animal cognition and the evolution of human language: why we cannot focus solely on communication. *Philisophical Transactions of the Royal Society* *B*, 375: 20190046. <http://doi.org/10.1098/rstb.2019.0046>

The author, Tecumseh Fitch argues that language did not evolve as an extension of great ape vocal communication but rather cognition more generally and that we share certain cognitive processes involved in language with various animals in the same way we share numerous other traits. Apes use species specific unlearned calls, triggered by social-emotional situations. Instead, human language could have evolved from the underlying framework of animal cognition, which is so sophisticated that no huge chasm would have to be bridged. Tecumseh Fitch provides a range of evidence that many animal brains have neural representations of many concepts, and some interesting philosophical discussion of the nature of concepts. He concludes that language could have evolved as a somewhat improved tool for cognition: connecting neural representations of concepts. Once linked to the existing animal capacity to communicate about emotions, the language of thought could be used to communicate about concepts. He further concludes that communication of concepts would have been so useful that language would evolve rapidly. This is an “Oh yeah, of course!” paper—totally clear once someone else says it. A possible criticism I would make is that there’s a somewhat subtle philosophical section on communication of neural representations of objects, rather than direct communication about objects. This seems valid but I don’t see why it’s essential to the main point. Overall, this is a useful and thought-provoking paper. The act of a chimp pointing at an object is qualitatively similar to the act of saying a word—each requiring a mental representation. The chimp has a neural representation of the object and can demonstrably reason about it, so language is much more similar to animal cognition than to animal communication. This raises questions. I think that emotional vocalizing involves right-brain areas that are analogous to our left-brain language areas. I think this will be useful as a primary source.