

# **Contemporary Research Methodologies in Technical Communication**

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Many tools, technologies, spaces, and practices of technical communication today bear little resemblance to those of the late 1990s, when *Technical Communication Quarterly* published its last special issue on research methods and methodologies. On the surface, this seems significant, for in the life of writing as a technology 15 years is not so long. As Schmandt-Besserat (1986) illustrated, 5,000 years transpired between the first appearance of symbolic clay tokens and their impressed and incised signs in written systems of accounting and commerce (pp. 32–34). Similarly, humans have used various combinations of ink and paper for around 5,000 years (Fischer, 2011). Pen and paper persist for contemporary technical communicators, but new writing technologies have developed dramatically over the last two decades. The workflows of today's technical communicators are mediated by conditions that either did not exist or were not prevalent in the late 1990s: by new tools (always connected smartphones and touch screen devices, widely available eye-tracking systems for usability research, inexpensive and expansive digital storage); by new technologies (instant=text=multimedia messaging, social media, real-time collaborative document editing, nimble content management systems, Darwin information typing architecture); by new spaces (hybrid work locations, co-working venues, virtual offices); and by new practices (contextual design, user centered design, interaction design, single sourcing).

Recent special issues of this journal have explored many of these developments (Ding & Savage, 2013; Kimme Hea, 2014; Pullman & Gu, 2008; Spinuzzi, 2007; Swarts & Kim, 2007). Although advances in technical communication research methodologies and methods have been substantial, the last special issue devoted to methodologies was published in 1998. In her introduction to that issue, Goubil-Gambrell argued that “defining research methods is a part of disciplinary development” (p. 7). We agree that methodological approaches act as markers for disciplinary identity and changes to practices and theories of technical communication since the late 1990s serve as powerful exigencies for this special issue on contemporary research methodologies. Goubil-Gambrell claimed that articles in the 1998 special issue illustrated “where we are now” (p. 7); the work of authors in this special issue provide indicators of where we are in 2015, and how we are responding to substantive change in our field.

More important, the articles in this special issue not only respond to these changes but innovate and map future methodological approaches to technical communication. Since their work looks forward, we briefly look back—to some of the key methodological developments that have shaped our field's current research identity. We begin with sociocultural theories of writing and communication that were coincident with the 1998 special issue on research methodologies. This body of work inspired and built from qualitative studies of communicators in context. Next, we explore associative theories and methodologies that developed in parallel, but that carried alternative assumptions, methods, values, and aims about communicative actors, tools, and contexts. This body of scholarship and methodological practice changed ways in which researchers of communication explored and theorized human agency and mediation. We then consider recent work in the new material turn, a related but diverse set of approaches that is changing the ways that technical communication researchers study and understand contexts, distributed work, and collective labor. Last, we touch briefly on evolving adaptations of traditional qualitative methodologies; mixed methods approaches; and reconciliations of increasingly large technical communication data sets with situated, contextual research methods. We do all this as a way to situate the methodological contributions made by the articles in this special issue.

## SOCIOCULTURAL THEORIES

Scholars such as Bazerman (1988, 1994, 1997, 2013) Prior (1998, 2006, 2009), and Russell (1993, 1995, 1997a, 1997b, 2009, 2010) have been strong proponents of sociocultural theory in a variety of communicative contexts, and their work has influenced approaches in technical communication. “Sociocultural theory,” according to Prior, “argues that activity is situated in concrete interactions that are simultaneously improvised locally and mediated by prefabricated, historically provided tools and practices” (2006, p. 55; emphasis in original). Sociocultural theory has clear implications for methodologies and methods, influencing what objects and practices—beyond texts—are germane to researchers. Bazerman, Prior, and Russell draw on traditions of scholarship in social psychology, symbolic interactionism, and learning theory. For Prior (2006), attention to local contexts of situated activity is thus foundational to sociocultural theories. Writing is a protean form of situated activity, mediating and communicating abstract knowledge, practical know-how, and ways of being in the world. In sociocultural material surroundings of communicators matter because everyday activities are carried out and mediated by heterogeneous artifacts and tools (Prior, 2006).

In technical communication and related fields such as human–computer interaction (HCI) and computer-supported cooperative work (CSCW), similar methodological and theoretical approaches to contexts, artifacts, and human activity have been deployed. For example, situated action models (Brown, Collins, & Duguid, 1989; Lave, 1988; Suchman, 1987) were grounded in contextual theories of learning and everyday practice. Nardi (1996) argued that a focus on practical activity and its epistemic effects in this approach “deemphasizes study of more durable, stable phenomena that persist across situations” (p. 72). In theories and studies of distributed cognition (see, for example, Norman & Hutchins, 1988, and Hutchins, 1991, 1995), however, the focus extends to tools, artifacts, and concepts that move across design problems (Nardi, p. 78). In distributed cognition, attention to the coordinative roles of tools, artifacts, and cognitive constructs stretch beyond particular situations and are reused and adapted to new or ongoing challenges (Nardi, p. 86). Scholars in rhetorical genre studies, also influenced by sociocultural theories, have explored such typification and durability in the form of genres (Artemeva & Freedman, 2007; Bawarshi & Reiff, 2010; Miller, 1984). The more recent synthesis of rhetorical genre studies and activity theory (known as writing, activity, and genre research or WAGR; see Russell, 2009; Spinuzzi, 2010) brings the durability and nomothetic potential of genres together with situated and ideographic explorations of specific contexts.

Indeed, Nardi (1996) argued that activity theory is a sociocultural approach that allows researchers in HCI and CSCW to study complex, situated contexts while producing findings that are generalizable (p. 70). Activity theory, which was introduced to professional communication via Bazerman (1988), Russell (1995, 1997a), and Berkenkotter and Huckin (1993), has been widely used in technical communication to study how genres are durable, suasive, and mediatory within specific activity systems (Fraiberg, 2013; Kain & Wardle, 2005; McCarthy, Grabill, Hart-Davidson, & McLeod, 2011), across linked activity systems (Gygi & Zachry, 2010; McNair & Paretto, 2010), and in broader networks (Ding, 2008; Propen & Schuster, 2010; Sherlock, 2009; Spinuzzi, 2008, 2012). (For more detailed overviews of studies involving genre and activity theory, see Russell, 1997b; 2009.) Activity theory posits a clear asymmetry between communicators and their tools and technologies. In technical communication, activity-theoretical approaches have emphasized the motives and intentionality of individuals or collectives,

positioning human subjects and material objects as distinct, yet interoperative. As Nardi argues, a key emphasis of activity theory is consciousness and motive, “‘which only belong to humans’” (p. 86). Spinuzzi (2008) detailed another foundational perspective of activity theory that has particular methodological salience: Grounded in the work of social psychologists such as Vygotsky and Leontiev, activity theory is fundamentally genealogical and its accounts of human actions and intentions are therefore developmental.

Within those developmental parameters, sociocultural theories such as activity theory have anchored various methodological approaches in technical communication. For example, Mirel (1998, 2004) drew on sociocultural theory to outline her approach to interaction design, and Spinuzzi (2003, 2013) developed genre tracing as a methodology for information design. More recently, Sun (2012) drew on activity theory, genre theory, and articulation theory to develop Culturally Localized User Experience. In a 2006 interview with Zachry published in *TCQ*, Nardi described that in her article “‘Objects of Desire’” she was trying to stay “‘really close to the data’” (p. 493) and, to do so, paired activity theory with grounded theory (GT). Grounded theory approaches (Corbin & Strauss, 2008; Farkas & Haas, 2012; Glaser & Strauss, 1967=2007; Strauss & Corbin, 1990) afford analytic granularity and generalizable, formal theory building (for additional examples of GT approaches in technical communication, see Cooke, 2003; Mirel, Barton, & Ackerman, 2008; Schuster, Russell, Bartels & Kelly-Trombley, 2013; Scott, 2008; Spafford & Schryer, 2010; Teston, 2009, 2012; Whithaus, 2012). Some of these approaches tend to draw on variations of interventionist methods and methodologies popularized in sociology, anthropology, cultural psychology, and computer-supported cooperative work. Yet, developmental approaches have their limitations. In particular, they assume a purposeful human actor who retains agency during processes of technical communication. However, this outlook is not the only productive one; other approaches have explored how agency, similar to cognition, can be understood across humans and nonhumans that have become associated in a system.

## ASSOCIATIVE THEORIES

Associative theories analyze humans and nonhumans as parts of intersubjective systems across which agency and motives are stretched. Such theories do not necessarily deny individual agency or cognition, but they deemphasize the roles of individual human beings to avoid over-determining human agency and underdetermining roles played by other parts of the system under consideration. By the 1990s, technical communication scholars had begun drawing in earnest from associative approaches such as articulation theory (Johnson-Eilola, 1997; Slack, Miller, & Doak, 1993), rhizomatics (Selfe & Selfe, 1994), distributed cognition (Freedman & Smart, 1997; Winsor, 2001), and actor–network theory (Winsor, 1994). Of these, actor–network theory (ANT) has had perhaps the most uptake in technical communication and rhetoric, being used in a range of studies with various methodological commitments (Fleckenstein, Spinuzzi, Rickly, & Clarke Papper, 2008; Fraiberg, 2013; McNely, 2009; Potts, 2009; Jeff Rice, 2009, 2012; Spinuzzi, 2005, 2008; Swarts, 2009, 2011).

Like other associative theories, ANT takes the position of symmetry—a methodological stance that ascribes agency to a network of human and nonhuman actors rather than to specific human actors. Methodologically, therefore, researchers focus on associations among nodes in an actor–network. And since associations themselves are the focus, things that they associate are

considered network effects. Symmetry does not involve anthropomorphizing nonhumans or seeing humans as agentless media; instead, it involves focusing on how associations among them generate new possibilities.

This stance has implications for technical communication research methodologies that have been developed in different ways. For example, Jeff Rice (2009, 2012) applied ANT descriptively, tracing associations across networked and offline media to explore how identities emerge from these networks. Swarts (2009, 2011) focused on aspects of translation and network-building in writing environments, and demonstrated how everyday issues such as technological literacy and reuse are developed rhetorically. Liza Potts (2009, 2014; see also Potts, Seitzinger, Jones, & Harrison, 2011) took a modeling approach by mapping different actants and how they relate in networks across social media. Last, scholars such as Fleckenstein and colleagues (2008) and Spinuzzi and colleagues (2006) used an ecological approach that provided a holistic examination of texts-in-use and compared different moments of that use. These strands are not exclusive, and they draw on different methodologies to apply ANT insights in different ways.

### THE NEW MATERIAL TURN

Associative approaches such as actor–network theory expand not only technical communication contexts but potential actors involved in such work. Latour (1992) suggested that nonhuman actors, in particular, are among the “missing masses” of collective life that participate in and shape experience (p. 152). Recent research across several disciplines (namely science and technology studies, political science, rhetoric, and philosophy) has extended associative and relational approaches to more directly engage the missing masses of nonhumans, taking seriously their potential role in affecting human work, and effecting ostensibly human activities and outcomes. In contrast to sociocultural theories, these approaches share a radically symmetrical perspective on relationships between humans and nonhumans—between people and things, whether those things are animal, vegetable, or mineral. Agency, from this perspective, is a function and emergent property of collectives: It is distributed and interdependent. Latour’s (2013) term for this phenomenon is interagentivity—the capacity of humans and nonhumans to affect and effect one another beyond a subject–object bifurcation (p. 5). The development of these theories, we argue, will affect technical communication theory and methodology in years to come.

Emerging from a broad body of work in philosophy and political science (Barad, 2007; Bennett, 2010; Coole & Frost, 2010) and scholarship often collected under the umbrella known as object-oriented ontology (not to be confused with object-oriented programming; see Bogost, 2012; Bryant, 2011; Harman, 2002, 2005, 2011; and Morton, 2007, 2013) these approaches constitute a new material turn. This scholarship is labeled “new” materialism because it considers materiality as something much more than the simple substrate upon which human designs and activity play out. In new materialisms, then, “things are not simply projections by, containers for, or artifacts of human activity: not fetishes but actors” (McNely & Rivers, 2014). Although some have called this brand of materialism new, others (in particular, those who align themselves with feminist materialism) would suggest there is nothing new at all about it. Yet, although research in technical communication and rhetoric has often focused on discursive relations and effects they generate among human actors, the radical symmetry of new materialism explores interagentive potentials by asking how things relate and produce effects as

assemblages. Bennett (2010), for example, considers electrons, electromagnetic fields, and power lines as formidable actors in what we experience as “power” or “electricity” (p. 24). These actors are often unwilling to be shaped by human designs and intentions (Latour, 1988, p. 197); an interagentive view of electricity (and related technical communication concerns such as energy policy and usage restrictions), therefore, sees agency emerging from the human–nonhuman assemblage rather than from human actors alone.

In scholarship of the new material turn, which increasingly influences work in technical communication and rhetoric (see, for example, Cooper, 2011; Gries, 2013; Hawk, 2011; Mara & Hawk, 2009; McNely & Rivers, 2014; Jenny Rice, 2012), things matter in robust ways, and nonhumans have suasive potentials that have been obfuscated by subject–object bifurcations (Latour, 2013). Rickert (2013), for example, invites us to reconsider information as not only a material context in which work is done, but also as “an ensemble of material elements bearing up, making possible, and continually incorporated in the conducting of human activity” (p. 93). In Rickert’s “ambient rhetoric,” human activities such as technical communication are “a stitchwork of material, practical, and discursive relations” (p. 93). From an ambient perspective, technical communication research and practice is often extractive: Our methods and methodologies seek salience about a particular concern—usability, collaboration, motives—allowing us (or, in a more cynical view, forcing us) to bracket the complexity of practical activity. In new materialist approaches, usability, collaboration, and motives of technical communicators are inseparable from the material environs in which knowledge work is practiced.

These theories, in short, have important methodological implications in the research of technical communication. Scholarship in the material turn has troubled how researchers should bound off and study objects and practices, given the potentially formidable roles such objects and material environs play in everyday work and in practical attunements of technical communicators to those environs (Rickert, 2013). New materialisms ask us to reconsider kinds of methodological commitments and values we should deploy when attempting to capture the complexity of objects and their role in everyday ontologies. For example, Dourish and Bell (2011) make a case for infrastructure as an object of study, and, when exploring mess and myths associated with ubiquitous computing, they adopt an ethnographic approach. They eschew, however, the editorial imperative to, upon completing the ethnography, make recommendations for improvements upon technological design. For them, ethnography is “scenic fieldwork” (p. 67) and serves to “reveal certain underlying logics of social practice” (p. 69)—not render recommendations for the elimination of a problem.

#### LOOKING FORWARD: PREVIEWING THE SPECIAL ISSUE ON RESEARCH METHODOLOGIES

In some ways, associative theories and work in the material turn bring us back to where we began: theory building about social practices of technical communication—including all their messiness, failures, and fraught, mutually constitutive associations. Methodologies influenced by new materialisms and associative theories, however, broaden the scope of social and rhetorical aspects of technical communication and encourage us to consider tools, technologies, and environs as potentially interagentive elements of practice. Although the three broad theoretical trends we have briefly outlined have shaped methodologies in technical

communication, so too have innovations in qualitative approaches. For example, work in action research (Blythe, Grabill, & Riley, 2008; Grabill, 2003), work in participatory design (Evia & Patriarca, 2012; Simmons, 2007; Spinuzzi, 2005), and work in visual methods (Evia & Patriarca, 2012; McNely, 2013; McNely, Gestwicki, Gelms, & Burke, 2013; Varpio, Spafford, Schryer, & Lingard, 2007) have adapted and extended traditional qualitative approaches for nuances of contemporary technical communication. In addition, given the increasing importance of so-called “big data” in a variety of knowledge work fields, mixed methods and statistical approaches to technical communication are likely to become more prominent. We believe a formidable methodological challenge in coming years will be to explore increasingly large data sets with innovative methods while remaining grounded in the values and aims that have guided technical communication methodologies over the previous three decades. In the hot-air balloon view of our discipline, methodological and theoretical pluralism reveals the rich and diverse tapestry of opportunities for research and practice.

The 1998 special issue of TCQ on research methodologies established new directions in how technical communication researchers, teachers, and practitioners would understand and explore the field’s objects of study, research ethics, and metrics (see Table 1). In this 2015 special issue, each contribution reflects how technical communication’s methods and methodologies have developed further—and along various paths—to better address many new objects of study, new aspects of research ethics, new metrics that have emerged alongside developments in theory, new research opportunities and modes, and new technologies.

TABLE 1  
Comparing TCQ’s 1998 and 2015 Special Issues on Research Methods and Methodologies  
Based on Key Methodo-Communicative Issues

<i>Methodo-Communicative Issues</i>	<i>1998</i>	<i>2015</i>
<i>OBJECTS OF STUDY.</i> How do we account for contexts, people, things, objects?	Longo is attentive to contextual nature of technical communication.	Read and Swarts are attentive to networks and knowledge work.
<i>ETHICS.</i> How do (and should) we cross borders?	Blyler deploys critical (e.g., feminist; participatory action) methods vs. descriptive/explanatory methods. Johnson sees interdisciplinarity as an ethic.	Walton, Zraly, and Mugengana see visual methods as a way to deploy ethically sound cross-cultural, community-based research.
<i>MEASUREMENT.</i> What’s our metric? What counts as data?	Charney asks, what does empiricism, romanticism afford us?	Graham, Kim, Hartke, and Keith ask, what does statistical genre analysis of larger data sets afford us?

This special issue extends some of these theoretical and methodological trends in innovative ways, describing and deploying perspectives that allow us to better apply their insights to technical communication research questions (see Table 2).

In “Visualizing and Tracing: Articulated Research Methodologies for the Study of Networked, Sociotechnical Activity, Otherwise Known as Knowledge Work,” Read and Swarts

address the question of how to conduct a principled network analysis. Taking the network as their object of study, they bring together and place into conversation two very different methodological perspectives, using actor–network theory and social network analysis to develop

TABLE 2  
The Current Issue's Contributions to Methodo-Communicative Issues

<i>Methodo-Communicative Issues</i>	2015	<i>What's New (or "Where Are We Now?")</i>
<i>OBJECTS OF STUDY.</i> How do we account for contexts, people, things, objects?	Read and Swarts model how to study networks and knowledge work.	Networks are an object of study; network analysis is one method for capturing their complexity. <i>Theoretical ancestry: science and technology studies; actor–network theory; social network analysis</i>
<i>ETHICS.</i> How do (and should) we cross borders?	Walton, Zraly, and Mugengana model visual methods as a way to engage ethically in cross-cultural, community-based research.	Values and validity should be considered in cross-cultural research; visual research methods as a way to do that. <i>Theoretical ancestry: anthropology</i>
<i>MEASUREMENT.</i> What's our metric? What counts as data?	Graham, Kim, Hartke, and Keith model how to conduct statistical genre analysis of larger data sets.	Larger data sets can be analyzed rhetorically using statistics' methodological affordances. <i>Theoretical ancestry: rhetorical studies, linguistics, science and technology studies, statistics</i>

a synchronic view of how work is distributed spatially, temporally, and disciplinarily at an interdisciplinary, project-based research environment called the CIRCUIT Studio. Moreover, Read and Swarts provide visual tools for understanding this distributed work, and their methodological innovation offers incisive implications for how we understand knowledge work in such organizations.

Walton, Zraly, and Mugengana explore methodological processes in “Values and Validity: Navigating Messiness in a Community-Based Research Project in Rwanda.” In particular, they consider the issue of how to develop and enact research ethics in community-based, translingual fieldwork. Qualitative fieldwork is inherently messy, and community-based, translingual research may involve additional considerations for technical communication research, such as adjusting mutually with community stakeholders throughout the research process. Walton, Zraly, and Mugengana describe how to negotiate research objectives while democratically sharing power with community stakeholders, maximizing rigor, and navigating uncertainty. By drawing lessons from their developmental processes, they provide valuable guidance for others who plan to do similar research.

Over the past two decades, technical communication researchers have performed many qualitative field studies, but comparatively few textual studies deployed techniques of statistical analysis. In “Statistical Genre Analysis: Toward Big Data Methodologies in Technical Communication,” Graham, Kim, Hartke, and Keith develop a statistical approach to perform a genre analysis on a data set whose size would be too large for the techniques typically used in rhetorical genre studies. In this analysis of deliberations conducted by the U.S. Food and Drug Administration’s Oncologic Drugs Advisory Committee, the authors pilot a big data approach to genre analysis, one that allows them to systematically investigate effects of industry and stakeholder inclusion in science-policy deliberation. Through their hybrid methodological approach, the authors argue, genres can be defined with more precision—not based on

individual cases but across the entire data set—and specific genre features can be correlated with specific outcomes.

These three articles represent and frame very different methodological developments in technical communication research. In “Getting to ‘How Do You Know?’ Rather than ‘So What?’ from ‘What’s New?’” Davida Charney puts these articles into context by discussing how they relate to various technical communication research trajectories. More important, she considers some fundamental moves in our work by asking: Where do we begin? How do we frame our research? Where are the failures, dysfunctions, and conflicts? And, ultimately, how do we know?

This issue also includes reviews of recent books that we see as key methodological resources for technical communication researchers. First, Hashimov reviews what he calls two “musthave” books for qualitative researchers: Miles, Huberman, and Saldaña’s (2014) *Qualitative Data Analysis: A Methods Sourcebook* and Saldaña’s (2013) *The Coding Manual for Qualitative Researchers*. Hashimov discusses how readers will find useful each source’s systematic approach to qualitative data collection, coding, analysis, and presentation. In her review of Johnson-Eilola and Selber’s (2013) edited collection, *Solving Problems in Technical Communication*, Elizabeth Angeli argues for the value of this book’s technical communication heuristics for undergraduate and graduate students, but she also invites readers to imagine an additional chapter that might have provided an overview of research methods technical communicators could use to solve problems (e.g., basic statistics, coding, eye-tracking). Last, Lambert reviews Potts’ (2014) *Social Media in Disaster Response* as a model for the kind of methodological complexity contemporary technical communication researchers encounter, particularly when studying user-centered design and social media in the context of tragic events.

The 1998 TCQ special issue on research methodologies was a landmark issue that informed a generation of technical communication scholars as they defined their own objects of study, enacted their research ethics, and thought through their metrics. We hope that this special issue will similarly provide valuable grounding for technical communication researchers in the years to come.

## ACKNOWLEDGEMENTS

The authors extend thanks to everyone involved in this special issue. In particular, the authors thank TCQ’s previous editor Amy Koerber, who greenlighted this project, as well as the current editor, Donna Kain, who brought it to fruition. The authors also thank the TCQ editorial board for accepting their special issue proposal. The authors thank, too, the many reviewers who provided measured and thoughtful reviews. Most of all, the authors extend thanks to the authors in this special issue.

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