Cognitive mechanisms and out of equilibrium evolution

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In this presentation, I will try to summarize some recent studies of social evolution done in the Enquist Lab. at Stockholm University. In attempts to understand how cognitive mechanism influence signal evolution they discovered that such evolutionary processes tend to stay out of equilibrium. More general work shows that this is a general finding applicable to many cases of frequency dependent selection including social interactions with players in conflict. I will demonstrate this with a simple game called the "Game of Presence". These findings have consequences for game theory and assumptions about rationality. Furthermore new phenomena may evolve that could be expected at equilibrium proving alternative explanations to sexual selection and other signal evolution.

In the second part of the talk, I will talk about a research I have been involved in myself at the Enquist Lab. We consider the two kinds of recognitions, one is genetically inherited and the other is acquired by the individual learning in every generation. We try to understand how these recognitions influence evolution of signal forms and costs.