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- Type:** Article in Edited Collection
- Author:** Loula, Angelo *et al*
- Title:** On Building Meaning: A Biologically-Inspired Experiment on Symbol-Based Communication
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- Abstract:** The use of an appropriate set of empirical and theoretical constraints to guide the construction of synthetic experiments leads to a better understanding of the natural phenomena under study, and allows for a greater understanding of the experimental results. We begin this chapter with a description of a general approach for conducting experiments with artificial creatures within a synthetic ethological context. Next, we describe how this approach was used to build a computational experiment regarding the emergence of self-organized symbols. Our experiment simulated a community of artificial creatures undergoing complex intra and inter-specific interactions in which meaning evolved over time, from a tabula rasa repertoire of random alarm-calls to a specific set of optimal referential alarm-calls. To design different kinds of creatures as well as inanimate elements of the environment, we applied theoretical constraints from the Peircean philosophy of sign and empirical constraints from neuroethology. Our results suggest that the constraints chosen were both necessary and sufficient to produce symbolic communication.
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- Keywords:** Communication, Meaning, Semiosis, Symbol process, Self-organization, Emergence, Computer simulation