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Evolutionary Dynamics of Signaling Games

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The evolutionary origins of information transfer and honest signaling remains an open challenge for a vast plethora of research areas, from Philosophy and Theoretical Biology to the Physics of Complex Systems. An approach on this topic will be done, resorting to a combination of analytical tools. The first is game theory, with particular emphasis on signaling games for both costly and cost-free signaling. The second is stochastic evolutionary dynamics in finite populations. Here, the small mutation limit will be essential for enabling a reduction on the large number of states accessible to this complex system. Finally, the third tool to be used will be the dynamics of adaptive interaction networks, that should have an interesting role when overlapped with the previous ones. Based on this approach, the development of a rather extensible framework will be done, that should shed some light on the problems behind the emergence of honest signaling.

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