

Trust and Group-Decision-Making Behavior: a System Dynamics Perspective

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Motivations, aim, and research questions:

The process of decision-making in complex and dynamic settings, both at the individual and the group levels, has been well covered in literature. Whereas prior economic theory assumed perfect rationality in decision-making, other streams of research have shown that human agents have bounded rationality and can still make poor decisions even when all the information is accessible. Prior research has indicated the potential impact of several factors, including cognitive limitations, misperception of feedback, and flawed mental models on the interaction and decision-making processes among human agents.

Building on these considerations, this study aims to contribute to the growing field of research that highlights the significance and role of “trust”.

In particular, existing literature provides several calls for a deeper examination of the role trust plays in situations involving group interactions, even when decision-makers can cooperate.

The two research questions addressed in the study are framed as follows:

- RQ1: How does trust may affect the interaction of human agents and, subsequently, drive behaviour in group decision-making processes?
- RQ2: How can the use of System Dynamics-assisted simulators favour the analysis of trust in decision-making?

Research method

A System Dynamics in the form of a management flight simulator was built and used to assist group interaction and detect behavioural factors influencing decision-making outcomes.

More specifically, this study builds on the organization of four simulation-assisted games organized in educational settings. Groups of MBA and Ph.D. students enrolled in business administration and management programs made up the participants.

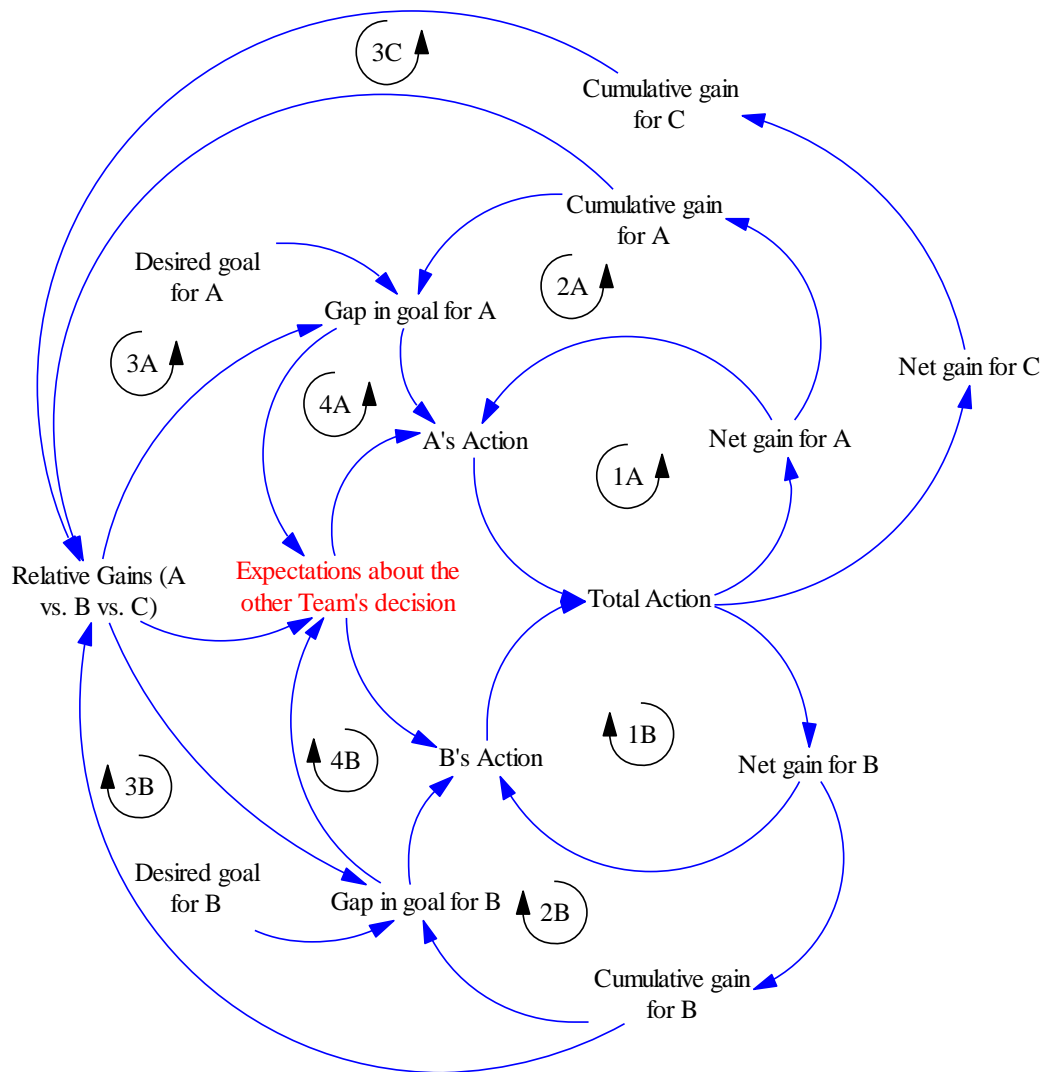
The simulation was conducted using a role-playing technique to divide the players into groups and give them tasks.

A regulated financial market was the domain selected for the simulation. The participants were specifically instructed to submit bids for a set quantity of bonds issued onto the market (7 issues, one per month).

All four games considered in this study had the same fundamental structure, although in games 3 and 4 the treatment entailed two additional factors, i.e., the possibility to sign a formal contract of cooperation and the existence of incentives.

Briefly, the underlying decision-making structure of the game is represented by the causal loop diagram depicted below.

Figure 1. Causal Loop Diagram representing the underlying decision-making structure of the game.



The theoretical lenses through which the simulations are analysed pertain to the Behavioural System Dynamics stream of research. Concepts from Game Theory are also used to discuss the results (specifically, specifically the “prisoner’s dilemma” and “tragedy of the commons”).

Main findings

The results of the simulations and the feedback obtained by the players show that trust may be a critical factor in influencing group decision-making, even in contexts where the outcomes of decisions are understandable and shared.

Additionally, the study shows that trust is a behavioral factor that can be observed, analysed, and understood using simulation models and techniques, thereby stimulating decision-makers to question their beliefs and mental models and, ultimately, favouring learning.

Contribution

This study expands the analysis of the behavioural factors that prior System Dynamics literature covered (e.g., misperception of feedback, flawed mental models, and bounded rationality) to focus more on a factor emerging from social interaction, namely trust.

This study also contributes to the debate about the potential of Behavioural System Dynamics when used in class to favour discussion and learning.