Analysis

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FINAL STORY LINE

Our final story line is: Technologies used in meetings drive interactions among people and their surroundings by shaping how people communicate with each other and manage the space around them.

Although meetings exist for a wide range of reasons, their common purpose is to allow a group of people to gather and communicate information between each other. The way this information is communicated is greatly facilitated by the technology present in the meeting, which is in turn influenced by the location of the meeting and the participants of the meeting. For example, a meeting that takes place inside a large room with a projector screen and a projector affords the use of a projector. The use of a projector may influence how the meeting participants interact with other forms of technology (e.g. meeting participants may be more engaged in their laptop if a projector is being used rather than if someone was not using a projector). The use of certain technologies can regulate the meeting focus (e.g. a projector screen will be the focus if a projector is being used). On the other hand, a meeting that takes place in a more intimate setting (e.g. a small room with a table and seats around it) affords the use of more personal technologies brought by the participants of the meeting, such as laptops and paper. Furthermore, in a less engaging type of meeting where a person is presenting information to a large group of people through a projector, it may be more likely that the people in this meeting have side conversations and whisper to each other during the meeting. This shows how people's communications with one another are influenced by the technologies in a meeting.

Also, suppose two people are in a meeting and are doing work on their laptops. At the same time, these people may need to collaborate on work that is not located on their laptops but rather on another type of technology, such as a piece of paper. In this example, these people will need to shift their focus between their laptops and the piece of paper, which requires managing the space between them depending on whether their current focus is on their laptops or on the piece of paper that they need for their

collaborative work. From these examples, it is clear to see that the use of technology can drive the interactions that meeting participants have.

These examples are fictional and we are not sure that they truly illustrate the interactions between people and technologies during meetings. We would need to perform further observations in order to arrive at more concrete conclusions.

ANALYSIS PROCESS

We decided to use grounded theory to analyze the data we collected from our observations of meetings. As grounded theory suggests, our analysis began with the open coding process. We started by rereading our merged fieldnotes, which reveal numerous phenomena. Within our fieldnotes, we bracketed phrases that illustrated concepts and wrote a label for each. In order to establish these concepts, we made abstractions from actions and events described in our fieldnotes. An example of an abstraction would be conceptualizing the phrase "he sends the group an email" as "web-based communication." However, we were careful not to overly abstract the observations in our fieldnotes, because we understood that the later stages of grounded theory would focus on further levels of abstraction. Yet in still, there were times when we were unsure whether we were labeling concepts correctly. In order to solve this problem, we first tried to decipher if the concept was in actuality a concept or a higher-order category. Therefore, if a concept was too broad and was more appropriate as a category, we proceeded to make a sidenote to remind us of this potential category. For example, we labeled "she swivels in her chair" as "Movement." Later in our fieldnotes, we labeled "he walks across the room" as "Movement." It is very clear that moving in a chair is different than moving across a room. Therefore, we decided to give each its own label that was more specific and less abstract than the label "Movement." Though both are types of movement, we were not ready to use such abstraction during the open coding phase. We thought that movement may be a potential category later so we made a note of this. Overall, we obtained over 100 unique labels.

Next, we wrote the concepts on Post-It Notes and placed them on a wall (See Figures 1 and 2). As we began thinking about the characteristics that each of the concepts had in common, we moved the Post-It notes around such that related labels were in the same area. We then used these groupings to create categories that encompassed multiple concepts. We developed a total of thirteen categories. A few of our categories include Attention, Meeting Progress, Artifacts, Seating Arrangement, and Interruptions. These categories effectively reduced the number of labels we were working with while still being descriptive enough to provide an understanding of how they relate to the data. Each of our categories describes a phenomenon that is an important concept in meetings.

Figure 1.

Figure 2.

From the thirteen categories created, we determined the properties and dimensions of each category by examining the labeled concepts of each category and the common themes that they all share (See Figures 3 – 6). We used these relationships to understand the properties of the specific category. For example, the following are a small subset of labels from the "Broadcast" category: "handing out paper," "updating attendees on a topic," "passing around business card," "reading email aloud to the group," and "forward email to other group members." Each of these concepts has a common theme of providing information to the entire group. Thus, the category is called "Broadcasting." Additionally, the properties of "Broadcast" can be extracted from the concepts. The properties that emerged from the concepts listed above are Verbal, Electronic, and Written. These three properties help describe the characteristics of "Broadcast." Since properties represent the characteristics of a category, determining them forced us to ask

questions about the categories. Using the "Broadcast" category as an example, we asked ourselves questions such as "Who does the broadcast?" and "Who are the recipients of the broadcast?" The range of answers to these questions then led to the development of the dimensions of a category. In the case of the "Broadcast" category, the answers ranged from one-to-one and one-to-many. Therefore, the answers to the questions describe the dimensions for this category. We performed an in-depth analysis on each category to develop the properties and dimensions of each. See Table 1 for a subset of this analysis.

Figure 3.

Figure 4.

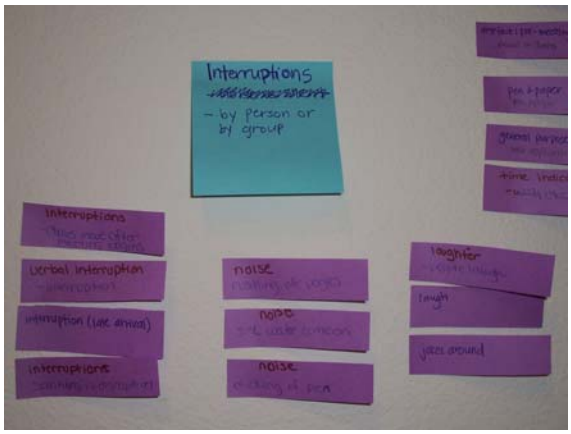

Figure 5.

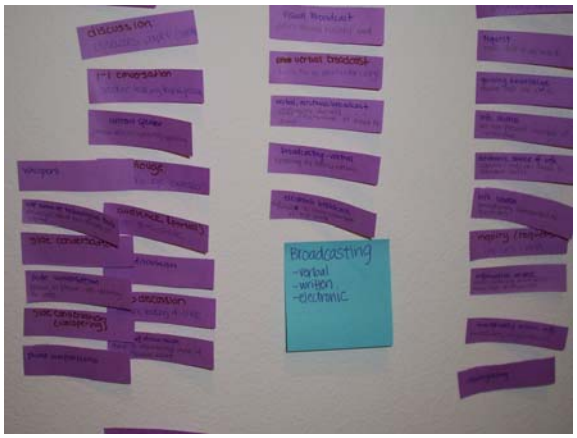

Figure 6.

Table 1.

Observation	Properties	Dimensions
Broadcasting	-Verbal -Written -Electronic	Individual to Group
Body Language	-Gestures -Expressions	Blatant to Subtle
Artifacts	-Personal -Group -Room	Digital to Non-digital
Workspace	-Establishing -Expanding -Managing -Clearing	Initialization to Termination
Existence of Technology	-Individual -Group	Foreground to Background
Load/Store Information	-Writing/Recording - Retrieving Info	Dynamic to Static
Attention	-Eyc Contact -Participation -Preoccupation	Paying no attention to Devoting complete attention
Idiosyncratic Movements	-Individual Movement -Annoyances -Personal	Unconscious to Conscious

After creating properties and dimensions for all the categories, we began to group the categories by extracting the similarities. Therefore, we began to form new meta-categories to encompass the original categories that emerged from the data. For example, of the thirteen categories derived, four of these categories are "Workspace," "Existence of Technology," "Seating Arrangement," and "Movement." We grouped these categories under a single meta-category of "Managing Workspace" because they all have the property of space management. This is evident in that "Workspace" is defined as establishing, expanding, managing, and clearing the space around the user. The "Existence of Technology" is defined as when technology is moved from the foreground to the background (e.g. a closed laptop in front of a participant is technology in the background while an open laptop is technology is the foreground.) "Seating Arrangement" is defined as how participants are seated (e.g. close to the food, behind the speaker, on the floor near the advisor, etc.). "Movement" is defined as when a participant relocates or moves his/her personal belongings (e.g. a backpack) from one place to

another. "Movement" incorporates a majority of the movement that takes place. Understanding the definitions of these categories allows us to clearly see that they are all related to space management. Similarly, we grouped the remaining nine of the thirteen categories intro three separate meta-categories, leaving us with four meta-categories in total. We then created properties and dimensions for the four new categories. At this point, we began to study and focus on understanding the relationships between the four meta-categories and the thirteen subcategories using their properties and dimensions, which is axial coding. We tried to answer questions about our data such as "When do people manage their workspace?" and "How is concentration affected by interruptions?" By posing these questions, we arrived at a better understanding of the relationships between the categories and subcategories. Figure 7 shows a subset of this analysis.

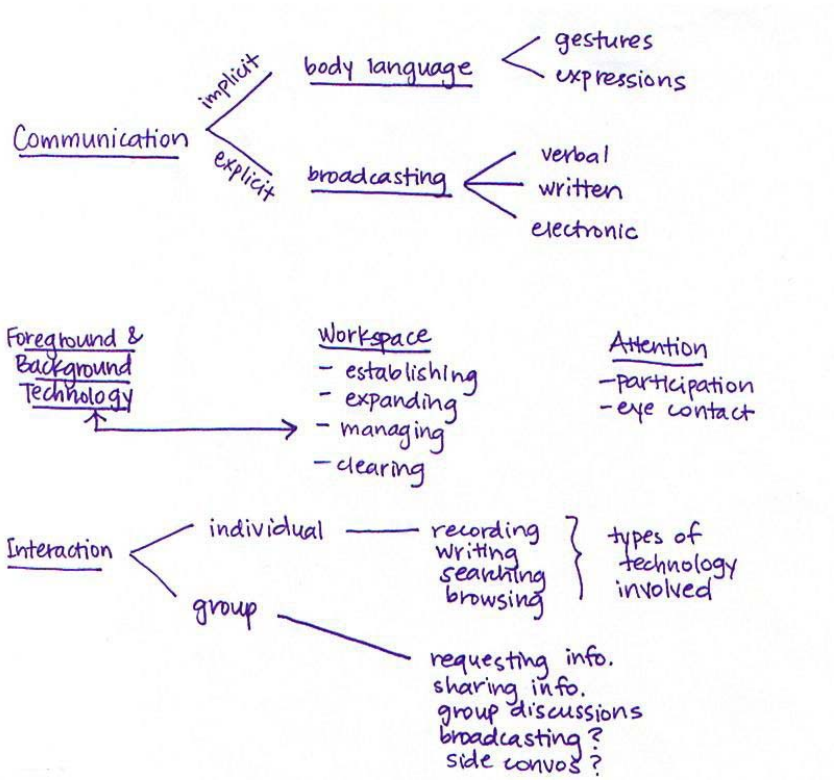

Figure 7.

The final phase that we were faced with during our analysis was selective coding. In selective coding, a single central category is chosen that must relate to all the current major categories. This single category must not be forced but instead obtained through logical reasoning. During selective coding, we used the knowledge gained from the

relationships, properties, and dimensions of the categories and subcategories to form one overarching category. Our first attempt to choose one category left us with two categories instead of one that encompasses the four previous meta-categories mentioned. We chose these two categories because it was easy to see that "Concentration," "Managing Workspace," and "Communication" all had similar properties; thus, they were grouped as "Interaction." However, it was difficult for us to see the relationship between the "Types of Technology" category and the new "Interaction" category that was created from merging the three previously mentioned. Therefore, we created a "Technology" category that encompassed "Types of Technology." Though this made sense at the moment, it was obvious that we needed to reduce these categories into one. After much debate and thought, we went back to the properties and dimensions of the two new categories, "Interaction" and "Technology." It is obvious that people interact with technology, which is a large phenomenon during group meetings. Therefore, our final category was "Interaction." Though this is clear to see now, we were unable to arrive at this conclusion by simply integrating the "Types of Technologies" category with the "Interaction" category without first grouping "Types of Technology" as "Technology." "Types of Technologies" seems to refer to the technology itself and less about the usage of technology. Thus, creating a category deemed "Technology" affords the interruption of usage or type. All in all, "Interaction" was our final category.

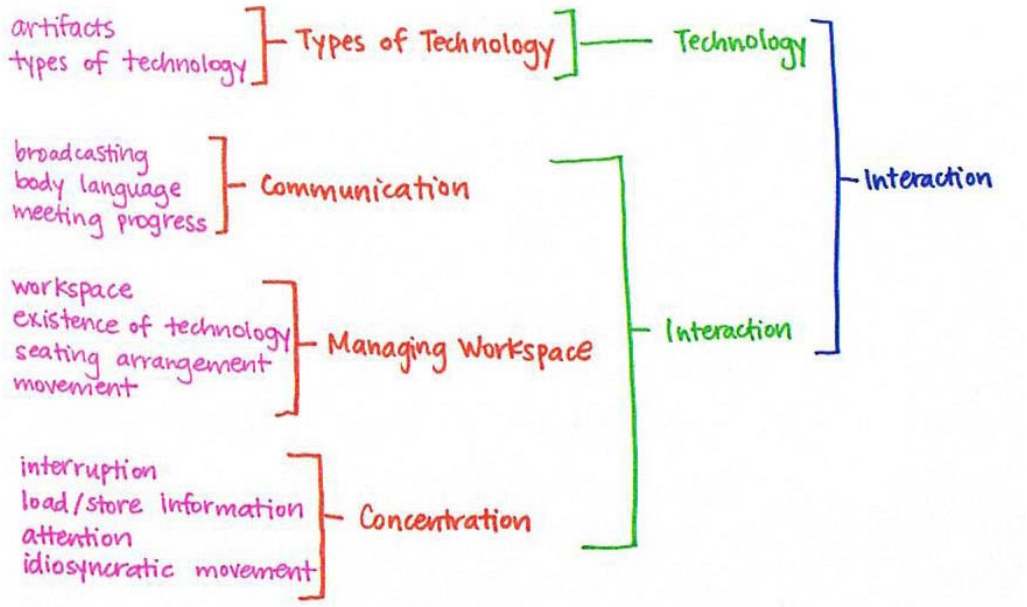

Figure 9.

REFLECTION

Since this is our first attempt at applying qualitative methods, there were many lessons learned throughout the process. Reflecting on our new experiences with qualitative observations, we recognize that there are a few incidents that we would have changed if given the chance to repeat this project. Though, we know that the knowledge we have gained from these experiences will undoubtedly help us in our future ethnography endeavors.

One concern we have regards the selection of meetings we chose to observe. We believe it would have been beneficial to recruit meetings with a wider range of technologies used than those we observed. From a technological perspective, the meetings we observed involved people interacting with paper, pens/pencils, books, chairs, and laptops. If these meetings had incorporated a larger variety of technology, we would have observed different kinds of interactions between people and technology. Consequently, we could have come to a different conclusion, or story line, regarding interaction with a wider range of technology during meetings.

Secondly, it would have been beneficial to focus on a particular type of meeting to observe rather than observing meetings of different types. The two meetings we observed consisted of one administrative-style meeting and another presentation-style meeting. While these meetings allowed us to observe how people's interactions with technology vary according to the style of the meeting, it was difficult for us to gain a common understanding of the data collected. That is, during our analysis, it was challenging trying to relate the observations from both meetings with each other and find repetition among our categories. A main reason for this difficulty arises from the fact that each style of meeting has different goals and the members of each meeting have different tasks. For example, administrative-style meetings are more oriented towards planning events, distributing tasks, and discussing orders of business. On the other hand, presentation-style meetings are more slanted towards paying attention to a particular speaker or group of speakers, contributing to the discussion, and asking questions relevant to the topic of discussion. Thus, members of each type of meeting are more

likely to be focused on different types of tasks and use technology in diverse ways to facilitate the completion of their tasks. From these dissimilarities between the meetings, it was harder to find many overarching themes across both meetings that were supported by many recurring events. However, if the assignment was to understand how the use of technology differs in various types of meetings, then the meetings that we observed would be excellent.

Although we were only required to observe two meetings for this project, we agree that it would have been advantageous to observe additional meetings in order to collect more data and find more recurring patterns in the data. With two meetings, it was difficult to develop a storyline that applied to both meetings that we felt confident would also apply to meetings in general. It is possible that our storyline is only specific to the two meetings observed rather than to meetings as a whole. By observing additional meetings, we would have an opportunity to collect more data and make a story line that is generalizable.

Another detail that we would have approached differently is agreeing on a common labeling scheme to identify participants before each meeting began. For the first meeting, we arrived early enough to allow ourselves time to sketch out the room and agree on a common identification scheme of the participants when writing our fieldnotes. We also agreed on where each of us would be positioned during the meeting so that we would be observing the meeting from complementary positions/viewpoints in the room. Unfortunately, the second meeting was a bit more disorganized and we were not able to agree on a common identification scheme of the participants. Consequently, when we were merging our fieldnotes for the second observation, we had to reconcile the fact that each of our notes was referring to the participants using a different numbering scheme, so it was harder to recognize which participant was been discussed in the fieldnotes. We had to spend time later converting our numbering scheme to a common one, whereas we could have saved ourselves this time had we agreed on a scheme earlier.

After performing two separate observations, we noticed while merging our fieldnotes that our first set of observations contained less raw data and more high-level descriptions of what was occurring during the meeting. These observations consisted of generalizations about the activity that was taking place and were therefore more abstract, containing less concrete details about what we observed and more on our *thoughts* about what was occurring (e.g. "Many people are typing on their laptops and not participating"). Our second set of fieldnotes contained more descriptive observations about exactly what particular participants were doing (e.g. "Person 3 types on his laptop"). We learned that having raw data about concrete aspects of what we are observing is more useful during the coding process than having notes of our analysis and interpretation of what we thought we were observing, since these are assumptions that do not represent true events.

Furthermore, being a member of a meeting that we are observing raises additional concerns as well. We realized this because one of the meetings we observed was a meeting that Sheena regularly attends. As a member of this meeting, she has some background knowledge about the meeting that a non-member would not have, so it makes it more difficult for her to ignore this knowledge and not let it affect the observations that she makes. One main point of our observations was to observe a meeting as an outsider, which is a difficult task if one is already a member of the meeting one is observing.

Similarly, we learned that being acquainted with the participants of the meetings we observed made it challenging to gather objective data. Sheena obviously has a relationship with the participants in the meeting that we observed that she is also a regular participant of. Thus, it was difficult for her to remain unbiased and to not leverage her knowledge of these acquaintances during the observation. For example, it was easier for Sheena to gain insight into why a participant of the meeting said or did something in a certain way because she is familiar with this person's behavior. She is able to quickly make assumptions and draw conclusions regarding a person's intentions without really having to observe this in the person's behavior.

Recruiting was a challenge for us during this project, so if given another chance, we would start recruiting as early as possible so that we would have a range of meetings to choose from. In our case, we observed the first two meetings that we were able to obtain consent for, since it took some time to schedule these meetings. We should have allotted more time to recruiting a good number of potential meetings for observation.

Another aspect of our observations that we would have done differently is imposing more aggressive time stamping. During the first meeting, we both took fairly frequent time stamps. However, the second meeting was quite large compared to the first. We had to observe a lot of activity, and thus forgot to take time stamps as often. We agreed that in the future, it would have helped had we been more stringent with our time stamping. Although we did not have too difficult of a time merging our fieldnotes for the second meeting (because we took notes on different activity and did not run into many disagreements), it would have certainly helped us to have time stamps with which to align our notes.

Additionally, we tried to complete the coding of our fieldnotes in one session. We quickly found that this process is exhausting and is more productive when split into multiple sessions.

Overall, we found the experience of observation to be quite insightful and beneficial. It is definitely a process that is refined through practice and experience. Now that we have some initial experience with observation and grounded theory, we will be better prepared and knowledgeable for future attempts at ethnography.