

SUPPLEMENTARY INFORMATION-II

Competition and cooperation in sociophysical settings: Simulation of a strategic model

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Supplementary Videos

Video 1: The evolution of deceptive invasion under the strategies of idle PPs

This video visualises the process of deceptive invasion under the rule of idle PPs. Here the emperor (the bigger circle) comprises a total of 15 powerful provinces (PPs) of different sizes (green in color). The red circular domain represents the invaders that pierce the territory and enter the empire. The invaders occupy the weaker region of the empire, enhance their military strength, and proceed towards the emperor (the smaller grey circular domain at the center of the empire) by initiating deception among the neighbouring PPs. The other PPs remain idle although a vicious war takes place among the deceived PPs (cyan in color) in their neighbourhood. In each encounter, the invaders suffer casualties of war (shrinking in size). Finally, the invaders are able to attack the emperor. The moment the emperor is attacked (represented by changing the color of the emperor from grey to blue), the emperor puts its remaining PP's on high alert. To enhance their military power, the PP's at once will start expanding and coalescing among each other and, thereby, the empire wins a victory over the invaders.

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Video 2: The evolution of deceptive invasion under the strategies of active PPs

This video visualises the process of deceptive invasion under the rule of active PPs. The invading domain proceeds by initiating deception among the neighbouring PPs. The deceived PP (cyan in color) sends a message to other PPs that lie within the radial distance $r \leq 15$. The PP who receives the message (yellow in color), start expanding and coalescing with the neighbouring PPs (green in color) for collective defence. Meanwhile, the growing invading domain comes into contact with the yellow PP and a vicious war takes place.

Video 3: The evolution of the empire with an optimal defensive structure and for the case of strong deceit

This video visualises the process of deceptive invasion on an optimal defensive structure comprising five active PPs. The invading domain proceeds by initiating deception among the neighbouring PPs. The deception is strong enough that can deceit the PP that gets the message.

Video 4: The evolution of the empire with an optimal defensive structure and for the case of weak deceit

This video visualises the process of deceptive invasion on an optimal defensive structure comprising five active PPs. The invading domain proceeds by initiating deception among the neighbouring PPs. The deception is weak enough that is unable to deceit the PP that gets the message.