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"The evolution of reproductive skew under imperfect information"

Abstract:

The division of reproduction among the members of a breeding group has been one of the persistent problems in evolutionary biology. Despite numerous models and empirical studies, there seems to be no completely satisfying theory for how the division of reproduction --the reproductive skew-- evolves. I will present a new hypothesis for the evolution of reproductive skew. This hypothesis extends the spirit of reproductive transactions theory in assuming that the division of reproduction is determined to incentivize individuals to stay in the group and cooperate. However, it departs from previous theory in positing that individuals have private information about themselves and the state of the world. Applying the theory of mechanism design to this problem we determine what outcomes can be implemented in evolutionarily stable strategies, and what outcomes cannot. Furthermore, we model how the reproductive transaction game itself evolves. I will discuss how our results can help make sense of existing empirical patterns and what directions might be profitable for future empirical and theoretical research on reproductive skew.