

Who Controls the View, Controls the Narrative: Visualizations as Vectors of Power in Remote Collaboration

Ilir Jusufi*
Blekinge Institute of
Technology
Karlskrona, Sweden

INTRODUCTION

Remote data collaboration has become the norm. Yet the tools we use to “collaborate” often conceal who is in control. Visualization platforms, seen as neutral, operationalize soft control: they shape participation, mute dissent, and privilege certain voices. Collaborative visualization is not only about sharing data, it is about structuring power.

Drawing from Suchman’s *Human–Machine Reconfigurations* [7], we view visualization tools as *actors* that configure authority, visibility, and voice. Remote visualizations often preserve hierarchy while performing inclusivity.

Teams now rely on dashboards, annotation layers, and AI-driven interfaces. Marketed as enablers of collaboration, these systems centralize control, prescribe roles, and flatten team dynamics. As Isenberg et al. [3] note, true collaboration requires negotiation, parallel exploration, and shared authorship—rarely supported by mainstream tools.

This provocation is grounded in practice. While co-advising a remote PhD student, I saw how power surfaced in interruptions, re-framing, and subtle control of visuals. In another case, a crowd-sourced visualization revealed dissent but the facilitator ignored it. These are not anomalies but signs of a deeper design ideology: *visualizations serve those who manage them*.

HOW POWER SHOWS UP IN REMOTE VISUALIZATION

Power in remote collaboration often shows up in small but important ways. These examples illustrate how power manifests through tool design and interaction defaults:

- **Control over the visualization (zoom, filter, reconfigure):** The person controlling the view determines what others see. Trif et al. [8] show this often empowers dominant voices.
- **Annotation privileges:** Those who annotate or comment influence interpretation. Akbaba et al. [1] find these roles are usually held by those in authority.
- **Selection of views or datasets:** Highlighting or omitting views shapes the narrative. Losev et al. [5] show centralized COVID-19 dashboards restricted alternate perspectives.
- **Interaction roles:** Some users engage actively while others remain passive viewers. Neogy et al. [6] link this to organizational hierarchies.
- **Voice-controlled interfaces:** Molina León et al. [4] show such systems shift who interacts, who gets interrupted, and whose commands are prioritized.

TOWARD A TAXONOMY OF POWER IN COLLABORATIVE VISUALIZATION

To frame how power operates in remote collaborative visualization, I propose a preliminary taxonomy (Table 1). Echoing Dourish’s critique of shallow “implications for design,” it is not a set of rules [2] but a lens to reflect on how visualization practices reveal and reinforce power. The taxonomy groups key dynamics into four interrelated dimensions.

These dimensions often overlap. A facilitator may control the view (1), set interaction privileges (2), and guide the narrative (4). Framing—what is emphasized or omitted—also shapes interpretation, linking (1) to (4).

The taxonomy builds on prior work. Trif et al. [8] describe how control and visibility consolidate in multi-party systems. Akbaba et al. [1] highlight authority and participation, which inform how we interpret interaction privileges and modality bias.

This taxonomy is not exhaustive or validated. It is an exploratory synthesis, offered as a prompt for dialogue on how power is embedded in design and how it might be reimaged by the community.

CONCLUSION

Collaborative visualization is not only about technology, it is about agency, voice, and access. As remote data work expands, we must critically examine who shapes the story when teams engage with the same dataset. Making power visible and rethinking defaults in roles, views, and interaction can open the door to more inclusive collaboration. Working remotely should not mean losing one’s voice. Designers can support fairness with shared cursors, input tracking, or multimodal feedback. The challenge is also cultural: equity must be treated as a core design value, not an optional add-on.

DISCUSSION QUESTIONS

1. How can visualization tools make power dynamics visible rather than concealing them?
2. What design strategies could enable all participants to explore data on equal terms?
3. How might alternative modalities (chat, anonymous input, voice) shift who is heard or silenced?
4. In what ways do current defaults (roles, permissions, views) reinforce hierarchy?
5. What would equitable collaboration look like if we prioritized agency and voice over efficiency?

ACKNOWLEDGMENTS

ChatGPT was used as a language editor for grammar and clarity, but did not generate any content for this paper.

This work was supported by the Knowledge Foundation, Sweden, through the project “Rekryteringar 21, Universitetslektor i spelteknik” under Contract 20210077.

*e-mail: ilir.jusufi@bth.se

Table 1: Dimensions of power in remote collaborative visualization

Dimension	Description and Examples
1. Control of Visual Framing	Who decides what is shown or emphasized (zooming, filtering, dataset choice, layout).
2. Interaction Privileges	Who can act on or modify the visualization (annotations, reconfigurations, edit rights, active vs. passive roles).
3. Modality Access and Bias	How input modes shape participation (voice, chat, drawing, asynchronous feedback).
4. Narrative Control	Who directs the storyline and discussion (pacing, topic choice, highlighting or ignoring inputs).

REFERENCES

- [1] D. Akbaba, D. Lange, M. Correll, A. Lex, and M. Meyer. Troubling collaboration: Matters of care for visualization design study. In *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*, CHI '23. Association for Computing Machinery, New York, NY, USA, 2023. doi: 10.1145/3544548.3581168 [1](#)
- [2] P. Dourish. Implications for design. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, CHI '06, p. 541–550. Association for Computing Machinery, New York, NY, USA, 2006. doi: 10.1145/1124772.1124855 [1](#)
- [3] P. Isenberg, N. Elmqvist, J. Scholtz, D. Cernea, K.-L. Ma, and H. Hagen. Collaborative visualization: Definition, challenges, and research agenda. *Information Visualization*, 10(4):310–326, 2011. doi: 10.1177/1473871611412817 [1](#)
- [4] G. M. León, P. Isenberg, and A. Breiter. Talking to data visualizations: Opportunities and challenges, 2023. [1](#)
- [5] T. Losev, S. Storteboom, S. Carpendale, and S. Knudsen. Distributed synchronous visualization design: Challenges and strategies. In *2020 IEEE Workshop on Evaluation and Beyond - Methodological Approaches to Visualization (BELIV)*, pp. 1–10, 2020. doi: 10.1109/BELIV51497.2020.00008 [1](#)
- [6] R. Neogy, J. Zong, and A. Satyanarayan. Representing real-time multi-user collaboration in visualizations. In *2020 IEEE Visualization Conference (VIS)*, pp. 146–150, 2020. doi: 10.1109/VIS47514.2020.00036 [1](#)
- [7] L. Suchman. *Human-Machine Reconfigurations: Plans and Situated Actions*. Learning in Doing: Social, Cognitive and Computational Perspectives. Cambridge University Press, 2 ed., 2006. [1](#)
- [8] S. R. Trif, P. L. Cursesu, and O. C. Fodor. Power differences and dynamics in multiparty collaborative systems: A systematic literature review. *Systems*, 10(2), 2022. doi: 10.3390/systems10020030 [1](#)