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Abstract: In this paper, we describe a digital scenario where we simulated the emergence of self-organized symbol-based communication among artificial creatures inhabiting a virtual world of unpredictable predatory events. In our experiment, creatures are autonomous agents that learn symbolic relations in an unsupervised manner, with no explicit feedback, and are able to engage in dynamical and autonomous communicative interactions with other creatures, even simultaneously. In order to synthesize a behavioral ecology and infer the minimum organizational constraints for the design of our creatures, we examined the well-studied case of communication in vervet monkeys. Our results show that the creatures, assuming the role of sign users and learners, behave collectively as a complex adaptive system, where self-organized communicative interactions play a major role in the emergence of symbol-based communication. We also strive in this paper for a careful use of the theoretical concepts involved, including the concepts of symbol and emergence, and we make use of a multi-level model for explaining the emergence of symbols in semiotic systems as a basis for the interpretation of inter-level relationships in the semiotic processes we are studying.

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