

# Der Gute, der Böse und der Diskriminator

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This paper presents, in a series of simple diagrams, concise results about the replicator dynamics of direct and indirect reciprocity. We consider repeated interactions between donors and recipients, and analyse the relationship between three basic strategies for the donor: unconditional cooperation, all-out defection, and conditional cooperation. In other words, we investigate the competition of discriminating and undiscriminating altruists with defectors. Discriminators and defectors form a bistable community, and hence a population of discriminators cannot be invaded by defectors. But unconditional altruists can invade a discriminating population and 'soften it up' for a subsequent invasion by defectors. The resulting dynamics exhibits various forms of rock-paper-scissors cycles and depends in subtle ways on noise, in the form of errors in implementation. The probability for another round (in the case of direct reciprocity), and information about the co-player (in the case of indirect reciprocity), add further elements to the ecology of reciprocation.

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