

Research Statement

Matthew J. Bietz

My research enriches our understanding of the role that interpersonal communication media play in shaping social interaction. Because communication media support various modes of communication, and impose different communication costs (Kraut, Fussell, Brennan, & Siegel, 2002), they can influence how we build and maintain relationships and how we share and interpret information. My research highlights the interdependent and intersubjective character of communication, and focuses on how social and organizational processes are affected by distance-spanning communication technologies.

In my research I draw on my experiences in several disciplines. At the State University of New York at Stony Brook, I studied historical musicology, with a particular focus in ethnographic and gender theories. At the University of Michigan School of Information, my focus has been on the design and use of information and communication technologies. As a Masters student, I worked at the intersection of technology design and cultural and feminist studies, working with the University of Michigan Institute for Women and Gender and the Cultural Heritage Initiative for Community Outreach, and writing on feminist practice and the design of information technology (Bietz, 2000). I employ both qualitative and quantitative methods in my research.

My recent research demonstrates attention to issues of difference in two ways. First, I have studied cross-cultural interaction in scientific teams, and how communication technologies can help to bridge or possibly reinforce difference. Second, my work is influenced by a feminist approach to relationships and relational practice. In an era of increasing distribution of work and mediated interpersonal communication, it is important to know how communication technologies can be used to create and maintain “high quality relationships” (Dutton & Heaphy, 2003). Taking a relational approach to mediated interpersonal interaction allows us to see how new technologies shape “the space between” (Bradbury & Lichtenstein, 2000; Walther & Burgoon, 1992).

Communication in Distributed Scientific Teams

Scientists are increasingly making use of networked technologies to support distributed science. Within this context, my research has focused on how scientists use information and communication technologies to support distributed team-based laboratory work. As part of the International AIDS Research Collaboratory (IARC), I worked with distributed HIV/AIDS research teams collaborating in the United States, the United Kingdom, South Africa, and Botswana (Olson, Teasley, Bietz, & Cogburn, 2002). With Gary Olson, I focused on how these scientists use data and other boundary objects to support their ongoing interaction (Bietz & Olson, 2002). Jeremy Birnholtz and I looked across multiple scientific disciplines and found that data play an important role in supporting social interaction and communities of practice (Birnholtz & Bietz, 2003).

Analyzing critical incidents in these HIV/AIDS collaborations revealed that communication delays can lead to bad feelings and lower trust among participants (Bietz, 2003). Our observations with the projects suggested that supporting distributed laboratory

meetings could help address some of the interpersonal and organizational issues the collaborations were facing. Weekly laboratory meetings are important times for research teams to share findings, update status, and generally engage in both formal and informal communication. They also provide an opportunity for senior scientists to provide feedback on the work of junior scientists and students (Owen-Smith, 2001). We helped implement an infrastructure for real-time, distributed laboratory meetings, and tracked the use and impact of these technologies. We found that having a working “cyberinfrastructure” in place is crucial for initial adoption, but once the infrastructure is available, the distributed meeting practices quickly diffused to related user groups (Bietz, Naidoo, & Olson, forthcoming).

A key goal of IARC was to support the development of local HIV/AIDS expertise in southern Africa. One facet of this program was pairing graduate students in South Africa with mentors in the United States and the United Kingdom. When I observed conversations among sites, I saw that differences in culture, status, and social context formed significant barriers to successful communication. It also seemed that the use of particular computer-mediated communication channels was affecting the scientists’ ability to bridge their differences and create shared understandings. This observation became the seed for my dissertation research.

Feedback Communication in Mixed-Media Environments

The software that the South African students used to communicate with their distant mentors supported only one-way audio and video over the Internet. If one person was talking, the only way the other person could respond would be through typing in a text-chat window. In these mixed-media environments, the technology imposes a higher communication cost on one participant than another. This can affect how critical feedback is given, interpreted, and used.

Many studies of mediated interpersonal communication assume that all actors in a conversation are using the same communication medium. Some work has studied the difference between one-way (monologue) and two-way (dialogue) communication (Burgoon, Buller, & Floyd, 2001), but there has been little attention paid to communications in which participants are using different media. With increased technological convergence (for example, mobile phones that can also send and receive text and video), the implementation of standard communication protocols, and the huge variety of communication hardware and software (especially in distributed and mobile workplaces), we can expect that mixed-media communication will become more prevalent.

My dissertation focuses on how mixed-media communication environments structure interpersonal interactions. Mixed-media environments provide phenomenologically divergent communication experiences for each participant. When there is an imbalance (for example, in the speed of communication or the richness of the media), some participants will find it more difficult to contribute while others will have more control in the conversation. Mixed-media environments can also interrupt crucial meaning-making processes that depend on interactivity, from micro-level grounding to higher-level sensemaking (Clark & Brennan, 1991; Weick, 1979).

My dissertation research addresses these issues through a series of experiments conducted with pairs of participants giving feedback to each other. In these experiments, a “Writer” creates a document based on a business case study. Another participant critiques the document and gives feedback to the Writer, who can then edit the document before submitting a final version. The feedback conversation between the Critic and the Writer takes place over instant messaging, videoconferencing, or in mixed-media conditions (one participant using IM, the other using videoconferencing). Data are collected from questionnaires, in-depth coding of the feedback conversations, and analysis of the documents from before and after the feedback conversation.

Analysis of experimental data is continuing, but early results reveal that mixed-media environments affect how much feedback is given, how it is given, and how it is received (Bietz, 2006). For example, conversations conducted over instant messaging produced fewer items of feedback than those in video-conferencing. In mixed-media conditions, the amount of feedback is similar to that of IM conversations, even when the Critic is using video-conferencing.

Additionally, it appears that gender plays an important role in feedback communication. Men are more likely to give positive feedback if they can see and hear their communication partner, whereas women give more positive feedback if the Writer is communicating through IM. In female pairs, Writers are more likely to provide excuses for their work when the Critic is using video-conferencing than when the Critic is using IM. The opposite is true for males.

Using the results of the dissertation, I will be able to offer recommendations to developers and managers of communication technologies about the potential effects of media imbalances. In future research, I hope to develop and test potential strategies and technologies that would help communicators be aware of and compensate for these effects. I also want to explore opportunities to leverage these effects. For example, there may be situations where it would be beneficial to use a mixed-media communication environment to intentionally shift the power balance among communicators.

My dissertation demonstrates the important role that interpersonal communication media play in shaping how critical feedback is delivered and received. It recognizes the increasing potential for mixed-media communication (Billingshurst, Kato, Bee, & Bowskill, 1999), and begins to develop and validate a theoretical framework for understanding the effects of mixed-media communication environments on interpersonal interaction.

Continuing Research

My future research will extend my interest in communication technologies and interpersonal relationships. My dissertation research suggests a number of questions that deserve further exploration. First, in order to advance a more general theory of the relational impacts of communication affordances, I plan to expand my dissertation experiments to include additional media and communication domains. Second, my experimental results show that gender can affect how individuals react to mixed-media communication, and I want to further develop these results.

It is important to me to have a close connection between laboratory research and field research, and I hope to continue studying distributed scientific communication in field settings. The current national and international focus on Cyberinfrastructure and e-Science makes this a rich area of study. I look forward to developing a better understanding of the role of interpersonal critical feedback in scientific practice, and how to support that role in distributed environments.

Consistent with a relational approach, I strive to create overlap in my research between considerations of understanding and considerations of use, and I want my research to have a meaningful and practical impact (Bradbury & Lichtenstein, 2000; Stokes, 1997). At a minimum, I hope that the results of my research lead to improved design, management, and use of communication technologies. But I am most fulfilled when, as with the International AIDS Research Collaboratory, the communities that I work with can both inform and be informed by my research.

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