

## 論文内容の要旨

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### Indirect Reciprocity under Imperfect Reputation Sharing

(不完全な評判共有のもとでの間接互惠性)

Conflicts between individual self-interests and social welfare can cause social dilemmas in which defection forms a Nash equilibrium, whereas cooperation realizes Pareto efficiency. Understanding how cooperation can emerge in social dilemmas is a topic of importance across various disciplines including economics, sociology, and population ecology. Several mechanisms for establishing cooperation have been proposed, including indirect reciprocity in which individuals vicariously reward cooperators and punish defectors, even between unacquainted individuals, by referring to reputation information as a signal of past behaviors. Information about reputations is considered to be transmitted via gossip without the presence of authoritative institutions such as seller evaluation systems in online marketplaces. However, gossip is limited in its range of transmission. In addition, the manner in which individuals share information is likely to depend on social structure, which has typically been ignored in previous studies of this topic. In the first study, we analyze a general model of indirect reciprocity in which information transmission is limited for individuals when playing social dilemma games and when assigning reputations to players. We find that two types of reputation

assignment rules enable indirect reciprocity, namely trustful and suspicious assignment rules, which differ in regard to the observers' default assumptions on assessing defection against unknown individuals. Suspicious and trustful rules punish and forgive such defection, respectively. In the second study, we introduce group structure with regard to game interactions and information transmission. We find that unexpected ingroup favoritism emerges as a by-product of groupwise information sharing. Two well-known reputation assignment rules, namely simple standing and stern judging, enable evolutionarily stable cooperation and yield ingroup favoritism. The degree of ingroup bias is weak under simple standing and strong under stern judging. We throughout find that introducing social structure with regard to information sharing to indirect reciprocity yields unexpected outcomes in which the resultant discrepancy of reputation information harms cooperation to some extent.