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## Biological Signaling Sheds Light on Both the Ontogeny and Phylogeny of Language

Abstract: This paper is an attempt to add a philosophical perspective to the fast-growing literature on the evolution of human natural language; it also purports to contribute to cognitive ethology. Our focus will be on the semantic dimension of natural language, and our task will be to determine how many and what kinds of semantic properties can be accounted for without traversing the standard Lockean-Gricean route through reflexive-communicative intentions and Lewisian conventions. Instead we will work with tools from the evolutionary biology of communication and evolutionary game theory, to show that we may discern entities within animal communication systems bearing semantic properties (and not just “functionally semantic properties” as the literature often calls them). We will then develop a notion of convention that will help us to understand when a communication system goes from meaning to symbolism. In the course of our discussion we will also consider whether the indeterminacy characterizing these semantic characterizations should vitiate them, as well as whether it is possible to discern different parts of speech within animal communication systems.