

Rouwette & Vennix (2006): System Dynamics and Organizational Interventions

After in the 1950th scholars have started to build System Dynamics models, first attempts to involve the client in the model building process have started in the 1970th. This successful story of Group Model Building is wrapped up by the authors in this research paper shortly. While describing goals, empirical work and theories on System Dynamics modeling for organizational consultation, the authors point to many open research questions in the field. The final suggestion is to slice the problem on modeling effectiveness up into four parts: a) participants contribution b) impact of exchanges information c) relation of GMB to biases and shortcomings and d) impact of the intervention on the whole organization. In the following some interesting ideas mentioned in the paper are summarized:

Background:

- Forrester: Need to access the mental database of managers.
- Problem of expert modeling: Lack of ownership → Problem of implementation failure.
- Group Model Building as systematic client involvement → But: Lack of clearly defined methodological guidelines.

Goals of GMB

- Individual level: Positive reaction, commitment, behavioral change.
 - Group level: Increased quality of communication, shared language & consensus.
 - Organization: System changes, improvement of the systems and results.
 - Method: Further use, efficiency.
- } Outcomes of GMB
- Usefulness qualitative versus quantitative models → Debate based on desire to model reality representation (micro world view) or aligns views of problem stakeholders (boundary object view).
 - Micro world view: top-down
 - Boundary object view: Laundry list of clients' views and opinions.
 - Uncontroversial areas in GMB → core areas:
 - Problem identification and definition.
 - System conceptualization.
 - Model formulation.
 - Techniques for knowledge acquisition: Interviews, process tracing, task analysis, etc.
 - Knowledge representation techniques: Task over time, CLDs, SFDs, constants, etc.
 - Important for the process: Suitability, purpose, clarity on problem, participant number, phases in the process, available time, costs.

Empirical studies

- Case study as most frequently used design to study GMB interventions.
- Results:
 - Information influences beliefs, attitudes and subjective norms → Change of intentions & behavior.
 - No effect of beliefs on outcomes, norms & perceived control.
 - Quantitative models have higher chance to lead to commitment, consensus and system changes (than qualitative ones).
 - Research on management flight simulators: Performance improves, when:
 - The model is more transparent.
 - Subjects receive decision cues or strategic heuristics.
- Declarative knowledge: knowledge of objects & facts.

- Procedural knowledge: knowledge about how to do something.

Theories

- Distinguishing: End models (goals), means models (strategies, tactics and policy levers) & means-ends models (connection between both of them).
- Operator logic (high level heuristics): Necessary condition to improve system performance. → Key to implement system changes.
- Aim of GMB: “Integrate and structure available information about a problem, bypassing the heuristics used in ‘traditional’ decision making.”

Further Development of Theories

Three possible sources of further development:

- Research on problem structuring methods.
- Research on electronic meeting systems.
- Research in psychology and group-decision-making.