

Introduction

I have recently failed in a research project. To be fair, I was part of a *team* that failed. Our goals were to understand the nature of biomedical research and to develop technology tools to support that work, and we were unable to make significant progress on either front. What follows is my attempt to view my past experience with a collaboratory through a sensemaking lens and to use these failures as opportunities to learn. This paper serves as a sort of proposal for writing a longer paper about the project. The longer version would use more examples from the collaboratories and explore the analogies to high reliability organizations and patient care more thoroughly. The phenomena that I'll take a first pass at explaining are (1) a marginalization of social science researchers in collaboratories and (2) scientists' reluctance to adopt technological solutions. I will rely heavily on Weick's seven properties of sensemaking: social context, personality identity retrospect, salient cues, ongoing projects, plausibility, and enactment (Weick, 1999) to describe my process of making sense of the unfolding story of collaboratories.

Marginalizing Social Science in Collaboratories

The Great Lakes Regional Center of Excellence in Biodefense and Emerging Infectious Diseases (GLRCE) is a multidisciplinary, distributed research project that included such disparate disciplines as microbiology, clinical medicine, public health, and information. I often felt a sense of us-them that was not explained by discipline alone.

The pronouns people use in clauses about their work indicate, to a large extent, their personal investment in that work (Podolny, Khurana, & Hill-Popper, 2005). GLRCE researchers referenced themselves as "we" and us social scientists as "you." This pronoun use indicates that they saw themselves as part of one community and did not see us as part of that community. This language use, when combined with their understanding of our role, illustrates the chasm between their

Libby Hemphill

Collaboratories through a Sensemaking Lens

work and ours that resulted. It may also explain why, in the jockeying for resources, biological science expenditures trumped social science money; investing in biological science was an investment in their own community, and funding us was not.

The GLRCE researchers often referred to us as “the IT people.” A lack of knowledge about our research coupled with a predisposition toward IT people enacted an environment in which we were marginalized as researchers and in which our role as service providers was emphasized. Cues, plausibility, enactment, and identity are just 4 of Weick’s 7 properties of sensemaking (Weick, 1999), but they explain much of what happened in the GLRCE. Biomedical researchers picked up the cues that we were technically proficient (e.g. we helped them use video conferencing) and came up with a story that cast us as IT support staff. Having IT support was a more familiar scenario for them than having social science research partners; therefore, thinking of us as IT support was a plausible explanation for our presence on their grant. Lastly, they enacted this role by asking us technical questions and relying on us to provide them with tools to conduct distributed meetings and to share data among labs. We acquiesced to the role by addressing their immediate and incremental IT needs without asserting our own research goals. By enacting the role they’d given us, we contributed to our own marginalization.

Graduate students in the biological sciences are often called upon to “do the grunt work” of ordering lab supplies, running experiments, and keeping labs running smoothly. The GLRCE researchers knew I was a graduate student, and it seemed plausible to them that my role was similar to their own students’. In that understanding, I could be counted on to fix their technology problems much like their own students took care of procedural problems in the lab. I struggled to maintain my identity as researcher rather than a lackey, but my own background in IT and my general willingness to help hindered my ability to do so. These misunderstandings

Libby Hemphill

Collaboratories through a Sensemaking Lens

about roles reminded me of the aircraft carrier video where it was clear everyone knew everyone else's role, so I also did some benchmarking of the GLRCE against high reliability organizations (HROs); the next section briefly describes those findings.

Managing Collaboratories as High Reliability Organizations

Awareness and containment of the unexpected are essential to HROs' success (Weick & Suttcliffe, 2001). We became aware of the unexpected interpretation of our role on the project late in the game. It wasn't until the first annual all-hands meeting (about nine months into the project) that we realized we were being referred to as the "IT people." We had failed to detect this misunderstanding, and by month nine, it was too late to correct it. This failure to detect occurred, I think in part, because we did not have frequent interactions with the other researchers. The GLRCE is a geographically distributed interdisciplinary group, and we were separated by distance, time, and discipline in ways that prevented such interaction.

Avoiding Technology Adoption

The members of the GLRCE were reluctant to adopt technological tools that might've helped them accomplish their research more easily. Some of the technologies they rejected were instant messaging, video conferencing, and shared online data repositories. They preferred traditional email to all of these communication media. I've seen this reluctance as a set of decisions not to use technologies, but I might be better served by thinking of them as "'good people trying to make sense' rather than 'bad [people] making bad decisions'" (Snook, 2002). It's likely that they rejected these tools because I couldn't promise that the tools would work rather; they were opposed to tools not guaranteed to work, not to tools in general.

One way to explain the reluctance I observed is to use the analogies to the approaches to patient care we discussed. One approach followed the familiar

Libby Hemphill

Collaboratories through a Sensemaking Lens

symptoms, diagnosis, treatment sequence, and the other followed a symptoms, treatment, diagnosis sequence. The doctors using the second approach try treatments out and determine their diagnoses based on the outcome. If we think of technology tools as treatments, we can understand why the scientists and I had different ideas about technology adoption.

The scientists I worked with were like patients who prefer the first kind of treatment. They viewed me as a solution provider and wanted to have me see them work, identify what was wrong, and provide a tool that fixed that problem. I am by training and philosopher-developer. I came of age during a time of “cheap” and lightweight technologies like instant messaging and situated software¹. My approach to technology is one of tinkering and testing. I, like the doctors in the second approach, start with symptoms and go straight to treatments/tools. I build small applications and test them out. When I develop a system that works, I am able to identify the problem I addressed. These two approaches are incompatible because mine requires an iterative cycle and a tool failure rate that just isn’t feasible for biological scientists to endure. They wanted me to give them solutions (much like an IT person would) rather than to test out treatments with them (like a social science acting as a participant observer would).

Conclusion

Applying the lenses of sensemaking and high reliability to my collaborative experience has helped me to outline a coherent story that explains that failure. It also showed me that, through my own actions and pronoun use, I was enacting a role on that grant that did not match my research intentions. My analysis highlighted the importance of interaction and early detection in preventing misunderstandings about roles. I also see the scientists’ reluctance toward technology as a natural

¹ For more information on situated software, I recommend Clay Shirky’s essay of the same title, originally published on a mailing list and now available at http://www.shirky.com/writings/situated_software.html.

Libby Hemphill

Collaboratories through a Sensemaking Lens

response based on their relationship with technology, and that relationship is fundamentally different from mine.

Next month I will embark on a new collaboratory project, and I hope that this exercise of trying to learn from failure served as a successful learning opportunity. I now see how the collaboratory's problems were systematic rather than personal and that structural and social changes will be necessary for future success. We (the entire GLRCE grant team) had problems because we did not identify each other in the same way, did not enact amenable research roles for social scientists, and we had incompatible approaches to testing and using technological tools.

One of the goals of the next collaboratory project is to develop lessons learned; this paper was an attempt to explain failures in my last project in order to develop hypotheses to test in the next one. The research questions I identified are (1) How can we help people notice when they are distancing themselves from the research team through language or role differentiation? (2) How can we interact meaningfully, even at a distance, in a way that enables us to anticipate the unexpected so that we may have time to contain it? (3) Is there an approach to technology development that balances the needs of users and developers?

References

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