COMMUNICATION MONOGRAPHS, 2017
https://doi.org/10.1080/03637751.2017.1322212

Questioning as regulatory work practice: The communicative accomplishment of reliability and safety in the oversight of nuclear power plants

Joshua B. Barbour [a] and Rebecca Gill[b]

[a]Department of Communication Studies, The University of Texas at Austin, Austin, TX, USA; [b]School of Management, Massey University, Albany Campus, Auckland, New Zealand

ABSTRACT
The safety of high hazard systems depends on the organizations that monitor and regulate them, but theorizing of these organizations tends to gloss over the specific communicative practices that comprise organizing for reliability and safety. This article investigates nuclear power plant inspectors' communicative work practices by studying how asking and answering questions organizes their work. The data include interviews ($N = 29$) and shadowing of resident inspectors at six nuclear power plants and a regional office of the U.S. Nuclear Regulatory Commission. The analysis of communicative work practices central to inspection work (e.g., interrogating, coordinating interaction, and keeping track) contribute to normative theory of questioning in safety organizing with implications for the communicative study of questioning, work practice, and high hazard systems.

ARTICLE HISTORY
Received 5 May 2016
Accepted 30 March 2017

KEYWORDS
Questioning; practice; high reliability organizations; normal accident theory; nuclear power

> The leaders' mobiles vibrated, and we set down our menus. We had arrived at the enchiladas place early to have time to talk about the project before the midday rush. The restaurant was quiet and dark save for dim lighting and sunlight through half-closed blinds. The phones drummed on the wooden tables, loud in the empty restaurant. They answered. The senior leader spoke briefly to the caller, and asked someone on the line to setup "a bridge"-- a secure teleconference. The others joined the call. Soon after, he asked: "Can you summarize the event for us?" … "Has it stopped?" … "How much was it?" … "Has the cause been identified?" … "Is it ongoing?" They listened. The senior leader gave a few instructions, and they hung up and pocketed their phones. They explained that the call was no cause for worry. Nonetheless, lunch would have to wait. They stood up, we shook hands, and they left.

This study focuses on the safety oversight work practices of resident inspectors (RIs) in the United States Nuclear Regulatory Commission (NRC). The NRC's mission is "to license and regulate the civilian use of radioactive materials in the United States to protect public health and safety, promote the common defense and security, and protect the environment" (NRC, 2015a, p. xi), which includes responsibility for nuclear reactors and power plants. RIs work at each plant, verify information provided by the plants to

CONTACT Joshua B. Barbour barbourjosh@utexas.edu
© 2017 National Communication Association

the NRC, monitor ad hoc issues, and conduct planned surveillance of plant processes – all guided by a risk-informed regulatory framework (i.e., the reactor oversight process [ROP], NRC, 2015b). RIs observe, interview, and discuss safety issues with plant employees, and RIs communicate with their local team, their counterparts at other plants, and with their leadership and counterparts at regional offices to oversee and document safety and compliance in inspection reports (NRC, 2015b). The potential for catastrophe and the complexity of the scientific, engineering, and regulatory apparatus involved make nuclear power an important context for the study of the communication, reliability, and safety (Kinsella, Collins Andreas, & Endres, 2015; Perin, 2005).

The opening vignette exemplifies the central role of asking and answering questions in safety oversight. In this study, we found that questioning is at the core of this work, but also that questioning can undermine the very organizing meant to accomplish reliability and safety. This article explores how RIs navigate this difficult communicative space. It joins scholarship demonstrating the importance of communication in high reliability organizations (HROs, Jahn, 2016; Weick & Roberts, 1993), and calls for the study of communication in such systems (Barton & Sutcliffe, 2009; Scott & Trethewey, 2008). It also corroborates scholarship on questioning as a distinctive, important, and complex form of communication (e.g., Daly & Redlick, 2016; Krone, 1993; Levine, Blair, & Clare, 2014; Tracy, 2009; Tracy & Robles, 2009).

This article makes three main contributions to the study of questioning, communicative work practice, and organizing for reliability and safety. First, it integrates the analyses of questioning as microsocial communicative action and meso-level work practice to demonstrate how communication unfolds in, and gives form to, distinctive forms of work and organizing; that is, how questioning is constitutive of safety oversight work. Second, it contributes to a normative theory of questioning as communication practice by highlighting the efficacy and limitations of particular communicative techniques for managing the demands of safety oversight work, including problems associated with attempting to routinize or standardize questioning. Third, the focus on communicative work practice offers insights for integrating and enriching the theorizing of HROs, including hazardous, complex industrial systems.

Communication in organizing for reliability and safety

Organizing for reliability and safety focuses on minimizing error and accidents in settings such as nuclear power plants (Perin, 2005), firefighting (Barton & Sutcliffe, 2009; Jahn, 2016; Scott & Trethewey, 2008; Thackaberry, 2004), aircraft carrier flight decks (Weick & Roberts, 1993), and healthcare organizations (Vogus & Sutcliffe, 2007). It is difficult to overstate the importance of communication in such settings and, by extension, to society at large. Safety, reliability, and the underlying resilience needed in these systems are communicative accomplishments (Buzzanell, 2010). Researchers focused on such organizing have (a) argued that reliability and safety depend on complex, difficult, and at times fragile, communication processes; (b) investigated organizational systems, structures, and cognitive orientations to communication that may bolster reliability; and (c) found empirical support for the importance of specific communicative behaviors such as heedful interrelating (Leveson, Dulac, Marais, & Carroll, 2009; Weick & Sutcliffe, 2015). This literature has also highlighted the need to explicate and understand the

communicative action that constitutes these processes because doing so could prevent large-scale organizational failures and the cascades of small, accumulating problems that can precipitate them (Barton & Sutcliffe, 2009; Scott & Trethewey, 2008).

Questioning in organizing for reliability and safety

At their most basic, safety systems exist to curate a useful sense of the state of the system (Leveson et al., 2009; Weick & Sutcliffe, 2015). Questions are part of the necessary and complex gathering, flow, and management of information needed to understand what is happening (Mokros & Aakhus, 2002; Perin, 2005), and these communicative actions are central to the sort of sensemaking sought in HROs. Here, sensemaking refers to the ongoing processes of interpretation of and communication that "talks events and organizations into existence" (Weick, Sutcliffe, & Obstfeld, 2005, p. 413). Through sensemaking, organizational members develop shared understanding out of the fragmented information and ideas about the state of organizing. Weick and Roberts (1993) argued that heedful interrelating, that which is "carefully, critically, consistently, purposefully, attentively, studiously, vigilantly, conscientiously, pertinaciously" undertaken, can contribute to enhancing organizational "capability to comprehend unexpected events that evolve rapidly in unexpected ways" (pp. 361, 366). For example, in their formative study of flight decks, they found that pilots repeatedly asked themselves questions to sustain an active awareness of the system and that the questions of newcomers could prompt heedful interrelating. Barton and Sutcliffe (2009) further argued that prompting individuals to question assumptions and expertise could enable more robust sensemaking. Weick and Sutcliffe (2015) emphasized the importance of cultivating the right mindsets for sensitivity to operations, and, in their recommendations for practice, they suggested "questions that uncover blind spots" (p. 58).

Communication, and questioning in particular, has been emphasized as important to reliability and safety, but communicative practice along these lines – what should be done and how it should be done – needs further explication (Scott & Trethewey, 2008). Work in this domain tends to focus on organizational structures or the cognitive underpinnings of interaction (Barton & Sutcliffe, 2009; Jahn, 2016). It suggests practices such as continuous talk and heedful interrelating as "self-evident solutions" without (a) acknowledging or providing resources to address the difficulties inherent to such disciplined communication or (b) recognizing that "increases in the clarity of communication or amount of information flow do not automatically translate into cultural or behavioral change" (Scott & Trethewey, 2008, p. 311). In other words, the advice recommends asking questions without making clear how to do so.

The communicative study of questioning

Communication research has made clear the importance of, but also the interactional difficulty in, asking and answering questions. Questioning is central to processes of uncertainty management: it organizes, sustains, and controls conversations, communicates content and relational meaning, and helps manage the multiple goals inherent to complex communicative situations (Krone, 1993). Contexts for this research have included bargaining, employment interviews, public deliberation, academic presentations

and colloquia, medical interviewing, courtroom interaction, 911 call-taking, and police interrogation, emphasizing the sorts of questioning involved in formalized, standardized, or policy-governed interaction, often referred to as institutional discourse (Krone, 1993; Tracy & Robles, 2009). This research has investigated the practice of questioning by identifying and categorizing its expected and unexpected functions, and its associations with particular features of language (Tracy & Robles, 2009).

This research makes clear that asking and answering questions are essential to accomplishing the institutional requirements of context-specific work such as soliciting information from patients, suspects, litigants, 911-callers to enable action, but questioning in such work is complicated by competing individual, organizational, or institutional ideals for action (Krone, 1993; Tracy & Robles, 2009). With an understanding of those complications, research can inform recommendations for more useful and adaptive practice (Craig & Tracy, 1995, 2014). For example, Tracy (2002) demonstrated how identity management complicated 911 call-taking by focusing on its interactional difficulties. Institutional expectations for 911 call-taking and specific organizational rules provided ideals that call-takers sought to realize to varying degrees during interaction while also negotiating threats to communicators' trustworthiness, intelligence, character, and autonomy (see similar findings in academic presentations and courtroom interaction in, Daly & Redlick, 2016; Tracy, 2009). Understanding how actors negotiated such difficulties empowered a reconsideration of 911 call-taking as communicative practice with indirect organizational and institutional implications.

An opportunity at the edge of this literature is to understand the dynamics of questioning not just in terms of interactional difficulty and complexity in particular communicative moments but the broader force of those microsocial difficulties in organizing (Tracy, 2009). This study builds on this literature by investigating the difficulties of questioning in a rich context, addressing calls for insight about what makes questioning workable in particular settings (Tracy & Robles, 2009), while also shifting focus to meso-level, communicative work practice (Leonardi, 2015). This shift can integrate the (a) insights of careful attention to microsocial practices, a hallmark of the study of questioning (Krone, 1993; Tracy & Robles, 2009), and (b) a more macrosocial understanding of work practice (Leonardi, 2015) – communicative action understood collectively (Lammers & Barbour, 2006).

A concern for communication and work practice involves shared interest in understanding socially recognizable, patterned clusters of action undertaken to achieve particular ends (e.g., in the study of "forms of life," "communities of practice," "grounded practical theory," Craig & Tracy, 2014, p. 230; actions that are indexical, accountable, and reflexive, Leonardi, 2015). A focus on communicative or work practice reflects the framing of the researcher (e.g., a choice to focus on a cluster of activity of work or communication) but also a socially codifiable recognition that clusters of action entail or comprise particular communication or work. For example, Craig and Tracy (2014) explained, "Surgery per se is not a communication practice, but the collaborative interaction among the members of a surgical team is" (p. 230). To focus on *communicative work practice* is to focus on (a) the communicative aspects of a category of work (e.g., communication in surgical teamwork) and/or (b) forms of work that are distinctively communicative and, therefore, comprised of particular communicative practices (e.g., medical interviewing). Leonardi (2015) advocated for the study of work practices in particular, because they "form a grammar for understanding organizing as it happens" (p. 264). He conceptualized

work practices as comprised of the action through which work and organizing are accomplished, but also as space for defining and refining action. They are "generative in the sense that they are actions that produce organizations, but they are also contexts in and of themselves that allow action to occur" (p. 253), and accordingly, the goal should be to understand not just which work practices develop but what work practices do in organizing.

To do this in our study, informed by the previous communication research on questioning as practice, we began by asking, *what are the safety oversight work practices comprised of asking and answering questions (RQ1)?* The analysis was grounded in understanding when and to what ends do inspectors ask and answer questions as part of the communicative accomplishment of safety oversight. This first step provided foundational understanding of the functions and circumstances of questioning in this context, and building on that understanding, we next shifted the analysis to the meso-level. To do so, we turned to grounded practical theory (GPT), a metatheoretical and methodological framework for the study of communication practice (Craig & Tracy, 1995, 2014) adapted here to the study of communicative work practice. We elaborate the specific guidance provided by GPT below, and note for now that GPT prompted us to study these practices and their implications by asking, *what are the dilemmas in these communicative work practices, what are the techniques employed to manage them, and what situated ideals govern them (RQ2)?* Through this structure of research questions, we explored the implications of the findings for the communicative study of questioning for reliability and safety.

Methods

The offices of the NRC include the national headquarters in Rockville, MD, two national training facilities, four regional divisions that monitor the plants in their region, and the resident offices located on site at the approximately 60 nuclear power plants across the U.S. (NRC, 2015a). Our particular study took place at one of the regional divisions, which we refer to as the Reactor Safety Unit (RSU). Headed by a director and deputy director, the RSU was organized into branches with 3–4 power plants per branch. Each plant had a presence at the regional office, and vice versa, as the RIs or senior RIs (SRIs) and part-time administrative staff (AAs) located at each plant were supervised by a branch chief (BC) and typically supported by a senior project engineer (SPE) and 1–2 project engineers (PEs) who worked in the regional office.

Data collection

From January 2011 through March 2012, we carried out an investigation focused on understanding the information management and meaning making involved in safety oversight and the communicative processes of the RSU. The importance of questioning in the RSU's safety oversight work struck us early. The frequency of questioning and the language participants used to describe their work, such as the need for a "questioning attitude" indicated its prevalence and importance. We conducted the bulk of data collection mindful of this insight.

Guided by (a) principles of engaged scholarship such as the co-creation of research design and analysis, extended data collection, and multiple methods, and (b) our interest in safety oversight as practice, we designed an interpretive research approach that involved

shadowing, field interviews, document collection, open-ended surveying, and a preliminary findings workshop that allowed for member checks. The combination of methods meant that observations of practice could be reflected on during interviews, which supported normative claims grounded in participants' and researchers' notions of what worked and what did not. Attending an RSU-wide meeting at the start allowed us to describe the project and discuss human subjects protections. We provided details about the project online throughout the study, and reiterated a formal informed consent process before each interview.

Shadowing

The core of data collection centered on six plant observations carried out between March and October 2011. The plants were selected by RSU leaders to provide time in multiple branches and to avoid plants where our visit might interfere with the safety mission. We shadowed in parallel (Gill, Barbour, & Dean, 2014) such that one of us shadowed at a power plant while the other shadowed the plant's counterparts in the regional office. Shadowing was crucial, because it allowed us to observe communication in process and to ask participants to reflect on what was happening as it happened or soon after, an approach well-suited to the study of practice (Leonardi, 2015). These immersive waves of data collection typically lasted for four days during which we observed during working hours and spoke by phone in the evening. Evening check-ins lasted 1–2 hours, during which we shared narratives, discussed emerging issues, and problem-solved research difficulties, but we took care to avoid sharing interpretations to preserve our distinctive perspectives. Apart from shadowing, we conducted a preliminary visit to a different plant to learn about the RI program and the RSU, and we visited the regional office once for preliminary meetings, twice to attend regional counterpart meetings (a time when RIs come together from across the branches in the region), and three times to conduct targeted interviews. We also called into meetings regarding RIs' quarterly reports (debriefs) on two occasions, in addition to attending them in person in the course of shadowing. We observed for approximately 380 hours in total.

Interviews

During formal interviews ($N = 29$), we used a short, semi-structured interview protocol that began with and included seven initial questions, but which also incorporated questions about the observations we were making as the project unfolded. The initial interview questions were meant to elicit broad reflections on safety oversight and communication as well as specific observations about communication dilemmas, strategies for addressing them, and reflections about why particular approaches worked or not (Craig & Tracy, 1995, 2014), including for example: "In general, describe how day-to-day safety oversight works (e.g., Describe an average day in safety oversight. Who is involved? How and how often do they communicate?)," "What works really well about the safety oversight process?" and "What challenges do you see in the day-to-day safety oversight process?" As the project unfolded, we added follow-up questions, for example, that asked participants to reflect on what made questions effective or ineffective. Formal interviews typically lasted between 45 minutes to an hour, and we completed formal interviews with a little less than half of the RSU personnel (29 of 65 available, 45%), including BCs ($n = 3$), S/PEs ($n = 6$), S/RIs ($n = 13$), and AAs ($n = 2$) across five of six branches (excluding one

branch dealing with a special event) and senior RSU leaders ($n = 5$). Shadowing provided opportunities to revisit these interviews in follow-up conversations and to conduct ad hoc interviews with additional personnel.

Field notes

During shadowing and interviewing, we made headnotes, jottings, and drawings that we later elaborated and typed for analysis, replacing plants,' and participants' names with pseudonyms and markers of position (e.g., BC, S/RI). We took notes to capture participants' responses to formal and informal interview questions, and during observations, we sought to capture key events, interaction settings, what seemed meaningful to participants, verbatim or paraphrased exchanges, and our own initial impressions (Emerson, Fretz, & Shaw, 2011). While remaining open to observations as they unfolded, we had a particular concern for practice reflected in our attention to how participants communicated with each other, their rationales for communication choices, and we observed and reported implications of those choices. The first author's notes emphasized key, discrete moments and phrases, and the second author's notes were in the style of thick description, meant to capture the context of communication. We generated approximately 315 typed pages of field and interview notes.

Additional data

We gathered additional data as the project unfolded to supplement our field notes. For instance, we collected publically available materials relevant to the RSU, including reports from the U.S. Government Accountability Office; organizational charts; RSU newsletters; and public inspection reports and memoranda available through the NRC ADAMS portal. We also created an online survey for participants to comment anonymously on RSU communication and the project itself. During the second counterpart meeting we attended, we also conducted a workshop that presented preliminary observations and invited participants to clarify, amplify, modify, and challenge them. We collected worksheets from the event as well as our own notes. Moreover, we crafted a final report in concert with leadership that checked our interpretations and integrated our observations and their insights about potential changes. These efforts provided useful member checks and created additional opportunities for participants to discuss their own communication explicitly while participating in early data analysis. We referenced these materials throughout the analysis process.

Data analysis

Data were analyzed using an iterative process of open and focused coding. The authors annotated the entire corpus of data (i.e., notes, documents, survey responses) with dimensions and categories to open potential lines of inquiry. For example, annotations included lists of typical communication encounters and patterns, recurring phrases (e.g., "questioning attitude," "get the facts," "the resident is following up"), participant concerns, their frames for thinking about communication (e.g., the "telephone game," "standing in a river"), and emerging tensions. During open coding, we drafted and updated research memos, putting to paper preliminary interpretations and ideas. We then held a day-long, audio-recorded research meeting to discuss observations, share memos, draw

topic maps on flipcharts, and develop foci for additional coding. We then undertook repeated waves of secondary coding for particular lines of inquiry, comprising the larger research effort (Barbour & Gill, 2014).

During focused coding for this study, the first author flagged (a) key moments of questioning and answering, (b) moments where a particular way of asking or answering a question was observed or was mentioned by participants, and (c) responses about what made a question effective or not, examples offered of "good" or "bad" questions, and moments where a particular ideal seemed to be at work. Per GPT (Craig & Tracy, 1995, 2014), this coding effort produced codes reflecting the *problems* that questioning seemed to be addressing and the *dilemmas* experienced by participants in questioning, the specific *techniques* for asking and answering questions, and the *situated ideals* relevant to them. The first author coded the data a third time to highlight examples. The authors revised this coding effort in discussion.

Findings

In this section, we first identify and explicate work practices specific to safety oversight that center on asking and answering questions, namely (a) interrogating an issue, problem, or person; (b) coordinating interaction for inspection work; and (c) keeping track of issues to be monitored or criteria for deciding what constitutes an issue (RQ1). Next, we detail the dilemmas and situated ideals relevant to each, giving examples of specific communicative techniques that illustrate these dilemmas and situated ideals (RQ2), highlighting techniques that seemed able to navigate multiple ideals. We first preface the discussion of these findings with a review of the functions and distinctive occasions for asking and answering questions that we observed.

Asking and answering questions played a central role particular to the RSU. As is true of most at work, participants asked and answered questions throughout their day, including during typical office work and small talk, when coordinating routine business (e.g., human resources changes, new initiatives), or when seeking additional information while compiling a report. Consistent with previous research (e.g., Krone, 1993; Tracy & Robles, 2009), we found that asking and answering questions performed multiple communicative functions, and, at times, simultaneously. Nonetheless, the prevalence of questioning was still striking.

Questioning worked to manage information, persuade, organize thoughts and make decisions, and/or were asked simply because questioning was *expected*. A function distinctive to this context, participants asked questions *because they always asked questions*. The most common questions we observed were, "Any questions?" or "Any seconds?" These questions often came at the end of routine reporting, and they might be repeated until there were no more. The importance of asking questions as a part of work practice was brought into relief when expected space for questions was missed, as demonstrated in this field notes excerpt:

> SPE Pryce is about to get off of the call, but RI Bristow at Plant W booms loudly, "Hey, do you have seconds?" RI Flinkman says with a humorous tone, "That's RI Bristow." Call ends. RI Flinkman jokes that they should call SPE Pryce to tell him, "our communication expert says you failed" because he forgot to ask for seconds.

This exchange also shows how the expectation for questions was itself so obvious that it was a source of humor. We saw this several other times, for instance during an RSU morning meeting, a senior leader had opened up the floor for questions, and hearing none, called out someone directly with "SPE Fir! What's your question?" A few chuckled, and SPE Fir protested that he did not have a question, but the senior leader pushed on, saying "you always have a question!" After three prompts, SPE Fir did, eventually, ask a question.

Questioning featured prominently in communicative situations distinctive to the RSU, and they spent much of their time asking and answering. Questioning was inherent to a pair of *plant status meetings* that were held each weekday morning. Every morning, each branch in the RSU held a telemeeting of the BCs, S/PEs, and S/RIs (hereafter, "branch calls"), which was then followed by an RSU-wide meeting that involved senior leadership, BCs, NRC staff from other units, S/PEs, and others in person or by teleconference. During this morning meeting, the BCs briefed, updated, and answered questions from RSU leadership and those present about the plants, going branch-by-branch (hereafter, "the RSU morning meeting," see, Barbour & Gill, 2014, for more details about these meetings in particular). Questioning was also inherent to *debriefs*, which were meetings to give the RSU a space to ask questions about the quarterly safety report for each plant. *Ad hoc briefings* and *follow-up calls* also provided informal space to ask questions. On multiple occasions we observed the person leading the RSU morning meeting request a later briefing about an issue that had surfaced.

We also observed communicative situations focused in part or in whole on answering questions, particularly around professional development. This included *counterpart meetings* and time during *all-hands meetings* routinely given over to answer questions from the floor. In most sessions, presenters would be interrupted with questions, and during one such meeting, the presenter joked to the room full of inspectors, "I know that you can ask more questions than I can answer." Indeed, during an interview, SRI Don and RI Roslin explained that counterpart sessions *should* be motivated by inspectors' questions.

In sum, these communicative situations were striking to us because they were recurring, if not routine, and most had their own specific label within the organization (e.g., "branch call," "morning meeting," "counterpart meeting," and "debrief"). Questioning figured prominently in each and their explicit purpose was in part or in whole to ask and answer questions. Many of the communication situations distinctive to the RSU were meant to make space for questions, a point explicit in participants' descriptions of why they held these meetings, calls, and so forth.

The focus on questioning was underscored throughout the study by SPE Smith, who explained that the "main job [of being an RI] is gathering information, answering the questions that pop up, gathering information to satisfy inspection requirements . . . ." Other RIs corroborated (from our field notes):

> SRI Flinkman and RI Derevko talk about what they know as a result of their work and how it bleeds into their "normal life" (their words). They talk about how they are trained to be nosy and inquisitive, to think of their days as "one big information gathering thing" and this annoys their families because they cannot help but also be like this at home.

The prominence of asking and answering questions should not be surprising, given that we were observing inspectors or former inspectors (Perin, 2005), a profession akin to

investigators and diagnosticians known for seeking and interpreting information (Levine et al., 2014; Tracy & Robles, 2009). To further our understanding of questioning in this particular context, we distilled work practices from our analysis of communicative actions and situations.

RQ1. What are the safety oversight work practices comprised of asking and answering?

To answer this research question, we investigated what the participants were doing with questioning that was distinctive to their work. We looked across the functions and communicative moments identified in the intermediate analysis in search for work practices that were constitutive of safety oversight and that created space for making choices about how to accomplish it (Leonardi, 2015). We identified three work practices: (a) interrogating an issue, problem, or person; (b) coordinating the flow of interaction for inspection work; and (c) keeping track of issues to be monitored or criteria for deciding (see Table 1).

Interrogating an issue, problem, or person

RIs interrogated issues, problems, or persons to identify and make sense of information thought to assist in maintaining safety. This practice involved a mode of questioning that took the form of a peppering or repeated asking of questions. This repetition might be meant to "get the facts" (an RSU aphorism printed on laminated cards for lanyards and repeated in comments from leadership), or to invigorate thinking or generate insight. An example of this is given in the opening vignette of this article, with the senior leader's questioning about the emergent event. This pattern of quick questions

Table 1. Safety oversight work practices, dilemmas, techniques, and situated ideals.

Safety oversight work practices	Dilemmas	Techniques	Situated ideals
Interrogating an issue, problem, or person	Learning/abrading/ just to be asking	• Repeated asking • Meta-questions • Question framing	• Clarity, accuracy, fidelity • Insight and technical acumen • Getting along • Professional autonomy and trust • Questioning itself
Coordinating interaction for inspection work	Cultivating vigilance/ working/obscuring	• Making space for questioning • Sharing information to manage questioning • Deferring questions to other times or places	• "Questioning attitude" • Protecting the agency • Right time and place for questions
Keeping track of issues to be monitored or criteria for deciding	Organizing work/ applying/ interpreting	• Standardizing flexibility with questions • Matching questions and situations • Scheduling questioning conversations in sequence	• Standardization • Flexibility • Timing

and answers was typical in branch calls, meetings, and debriefs. For example, a discussion after the reporting of a finding began with the remark, "I got a lot of questions," and then the person asked four questions focused on that single finding, each time listening and then asking another.

Coordinating interaction for inspection work

Previous research has documented that individuals use questions to influence the flow of conversation, and that asking and answering questions lends shape to particular forms of institutional discourse (Krone, 1993; Tracy & Robles, 2009). We also observed questioning working in these ways. For example, as mentioned above, participants asked questions to prompt individuals to share specific information or to highlight a concern and bring it into focus. In this case though, we also observed participants structure their conversations around asking and answering questions in ways that were distinct from typical interactional maneuvering or more mundane turn-taking. Instead, they involved specific communicative strategies for doing safety oversight work.

The regular requests for additional questions (e.g., "any questions?" "any seconds?" "anything else?") that occurred by design in RSU morning meetings and routinely in other meetings provide an illustration. Participants explained that these regular questions helped them "get lots of eyes on" problems and concerns and helped the group catch what they might not otherwise catch. In this sense, these questions created space that helped them decide how much information to share as well as to ask more questions, sometimes sharing information until no one asked any more questions. Meeting and call leaders would also regularly start meetings by asking who was on the line and close meetings by asking if representatives from other units had anything to add, as well as asking for questions from the group at large (e.g., "anything from HQ?"), which attended to the overlapping and related hierarchies in the organization and the RSU as a national system. After meetings, we observed participants turn to others in the room and again ask if they had any questions. This sort of questioning coordinated their interaction by helping them decide how much to share and it marked openings and closings.

Anticipating questions also coordinated interaction. Knowing what to share in the branch calls, participants explained, involved a mix of experience and formal and informal expectations. For example, a poster that hung in the main conference room listed items to address in the morning calls and meetings, and SPE Pryce referenced it while explaining, "That's management expectations for what will be covered in the morning meeting. You always have to anticipate questions." He then mentioned specific issues (e.g., if there's a storm or if there's a strike) and gave examples of the questions that would likely arise (e.g., "Did they enter adverse weather conditions?" "Maintaining enough staff to meet requirements?"). Anticipating questions served as an important heuristic or shorthand. On the other hand, RI Alton commented that he had become skilled in his ability to "intuit region questions," because particular sorts of issues and events would regularly prompt questions. He had to gather the information needed to answer them, and anticipate the reaction to the answers in the form of additional questions, which would themselves need answers. Questioning and answering coordinated interaction for inspection work by creating routine and ad hoc spaces for questions, prompting routine reporting, and influencing the length and contents of interaction.

Keeping track of issues to be monitored or criteria for deciding

In general, the RSU monitored and made sense of what was happening at the plants by following issues, events, or concerns of importance to safety. They talked about these issues in terms of the questions they produced that still needed to be answered. We observed participants make use of lists of questions to keep track of issues or translate formal guidance into a checklist of questions to be answered. For example, to decide how to designate a finding as "minor" or "more-than-minor," participants often referred to a formal list of questions that referenced approved policy. In an interview, SPE Smith shared a list of questions that he had created for routine surveillances based on the regulatory framework, and we later observed him share it with others as a tool they could use. Questions to organize thinking were also created in the moment. In an extended call to discuss the monitoring of a natural disaster, attendees talked at length to identify the right question or questions and then specify the sort of answers that would help make the decision. In another moment, a participant provided a list of answers to 13 questions about an issue, and then asked later, "Do you have any questions about those [answers to your questions]?" Inventories of issues centered around as-yet-unanswered questions, and participants referred to or created lists of questions to interpret issues and make decisions.

Although all three of the above work practices were oriented in various ways to interpretation and decision-making, we want to draw attention to the differences in communicative action comprising them. Interrogation and coordination often occurred in situ, with questions being repeatedly asked and answered during interaction. In other words, the formation of questions and answers occurred between the communicators and helped to shape the practice in the moment. Yet, for the third work practice of making lists of questions to keep track, interpret, and make decisions, communication was less directly interactive in that participants worked in isolation or collaborated to develop questions that would then need to be answered. The lists of questions were objects produced of interaction that would prompt interaction, but not dynamic in the same way as interrogating and coordinating.

RQ2. What are the dilemmas in these communicative work practices, what are the techniques employed to manage them, and what situated ideals govern them?

These safety oversight practices – interrogation, coordination, and keeping track – each involved multiple dilemmas, and prompted communicators' efforts to address them (see Table 1). We now take each in turn, and discuss the dilemmas, situated ideals, and techniques relevant to them. It is important to note that dilemmas and ideals were overlapping and interdependent, and we draw attention to this fact in the analysis. Together they form not one, but multiple, tensional, circulating practical theories of questioning at the RSU. Agreement with particular ideals varied from person to person in the RSU, but even those who might disagree with, or not care about, an ideal still had to cope with its influence.

Interrogation

As detailed previously, participants asked and answered questions to seek information, clarify, and invigorate thinking, but at the same time, participants explained that being peppered with questions could feel like being under attack or that the person asking

was just "going through the motions." The dilemma here centered on realizing the value of this form of questioning without souring relationships or wasting time or attention. The implications of questions depended on uncertain inferences about intent. A senior leader highlighted this in distinguishing between good and bad questions. Good questions come, he explained, when people are "really curious" or "thought something might have been missed," but not when people "have a beef" or "want to be heard asking." He argued that "very basic questions" that "any inspector would have asked" are "gotcha questions." Participants referred to this sort of questioning as "inspecting from the region," to draw attention to their belief that those who were not present on site at times asked questions to assert how they would go after an issue, to satisfy their own curiosity, or to "test" the inspector. Multiple participants acknowledged that they had done this themselves. At the same time, S/RIs also pointed out that this kind of questioning could be valuable, because it could help catch something that might otherwise be missed.

Tone mattered as well. An RI discussing plant walkthroughs explained that leaders could be transparent in explaining their thinking and how they go about looking over the plant, whereas others might pose questions with a more accusatory tone, such as "why didn't you do this?" As a participant noted, repeated questions might reflect a critique of how an issue had been briefed:

> [The leader] is asking [some RIs] all sorts of detailed questions, and for others, he is not. I don't know if it's because [some] don't explain things well, or talk too fast, but they seem to get a lot of heat. I always worry if I'm going to get asked to explain something and then I will fall short … It's very stressful to me, because I want to do a good job.

Another participant argued that the value of questioning should override such concerns, explaining: "The more questions BCs ask, the more RIs see." They could see questions as about teaching or grilling, but "I don't care, because they learn either way." In fact, any effort to couch these questions in a supportive frame would, in his view, dilute their effectiveness.

Debriefs, called "murder boards" by a few, proved to be especially tricky communicative situations, capturing the dilemma well. The value of debriefs lay in subjecting the reports to the combined scrutiny of the RSU, and so they were infamous for difficult questioning. Participants explained that debriefs could be constructive because the questions could provoke new thinking, insight, or understanding. Yet, debrief questions might also be seen as "inspecting from the region" if they were about a detail that should have already checked, questioning competence.

Situated ideals

Making sure information was accurate and clear were principal RSU ideals for interrogating. Participants made these ideals explicit, for example, by sharing their concern that communication was like a "game of telephone" and that meaning could be distorted. Participants wanted to "get the facts." They wanted to make sure that they understood the shared information, and that this information had fidelity with what was happening. We observed this concern for accuracy many times, including during a conversation about plastic being dropped into a plant system: A participant summarized, "So there are pieces of plastic … " and another asked, "Wait. Was it *piece* or *pieces*?" The room erupted into answering.

The RSU valued technical rigor. SRI Baltar explained that a particular colleague had been successful because he "is technically astute," and that, most of the time, he has "good nuggets" and "asks good questions." The problem, SRI Baltar explained, was that he is "caustic" about how he goes about it. RI Alton argued that in ideal communication, "Everyone has adequate/requisite knowledge … ." This peppering with questions could thus ensure technical rigor. Good communication was a crucible that could help them be clear, accurate, astute, and vigilant, but other relevant, situated ideals made the model of a crucible problematic.

The RSU also valued getting along. SRI Baltar's broader point was that being caustic got in the way, because effective communication depended on the relationship between communicators. BC Stark explained that he preferred questions over statements because, "First I don't like to be directive … Second, it can be too heavy-handed in interaction." During a counterpart meeting, a leader explained that not all debriefs would be successful, and that was okay, but that success happened when (1) the finding was well-done (e.g., it was sensibly categorized against the regulatory framework), (2) when someone unfamiliar with the issue could "get it," (3) when the presenters "anticipate questions in advance … to answer them, to avoid having to answer them," and (4) when "people don't feel brutalized. Nobody feels bad."

The professional autonomy of the S/RIs and the trust placed in them by the RSU and the NRC was another relevant ideal. For instance, a senior leader explained that S/RIs need autonomy because they have to know and adapt to the particular branch and plant. Yet, one of the BCs remarked of scheduling inspection work, "I guess it means they want it more regimented, guaranteed," which he explained people might take to mean that, "they don't trust us? … Higher expectations are okay, but it's about how it's communicated." Asking what participants described above as basic questions provides another example of the binds between the desires for accuracy, clarity, fidelity, and professional trust. Even though asking basic questions could be useful, if not necessary, they could also be seen as "gotcha questions," because a competent inspector would have already addressed them.

The problematic nature of basic questions points to a final relevant ideal: asking for the sake of asking. Whereas the ideals above maybe found in other communicative situations involving questioning (e.g., face concerns, Tracy & Robles, 2009; Tracy, 2002), questioning *itself* was so fundamental in this work that it was a situated ideal. Although multiple participants said that they might not ask a question in the moment if they believed they should have asked it earlier or known the answer already, they also expressed admiration for inspectors who were tough, astute questioners. Two RIs, for instance, admired a colleague by remarking that he was a "tough questioner" and that "he will push you." In another interview, a leader remarked that he had noticed that the BCs had been asking fewer questions than usual, suggesting it was tempting to "just sit there and take notes," and so he charged them with asking more questions.

Techniques

Techniques for addressing the dilemmas inherent to interrogating included meta-questions and providing context for questions. For instance, SRI Diwalla advocated for meta-questions, such as asking for a rationale for a question, suggesting that they were underused: "No one ever asks why they are asking … People don't want to ask why you

are asking that, because then you don't look like you know what you're doing." And, during a break at a counterpart meeting, participants discussed questions like "Why are you asking that question?" and, "Help me understand your question?" making the point that though these questions could be seen as challenges, they had to be asked. Participants also advocated for questioners to provide additional context for questions by explaining who was asking. A participant noted that this context could help because it could limit unnecessary urgency in responding and clarify that managers were not trying to "take ownership of their issues, when this is not intended." Although we did not often observe requests for rationales for questions, we did observe question framing. For example, during a branch call, BC Pete began a series of questions with the phrase "Let me make sure I understand" followed by a summary and a question of confirmation. Meta-questions (i.e., asking for a rationale, asking general "what was your thinking?" questions) and question framing worked, because they could attend to multiple ideals at once: clarifying while minimizing threats to relationships or professional judgment.

Coordination

Participants also asked questions to mark the flow of their meetings and to foster vigilance. They structured conversations to make sure questions could be asked. These questions, RI Alton explained, "got more eyes" on issues (a phrase common to the RSU). The dilemma lay in that asking all possible questions could generate endless additional work. Each question took time that could otherwise be dedicated elsewhere. Asking too many questions about an issue might obscure another, a tradeoff with implications that were not always apparent. BC Tippin touched on this point, explaining, "I try to minimize impact on [S/RIs'] jobs. [Others in RSU] ask me questions … I try to protect residents' time." RI Alton also mentioned, "You can always ask more questions, but there's a point when no more value gets added."

Debriefs of quarterly reports are pertinent here as well. The interrogating of issues could, in a way, become mindless – a sort of going through the motions. Then again the point of such regular questioning (as well as asking basic questions) was to make routine a questioning of what might otherwise be taken-for-granted. The difficulty in coordinating interaction around questions was that it was not always clear ahead of time, especially for those who were participating, which questions would generate insight and which would not.

Situated ideals

The ideals relevant to interrogating are relevant here too. Coordinating interaction to make space for questions created opportunities for interrogating, and the routine spaces for questions reflected the fundamental ideal of asking/answering questions. The central ideal in using questions to coordinate interaction, though, was less about the difficulties of interrogating as an interactional form, and more about what to ask and when (e.g., when to start interrogating). A situated ideal relevant here was evident in the repeated reminders to maintain a "questioning attitude," a well-known term in the safety literature of which they were conversant, and here an admonition repeated in meetings and mentioned during interviews. The ideal was that they should ask questions to sustain vigilance or catch faulty assumptions. A participant gave this illustration as exemplary of it: "Every plant has a rain alarm, but you check it anyway."

Coordinated space for questions also reflected another ideal expressed in the need to protect the RSU and the work of the NRC as a whole. That is, the reports produced by each branch had to speak with the voice of the NRC, or as stated by participants, "speak with one voice." Debriefs, a senior leader explained, protected the agency by allowing everyone to come to an agreement that they were applying the framework as it should be. A plant might communicate with multiple NRC personnel, but decisions about findings had to be the product of careful processes to be sure they were fair, reasonable, accurate, and consistent with regulatory guidelines. And, coordinated space for questions was one way in which this aspect of oversight was accomplished. Creating space for questions that invited contributions from the entirety of the RSU encouraged participants to err on the side of asking – to fail to ask would be unacceptable because of safety concerns *and* the requirements of the regulatory mission.

To this end, participants had to be able to ask any question, but it was also evident that not all questions belonged in all interactions. Another ideal operating in the coordination space was the need to keep questions in the right place. SPE Smith argued that "asking for information not relevant to regulatory mission" could be counterproductive, and he argued that he focused on relevance when deciding what to ask and when. Likewise, a senior leader argued that irrelevant questions should be skipped, when "that's not what is at issue here." At the same time, staff were empowered to ask basic questions and questions motivated by curiosity or a questioning attitude. The ideal here is not just about relevance then, because (seemingly) irrelevant questions had to be asked too. In observations, we were more likely to see what could be called exploratory questions in backstage or liminal spaces (e.g., just after a meeting, during breaks, and in passing conversations). Even erring on the side of asking, they needed to ask in the propitious moment.

Techniques

To navigate the dilemmas, participants shared information in ways that would encourage helpful and discourage unhelpful questions, and deferred questions to another (more appropriate) time or space. They reported that anticipating questions could forestall an avalanche of questions. For example, we observed PE Katz ask, "do you want more detail?" after sharing an issue, and then providing the detail only when the reply was affirmative. If not, attention could be devoted elsewhere. When they anticipated that complicated issues would generate questions, S/RIs also called directly into the RSU morning meeting to answer in the moment rather than having their BC feed questions back to them. Participants also reported waiting to share minor or uncritical information until they had all needed details.

We also observed participants defer questions. For example, when prompted in a meeting by a question that they could not answer, a briefer might state, "the resident is following up." This phrase, "the resident is following up" was often repeated, and it served many functions. Participants argued that, at times, the phrase could be taken at face value; that it was sometimes the case that the RIs were still seeking information. It could also serve as a place-holder if a briefer was not sure of an issue or wanted to delay questions. This deferral would only work for a time, and we observed participants consistently returning to previously deferred issues. By then, it was likely that the S/RIs would have been able to gather the information needed. A senior leader also explained that he would stop questions when he had the sense that "questions aren't finding new things for an inspector" or when "a branch hasn't had time to get answers."

Keeping track

Questions also served as a way of orienting thoughts and decisions, or, keeping track of questions and the unknown. The crux of the dilemma in question-organized work centered on how straightforward the answers were or were thought to be, and how they were used over time. For example, in deciding whether to change how the RSU was monitoring a natural disaster, the implications of answers to questions generated in discussion seemed self-evident to those involved but may not have to others. At other times, participants seemed to agree on the question but disagreed about what constituted an answer, or *the* answer. Keeping track included talking about and inventorying issues in terms of unanswered questions, as well as formal and informal frameworks for making decisions in the form of a list of questions. Answering them would indicate that an issue was understood or a problem decided, though that might mean, for some, finding *the* answer (consonant with the regulatory framework), and, for others, finding *an* answer (interpreting information within the regulatory framework).

Situated ideals

As with the other practices, multiple situated ideals were relevant to keeping track. Participants used questions in this practice also out of a concern for accuracy, vigilance, deference to professional judgment, and so forth. However, inasmuch as the dilemma here centered on the straightforwardness of answering, the relevant ideals involved standardization and flexibility in answers, and the timing of questioning.

As situated ideals, standardization and flexibility in safety oversight were intertwined (see also, Barbour & Gill, 2014). For example, we observed multiple, ongoing discussions in small and large group settings wherein participants wrestled with expectations for what exactly should be shared in safety meetings. Just after a branch call, for instance, RI Derevko and SRI Flinkman explained that during calls, what is expected to be reported is a "moving target," and that they wish that the expectations were actually put into writing. Others, including senior leaders, however, were reluctant to dictate expectations about, for example, what should be shared during the RSU morning meeting or how to designate a finding, because they wanted to engage the expert judgment of those involved. Participants also worried that creating specific lists would make them focus too much on the items on the lists and not the ideas behind them. Others argued that the differences of each plant necessitated flexibility. Then again, what constituted an answer had to be standardized to be fair across plants and consistent with the regulatory framework. The push and pull of this dilemma was represented well in our conversations with SRI Don, who explained that the framework had been appropriately designed to "build subjective interpretation into the inspector process," suggesting that he supported the need for interpretation. And yet, previously, he had explained, "I do not interpret. I read black and white," suggesting that there is no room for flexibility. Later, SRI Don criticized a leader who "tries to standardize without looking at or appreciating individuality."

Timing as an ideal focused on when an issue (i.e., an unanswered question or list of questions) could still be open to change (e.g., adding or changing questions). For example, S/RIs argued that basic questions were harder to add at the end of the lifespan of an issue. Participants explained that debriefs may encourage more defensiveness in particular when issues had already been presented to the plants, because questions that

resulted in changes could mean that they have to retread them with the plants. They indicated that doing so made negotiating their professional authority more difficult.

Techniques

To manage these competing ideals, participants attempted to standardize flexibility. Orienting around questions was in and of itself an effort to retain a measure of flexibility. For example, during a counterpart meeting, we observed a discussion about the meaning and application of a list of questions used to make a minor/more-than-minor designation. A participant quoted the formal guidance verbatim (without consulting notes) while others argued that the formal guidance was open to interpretation. In a separate instance, RI Alton ticked off part of this list responding to a question about how they decide minor/more-than-minor designations:

> Apart from my gut and management, we don't have a lot of guidance for what's minor and more than minor. Previously we had precedent … very subjective and uneven. Now we have the questions. Is it corroding, degrading, observable? Can I demonstrate it quantitatively?

For RI Alton and others, the questions provided enough guidance even if it was flexible guidance. For others, a list of questions was not specific enough.

Participants also tried to set the timing of questions relative to the communicative situation. They engaged in conversations about finding "the main question" as a way to discuss what was most important in the moment. Near the end of our engagement, the RSU decided to try to schedule debriefs ahead of quarterly report meetings that took place with the plants. These discussions about propitious questioning and their attempts to sequence conversations about questions reflected efforts to acknowledge that blanket policies may be difficult to carry out given the emergent character of their day-to-day work, and yet they were also necessary.

Discussion

Questioning presented unresolvable tensions for day-to-day safety oversight. According to participants, they had to ask all questions they needed to ask, though they should not ask *all* the questions. Participants had to navigate competing pressures for exhaustively complete and merely sufficient information, a balancing act expressed in their communicative work practices. Building on communication research related to asking and answering questions, these findings confirm insights about the difficulty of navigating the multiple demands relevant to asking and answering questions in complex situations. In doing so, the findings extend this work by providing an exemplar that shifts attention from questioning as microsocial to communicative work practice that, together with this more macroscopic focus, can be seen to constitute safety oversight work. This shift highlights organizational dynamics of questioning that might otherwise be understood only as interactional difficulties complicated by context.

The findings build on typologies of the functions and form of asking and answering questions in other institutional contexts by highlighting (a) how communicators attempt to manage communicative difficulties generated by the necessity of asking and answering questions, and (b) how their efforts marshal interactional, organizational, and institutional resources to do so. As such, the findings contribute to normative

theory of questioning captured in the techniques that seemed relatively more adaptive to the multiplicity of relevant ideals (e.g., meta-questions, question framing, sharing information to manage questions, deferring questions).

Given the need for professional judgment in navigating these complexities, the findings also demonstrate the limitations of standardized question formats and checklists, which are commonly created or sought in safety rule making (Jahn, 2016; Thackaberry, 2004) or police interviewing (Levine et al., 2014). Though it might be tempting to standardize questions to perfect and control this work, questioning was inherently contingent on the requirements of interaction and organizational and institutional policy (Mokros & Aakhus, 2002; Tracy, 2002), as well as the requirements of the conventions of the work practices themselves as spaces for defining and redefining communicative action (Leonardi, 2015). At the same time, the requirements of doing the work well motivated standardization *and* flexibility, as well as disagreements about standardization and flexibility.

Taking a more macroscopic focus makes another contribution to these literatures by demonstrating that the discipline of work practices can bleed into and across communicative situations. Questioning constituted the work of regulators and safety oversight such that their focus on inspecting the plants and interacting with each other became blurred. For example, RI Crane quipped, "well, a questioning attitude is for the plant, not for us," to highlight that although the questioning attitude was supposed to be in relation to the plant itself, they could not help but inspect each other. Likewise, recall SRI Flinkman and RI Derevko's comments about being nosy and inquisitive with family. This finding should prompt scholars of questioning, and communication practice in general, to consider the ways in which the logics that collate dilemmas, techniques, and ideals are portable, and to account for the fact that modes of interaction not only reflect and negotiate identity, but also embody it. Questioning made them inspectors. Changing practice may entail changing who we are or see ourselves to be.

This study also provides evidence that a focus on communicative work practices can contribute to the theorizing of high hazard, complex systems by helping reconcile the principal approaches to organizing for reliability and safety – normal accident theory (NAT) and high reliability theory (HRT) (Leveson et al., 2009). According to NAT, disasters are inevitable in complex industrial systems because they involve staggering technical complexity, chronic lack of awareness of ultimately unknowable systems, and competing ideals for governance (Perrow, 1999). HRT research contends that particular organizational structures, cognitive orientations, and communication processes can prevent failure (Jahn, 2016; Weick & Sutcliffe, 2015). NAT emphasizes the inevitable fragility and inadequacy of communication in these systems. HROs focus on preventing error (an attainable goal per HRT), but the intermediate communicative goals that must be enacted to do so multiply, confound, and confuse (NAT).

The analysis of processes in terms of communicative work practice provides a way to integrate theoretical concerns for the realities of the specter of failure in the systems (NAT) and the ideal modes of organizing that may prevent failure (HRT) by centering attention on how actors negotiated ideals for practice in the day-to-day reality of doing the work. The irresolvable tension between the pessimistic/realistic NAT and optimistic/ideal-model HRT views (Barton & Sutcliffe, 2009; Perin, 2005) is reflected *in the safety work itself*. The inspectors' interaction, oriented to taking care with the staggering technical complexity of these systems, struggled with a chronic lack of complete awareness, and

made clear the competing ideals for governance. Concerns about inevitability/preventability raised the stakes and made asking the right questions, at the right time, all the more important. This pressure made it more difficult to ignore questions too. Sorting "gotcha" from genuine questions was difficult even when – perhaps at most when – reliability processes were operating at a high degree of sophistication. Recognizing the tensional character of safety work shifts focus in this research from finding the right question or having a "proper" mindset, toward forms of questioning that allow communicators to hold in tension the real potential for catastrophe and the need to act nonetheless.

Such a shift can empower intervention in safety systems by focusing attention on not just the choices about how to ask and answer questions, but how questioning unfolds in flows of interactivity and strategies for organizing. Asking a basic question worked differently than asking another to "explain their thinking" about a basic issue, but it also worked differently when an issue was first developing compared to later in its trajectory. A shift to focus on this underlying tension underscores the potential of future research about the specific communication strategies and interaction formats that encourage awareness and management of the tension between the inevitability/preventability of disaster.

This study also addresses the need to explicate the communicative action called for in theorizing of organizing for reliability and safety. A central concern of research in this domain (and participants' practice) is figuring out how not to miss what is important before it is too late. Questions help solve that problem by encouraging reflexivity, especially in sensemaking for HROs (Weick & Roberts, 1993; Weick & Sutcliffe, 2015), but these findings make clear why such communicative action is difficult: The asking and answering of questions unfettered can make it more, not less, difficult to catch important concerns by generating work that obscures as it reveals. Questioning can have diminishing returns as the value of the new information gathered becomes less than the cost of the limited time and resources to answer questions. A naïve reading of the recommendations of HRO literature might recommend just the sort of going through the motions, where asking basic questions as a matter of course is a path to mindfulness (Weick & Sutcliffe, 2015). Yet, the discipline required of asking routine questions heedfully may discourage the very mindfulness sought. The bureaucracies that govern hazardous systems may too often seek a checklist-driven, reductionist approach to the limits of human cognition and action (Thackaberry, 2004). These findings point to the need to encourage questioning *and* to allow safety professionals to discuss and calibrate what makes questions useful or not.

The findings also underscore what is at stake in failing to do so when safety processes are predicated on the wisdom of questions. Asking too many questions could undermine the process in a way that is difficult to counteract, especially when questioning is generally understood as a positive communication practice (e.g., needed for a questioning attitude *and* to protect the agency). At the same time, although the findings indicate that questioning can be problematic, they do not suggest that questioning can be avoided. Assessments of helpful and unhelpful questions likely reflects identity management and depends in part on who is asking and who is answering; although, participants did acknowledge that they had asked questions at times that they might have themselves seen as unhelpful. This point notwithstanding, the importance of questioning and the inherent difficulties of distinguishing "good" from "bad" questions before asking means that organizational efforts to limit questioning should be avoided or undertaken very carefully. The findings

demonstrate the potential hazards of "strategic procedural practices that fail to consider the relevance of meaning and personal identity" (Mokros & Aakhus, 2002, p. 311) and of the operation of situated ideals that acknowledge but dismiss them (e.g., getting along and professional trust as not just alternatives to, but *threats* to clarity, accuracy, and fidelity). The questioning captured in the opening vignette provides a concrete example of the importance of questioning in RSU's information management, but the simplicity of the questions asked belies the difficulties of questioning in day-to-day organizing for reliability and safety.

Acknowledgments

The authors wish to thank the dedicated professionals at the U.S. Nuclear Regulatory Commission (NRC). The data reported here were gathered as part of a communication assessment completed while the authors were employed as communication specialists by the NRC.

ORCID

Joshua B. Barbour http://orcid.org/0000-0001-8384-7175

References

Barbour, J. B., & Gill, R. (2014). Designing communication for the day-to-day safety oversight of nuclear power plants. *Journal of Applied Communication Research*, *42*, 168–189. doi:10.1080/00909882.2013.859291

Barton, M. A., & Sutcliffe, K. M. (2009). Overcoming dysfunctional momentum: Organizational safety as a social achievement. *Human Relations*, *62*, 1327–1356. doi:10.1177/0018726709334491

Buzzanell, P. M. (2010). Resilience: Talking, resisting, and imagining new normalcies into being. *Journal of Communication*, *60*, 1–14. doi:10.1111/j.1460-2466.2010.01469.x

Craig, R. T., & Tracy, K. (1995). Grounded practical theory: The case of intellectual discussion. *Communication Theory*, *5*, 248–272. doi:10.1111/j.1468-2885.1995.tb00108.x

Craig, R. T., & Tracy, K. (2014). Building grounded practical theory in applied communication research: Introduction to the special issue. *Journal of Applied Communication Research*, *42*, 229–243. doi:10.1080/00909882.2014.916410

Daly, J. A., & Redlick, M. H. (2016). Handling questions and objections affects audience judgments of speakers. *Communication Education*, *65*, 164–181. doi:10.1080/03634523.2015.1081958

Emerson, R. M., Fretz, R. I., & Shaw, L. L. (2011). *Writing ethnographic fieldnotes* (2nd ed.). Chicago, IL: University of Chicago Press.

Gill, R., Barbour, J. B., & Dean, M. (2014). Shadowing in/as work: Ten recommendations for shadowing fieldwork practice. *Qualitative Research in Organizations and Management: An International Journal*, *9*, 69–89. doi:10.1108/QROM-09-2012-1100

Jahn, J. L. S. (2016). Adapting safety rules in a high reliability context: How wildland firefighting workgroups ventriloquize safety rules to understand hazards. *Management Communication Quarterly*, *30*, 362–389. doi:10.1177/0893318915623638

Kinsella, W. J., Collins Andreas, D., & Endres, D. (2015). Communicating nuclear power: A programmatic review. *Communication Yearbook*, *39*, 277–309. doi:10.1080/23808985.2015.11679178

Krone, K. J. (1993). A review and assessment of communication research on questioning. In B. Dervin, & U. Hariharan (Eds.), *Progress in communication sciences* (Vol. 11, pp. 179–206). Norwood, NJ: Ablex Publishing.

Lammers, J. C., & Barbour, J. B. (2006). An institutional theory of organizational communication. *Communication Theory*, *16*, 356–377. doi:10.1111/j.1468-2885.2006.00274.x

Leonardi, P. M. (2015). Studying work practices in organizations: Theoretical considerations and empirical guidelines. *Annals of the International Communication Association*, *39*, 235–273. doi:10.1080/23808985.2015.11679177

Leveson, N., Dulac, N., Marais, K., & Carroll, J. (2009). Moving beyond normal accidents and high reliability organizations: A systems approach to safety in complex systems. *Organization Studies*, *30*, 227–249. doi:10.1177/0170840608101478

Levine, T. R., Blair, J. P., & Clare, D. D. (2014). Diagnostic utility: Experimental demonstrations and replications of powerful question effects in high-stakes deception detection. *Human Communication Research*, *40*, 262–289. doi:10.1111/hcre.12021

Mokros, H. B., & Aakhus, M. (2002). From information seeking behavior to meaning engagement practice: Implications for communication theory and research. *Human Communication Research*, *28*, 298–312. doi:10.1111/j.1468-2958.2002.tb00810.x

Perin, C. (2005). *Shouldering risks: The culture of control in the nuclear power industry*. Princeton, NJ: Princeton University Press.

Perrow, C. (1999). *Normal accidents: Living with high risk technologies*. Princeton, NJ: Princeton University Press.

Scott, C. W., & Trethewey, A. (2008). Organizational discourse and the appraisal of occupational hazards: Interpretive repertoires, heedful interrelating, and identity at work. *Journal of Applied Communication Research*, *36*, 298–317. doi:10.1080/00909880802172137

Thackaberry, J. A. (2004). "Discursive opening" and closing in organisational self-study: Culture as trap and tool in wildland firefighting safety. *Management Communication Quarterly*, *17*, 319–359. doi:10.1177/0893318903259402

Tracy, K. (2009). How questioning constructs judge identities: Oral argument about same-sex marriage. *Discourse Studies*, *11*, 199–221. doi:10.1177/1461445608100944

Tracy, K., & Robles, J. (2009). Questions, questioning, and institutional practice: An introduction. *Discourse Studies*, *11*, 131–152. doi:10.1177/1461445608100941

Tracy, S. J. (2002). When questioning turns to face threat: An interactional sensitivity in 911 call-taking. *Western Journal of Communication*, *66*, 129–157. doi:10.1080/10570310209374730

U.S. Nuclear Regulatory Commission (NRC). (2015a). *Information digest, 2015–2016*. Retrieved from https://www.nrc.gov/reading-rm/doc-collections/nuregs/staff

U.S. Nuclear Regulatory Commission (NRC). (2015b). *Reactor oversight process (ROP)*. Retrieved from http://www.nrc.gov/NRR/OVERSIGHT/ASSESS/

Vogus, T. J., & Sutcliffe, K. M. (2007). The safety organizing scale: Development and validation of a behavioral measure of safety culture in hospital nursing units. *Medical Care*, *45*, 46–54. doi:10.1097/01.mlr.0000244635.61178.7a

Weick, K. E., & Roberts, K. H. (1993). Collective mind in organizations: Heedful interrelating on flight decks. *Administrative Science Quarterly*, *38*, 357–381. doi:10.2307/2393372

Weick, K. E., & Sutcliffe, K. M. (2015). *Managing the unexpected: Sustained performance in a complex world* (3rd ed.). Hoboken, NJ: John Wiley & Sons.

Weick, K. E., Sutcliffe, K. M., & Obstfeld, D. (2005). Organizing and the process of sensemaking. *Organization Science*, *16*, 409–421. doi:10.1287/orsc.1050.0133