Exploring hierarchy in dynamic environments

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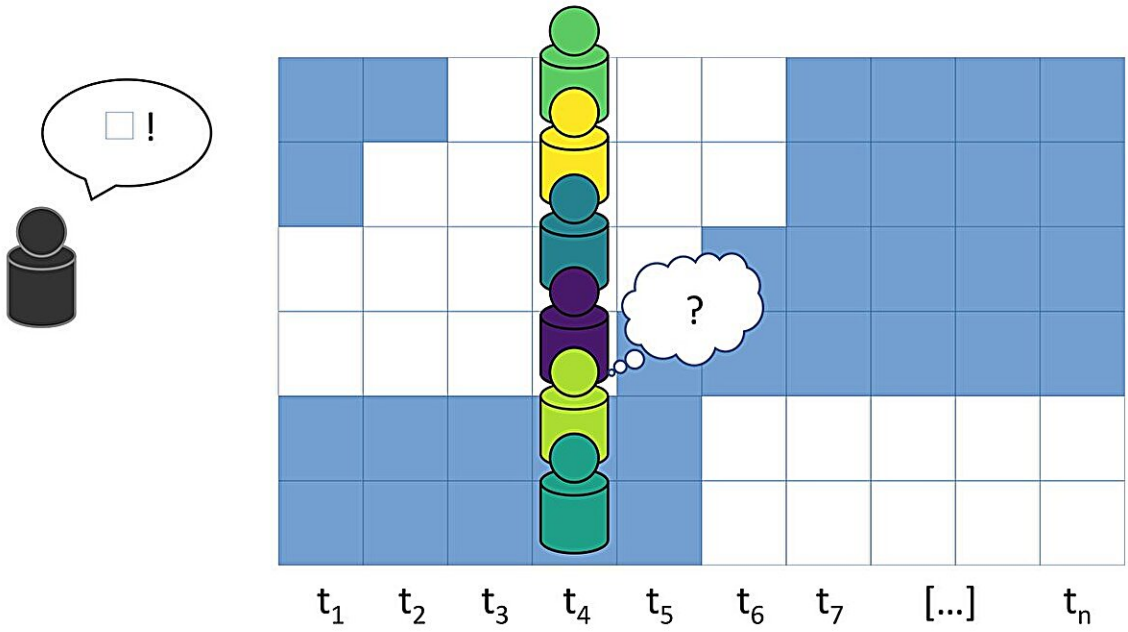

In a recent paper, researchers use agent-based models to explore how hierarchical groups perform under varying conditions. Credit: Stan Rhodes

Most organizations operate under command hierarchies: Workers, who know the ground reality, report to managers, who know the big picture. If these views conflict, what happens to organizational performance?

In a study published on March 31 in the *Journal of Artificial Societies*

and Social Simulation, Stan Rhodes (Colorado State University) with SFI External Professor Stefani Crabtree (Utah State University), and Jacob Freeman (Utah State University) use an agent-based model to explore how the performance of hierarchical groups varies with changing environments.

The researchers simulated hierarchical and non-hierarchical organizations as they responded to situations at two extremes: when local conditions changed synchronously, or at staggered times.

In most scenarios, teams with a hierarchical structure performed better than those without, with one crucial caveat: workers must have the autonomy to judge the manager's input when deciding what to do.

Worker autonomy, the study finds, allows a hierarchical organization to learn.

More information: Stan L. Rhodes et al, An Agent-Based Model of Hierarchical Information-Sharing Organizations in Asynchronous Environments, *Journal of Artificial Societies and Social Simulation* (2024). DOI: 10.18564/jasss.5328

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