

# Linking Micro- and Macrolevel Models of the Cultural Evolution of Language: From Graph Theory to Game Theory

KARIM BARAGHITH

kbaraghith@gmail.com

*Universität Düsseldorf*

I shall investigate whether a proper theory of cultural evolution (CE) possesses the ability to synthesize the social sciences (cf. Mesoudi 2011), and if CE is a good candidate for closing explanatory gaps between micro- and macrolevel phenomena in the social realm – at least in principle.

In order to achieve this, it should be possible to classify macrolevel patterns CE. But the serious doubt is raised whether it is possible to identify something like “species” (classes defined by their phylogenetic history and intrinsic reproductive barriers and not merely defined by similarity) in CE. However, since this is a crucial requirement for any evolutionary classification, a macrolevel cluster of a similar sort is necessary to realize the expectation that this paper aims to realize. I will suggest to apply the “Causal Interactionist Population Concept” (CIPC), recently formulated by Millstein (2009, 2015) in the philosophy of biology. According to some critical authors, CE is in need of a valid population concept anyway (Reydon & Scholz 2015). Since CIPC is a non-formal hypothesis, I will also present a possible formalization of CIPC using graph-theory. Finally, a possible candidate for the micro foundation of this model is presented within the framework of the evolution of language and meaning: the signaling game of coordination, which has been widely examined in the context of evolutionary game theory (Huttegger 2008, Skyrms et. al 2014). It will be shown that this game theoretical micromodel can seamlessly be transferred into a macrolevel population cluster given by the CIPC.

## References

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