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Emerging diversity in a population of evolving dice

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Exploiting the mathematical curiosity of intransitive dice, I will present a simple theoretical model for coevolution that captures scales ranging from the genome of the individual to the system-wide emergence of species diversity. In this simple model, evolving agents interact competitively in a closed system, in which both the dynamics of mutations and competitive advantage emerge directly from interpreting a genome as the sides of a die. The model demonstrates how simple ingredients can lead to a host of complex features, including sympatric speciation and the emergence of metastable states of finite diversity.

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