

Revealing Hidden Dynamics in Collaboration: Using Group Model Building to Enhance Qualitative Longitudinal Research

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We describe a case in which researchers conducting an eight-year action research study of a collaboration of nonprofit organizations supporting minority-owned businesses worked with system dynamics modelers to make sense of why the collaboration had grown slowly and had not formalized as an independent entity despite some notable successes. Using group model building methods in a 14-hour workshop, we developed causal loop diagrams that reveal key dynamics affecting the collaboration's trajectory.

Background and Motivation

Nonprofit collaborations, especially those aiming to address complex community challenges, often struggle to formalize their structure and sustain member commitment, despite favorable internal and external conditions. This puzzle is exemplified by the case of "Synergy" (a pseudonym), a coalition of seven nonprofit organizations serving minority-owned businesses (MOBs) in a large US Midwestern metropolitan area. While Synergy achieved notable programmatic successes from 2016 to 2024, it failed to become an independent entity, capable of directly accepting funding (and associated liability), despite recurring leadership aspirations and external support from policymakers and foundations.

Longitudinal Qualitative Research

Researchers from the University of Minnesota conducted a longitudinal action-research study of Synergy, employing process-oriented qualitative methods: quarterly interviews with nonprofit CEOs over seven years (over 160 interviews), participant observations, and analysis of meeting notes and organizational archives. Despite rich contextual data and evolving stakeholder perspectives, traditional qualitative analyses and theoretical lenses—resource theory, institutional theory, and process models—did not satisfactorily explain why observed successes did not translate into sustained member commitment or formalization, especially in response to significant environmental shifts such as the COVID-19 pandemic and civil unrest following the police murder of an unarmed Black man.

System Dynamics and Group Model Building Integration

The action researchers collaborated with system dynamics researchers and practitioners during a 14-hour group model building (GMB) workshop in early 2025. The workshop's central question was: Given Synergy's members' aspirations and the documented scale of need in the region (about 50,000 MOBs), what explains the collaboration's extremely slow growth and lack of formalization? The GMB process adapted several standard GMB scripts to fit the workshop's context and participants (researchers of the phenomenon of interest, rather than direct system stakeholders in the challenge). The activities helped the qualitative researchers make explicit their mental models, visualize system structure, and identify core feedback mechanisms.

Key Feedback Structures Identified

The causal mapping and loop identification revealed several interconnected structures:

- **Service Quality Payoff Loops:** Capacity limitations at the member collaboration level can create balancing feedback, as growth in client numbers strains resources and risks declining service quality, that in turn impedes client success if resources and clients do not scale proportionally. Reinforcing dynamics can be fueled by successful MOBs providing collaboration members resources through loan fees and interests and principal payments.
- **External Resource Acquisition Loops:** Success in serving MOBs increases political / business support and collaboration reputation, leading to greater resource inflows—a reinforcing (virtuous or vicious) cycle depending on performance and perception.
- **Formalization (Lift-off) Loops:** Collaboration network cohesiveness drives the desire and ability to create legal structure. Legal empowerment boosts governance capacity and funding, which can further reinforce member unity, but progress towards formalization may be stymied by underlying tensions among collaborating members (see Coopetition, below).
- **Institutionalizing the Value Proposition:** Clarifying and delivering on network-wide added value is central to maintaining collaboration network member buy-in and driving formalization.
- **Collaboration Success Threatening Members (Coopetition):** As Synergy moves toward formalization and grows its administrative independence, member organizations may feel threatened, fearing loss of status, clients, or resources. This balancing loop, termed “coopetition,” in combination with other feedback dynamics, explains observed oscillations in CEO support, as perceived benefits are offset by competitive anxieties.

The workshop did not produce formal simulation models but relied on mental simulation and scenario discussion to connect feedback structures with reference modes, especially the oscillating CEO support for the collaboration. Participants described how crisis events temporarily boosted collaborative energy, but as stabilization and formalization advanced, competitive tensions intervened, curtailing momentum.

Sensemaking Theory as Analytic Lens

Drawing on Weick’s sensemaking theory, the paper articulates how different GMB activities promoted retrospective, social, ongoing, and plausibility-oriented sensemaking among researchers. Stakeholder mapping grounded identities; reference mode elicitation facilitated retrospective pattern recognition. Structure mapping and feedback loop identification enabled construction and enactment of sensible causal environments, extracting cues for plausible narrative formation. Naming feedback loops (e.g., “coopetition”) proved pivotal in reconciling paradoxes and emotional undercurrents observed in the longitudinal data.

Contributions and Implications

This study demonstrates the methodological and substantive value of integrating system dynamics and GMB with qualitative research:

- **Theoretical Advancement:** It extends collaboration theory by dynamically explaining slow growth and oscillating commitment via feedback mechanisms, particularly the threat-success paradox of coopetition.
- **Methodological Complementarity:** System dynamics offers operational causal mapping to enrich and structure qualitative narrative data, yielding more actionable insights.
- **Practical Guidance:** The insights inform practitioner design for collaboration governance, emphasizing resource allocation protocols, power balance, and explicit recognition of coopetition dynamics to sustain member engagement through formalization phases.