

The Evolution of Collective Action: the role of co-evolving groups



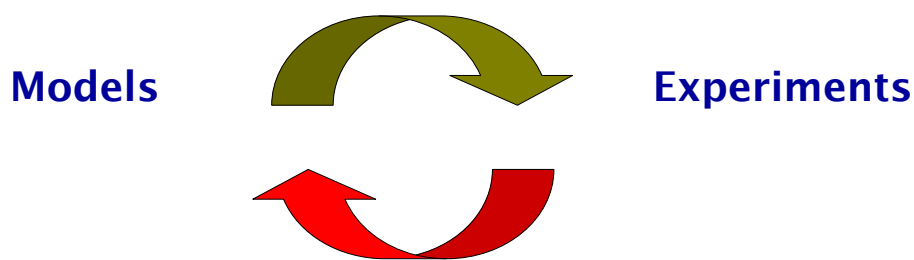
Susanne Rebers, Julian Garcia, Ruud Koopmans, Jeroen van den Bergh
Vrije Universiteit Amsterdam

Collective action is the cooperation of individuals in large groups in pursuit of aims characterized by impossibility of exclusion. *We aim to explain how all the features of collective action may have evolved, using **models and experiments**.*

Evolutionary models describe *mathematically* changes in gene or phenotype frequencies in a population. They involve specific assumptions about the life-cycle of individuals. Conditions for a trait to be selected are derived.

Experiments test human behaviour under carefully controlled circumstances, providing information on the influence of a single parameter on human behaviour. They can test whether humans behave in accordance with evolutionary models and can provide input for models yet to be built.

Explain **how** behaviour could have evolved.



Uncover **what** the evolved behaviour is

An example...

In an experiment, we tested whether humans indeed behave in a parochialistic fashion, a behavioural pattern that was predicted from mathematical models. Instead of finding parochialism, we found that people's contributions to collective action are much more influenced by the expectations they had about other participants' contributions to collective action¹. Currently, we are using this finding to build an evolutionary model, in which we want to investigate the role of group selection in the evolution of this behavioural pattern.

1: Koopmans, R. & Rebers, S. 2009. Collective action in culturally similar and dissimilar groups: an experiment on parochialism, conditional cooperation, and their linkages. *Evolution and Human Behavior* 30, 201-211.

Conclusion

Interdisciplinary research in our project proved to be fruitful. Experimental research and evolutionary modelling complement each other when investigating the evolution of specific behavioural patterns