Innovation in Collaboration: Using an Internet-Based Research Tool as a New Way to Share Ethnographic Knowledge

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Ethnography in business is only successful if it is a cooperative, communicative endeavor. Research teams must be able to share knowledge with one another and with the client. In the absence of effective communication, time is wasted, analytic quality can suffer, and the client may lose faith in the value of the project or the value of ethnography in business. This paper will address the subject of transmissivity by defining four key needs for knowledge sharing in collaborative ethnographic research: direct experience of the research context, even distribution of knowledge, coordinated development of analysis, and management of the client experience. After synthesizing the literature on knowledge sharing to define these four key needs, the paper will describe how an internet based research tool can enable global, continuous, and controlled information exchange, meeting these needs in a new way. This type of solution can facilitate communication and enrich contextual understanding, pointing in a new direction for collaborative ethnographic tools. Particularly for dispersed teams, these tools can produce better, faster analysis and more relevant results—the most important deliverables to demonstrate the value of ethnography in business.

INTRODUCTION

Successful ethnography in a business setting depends upon the effective sharing of observations, analytic interpretations, and understandings between research team members and with clients. Getting the fullest meaning and value from ethnographic data requires exposure to the research setting and immersion in the analytic process (Howard and Mortensen, 2009; Cramton, 2001). In addition, the team must keep client needs and priorities connected to and informed by the ongoing insights that the ethnographic research is uncovering. Ethnographic researchers must have shared context, a mutual knowledge base, and strong trust in order to conduct situated analysis, as well as to work with clients and develop business recommendations in a way that fully demonstrates the value of ethnography.

Because ethnographic knowledge is based on interpretation, it is particularly difficult to share between individuals and across time and space while preserving meaning. First-hand, direct experience of both the process and the results is the most effective way to understand the process and gain necessary empathy for the subjects of research, but it is impossible to bring the client and all team members into the field at all times. To make things even more complicated, it is increasingly important to gather data from global markets to gain broad, multifaceted insights, which means research teams and clients are often widely geographically dispersed, and even individual researchers are finding it necessary to work remotely. This global dispersion makes effective communication more essential to the analytic process (Mohrman, 1999) while at the same time rendering it more difficult, necessitating new ways of communicating data and results.

EPIC 2010 Proceedings, pp.122-135, ISBN 0-9826767-3-8.

This paper will explore the challenges of sharing knowledge, experiences, and insights in collaborative ethnographic research. It will begin by discussing several analyses of the issue of collaborative communication in the existing literature and identifying key problems in effective knowledge sharing in ethnography. Cramton (2001) explores sharing among team members and identifies the ways that a "mutual knowledge problem" can disrupt effective collaboration. Similarly, Mohrman (1999) studies the challenges of dispersed collaborative research to point to successful organizational contexts that support such work. Meanwhile, Arnal and Holguin (2007) detail a list of "dissemination factors" which can enable researchers to best share knowledge with clients, incorporating them into an interactive, immersive ethnographic research process. Howard and Mortensen (2009) explain in depth the importance of sharing the entire research process with clients in order to effectively share meaning and value and ensure lasting impact.

Examining the intersection of these analyses of communication with both team and client, this paper will identify four key needs for successful collaborative ethnography: direct experience of the research context, even distribution of knowledge, coordinated development of analysis, and management of the client experience. It will then introduce an innovative internet-based tool that points in the direction of new solutions to these problems. It will explore, through the basic stages of a research project, how this type of internet-based tool allows for the four key needs to be met in a globally dispersed setting to enable remote collaboration. As ethnographic research becomes more often an exercise in dispersed and virtual collaboration, researchers will benefit from exploring innovative solutions that support contextual knowledge sharing by wholly addressing these four key needs, both for quality of results and in order to continuously demonstrate value to the client.

KNOWLEDGE SHARING AND COLLABORATIVE RESEARCH

The benefits of collaborative research come from developing insights through the combined capacities of multiple researchers. Collaborative research can incorporate a greater number and range of observations, and it allows for the development of more complex insights as researchers build off one another's ideas. But researchers must continually communicate to unite these perspectives into a coherent final product. And as Krauss and Fussell (1990) note, communication can only occur in the presence of "mutual knowledge", that is, knowledge that communicating parties share, and which they know they share.

Mutual knowledge serves as a foundation upon which to share new information and develop new understandings, as well as to move forward effectively through analysis, synthesis, and development of resultant strategies. The more knowledge two people share by mutual experience or observation, the less time they have to spend communicating these concepts and establishing a shared knowledge foundation, leaving them free to generate new ideas. Additionally, knowledge that is shared or pooled by multiple collaborators is more likely to be brought up, discussed, and incorporated in collaborative discussions than information held by only a single party (Stasser and Titus, 1985). In a collaborative ethnographic research setting, establishing a broad base of mutually shared qualitative data is thus likely to result in more rich and nuanced conclusions.

PIONEERING THE PATH

The negative effects of a lack of mutual knowledge are well established in the literature. Stasser and Titus (1985) find that discussions that involve unevenly shared knowledge are likely to lead only to conclusions that support the biases the parties held upon entering the discussion. This effect is exhibited even more strongly in dispersed groups using computer-mediated communication (Hightower and Sayeed, 1995). Cramton (2001) proposes that such groups may attempt to avoid discussion biases by spending more time on communication, leading to a trade-off between decision quality and productivity. A lack of mutual knowledge may also have a negative impact on collaborator relationships, since differences in understanding can lead to attributions of personal failure (Blakar, 1973). Once again, these problems are likely to be exacerbated by reliance on computer-mediated communication (Siegal, Dubrovsky, Kiesler, and McGuire, 1986).

In her study of geographically dispersed collaborative work, Cramton (2001) found that episodes of frustration, conflict, and confusion typically resulted from five types of problems:

> (1) failure to communicate or retain contextual information, (2) unevenly distributed information, (3) differences in the salience of information to different individuals, (4) relative differences in the speed of access to information, and (5) misinterpretation of the meaning of silence (347).

The first four types directly involve differing or ineffectually communicated knowledge, while the fifth type, misinterpretation of silence, is generally caused by a lack of contextual information that would have led to a more accurate interpretation. This demonstrates the importance of effectively establishing a mutual knowledge base in order to avoid serious difficulties in the collaborative process.

In a finding particularly relevant to ethnographic collaboration in business, Cramton further observes that "exacerbating factors" that most strongly contribute to breakdowns in mutual knowledge "can be expected to include heavy cognitive load, a complex, interdependent task, tight time limits, and a complex team design" (367). The first two factors in particular are characteristic of the type of qualitative and interpretive work of ethnography, while the latter two are typical in ethnographic research in business.

Mohrman (1999) indicates a number of reasons that dispersed teams may be especially susceptible to breakdowns in mutual knowledge and the resultant challenges such breakdowns cause. Membership in different departments or organizations often implies different business objectives and priorities. On a deeper level, it may also result in incompatible "thought worlds"—that is, divergent sets of knowledge, systems of meaning, and organizational routines—among collaborators, posing particular difficulties to the process of business innovation (Dougherty, 1992). Being situated in different geographical locations also roots researchers in different cultural contexts, opening up additional possibilities for mutual knowledge deficiencies. Potential results of these circumstances, according to Mohrman, include uncomfortable interpersonal dynamics, poor working relationships, inconsistency, misunderstandings, time delays, conflict, and uncertainty.

Mutual knowledge is, therefore, a key concern of collaborative research. Establishing mutual knowledge fosters effective, unbiased research and prevents a host of analytic and interpersonal

difficulties. Because members of dispersed teams are situated in distinct contexts, not only will it be more technically difficult for them to establish mutual knowledge, but they will also hold less knowledge initially in common. It will thus be particularly critical for such teams to find ways to share their knowledge in order to ensure fruitful collaboration.

KNOWLEDGE DISSEMINATION AND CLIENT COMMUNICATION

While the above analyses focus on identifying the problems that arise from ineffective communication within the research team, Arnal and Holguin (2007), Howard and Mortensen (2009), and others address some potential problems and solutions of effective communication with the client, emphasizing ways to ensure implementation and convey the value of research results. Ultimately, many of the insights about effective communication gained by considering the researcher-client relationship can also be applied to enhance communication within research teams, and vice versa. However, as the literature shows, considering each perspective separately can lead to a richer, more encompassing understanding of the collaborative process.

It is necessary to effectively share the process and results of ethnographic research with clients in order to convey the real value of that work and ensure the findings will have a meaningful impact on the organization. Arnal and Holguin discuss six factors that serve to maximize the dissemination of ethnographic research: speed, transcendence, compellingness, reach, exposure, and involvement. Communicating results with increased *speed* (for instance by sharing analysis as it is developed rather than waiting until the end of the project) ensures that insights will be incorporated while still relevant. Greater *transcendence*—that is, connection to high-level business policies—allows ethnographic research to have a more significant organizational impact. *Compelling* research is more memorable and thus more likely to impact future decisions. The more people, departments, and levels research *reaches*, the more value it can provide to a company. When clients are frequently *exposed* to the insights emerging from the research process, they will internalize those insights and come to recognize their implications and importance. Finally, *involving* clients in the research process increases their understanding of and commitment to the insights gained.

Howard and Mortensen (2009) advocate similar principles. They attest to the power of directly involving clients in the ethnographic process—even bringing them into the field when possible. This overcomes skepticism about the value of ethnographic research, results in the deep empathy necessary for user-centered innovation, and helps businesses to break free from constraining preconceptions. In this way, several well-established organizations (including Mercedes-Benz, Nike, and Harley Davidson) have managed to overcome the limitations of their existing business models in order to expand into new markets and rejuvenate their corporate image.

There may be risks in sharing too freely with the client without actively guiding them through the process. Because clients are not trained in ethnographic research, difficulties including misunderstanding and reinforcement of previously held bias can arise if clients are exposed to partially developed analysis or incomplete data. Ultimately, though, ethnographers in business understand that, if done carefully, involving the client in the process builds trust, depth of perceived investment, and a culture of open communication (Diaz and Rideout, 2007).

FOUR COLLABORATIVE NEEDS

As discussed above, various forms of knowledge sharing in ethnographic research can improve collaboration both within research teams and between researchers and clients, while breakdowns in knowledge sharing can cause serious difficulties. When considered in combination, these observations point to four key needs that must be satisfied to ensure the success of collaborative ethnographic projects in business. These four collaborative needs are (1) direct experience of the research context, (2) even distribution of knowledge, (3) coordinated development of analysis, and (4) management of the client experience.

Direct experience of the research context (which might include video or audio footage, cultural background and exposure, and physical context) minimizes mutual knowledge problems. The common alternative to achieving mutual knowledge through direct experience is to achieve it through explanation and interaction. However, Cramton has noted that receivers are less likely to retain contextual information conveyed in this way, and are also less likely to pick up on more subtle factors such as information salience. In Arnal and Holguin's terms, providing clients with direct experience of the ethnographic process (as exemplified in Howard and Mortensen 2009) can heighten the compellingness of the research. This can also encourage more people to engage with the material, extending reach. Opening the ethnographic context to clients during the research process, in a controlled manner, provides additional chances for exposure, and gives them an earlier opportunity for input, increasing the speed of both knowledge transmission and feedback. However, this is especially difficult to execute effectively between dispersed team members.

Just as important as direct experience of context is an **even distribution of the knowledge** arising from this experience. In-group behavior tends to emerge in contexts of unevenly distributed information, particularly among dispersed research teams, due to uneven exposure to qualitative data (Cramton 2001). This behavior detracts from effective collaboration. Furthermore, when some observations are more widely shared within a group than other observations, the group tends to discuss the shared pieces at the expense of those that are uniquely held, limiting the pool of data from which they draw their conclusions. This tends to support the biases with which discussants entered the conversation, as it makes it difficult for new information to enter (Stasser and Titus, 1985), presenting a major challenge for both researchers and clients.

Direct contextual experience and even distribution of information can only take research so far in the absence of **coordinated development of analysis**. It is through the combined input of multiple individuals that the benefits of a collaborative research process truly emerge. Communication aids in the identification of salience and the interpretation of silence. Allowing clients to participate in the development of research conclusions, rather than to passively receive a finished research product, is a form of involvement that increases the likelihood that insights will be incorporated, reinforcing the value of the ethnographic research. This also allows for the type of input that will ensure that the research responds to relevant business objectives, thus maximizing its transcendence.

To ensure success and avoid pitfalls of understanding, researchers cannot haphazardly throw the client into the mix—they need to **manage the client experience**. Researchers must include the client in the process, immerse them in the research, and disseminate information throughout the organization for lasting impact. As we have seen, showing the client findings while "holding the process hostage" (Howard and Mortensen, 2009) does not instill understanding or trust; researchers have to thoughtfully guide the client through the research with them. The factors of success in client communication are complex; clients and their needs differ, and there is no one way for researchers to ensure that they are imparting real understanding, maintaining trust, and disseminating the knowledge in a far-reaching and lasting way. Rather, each project requires its own personalized strategy for the timing, extent, and framing of the client's exposure, in order to address the previous three needs in a way that maximizes the project's overall effectiveness.

If all four of these collaborative needs are met, researchers will achieve efficient and productive collaboration and clients will receive ample evidence of the value of ethnographic research. This approach fosters trust among research team members and between researchers and clients, and results in relevant, complete, and integrated recommendations that are more likely to achieve successful implementation and show their value into the long term. But as discussed, each of the needs can prove challenging for dispersed research teams and busy clients to meet. Bringing an entire team to an observation session is not only difficult to schedule—it may also significantly alter the dynamics of the situation in question. Yet unless all members are present at every moment of the research process, they will likely experience an uneven distribution of information. Even organizing a remote teleconference to discuss ongoing analysis can prove challenging, resulting in a minimal number of opportunities for coordinated development of ideas.

Fortunately, modern technological capabilities do allow for tools capable of simultaneously fulfilling all four collaborative needs. Dispersed teams of researchers have been using digital tools to collaborate for some time, and the capabilities of such tools have continued to evolve. Qualvu is one example of an internet-based service, geared largely toward data from focus groups, surveys, and self-report video. It allows researchers and clients to access video footage, build context-heavy reports, and manage information sharing, although it does not have a complete collaborative analysis capability. Atlas.ti is a widely used ethnographic tool that is extensively complete for conducting rich analysis on qualitative data and sharing the research process. The only sharing limitations are that users must have the software and be on the same local network. The solution introduced in this paper incorporates these functionalities, but focuses on complete shareability, storage, rigorous analysis, and communication via the internet to directly address the needs of dispersed or remotely operating researchers. This paper will now explore how this type of tool can meet the four key needs of collaborative research, as defined above.

COLLABORATION THROUGH TECHNOLOGICAL INNOVATION

ETHNOKEN is an online visual market intelligence annotation and storage system that directly addresses the collaborative needs of ethnographers as discussed above. Users can upload video content to a secure workstation, sharing access only with authorized team members and clients, and creating a bank of contextual information upon which mutual knowledge can be built, for current and future

projects. By accessing video footage and synchronized transcripts of research sessions that they did not personally attend, viewers can gain direct experience of much of the research context. And through complete access to the analytic process of others, users can get an understanding of the thought processes that led to decisions and insights, either elucidating conclusions or highlighting areas for discussion. This illumination of the thoughts of others aids in the even distribution of knowledge, both contextual and analytic, as well as the coordinated development of analysis. Discussion threads, messaging functions, and the ability to create collaborative report wikis with embedded video further support coordinated communication and development of ideas, with equally distributed power to shape findings and deliverables. Additionally, all research data is stored and organized in a searchable database for future re-harvesting or meta-analysis, with controlled access. Dispersed teams can particularly benefit from access to their archived knowledge on the internet so they can make use of existing data while working away from a central office.

Researchers can conduct analysis using this tool by tagging, coding, and categorizing segments of the video footage and the adjacent synchronized verbatim transcript. Users can first create segments in the video or transcript based on meaningful events or behaviors (tag), then group them into sets by theme (code), and finally categorize this information based on emerging patterns. Users can interpret these coded segments in linked text fields, which are also linked with the chunk of synchronized verbatim transcript. These segments can then be placed into various hierarchically nested, researcher-created categories as patterns emerge among the data, and this process is further aided by an illustrative spatial map of these emerging patterns. Other team members may view these interpretations and categorizations throughout the course of the project, ensuring that knowledge is distributed evenly to the entire team and facilitating access to and communication around developing insights and understandings. This communication can occur through comments and discussion threads, which team members can post to the entire team or address to specific collaborating partners via email. Team members can look at the interpretations linked to video segments and watch the video that led to the interpretations, sharing a full understanding of the partner's thought process.

The online nature of the system allows for constant availability of the project-relevant information to all team members at any time and place, allowing access to research progress in real time. This instantaneous transmission of progress obviates the problem of requiring team members to await meetings or presentations intended for the communication of research developments. Team leaders can manage the client's exposure to research materials through controlled access, carefully guiding the client through the process according to their client communication strategy. As discussed above, there may be advantages and disadvantages to sharing different parts of the process with the client. ETHNOKEN allows team leaders to make and stick to a client communication strategy according to the needs and concerns of each project, with customizable access for each user.

To illustrate how this type of tool can meet the key needs of collaborative ethnographic research, this paper will discuss cases of a hypothetical team collaborating using ETHNOKEN, following the course of a typical project. These use cases will demonstrate how an internet-based tool can address the four key needs of knowledge sharing in collaborative ethnographic research, particularly enabling dispersed or remote teams.

Use case I: **sharing the research context**.

A research and development project studying behavior relating to mobile applications involves a large team, including project managers, designers, client partners, and others not directly conducting ethnography. Two researchers are working in Tokyo, two are in Sao Paolo, and two are in Paris, experiencing dramatically different cultural and physical contexts and witnessing different participant behavior. In order to allow direct experience of the context, team members upload the video of their participant sessions while still in the field and each can watch the footage of the sessions they did not attend *before* discussing findings and emerging patterns with the group. The video is synchronized to a verbatim transcript; these are shown side by side to aid understanding and segmentation, or tagging, of footage. When the team meets for regular conference calls to discuss progress and insights, all team members have been exposed to all contexts, and knowledge is distributed evenly. This means they not only have a foundation from which to share further understanding, but are open to potentially surprising insights that are very different from those they saw in their field locations because they were able to witness the participant sessions themselves.

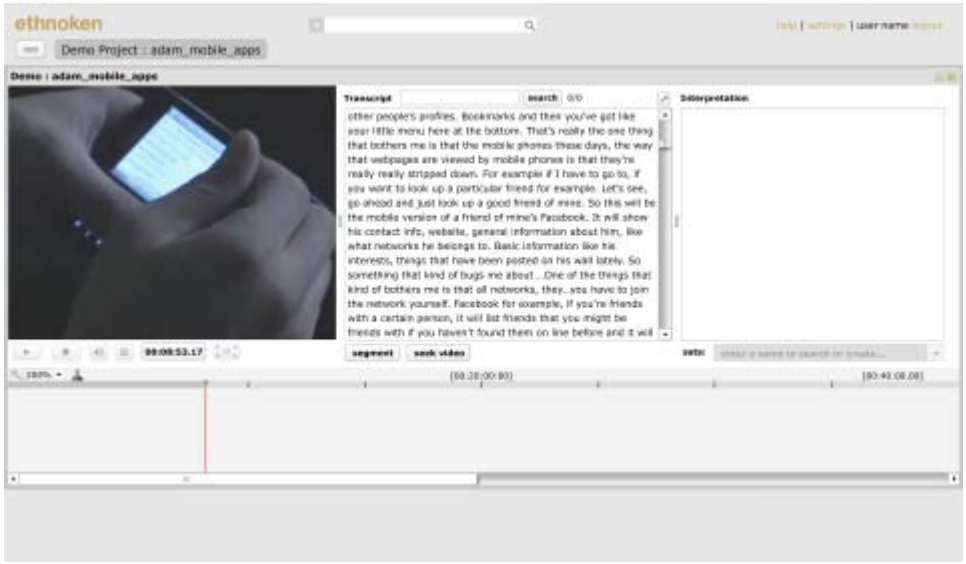

FIGURE 1. ***The ETHNOKEN editor, with video playback, synchronized verbatim transcript, and interpretation field.***

Use case II: sharing reasoning process.

The same team wants to begin analysis and idea development while in the field to keep up with a tight project schedule that leaves no time to waste. Plus, since they are geographically separated and unable to coordinate lengthy face-to-face sessions to discuss their findings, they are susceptible to disagreement and failures in understanding regarding the conclusions reached by team members in the other contexts. Through ETHNOKEN, in addition to watching the video of other participant sessions to gain direct experience of the research context, team members can also access the analytic thought

processes of each researcher, which are recorded in the interpretation field for each coded segment, further ensuring an even distribution of knowledge. Users can look at the current state of the interpretation, with conclusions or claims, as well as all previous revisions, which are saved as the researcher edits and develops her ideas. They can also watch the video linked to the segments or read the automatically linked verbatim transcript, clarifying how the interpretations came out of the data. All team members can have access to the methodological choices and analytical progress of any user who has begun to interpret the data, revealing any knowledge that might be hidden by a different, strictly document-sharing approach to dispersed collaborative analysis.

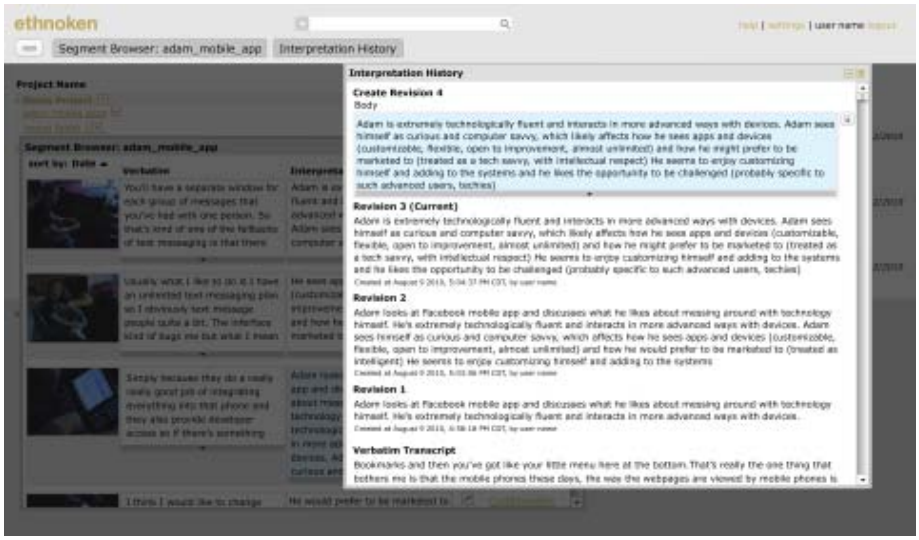

FIGURE 2. ***Interpretation history, showing all previous revisions of the interpretations of a particular segment.***

Each user has a color assigned to his video coding segments so it is clear who is responsible for each idea or piece of analysis, and researchers and other users can quickly leave comments or questions that can be continually followed up.

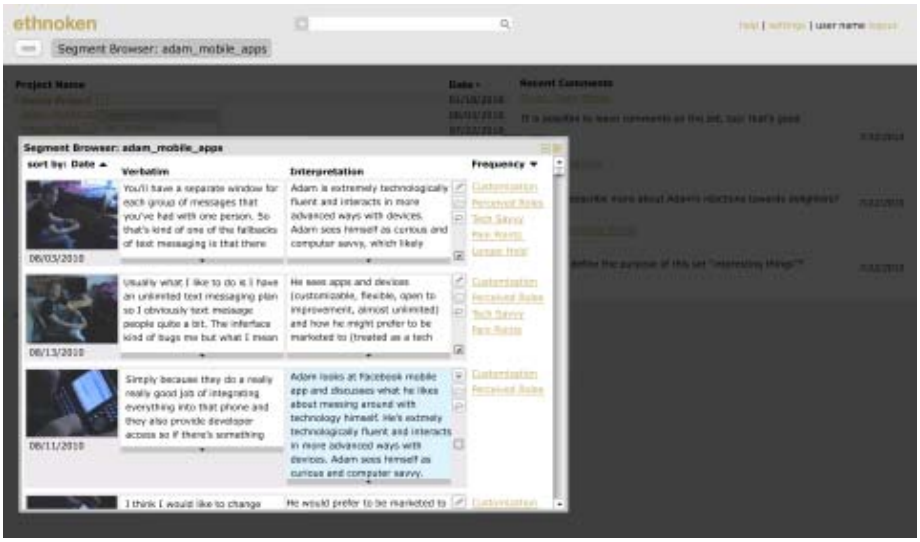

FIGURE 3. ***ETHNOKEN segment browser, where users can look through segmented and interpreted video segments. Browser is showing video thumbnail, verbatim transcript, and interpretation field, with interpretation open for editing. "Frequency" indicates how many other categorical sets each segment also lives in.***

FIGURE 4. ***ETHNOKEN editor with some completed segmentation, color-coded by user. Clicking on a segment pulls the associated interpretation into the editable field.***

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Users can collaborate to categorize and assign hierarchy to segments, and check the visual map of their analysis to see how larger patterns are emerging and discuss agreement or ideas on these findings.

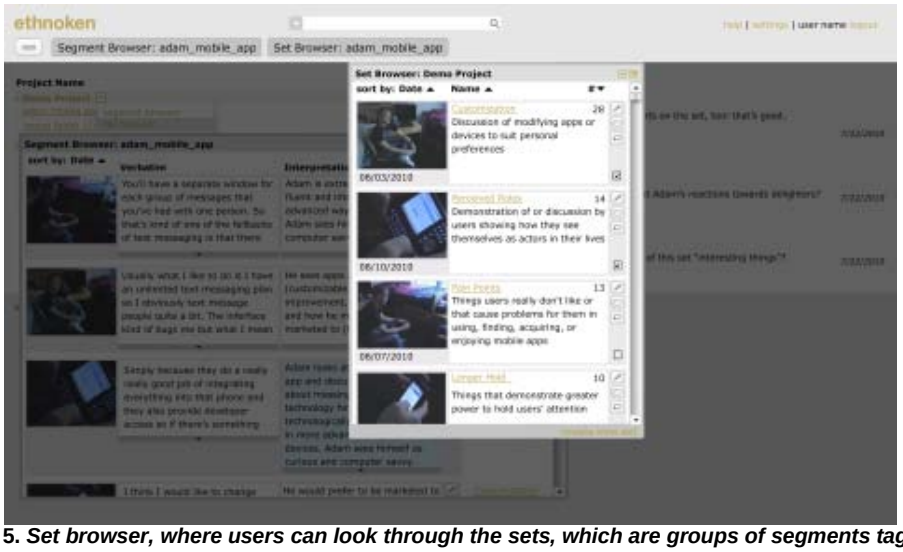

FIGURE 5. ***Set browser, where users can look through the sets, which are groups of segments tagged and organized by theme.***

FIGURE 6. ***Affinity map, a spatial representation of the relationships between themes. The sets (categorical groups of segments) that contain the most segments are represented as larger and toward the center, and sets that are very intertwined are shown as overlapping.***

The team can remotely build a report wiki, including embedded video and images to serve as the client deliverable, which will keep the process on schedule and fully collaborative even while team members are separated by time zones and miles.

Use case III: guiding the client.

This tool also allows the team to direct the experience and exposure of the client or external partners through controllable access to media files and limitable editing capability. For example, researchers can choose to allow any individual to view video footage only once it has been analyzed, to help guide the client away from drawing conclusions that may be biased by previously held beliefs or organizational orthodoxies. The team can also choose to assign a "read-only" status to such users, allowing them to participate in discussions, make comments, and view selected material, but not permitting them to edit or alter the work. This gives the researchers critical control to manage the amount and timing of exposure client users experience, allowing the team to create and stick to an effective communication strategy, as discussed earlier, to ensure real understanding, cooperation, and effective dissemination of the research.

Use case IV: growing knowledge.

This research team exists within a larger consulting company, and they know that they can answer the client's research question more quickly and save time and money if they could just access the relevant data from old projects. In ETHNOKEN, the team can search through their entire project history to find answers and topics of interest, profiting from the organized access to the work they've already done and avoiding redundancy. The information they find in their old data doesn't answer all of their questions, but it helps shape the new research question and narrow in on a direction, streamlining the planning and saving time that can be used on increasing the scope of the project. The findings can build on previous knowledge to have a stronger impact than if it had to start from scratch.

FIGURE 7. ***Search results, showing the available filters for focusing a broader, cross-project search.***

CONCLUSION

Collaborative ethnographic research is a challenge in knowledge sharing, further complicated by the continued need for teams to operate in a dispersed or remote setting. This paper has identified the key needs for effective knowledge sharing in collaborative ethnography in business. It has then shown how a tool that makes use of the internet for storage, communication, and analysis can address these needs to enable the research process and include the client in a way that reinforces understanding and value. Moving forward, our community would benefit from continued exploration into the ways that analysis and knowledge sharing capabilities on the internet can expand the efficiency and quality of dispersed collaboration and offer innovative strategies to involve the client. We must also continue to study and develop the tools of communication within such solutions to address the specific problems of digitally-mediated information exchange. This will ensure that methods of conducting ethnography in business evolve to meet the industry's rapidly evolving communicative demands.

NOTES

This work was supported by TOCA. A heartfelt thank you to our team for persevering through the process although we were widely dispersed.

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