

Negotiating the Meaning of Team Expertise: A Firefighter Team's Epistemic Denial

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Abstract

In this case study, we report how a team of firefighters critiqued one of its member's decisions to facilitate learning and process improvement. The study is supported by 500+ hr of ethnographic observations, documents, and 11 retrospective interviews, which captured how the team's talk about the member's decision shaped their interpretations of their own and others' expertise—interpretations that ironically undermined learning. Constant comparative analysis revealed that these firefighters positioned themselves as experts by crediting either personal experience or technical knowledge and then discrediting the alternative way of knowing. We labeled this process epistemic denial. The process of epistemic denial was rooted in identity concern; specifically, veteran team members relied on personal experience and newer members relied on technical information gained from training to assert their expertise, and to devalue others' expertise. The article concludes with recommendations for avoiding problems associated with epistemic denial in high-reliability teams.

Keywords

team learning, expertise, decision making, high-reliability teams (HRTs), after action review (AAR), high-reliability organization (HRO)

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High-reliability organizations (HROs) are characterized, in part, by the importance of the tasks they accomplish. A firefighter team engaging in search-and-rescue for individuals trapped in a burning building is one such example of an HRO-in-action. HRO teams (hereafter, HRTs) function in places and situations where risk and danger are ever-present; thus, their need to be highly reliable because the cost of low reliability is often at the expense of human life and well-being. In situations that demand highly reliable performance, risk and danger not only threaten the individuals directly affected, but also threaten the functioning of the team involved. The functioning of HRTs in these hostile environments may hold important insights for improving system interdependence by demonstrating how to enhance team members' mindfulness to system deviation and feedback. The logic proceeds as follows: If firefighters can maintain team functioning in the face of an extreme challenge like a burning building, how much more so should ordinary teams, which confront mundane challenges, be able to sustain effective team functioning (Roberts & Bea, 2001)? Therefore, it is no wonder why such questions have led to intense scholarly interest in the subject of HRTs (Roberts, 1990; Weick & Sutcliffe, 2007).

Scholars have investigated HROs like firefighter teams (Scott & Myers, 2005), air traffic controllers (Weick, 1990), space missions (Weick & Sutcliffe, 2007), healthcare teams (Weick, Sutcliffe, & Obstfeld, 2005), and aircraft carrier crews (Roberts, 1990) to name a few. Weick and his colleagues are especially well-known for their contributions in this area. Based on their research experiences and historical recreations of disasters, Weick and Sutcliffe (2007) recommend that top-level decision-makers, who want to improve the reliability of their organization's team functioning, should attempt to enhance system-wide reluctance to simplify and defer to expertise (among other recommendations). To elaborate on these interdependent principles for avoiding or buffering against failures, HRT members tend to show a reluctance to simplify processes and decision criteria, which allows them to encourage heightened awareness for a given situation and avoid meaningless categories that may inhibit innovation during chaotic situations. Also, these teams tend to show deference to expertise in that they violate traditional top-down expectations of expertise and leadership and allow decision making to occur among team members, regardless of rank, wherever the most knowledge of decision contingencies can be found. Taken together, these recommendations represent a compelling and theoretically prescriptive scheme for providing principled advice to team members and leaders.

However, more work is needed to describe how Weick and Sutcliffe's (2007) prescriptive HRO principles actually play out through messages and

decision-making processes shared among HRT members who may hold personal agendas, fragmented cultural assumptions, and identity concerns. Important work by Wilson, Burke, Priest, and Salas (2005) describes the specific team-related values necessary for successful team operations within HROs and therefore bridges HRO principles with principles for HRTs. Specifically, they argue that adaptability or flexibility influence teams with regards to being reluctant to simplify. The logic is that HRTs adjust and readjust their behaviors on an environment-based need by taking into account context and contingencies. Being aware of and adapting to present contingencies allows teams to guard against mindlessness and complacency. Wilson et al. (2005) also note that HRTs tend to value assertiveness and a collective orientation with regards to giving deference to expertise. In other words, HRTs praise members' assertiveness rather than denigrate oppositional opinions. Such affirmations of assertiveness build a collective (as opposed to individual) orientation within the team. HRTs recognize that "the knowledge or actions of one team member are important and must be taken into consideration . . . what another team member knows and does impacts on the rest of the team" (Wilson et al., 2005, p. 306). Teams that recognize a collective orientation refrain from positioning one member as the expert and instead, expect contingency-based expertise of all team members.

In this case study, we explain how Weick and Sutcliffe's (2007) deference to expertise recommendation can unfold as a communicative and political process in which team members attempt to get others to view them as experts through epistemological argument. In addition, the outcome of such epistemological arguments holds implications for undermining system functioning by encouraging simplification, rather than a reluctance to simplify (Weick & Sutcliffe, 2007). In this way, our investigation adds to Weick and Sutcliffe's framework by providing a nuanced and descriptive account of how HRT members come to understand whose knowledge is legitimate and authoritative enough to be deemed expert. In the following paragraphs, we explain how knowledge and expertise are the products of interwoven meaning-making phenomena and how those meaning-making processes come to influence a team's ability to learn and adapt.

The Powerful and Knowledge: Source and Force

In emergency situations, Weick and Sutcliffe (2007) note that HROs tend to engage in deference to expertise, which should not imply that HROs tend to maintain a rigid hierarchy with top-down command. The authors explain that HROs tend to prevent compounding deadly scenarios by "pushing decision

making down and around . . . with authority migrating to the people with the most expertise, regardless of their rank” (Weick & Sutcliffe, 2007, p. 16). The concept of breaking with hierarchy so that frontline workers are free to engage in spontaneous improvisation given situational constraints is central to effective HRT functioning (Riley, Davis, Miller, & McCullough, 2010; Weick, 1998). Frontline workers are often the first to observe indications of trouble. Yet, in ordinary organizations, frontline workers may have a “reluctance to speak up” (Weick & Sutcliffe, 2007, p. 73), usually for fear of retribution and being associated with the content of bad news (e.g., Bisel, Kelley, Ploeger, & Messersmith, 2011; Milliken, Morrison, & Hewlin, 2003; Morrison & Milliken, 2000). In contrast, effective HRTs overcome this problematic outcome of hierarchical relationships and get team members to be assertive by reinforcing a collective orientation and getting members to believe expertise is fluid and context based, rather than static and a-contextual. Wilson et al. (2005) explain this process ought to be observable among even junior HRT members.

Firefighters, who are first on the scene at a burning building, are a prime example of junior members of a team taking a lead position. Junior and low-ranking firefighters, who are first inside a building, have a fuller understanding of the incident in contrast to highly ranked officers—who are primarily stationed outside buildings. When ordinary organizational teams (non-HRTs) defer to the individual with the most legitimate-power authority or the highest-ranking official (i.e., deferring to authority) rather than the individual with the best understanding of local challenges (i.e., deferring to expertise), the consequences can be disastrous. Research suggests that when decision making becomes a closed system of information sharing and seeking, the consequence is that the ground for debate and innovation becomes eroded (Bazerman, 1988). If expertise is thought to be limited to a select few top-level decision-makers, the standards for what an expert entails diminishes and becomes compartmentalized according to a source-attribute logic, rather than a logic of judging the quality of contributions. In such circumstances, expertise becomes projected through a rhetoric where *source* of argument (i.e., who is speaking) can be seen to outweigh the *force* of argument (i.e., what is being said), resulting in a loss of rigorous standards for critical evaluation (Lyne & Howe, 1990). Hartelius (2011) explains, “Expertise is rhetorical: a social and symbolic process, a relational logic at once real and imagined, theoretical and pragmatic” (p. 164).

Knowledge is power implies that the more knowledge one can accumulate the more power and influence one can gain. The insight perhaps disguises an equally important point: Those who are powerful may wield a

disproportionate ability to convince us that their knowledge is special, legitimate, and superior (Hartelius, 2011). Nonaka and von Krogh (2009) explained that “knowledge is justified true belief” (p. 636). Undoubtedly, individuals often seek to justify their beliefs as true and position themselves and these beliefs in the most advantageous way possible during their team interactions (Harré & van Langenhove, 1999). Powerful individuals—whether they have positional power, personal power, or both (Rahim, Antonioni, & Psenicka, 2001)—are especially influential in their ability to persuade others that their justifications and positionings are correct. Thus, the phrase, knowledge is power, can be seen as suggesting power is gained based on what one knows and can be framed in such a way as to suggest that the powerful are uniquely able to convince us that they are knowledgeable. Recall that according to Weick and Sutcliffe (2007) successful HROs tend to defer to expertise and not necessarily authority. However, in actual practice, influential team members (e.g., supervisors or network hubs) likely hold a greater ability to get others to perceive them as expert, thereby complicating the practice of deferring to expertise. In other words, being considered expert often goes hand in hand with having power—influence that some may be unwilling to relinquish even in events where they have no special knowledge, insight, or understanding of the situation (i.e., expertise).

Team and Organizational Learning

Organizations that identify, develop, and use members’ expertise are known as learning organizations (Choo, 2006; for a review, see Weick & Ashford, 2001). Organizational learning refers to a collective’s cultural store of know-how (Kramer, 2010). Organizational cultures marked by effective learning pass along lessons and innovations to itself through its members and use this knowledge to adapt to environmental challenges and to thrive (Choo, 2006; Weick & Ashford, 2001). Organizational learning (or ignorance) often unfolds as team-level learning. In fact, Wilson et al. (2005) argue that encouraging the creation of HRTs is a way to achieve an HRO (see also Baker, Day, & Eduardo, 2006). Team learning occurs when team members share a culture that allows them to feel confident that they will not be embarrassed, rejected, or punished for speaking up with their insights and innovations (Edmondson, 1999). In sum, such teams encourage members to be assertive with their input (Wilson et al., 2005). Failures in creating systems marked by learning can occur when teams fail to reflect on their actions as a collective, or when teams reflect but fail to implement changes following reflection (Edmondson, 2002). When a team fails to reflect or

fails to implement changes after reflection, the team is unlikely to contribute new knowledge or new ways of working that could help its performance in adapting environmental demands (Edmondson, 2002). The purpose of this study is to illustrate how reflection practices themselves (like those that occur in after action reviews) are predicated on how knowledge quality is framed (Fairhurst, 2011) and how this framing can both construct a position of expertise and discount others' claims to expert status.

In system-level learning, knowledge must be recognized by multiple actors displaying or articulating their knowledge through their performance or explanation of a given task (Nonaka et al., 2006; Stehr, 1992, 1994). By blending both the individual position and the contributions of other team members, a joint enterprise comprised of different knowledge sets can be created and recreated and subjected to influence by others (Iverson & McPhee, 2008). Knowledge creation becomes a discourse of "making available and amplifying knowledge created by individuals as well as crystallizing and connecting it to" a team's store of retrievable know-how (Nonaka & von Krogh, 2009, p. 635). Such stores of know-how become resources that team members draw from in their routine interactions with one another and with their environment (Edmondson, Bohmer, & Pisano, 2001). Often the tacit stores of collective know-how are inadvertently made observable (i.e., explicit) when members give accounts of task-related events. Giving accounts serves as a way for veteran team members to teach new members and justify behavior and action (Poole, Seibold, & McPhee, 1985). As a result, the discourse of such accounts of past actions serves as a way to reproduce team structure and culture simultaneously (Fairhurst & Putnam, 2004).

Often what becomes problematic is the transferring of knowledge to team members when there are multiple perspectives of knowledge regarding shared situations (Zorn & Taylor, 2003). Given the rhetorical nature of expertise, it stands to reason that rhetorical moves, which position one's identity as expert, are likely common when multiple perspectives of knowledge are pitted against each other in team discourse. What remains unclear, however, is how team members' talk and collective sense making of their performance and decisions shapes members' understandings of whose contribution should be deemed expert and therefore worthy of transfer and preservation by the team?

Research Context

This research was conducted in the context of a municipal fire station. The first author gained access to observe the life and work of a firefighter team

Table 1. Stages of Data Collection

Month and year	Description of data collected	Resulting data
February (2010)	Start Date: Field observations begin collection of archival data	46 pages policies
April (2010)	Incident occurs	
	Observed team in action at structure-fire	93 photos
	Observed after action review	6 pages field notes
June (2010)	Newspaper article	1 newspaper article
	Artifact collection	1 image
	Six team member interviews (1st round)	125 pages transcribed
September (2010)	Five fire-expert interviews manual consultation	56 minutes (total)
June (2011)	Interview with Harrison (2nd round)	5 pages transcribed
December (2011)	End date: field observations cease (22 months total)	403 pages field notes

and was allowed to participate in all daily activities, ranging from routine to emergency situations (For a summary of data collection, see Table 1). In one such emergency situation, a fully involved structure-fire, the first author was present to observe team communication from the beginning of the emergency call (i.e., when the alarm sounded), the emergency itself, and subsequent conversations. While the firefighters were on location, the first author took 93 digital photographs of events as they unfolded. These photographs were later used by the team as a medium for critiquing the performance of a junior firefighter, who took a lead tactical role in the event. Post-emergency after action reviews (AARs), or reflection practices, were common practice—as they are in many HRTs (e.g., Edmondson et al., 2001) and HROs (Weick & Sutcliffe, 2007); however, typically, AARs usually rely on team members' recollections and recreations of events. The presence of research photographs in this instance yielded visual cues for members' AAR discussions. As such, the photographs provide a methodological advantage of this study in the sense that the *facts* of the circumstance and firefighters' tactical decisions are preserved and somewhat held constant, which allows a comparison between how team members assigned meanings to their actions during the critique with details that are verifiable within the visual evidence. AARs enable team members to make sense of their environment and actions

collectively and to develop a shared vision for how to proceed in the future (Smith-Jentsch, Cannon-Bowers, Tannenbaum, & Salas, 2008).

One such detail is particularly important to this investigation: A major point of contention arose among the team at the post-incident AAR, and continued intermittently for 3 more weeks, when a veteran firefighter claimed (and was then supported by other team members) that a junior firefighter—who took the lead that day on the fire hose—used a so-called *straight-stream* configuration. In a veteran team member's opinion, a *fog* configuration was better suited to the particular fire and structure. In turn, other team members appeared to agree with the veteran's assessment of the junior firefighter's performance. The resultant conflict appeared to invite team members to make a binary choice between two sides of the disagreement. Thus, while the disagreement was two-sided, the conversation itself recurred among the entire team over many workshifts thereafter and speaks to the nature of conflict and team learning in an HRT environment. The way in which the post-incident critique discussions unfolded within the context of a HRT, led us to ask:

RQ1: How did the high-reliability team (HRT) members communicate about an important team performance?

RQ2: How did the HRT's communication shape the ways in which team members come to understand their own and others' expertise?

Method

Participants and Team Structure

The context of this research is situated in an incident resulting from a routine, post—structure-fire AAR. The team members who worked the scene were: Harrison (junior firefighter), Jack (veteran firefighter), California (rookie firefighter), Brice (acting captain, meaning he was serving in a position one rank higher during the fire), Rusty (acting driver, meaning he too was serving in a position one rank higher for the day), and Jackson (assistant chief and highest-ranking officer). Harrison was the lead firefighter on the hose with Jack behind him and California maintained a position third-in-line as backup. Again, Harrison chose to use a straight-stream water flow instead of a fog-stream water flow. After the fire was extinguished, the team went back to the station for an AAR in which an argument over spray configurations broke out, initially between Harrison and Jack, and then was taken up by the rest of the team members, who aligned with Jack and participated with him in ridiculing Harrison.

Interview Data Collection

All six team members involved in the incident (five of whom worked the actual fire and one other who was present during the post-fire discussions) were solicited for face-to-face interviews; all six agreed (see also a description of five more interviews and ethnographic and archival data collection below). Interviews were conducted in the fire station during work hours but were conducted privately in a conference room so that other team members could not hear each other's answers. Interviews followed a 10-question schedule. Three additional tailored questions were asked of the target of the AAR and the instigator of the AAR. Follow-up questions were used to probe and clarify, including typical follow-up questions, such as, "What does that mean?" "Can you clarify?" and "Such as?" (Lindlof & Taylor, 2011; Rubin & Rubin, 2005). Each participant signed a consent form, in keeping with institutional review board oversight. Interviews lasted approximately 30 min. All interviews were digitally recorded. The first author transcribed recordings for words and utterances. Transcriptions were given to interviewees as a means for interviewees to grant permission to use materials: No changes or deletions were requested. Transcriptions resulted in about 125 double-spaced pages of text.

Ethnographic Data Collection

Similar to the ethnographic data collection processes of Scott and Myers (2005), the first author engaged in participant-observation methods among the firefighting team rotating in 24-hr shifts. Participants ranged from a rookie (2.5 years service) to assistant chief (24 years service). Ages of participants ranged from 27 to 53. All participants were male and self-identified as Caucasian. The first author was included in activities ranging from station clean up, meal preparation, training, and ride-alongs (both to emergency situations and medical calls). As a means of developing understanding about the team and their task firsthand (Emerson, Fretz, & Shaw, 1995), the first author engaged in informal, unstructured conversations with team members (Lindlof & Taylor, 2011). Periods of participant observation ranged from 8 to 14 hr yielding a total dataset spanning 50 work shifts, which resulted in 403 typed, double-spaced pages of field notes. In addition to typed field notes and transcribed interviews, the dataset consisted of cultural artifacts pertaining to the organization. These artifacts included a disparaging image related to the fire and AAR posted on the community bulletin board, a newspaper article documenting the fire, and a number of organizational documents

(e.g., Department Handbook, Monthly Incident Report Summaries, Daily Unit Assignment Sheets, Unit Assignment Sheets, and Departmental Exposure Policy, see Table 1).

Data Analysis

In order to answer the research questions, we employed a modified version of constant comparative analysis (Glaser, 1992; Glaser & Strauss, 1967; Suddaby, 2006). First, the entirety of the dataset was read for the purpose of data reduction (Lindlof & Taylor, 2011). Interview transcript excerpts, field notes, and archival documents that contained (a) descriptions of any aspect of the structure-fire and post-fire discussion, (b) judgments regarding the decision to use stream or fog tactics, or (c) evaluations of others' judgments regarding that decision were included in the dataset for answering the research question. Second, the remaining data were read and reread. A process of open-coding was then conducted as a means of identifying emergent and recurrent patterns (i.e., codes). As codes emerged, each was checked for better, opposite, or negative examples across the entirety of the remaining dataset. Third, in a process of focused coding, codes originated during open-coding were grouped into categories. Finally, in a process of axial coding, categories originated during focused-coding were interrogated for possible alternative explanations that could account for the interrelationships among them (Charmaz, 2000, 2002). Codes and categories remained flexible until late in the analysis process. However, by the conclusion of the analysis all data were accounted for comprehensively within the theoretical framework presented in the results section (Tracy, 2010).

Results and Interpretation

In the following paragraphs, we explain how these firefighters' discussion about the structure-fire was a moment of potential team learning. However, in this case, the team's discussion unfolded as a struggle for achieving the identity of expert. Two methods of providing support for one's expert identity were prominent: *personal experience* or *technical knowledge*. These methods of providing support for one's claims reflexively created an epistemological argument. Such discursive moves enabled a logical position from which to critique another team member's decision making; simultaneously, such moves tended to discount others'

Table 2. Structure of Grounded Theorizing

Sample raw data	Second-order categories	Sensitizing concept
<ul style="list-style-type: none"> • “So much of it is experience. That’s why these guys around here have like 30 years of experience. That’s the fundamental problem that I have with the military: They have a lot of book smarts but they don’t have experience to draw from. And here we have the vice versa problem sometimes.” • “They teach you in rookie school not to pass fire.” • “You know, [you learn] through training and rookie class you learn some of it” • “I learned what to do from magazines we have lying around here, books” • “You learn fire behavior in rookie school...reading the basic manuals” • “Most of what you learn comes from rookie school” 	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Technical training</div>	<div style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;">Epistemic denial</div>
<ul style="list-style-type: none"> • “Don’t get so defensive, just listen [to me, the experienced firefighter] and learn” • “You have to use some common sense. You learn as you go. I mean years ago there was no rookie class. You just showed up to work and them guys made it just fine.” • “Well, I learned [what to do] just through the day-in and day-out experiences?” • “That’s just how we do it here,” • “I hope that he learned that not everything that you read in a book . . . is what you take to the fire scene with you.” 	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">Personal experience</div>	

ways of knowing, and therefore, discount others’ identities as experts. Thus, we show how these firefighters engaged in disqualifying each other’s critiques—whether supported by personal experience or technical knowledge—in a process we label *epistemic denial* (see Table 2). The resulting communication pattern observed among the firefighters’ attempts to engage in process improvement allowed us to see how epistemic denial is both functionally useful for firefighters’ individual identities, while potentially harmful for the team’s ability to learn and improve.

But First, Who's Right?

In the course of the case study, the first author also interviewed five more firefighters who were neither present at the structure-fire or AAR nor on the same team as Harrison and Jack, as a means of evaluating advantages and disadvantages of Harrison's stream selection: a fire inspector, a captain, a driver and two additional firefighters. Participants were asked about the advantages and disadvantages of both fog-stream and straight-stream configurations. Responses indicated consistently that "straight-stream is good for deep seated fire whereas fog-stream is good for confined space and hydraulic ventilation" (9; notation represents interview participant number). Participants were also given a hypothetical scenario mirroring the conditions of the fire of interest and asked which stream configuration would be optimal. Responses ranged from "you need to assess all on-scene conditions" (8) to "it really depends on the overall scene" (7). Ultimately, all responses were consistent in that participants reported that either stream selection could be effective. Thus, such responses indicate the inherently ambiguous nature of Harrison's decision-making task. In sum, these sources reveal there was likely no single correct answer—a finding that warrants an analysis of how these team members' communication rhetorically constructed identities of expertise, and did not merely constitute a disagreement over the validity of a particular approach.

Personal Experience Versus Technical Knowledge

Our analysis of the firefighters' talk about the structure-fire and one another's performance revealed that these firefighters drew upon one of two bases of evidence and credibility to position themselves and their critiques as correct. Some firefighters based their evaluations on personal experience, making comments such as "don't get so defensive, just listen [to me] and learn" (1); and "You ain't gonna learn anything if you don't sit and reflect [on personal experience]" (4). Others based their evaluations on technical knowledge learned from classroom training or firefighting manuals with comments such as "they teach you in rookie school not to pass fire" (3).

Personal Experience. The veteran firefighters explained how they mastered their craft by making comments like, "Well, I learned [what to do] just through the day-in and day-out experiences?" (6). They described their expertise as emerging from "common sense" (1), "just knowing" (1, 2, 4, 6), and with statements such as "That's just how we do it here" (1, 2, 4, 5, 6), and

“That’s just the way I was taught” (1, 2, 4, 5, 6). In addition, many reported learning their craft through observing veteran firefighters when they, themselves, were newer firefighters. For example, “We put the fire out and he taught me how to do hydraulic ventilation, which is spraying a water pattern out a window, which evacuates the smoke from the house” (4). In fact, the transmission of personal experience was institutionalized in this particular team in that certain veteran firefighters were hired with the expressed purpose of teaching newer firefighters their experiences. For example, one firefighter explained, “I had a little bit of knowledge [about fixing trucks, therefore] they expected me to help these guys and teach them.” The chief commented, “I explained [to the rookies] that I brought [veteran firefighter, Jack] down here for a reason [pause] to teach.”

Similarly, veteran firefighters characterized their predecessors as heroic and worthy of esteem regularly:

I was asked to come down here or *told* [gesturing with air quotes] but asked, “This is why: to help with the younger guys,” I learned how to fight fire through some hard people but they was some firefighting people. They knew how to do it. Now none of those guys are really left. (1)

These statements serve to depict a team and organization that values and glorifies experience and relies on that experience to train new team members as a mark of one’s expertise. By valuing members with greater experience, other ways of knowing are subtly undervalued and a cultural assumption that experience leads to expertise is reinforced. In addition, in an organization that values experience, it stands to reason that the title of expert, which is inherently a privilege, would tend to be reserved for those team members with long tenure.

Implications for Identity

It is important to note that as the team evolved over time, the amount and intensity of training required by its organization also evolved. This training evolution created an important context for these arguments and their implications for identities: Members of the team with more than a decade of service received relatively little formal training compared to the 6-month curriculum newer firefighters were required to pass. In this new training program, recruits endured a curriculum that included 3,000 mandatory lecture hours, 30 written examinations, in addition to 30 days of training drills in firefighting tactics.

The following excerpt from Jack, the instigator of the post-fire AAR and advocate of experience, illustrates how this difference in training became a point of identity threat for veteran firefighter members, who were not required to pass the rigorous Academy demands. In this quote, Jack reflects on his assessment of Harrison's decision to use a straight-stream configuration:

You have to use some common sense. You learn as you go. I mean years ago there was no rookie class. You just showed up to work and them guys made it just fine. I hope that [Harrison] learned that not everything that you read in a book is what you take to the fire scene with you. (1)

This discourse both (a) discounts technical knowledge learned in fire training and (b) shuts down opposition by suggesting that common sense (and likely experience; "learn as you go") is enough to achieve mastery. Logically, if a team member disagreed with Jack's position by championing technical knowledge, he may be criticized for lacking common sense. If a member championing technical training does not respond, the lack of response may be seen as acquiescence, thereby resulting in effective silencing and perhaps the perception of agreement. In other words, such a counterargument would lose *ipso facto*. In fact, two of the team members confided in the first author that they avoid disagreements with Jack because engaging in debate with him tends to invite his ridicule. Perhaps it is not surprising then, that when the spray configuration contention was initiated by Jack, other team members adamantly agreed during the AAR. For example, Brice commented, while looking at a picture of Harrison using a straight-stream, "Look at that f*cking idiot," and California announced that Harrison is "a f*cktard."

Thus, the discourse ultimately became a (rather childish) matter of winning a debate rather than providing multiple perspectives and resisting oversimplification of localized team decision making. Team members, who could have offered alternative interpretations to the emerging binary opposition, were afraid of Jack's ridicule and participated in his ridicule of another team member by being sycophants. In one such instance, Brice perpetuated the epistemic denial when 2 days after the AAR he posted a disparaging image, hand labeled in all capital letters "STRAIGHT-STREAM HARRISON," on the station's main bulletin board. The image, taken from the internet, depicts a toothless likeness of Harrison wrestling (and losing to) a straight-stream water configuration. This action serves to undermine Harrison's argument by making a public mockery of his argument and depicts him as a fool (or lacking common sense) for his tactical decision making. Again, epistemic denial

is produced, not through means of reasoned argument, but by connecting Harrison's claims with a visual image meant to undermine and discredit his position and claim to be able to contribute knowledgeably to the team's learning.

From an identity perspective, positioning experience as *the* predicate of expertise yields expectations that the person with the longest tenure on the team will always be the most expert, a sentiment framed by the following statement from Jack:

Some people think they know it all and they just need to learn . . . I can help the younger guys just cause we've done it longer. The more experience you have with certain situations, the more open-minded you can stay instead of when you got a guy that has two years on and he goes in with a straight-stream, it's not putting out no fire. (1)

This framework suggests that the only legitimate way a newer team member can learn is if shown or taught by a veteran member. The purpose of the veteran member's expertise is established and maintained. As a reinforcing comment, Jack said contemptuously, regarding Harrison: "Modern technology, there is so much information available to 'em so they can pull it up on their computer and read about it and that makes 'em an expert. [The new hires] already know-how to do everything." In this quote, he conveys epistemic denial by condemning technology and the technical knowledge it communicates in addition to implying that two years is insufficient experience to achieve expertise. His frustration is apparent when expressing his opinion on the technological (as opposed to human) source of information. The frustration may stem from feeling circumvented as an expert source of information.

Technical Knowledge

The following statements are from newer team members who accomplished the rigorous training program, describing how they learned the skills needed for their craft: "That, oh I learned that from drivers books" (4), "I know that [technique] from rookie school, [pause] reading the basic manuals" (5), and "Most of what you learn comes from rookie school [pause] the basics about how to put fire out; how fire starts and grows [pause] and all these magazines we have laying around" (3). At the height of contention over the choice to use straight-stream water configuration, Harrison—invoking his technical knowledge of other fire departments' standard procedures—claimed that using a straight-stream is, "a sound tactic. There are cities that don't even

have nozzles that go into a fog; they just have nozzles that go straight-stream.” Harrison’s words were another, less successful, and, perhaps less obvious, example of epistemic denial. His denial implies his position should be correct by contrasting it with equipment choices available in other cities—a claim that originated from survey-based knowledge, not from personal experience.

Implications for Identity

The statements that articulate expertise gained from technical training also serve a purpose in situating the identities of team members utilizing such statements. As the experience-based statements create purpose for veteran team members, the statements focusing on technical knowledge compete with veteran firefighters’ claims to contribute to the team’s attempts at process improvement. In a similar comment Harrison advocated a way of viewing expertise separate from matters of time and experience:

So much of it is experience, that’s why these guys around here have like 30 years of experience. But that’s the fundamental problems that I have with the military. They have a lot of book smarts but they don’t have experience to draw from. And here we have the vice versa problem sometimes—meaning not as much technical knowledge but a huge wealth of experience. (3)

First, a noteworthy dynamic is that Harrison picks up and uses the false binary present in Jack’s epistemological reasoning as well: Within this logic, the counterpart of personal experience is technical knowledge, leaving team members to determine the preferred epistemology. Harrison does not discredit those with experience completely; however, he does consider it a problem if not accompanied by technical knowledge. Here, the team appears either unwilling or unable to reframe their experiences without assuming a bifurcation between ways of knowing. Notice, in Harrison’s account, too much of one or not enough of the other is problematic instead of representing different strengths from which to draw. As a polar construct is created, the space for these members to coauthor a different interpretation—one characterized by a reluctance to simplify (Weick & Sutcliffe, 2007) and a collective orientation (Wilson et al., 2005)—is lost. Again, what is being reinforced is a rigid emphasis on only one epistemological input (i.e., personal experience) leaving little space for multiple perspectives of how Harrison handled localized decision making. In the weeks following the AAR, technical

knowledge was discounted through ridicule of Harrison. Members of the team made comments to Harrison, such as, "It's a good thing that you can do some doctoring [medical assistance] because you damn sure can't do anything else [i.e., firefighting]" (1), comments that led team members to note that Harrison was "rode into the dirt [for his tactical decision]" (6). In the end, these social circumstances led Harrison to reduce the assertive force behind voicing his opinion, which, in turn, led team members to be confident the matter was settled: Fog streams are preferable tactics; Jack has experience and is the expert; Harrison has technical knowledge and is a fool.

Discussion

The goal of this study was to understand how HRT members communicated about an important team performance, and how the HRT's communication shaped the ways in which team members come to understand their own and others' expertise. We achieved each goal by explaining how constructions of personal experience and technical training invited the members of the team to communicate about a team performance through a process we labeled epistemic denial. Epistemic denial occurs when ways of knowing are discounted or disqualified, often as a means of positioning one's identity as expert and another's identity as illegitimate or unworthy. We illustrated how epistemic denial was utilized by the firefighters in framing their account of Harrison's tactical choices. The process of epistemic denial is rooted in identity concern. In this case, veteran team members relied heavily on personal experience-based knowledge and a new member relied on technical information gained from rigorous and extensive training in order to present their own identities as worthy of being deemed expert. The outcome of the team's epistemic denial was a systemic simplification of decisional inputs (i.e., fog streams are preferable, despite circumstantial ambiguities) and a cultural reinforcement that experience knows best (i.e., only experienced veteran members' have the moral right and expertise to assign meaning and evaluate action). Such a cultural development challenged important HRT values like assertiveness and collective orientation in that their communication behavior disqualified the junior team members' contributions and other contributions based on technical knowledge. This kind of unproductive feedback is especially disheartening given Smith-Jentsch, Salas, and Baker's (1996) finding that healthy feedback is associated with team members' assertiveness.

Furthermore, these findings connect to the literature on HRTs and their communicative relationship with team learning in four ways: (a) epistemic denial demonstrates that deferring to expertise may unfold as a socially contested and

negotiated process; (b) epistemic denial gains strength from silencing and discounting opposing sources of knowledge; (c) epistemic denial is rooted in ego-centric identity concerns relating to power; and (d) epistemic denial illustrates how in actual practice, deference to expertise can become settled in such a way as to encourage simplification, rather than to encourage a reluctance to simplify (Weick & Sutcliffe, 2007; Wilson et al., 2005).

Epistemic denial is a socially constructed process that may, at times, unfold as a struggle or negotiation and is not limited to individuals, but enacted collectively by teams and organizations embodying the values, beliefs, and goals of the collectivity (Nicolini & Meznar, 1995; Weick, 1995). The role that epistemic denial plays here is in silencing some of the values, beliefs, and goals of the collectivity. In the process of working out whose knowledge should rightfully be deemed expert, team members may look to each other for answers about what is considered expertise and who the expert is (Weick & Sutcliffe, 2007). The search for who is considered expert hinders the collective orientation mentality crucial to HRTs' healthy functioning (Wilson et al., 2005). The quality of members' discourse plays a crucial role in how they come to understand or make sense of (Weick, 1995) expertise and who has it.

This case study illustrated that during this negotiation process these firefighters framed their expert identity as based on either personal experience or technical knowledge. In addition, these firefighters discounted the other basis of knowing and any expertise that could be claimed from it (i.e., epistemic denial). Again, this discourse plays a part in discounting the veracity of one claim or another. Specifically, the veteran firefighters showed contempt for newer team members' reliance on what they learned through their technical training. At the same time, the newer members fought for both the opportunity to be heard and to contribute meaningfully. Thus, similar to Hartelius's (2011) observation, these firefighters positioned themselves as experts, in part, by articulating their epistemological basis of knowing. Hartelius explained, "In sum, the reason experts explicate their epistemologies . . . so elaborately is that doing so creates the impression of *techné*. It suggests to an audience that expertise exists, and that the expert is authentic and genuine" (p. 22). In the end, the winners of the contention over the tactical decision (i.e., veteran firefighters touting the merits of personal experience over technical knowledge) gained moral authority and perceived credibility—both of which are problematic in HRTs trying to enhance members' mindfulness and assertiveness, while avoiding members' tendency to simplify decisional inputs (Weick & Sutcliffe, 2007; Wilson et al., 2005).

The second characteristic of epistemic denial is that it gains strength from silencing and discounting opposing sources of knowledge. Not only does epistemic denial produce a problematic lack of receptivity to new information (i.e., the problem associated with simplification), but it may tend to silence innovative and new ideas shared from alternative ways of knowing—the way Jack functionally silenced not only Harrison but also affected the likelihood the rest of the team would disagree with his position by ridiculing others frequently. Wilson et al. (2005) advocate that team members, especially junior HRT members, must feel encouraged to be assertive. They explain that welcoming HRT member assertiveness involves: “Allowing team members the opportunity to provide feedback,” “address[ing] ambiguity,” and “offer[ing] potential solutions.” Environments that fail to foster these team-based behaviors might lead to a lack of team learning (Cook & Yanow, 1993).

Third, epistemic denial is rooted in egocentric identity concerns relating to power. Our analysis demonstrates that the recommendation to defer to experts has the opportunity to become a struggle of power identities in actual practice. We believe HRTs can avoid this dynamic by taking steps to encourage people to make knowledge about the system transparent, widely known, and to “create a set of operating dynamics that shifts leadership to the people who currently seem more likely to have an answer to the problem at hand” (Weick & Sutcliffe, 2007, p. 81). Also, in the case of these firefighters, we believe that if all firefighters went through the same training, veteran firefighters may not have been as threatened by knowledge claims—and related claims to expertise—based on technical knowledge. If all had the same training, they may have been more willing to compare and contrast the relative merits of tactics, rather than the relative merits of epistemology. Shifts in entry requirements and training can be uncomfortable for veteran team members, who may believe that expertise is gained through *paying dues*—especially, if such a process was required of them. The mentality of working one’s way up to achieve voice and the perception of being expert may cause members to be unsure of how much time must pass before they are considered seasoned enough to contribute meaningfully to the team conversations, which produce the kind of appreciative reflective practices associated with healthy HRTs (Edmondson et al., 2001).

Further complicating a veteran-centric approach is the reality that newer generations entering the workforce may be more familiar and more comfortable with technological advancements and globalization. Often, older members of an organization may struggle to yield the floor to a younger team member because of the social implications that accompany such a

relinquishment. An older team member may refuse to relinquish the floor as a response to the perceived threat that the younger team member may contribute better ideas and upstage the older member's contribution. Once positioned as an expert, the potential for that person to be sought out for information increases (Poole et al., 1985). A response to the threat of being upstaged is to enact epistemic denial by discounting the technical knowledge utilized by the younger team member in favor of personal experience being the only acceptable expertise. After all, by this logic, the team member with the most experience will always have the most expertise, never losing their epistemological superiority.

Hinds and Pfeffer (2003) explained how hierarchical structuring may inadvertently motivate organizational subgroups, like teams, to avoid engaging in knowledge transfer with other subgroups out of a sense of competition for organizational resources. We believe their claims are sound; however, we also believe that such claims may tend to obscure another insight about knowledge transfer: Knowledge is the result of a communicative process of negotiation (i.e., learning) and may be the result of identity-motivated competition within divisional teams.

Fourth, and finally, this case study illustrates how in practice, knowing whose knowledge is worthy to be deemed expert can become settled through discourses that discount some team members' contributions as inadequate. When such epistemic denial occurs—and ways of knowing like technical knowledge are discounted—team members have effectively simplified decisional inputs. Weick and Sutcliffe (2007) recommend that successful HRTs tend to enact a reluctance to simplify decision making, which helps members match complex decision circumstances with similarly complex decisional inputs. Epistemic denial discussed here may encourage simplification instead of encouraging a reluctance to simplify. Thus, while epistemic denial is first and foremost related to the concept of deferring to expertise, we argue that epistemic denial may undermine the decision making of HRTs—a point that aligns with Hirokawa and Rost's (1992) vigilant interaction theory.

Conceptualizing an Epistemic Denial Variable

Based on these field observations, it would seem that epistemic denial could vary as a function of the intensity, duration, and frequency of voiced or publicly displayed ridicule directed at a team member or members' way of knowing. High epistemic denial can be recognized here in Jack, California, and Brice's attacks of Harrison's training-centric claims to expertise, which included aggressive name-calling and public humiliation, and unfolded over

weeks. Presumably, low epistemic denial would unfold as relatively less-intense ridicule, for a shorter-term period, and with less frequent attacks on members' ways of knowing. Furthermore, the case suggests potential antecedents of an epistemic denial variable may include coalition formation emerging from threats to team members' identities as experts, the defensiveness of a group's climate, and its tolerance for verbal aggressiveness. Also, epistemic denial in teams might be especially likely when common knowledge effect and shared-information bias emerge in a group's discussions about its own performance. Shared-information bias may lead group members to discuss a majority's known method to perform a work task more often than a minority's alternative (Bonito, 2007; Wittenbaum, Hollingshead, & Botero, 2004). The majority's information sharing then may come to represent a kind of social proof in which the rightness of the method is supported by the fact so many know of the method—not that the method is superior, but more well-known. Such a social context might invite discourse in which majority team members ridicule minority members' ways of knowing (i.e., engage in epistemic denial). We speculate the result of shared-information bias followed by epistemic denial would be an exacerbation of a team's inability to take advantage of members' unique knowledge and expertise. Consequences of epistemic denial likely include the reduction of HRT functioning, especially in team members' assertiveness and collective orientation. When not functioning correctly, these team processes are argued to be associated with a reduction in the long-term learning capacity of HRTs in that they stunt deference to expertise and a reluctance to simplify—values characteristic of HROs (Wilson et al., 2005).

Practical Recommendations

As a means of reducing the occurrence of epistemic denial in teams, we make four recommendations. First, we recommend HRT leadership should make members aware of the negative consequences of positioning technical knowledge and personal experience epistemologies as though they are in competition for legitimacy. Thus, we assume that awareness is probably curative in its own right, although we concede that assumption needs to be tested. Second, we recommend HRT leaders be trained (a) to recognize the development of epistemic denial in AARs in order, (b) to affirm the value of multiple perspectives from team members, and (c) to suppress team tendencies to simplify decisional inputs. Third, organizations should require veteran team members to update their knowledge sets such that they receive similar training and achieve similar credentials as newer members. We believe this move will somewhat mitigate the influence of identity concerns that veteran members

may feel, if threatened by newer team members' technical knowledge and related expertise. Fourth, we recommend team members who are experiencing epistemic denial experiment with communication strategies that present their position in proximal ways rather than take up and reproduce distal positionings implied by others' discourse (Harré & van Langenhove, 1999).

Limitations and Future Directions

This study, like all studies, has limitations. These data do not trace the outcome of the epistemic denial apparent in team members' discourse on its projected learning. Indeed, many scholars have grappled with the difficulty of measuring team learning (e.g., Goodman & Dabbish, 2011). In other words, we do not know whether Harrison or other team members would use a straight-stream or a fog-stream configuration if placed in a similar situation again. Future research could also focus on how members of a team, when faced with epistemic denial, cope with the disqualification of their contributions. Similarly, we foresee future research can assess the extent to which team members who have been the target of epistemic denial either accept or deny others' positioning of them and the implications that stem from this choice. One way to test the notion of epistemic denial would be to attempt to disconfirm the implied association presented here between individuals' use of epistemic denial communication strategies with team members, and either (a) the speakers' or (b) team members' perceptions of the speakers' expertise. Furthermore, likely covariates include likeability and credibility assessments.

Conclusion

Knowledge may lead to power, but the powerful have a disproportionate ability to convince others that their own knowledge is worthy and other knowledge bases are insufficient. Such meaning-making is the outcome of team discourse. Team learning and ignorance are parallel mediums and outcomes of team communication. The discursive moves made in a single conversation (in this case, a post-fire AAR) are not merely inconsequential in the face of an entire organization's strategic adaptation, but come to form its very substance.

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