

The search environment is not (always) benign: reassessing the risks of organizational search

Samuel C. MacAulay,^{1,*} John Steen,² and Tim Kastle³

¹UTS Business School, University of Technology Sydney, Sydney, NSW 2007, Australia. e-mail: samuel.macaulay@uts.edu.au, ²UQ Business School, University of Queensland, St Lucia, Queensland 4072, Australia. e-mail: j.steen@business.uq.edu.au and ³UQ Business School, University of Queensland, St Lucia, Queensland 4072, Australia. e-mail: t.kastelle@business.uq.edu.au

*Main author for correspondence.

Abstract

March and Simon's (1958: 50) assumption that search happens within a "benign environment" has become taken-for-granted in organizational studies. The implications of making this assumption are not widely theorized, investigated, or even discussed, and yet, it often appears to have been unwittingly imported into explanations of organizational learning. March and Simon acknowledged that this assumption was not realistic—our work builds on theirs by investigating the origins and consequences of a non-benign search environment. We draw on in-depth qualitative research at a Fortune 500 mining firm to show how perceptions of social risk problematize the assumption of a benign search environment. Causal links are drawn between *role equivalence*, *performance comparisons*, and *rivalry for social status* to explain how social risk is generated and why it can lead actors to view the intraorganizational search environment as non-benign. These perceptions help create what we describe as a "paradox of local equivalence" that leads actors to search for nonlocal solutions. Our causal logic provides a new way of understanding the phenomena of nonlocal search; complements explanations of nonlocal search founded on myopia in organizational learning; and shows how the micro-foundations of existing search models can be adapted to better explain organizational learning. In doing so, this study contributes to recent efforts to improve behavioral explanations of search and learning by bringing the notion of intraorganizational conflict back to center stage in this important area of organizational theory.

JEL classification: D83, O30, D23, L20

"Unfortunately, it often seems that when theorists make a sensible decision to repress complexity temporarily for the sake of analytical progress, they often proceed to develop habits of thought that then prove hard to break—and the promise implicit in 'temporarily' remains unredeemed." (Winter, 2006: 1104)

1. Introduction

As each workday begins, people initiate search processes in organizations. Search occurs for a wide variety of reasons and can focus on diverse targets; an analyst at the Central Intelligence Agency (CIA) might be trying to unearth

knowledge held on a suspected terrorist (Kean *et al.*, 2004); a manager might be trying to locate a topic expert within a consulting firm (Singh *et al.*, 2010); or a technician might be trying to find colleagues who know the appropriate “fix” for a broken photocopier (Orr, 1996). The ubiquity of intraorganizational search can make the process appear mundane, but its nature and dynamics are foundational to the way in which organizations learn, evolve, and prosper (Argote and Greve, 2007; Dosi and Marengo, 2007; Laursen, 2012; Savino *et al.*, 2017).

The core contribution our article makes is to reconceptualize the model of action scholars of organizational learning use to explain how actors search. This model is founded on March and Simon’s (1958: 50) assumption of a benign search environment,¹ that is the assumption that the model of search specified “depends on an underlying belief on the part of the [actor] that the environment is benign.” The Oxford Dictionary of English describes the word *benign* as referring to something “not harmful in effect.” What this implies is that search environments might be usefully modeled in terms of the harm their exploration poses to a searcher, varying in degree from benign (none) to malevolent (existential). To take an example from the malevolent end of the spectrum, consider the nature of the environment in which Giovanni Falcone² searched for evidence to convict Sicilian Mafiosi (1980–1993). Falcone’s efforts ultimately put many Mafiosi behind bars; however, the Mafia had learnt of his efforts prior to this, and his search was conducted under the threat of assassination. There were many attempts made to stop Falcone along the way, but it was not until his assassination on May 23, 1992 that his efforts ceased. At the other end of the spectrum, one could consider the relatively benign environment encountered by participants in academic experiments on search (Singh *et al.*, 2010; Billinger *et al.*, 2014). Routine organizational life seems likely to fall somewhere between these two extremes.

We draw on an in-depth qualitative study of intraorganizational search to identify one common aspect of organizational life that might transform an actor’s perception of the search environment—interpersonal competition. Building on this insight, our study problematizes the assumption of a benign environment, arguing that it can unnecessarily limit the ability of organizational scholars to explain the pursuit of organizational learning through non-local search. This reconceptualization provides scholars with a new way of constructing socialized models of organizational search and incorporating aspects of intraorganizational conflict into models of organizational learning (Bunderson and Reagans, 2011).

Our study provides evidence that rivalry and conflict can have harmful effects on participants, bringing into question the empirical validity of the benign search environment assumption and the behavioral plausibility of explanations of search that depend on it. More specifically, we argue that the search strategy deployed may be *caused* by an actor’s perception of the search environment.³ Thus, scholars attempting to uncover how different search strategies shape an outcome of interest (e.g., incremental learning) across different search environments (e.g., over time, across institutions) would be well-advised to make their assumption about the nature of the search environment explicit and design their empirical strategy to control for this possibility. Otherwise the inferences drawn will be at risk of endogeneity via an omitted variable bias. This bias undermines the important task of building a robust body of knowledge about organizational learning and associated processes, such as innovation.

Our findings are organized according to the following logic. The first section situates the concept of intraorganizational search within the literature on organizational learning. The actions of individuals are central to existing theory, but it is rare to find studies that delve into the individual actions driving the search process and enable researchers to confront important taken-for-granted assumptions with empirical reality. As a result, the model of action that underpins studies of search is under-socialized and, we argue, will struggle to explain organizational learning within nonbenign⁴ environments. The next section explains the qualitative research conducted to study *why people might perceive the search environment to be nonbenign* and *investigate the consequences for organizational learning*. The data were analyzed using Glaser and Strauss’ (1967) method of theoretical sampling and constant comparison, and this work is presented in the article’s third section. We find empirical evidence that actors can view the search environment as non-benign and identify how role equivalence, performance comparisons, and rivalry for

1 In the second edition of the book, this quote appears on page 69.

2 Falcone was a dogged Sicilian prosecutor who dedicated his life to investigating and convicting members of the Italian Mafia. For an overview of his life, see his obituary in the New York Times (Cowell, 1992).

3 The authors thank a reviewer and the editor for making this point clearer.

4 We use the term “non-benign” throughout this article to describe all the space on the benign–malevolent spectrum beyond that which is “benign.”

social status combine to generate social risks, thus creating what we describe as a “paradox of local equivalence” that can lead actors to search for nonlocal solutions. The article’s final section draws together these findings to show how relaxing the assumption of a benign search environment helps explain important characteristics of organizational search and learning that are yet to be properly examined in the broad literature building on [March and Simon’s \(1958\)](#) seminal work ([Argote and Greve, 2007](#)). In particular, we highlight the value of this approach for understanding search as a signal and how the behavior of targets within the search environment can alter assumed causal links between search and learning. These insights open up new explanations for phenomena ranging from the how scientists search within R&D departments through to the way open innovation strategies are operationalized.

2. Theoretical background

2.1 Search within organizations

Search is a fundamental form of human behavior and theories of how it unfolds within organizations are seminal for explaining how organizations learn through adaptation and innovation ([Kay, 1979](#); [Greve, 2003](#); [Becker et al., 2006](#)). [Fleming’s \(2002\)](#) explanation of the organizational sources of breakthrough invention helps ground why intraorganizational search is pivotal to these efforts. Central to [Fleming’s \(2002: 1076\)](#) explanation, based on an inductive case study of Hewlett-Packard’s invention of the thermal inkjet printer, is the causal link between the ability of individual inventors to quickly search the intraorganizational environment and the generation of breakthrough invention at the organizational level:

“[Inventors] also need time to develop personal relationships throughout this network so that they can apply resources. Without such personal networks it would have been difficult for the developers to quickly access the disparate experience and knowledge that enabled wide-ranging recombinant search. This access enabled HP’s engineers to avoid inventing everything from scratch; instead they borrowed and integrated well-established knowledge and components. [...] Such opportunistic borrowing and reuse enabled rapid prototyping and testing of new and unpredictable combinations. Given that the specific prototyping needs to support wide-ranging recombinant search cannot be predicted, such rapid iterations would not have occurred without deep knowledge of many available building blocks and the social network to access them.”

This image of the firm, where cumulative patterns of individual search shape the broader trajectory of organizational learning, is foundational to conceptualizations of the firm grounded in the Carnegie School of organizational theory ([March, 1991](#); [Narduzzo et al., 2000](#); [Argyres and Silverman, 2004](#); [Gavetti, 2005](#); [Nerkar and Paruchuri, 2005](#); [Lazer and Friedman, 2007](#); [Taylor, 2010](#); [Fang et al., 2014](#)). Unsurprisingly then, the foundational work in this tradition ([March and Simon, 1958](#); [Cyert and March, 1963](#)) and the way it theorizes search have had a wide, if sometimes under-appreciated, impact on concepts, assumptions, mechanisms, and predictions used in studies of organizational learning (see [Argote and Greve, 2007](#)). These foundations have changed little since [March and Simon \(1958\)](#) and then [Cyert and March \(1963\)](#) made their seminal contributions to the Behavioral Theory of the Firm ([Maggitti et al., 2013](#)). Furthermore, there are surprisingly few granular empirical studies of individual search available to help validate and elaborate models built on these foundations ([Singh et al., 2010](#); [Dahlander et al., 2016](#)). This gap in the literature limits our ability to understand the way individuals decide on where and how to search and whether these choices might influence models of organizational learning.

2.2 A partial model of action?

Theory that explains where actors search is crucial to the predictions and explanations put forward in the organizational learning literature. Empirical research into this process has concentrated on understanding how the trajectory of search pursued by a focal actor (e.g., organization; division; group; individual) influences specific learning goals, such as new product development ([Martin and Mitchell, 1998](#); [Hansen, 1999](#); [Katila and Ahuja, 2002](#)), the accumulation of knowledge within capabilities ([Zollo and Winter, 2002](#); [Argyres and Silverman, 2004](#)), or the development of organizational strategy ([Mintzberg et al., 1976](#); [Gavetti and Rivkin, 2007](#)). The mechanism of local search—in that search is “originally local to the organizational unit where the problem occurs” and then sequentially expands out to a more distant location if a solution is not found—is central to these efforts ([Greve, 2003: 14](#)). The core theoretical insight built from empirical research in this tradition is that the locally biased trajectory of the search process produces significant path dependencies in learning ([Levinthal and March, 1993](#); [Helfat, 1994](#); [Rosenkopf and Nerkar, 2001](#); [Mina et al., 2007](#)), but that performance below aspirations can shift the trajectory of search away

from this local bias and toward more novel sources of learning (Baum and Dahlin, 2007; Shipilov *et al.*, 2011; Alexy *et al.*, 2016). This insight helps explain a wide range of empirical regularities related to learning (Greve, 2003), including the difficulty firms have when trying to adapt their capabilities to enter new markets (Tripsas and Gavetti, 2000), react to the competitive challenges arising from technical change (Christensen and Bower, 1996; Martin and Mitchell, 1998), and why radical shifts are rarely observed when an organization's capabilities change (Ahuja and Katila, 2004; Nerkar and Paruchuri, 2005). Such explanatory power has seen "local bias" become central to explaining the micro-foundations of action in organizational learning.

There are an impressive array of operationalizations, empirical contexts, and levels of analysis to be found in the broad literature dedicated to understanding search and learning (Greve, 2003; Gupta *et al.*, 2006; Raisch *et al.*, 2009; Laursen, 2012; Savino *et al.*, 2017). Yet, given the obvious breadth of this literature, it is surprising to find only a small number of studies where the actions of individuals engaged in the search process are subject to in-depth investigation (Fleming, 2002; Nigam *et al.*, 2016). Instead, search is commonly inferred through proxies such as R&D intensity (Nelson and Winter, 1982; Vissa *et al.*, 2010), patenting activity (Ahuja and Katila, 2004; Nerkar and Paruchuri, 2005), and the transfer of knowledge (Hansen, 1999; Monteiro *et al.*, 2008). What is missed through the use of such proxies is direct insight into the *how* and *why* driving the search actions pursued by the unit of analysis under investigation (Maggitti *et al.*, 2013). Building explanations of organizational search and learning on such an under-socialized model of action restricts organizational scholars to a partial explanation of the phenomena.

2.3 Under-socialized search and its consequences

Although organizational systems "can be designed to encourage managers to search," it is ultimately "a manager and not an organization that is capable of searching" (Li *et al.*, 2013: 894). Without data on these actors, the agency of individuals involved in the search process becomes "black boxed" (Singh *et al.*, 2010: 21) and associated foundational assumptions are left unchallenged. Our qualitative research, reported below, sensitized us to this problem and pointed to the important role intraorganizational rivalry and conflict played in shaping the way people actually searched within organizations. These dynamics posed a risk to the searcher and were thus important because they challenge March and Simon's (1958) long-standing assumption of a benign search environment.

March and Simon's (1958) work constitutes a seminal contribution to the Carnegie Tradition of organizational theory (Simon, 1947; Cyert and March, 1963) and provides the foundations for modern research on organizational learning (Argote and Greve, 2007), and yet, although March and Simon (1958: 50) originally noted that the assumption of a benign search environment was unrealistic, to the best of our knowledge the only organizational scientists to have dedicated subsequent attention to the idea are Lave and March⁵ (1993: 294–9). The assumption of a benign search environment seems to have gone unchallenged and become largely taken-for-granted.⁶ This is a peculiar state of affairs for a theoretical tradition that is otherwise notable for its rich theorization of intraorganizational conflict (e.g., goal conflict in March, 1962). It is difficult to be certain about how or why this happened. However, models of organizational search have typically assumed that search is "performed by single actors" (Knudsen and Srikanth, 2014: 410), which provides a fairly compelling explanation for the backgrounding of intraorganizational conflict; organizations of one are rarely thrown off course by internecine conflict. The backgrounding of intraorganizational conflict in theories of organizational search also fits the broader pattern that Gavetti *et al.* (2007: 524) observe in studies founded in the Carnegie School of organizational theory. The role of intraorganizational conflict, which was so central to work in this tradition (Pitelis, 2007), seems to have been lost over time.

Conflict is such a crucial aspect of organizational life that, without it, one cannot hope to build a compelling *organizational* theory of learning. Assuming away the possibility of a non-benign environment has seen our field develop explanations of *intraorganizational search* that are under-socialized and thus rooted in a partial model of action. This model is one where action is largely insensitive to the reality of intraorganizational conflict. It is a choice that has had implications for what aspects of organizational learning we study, how we study it, and, crucially, how we explain what we find. Altering the assumption of a benign search environment would enable intraorganizational conflict to be better modeled in the case of search and provide a framework for incorporating these dynamics into

5 Many thanks to Simon Schillebeeckx who brought the chapter in Lave and March (1993) to our attention.

6 For example, even otherwise excellent and comprehensive literature reviews are silent on this issue (Savino *et al.*, 2015).

existing explanations of intraorganizational learning. The next section outlines our research process and explains how we built theory about why people might perceive the search environment to be non-benign and the consequences for organizational learning.

3. Research setting and methods

3.1 Research approach

The research reported in this article comes from a broader 4-year program of research on organizational search and learning at our research site. We encountered a revelatory episode early on in the process, recounted below in our Data Analysis section, which shifted our focus and motived the study presented herein. This study was designed to collect ethnographic data from individuals involved in intraorganizational search and learning. It was ethnographic in the sense that it focused on understanding how individuals understood the social world in which the search process unfolded (Van Maanen, 1979: 539). Data of such richness and granularity are crucial for understanding how perceptions of the search environment influence intraorganizational search but remains difficult to access (Singh *et al.*, 2010). We used a single case study to access such data.

Focusing on a single case enabled us to concentrate resources on building a rich understanding of the organization's social world. We could then draw on these rich empirics to make claims based on logical inference about the broader validity the assumptions found in existing theory (Small, 2009), thus generating insight into the nature of problemistic search and organizational learning. We required a case where problemistic search could readily be observed and a nuanced understanding of the social world in which it occurred could be developed. To be theoretically classified as problemistic, the search being conducted had to be oriented toward improving a performance gap (Greve, 2003). "MinCo," an organization working in the mining industry, met these criteria.

3.2 Research setting

The empirical setting for the current study is the subsidiary of a global mining firm. We refer to this organization by the pseudonym "MinCo." MinCo is a wholly owned subsidiary of a global mining firm ("ResCo") and manages a number of export-oriented mines evenly distributed between the two main Australian resource deposits used by this industry. The resulting groupings of mines are approximately 1500 km apart with the subsidiary's headquarters located centrally. We use these pseudonyms, and are deliberately vague about the number of mine sites, to ensure conformity to the organization's request for anonymity and our own universities ethical guidelines.

After consulting with senior managers reporting to MinCo's Chief Operating Officer (COO), we decided to focus our study on employees within four different technical capabilities spread across the firm's operations. A technical capability was broadly defined as a specialized concentration of activities and skills that enables an organization to turn inputs into outputs (Nelson and Winter, 1982; Nerkar and Paruchuri, 2005). We studied search within mineral handling and processing (HP), excavation operations (EO), business improvement (BI), and reliability engineering (RE) capabilities. Knowledge within these areas was strategically important to a mine's operational performance. Individuals who interacted with their counterparts at other sites to solve performance problems (e.g. machine breakdowns; truck reliability; time lost to injuries) were recognized as gaining valuable performance improvements. Taken together, these characteristics fulfilled our theoretically derived case selection criteria, thus providing an excellent opportunity to study how problemistic search happened within the organization.

At this point it is important to be more specific about how we conceptualized and studied intraorganizational search. The concept of search has been used to refer to a wide range of activities performed by and within organizations, from an organization searching across technological space (Nelson and Winter, 1982) through to product development teams contacting each other for assistance with a problem (Hansen, 1999). March and Simon's (1958: 178) seminal contribution emphasizes three different categories of search:

"Search may be physical: finding a piece of correspondence in a file, or obtaining a customer by door-to-door canvassing; it may be perceptual: scanning the Patent Office Gazette to find items of relevance to a company's research activity; it may be cognitive: using associative processes to locate relevant information in the memory."

Greve (2003: 53), in what is the most thorough review of search processes in organizational learning, presents a number of useful examples:

“It includes activities such as production workers varying their work procedures to look for more effective ways of working or simply to relieve boredom, engineers going to conferences to pick up news about technologies, marketing staff conducting focus groups to learn about consumer preferences, purchasing departments collecting bids and specifications for new equipment, and managers discussing alternative strategies.”

The specific search process we focus on here is *problemistic* in that it occurs when an individual’s performance falls below aspiration levels, which then triggers a search to remedy the perceived shortfall (Greve, 2003: 53–6). The social action associated with contacting other people who might be able to help remedy this performance shortfall (e.g., they might know the solution to the problem) is a central component of the problemistic search process (March and Simon, 1958: 180) and the one on which we focus⁷ (for a similar approach, see Hansen, 1999). We originally chose to study problemistic search because the other two search processes theorized within this stream of literature—*slack* and *institutionalized* search—are viewed as slower moving “background processes” that shape organizational learning (see Greve, 2003: 53–6) and were thus expected to be more challenging to observe unfolding within our study’s timeframe. This choice meant our focus fell on goal-directed efforts to refine existing ways of doing things, rather than the more curiosity-driven, freewheeling experimentation often associated with radical innovation (Levinthal and March, 1981).

3.3 Data collection

In this article we specifically focus on our study of actor perceptions of the search environment and how these perceptions influenced action. We used Glaser and Strauss’ (1967: 45–77) principles of theoretical sampling and constant comparison to guide qualitative data collection over a 2-year period. These principles were used to select those interviewed, questions asked, meetings observed, and documents collected. This process is explained in more detail in the next sections; here, we provide a description of the three main types of data and how each was collected.

3.3.1 Interviews

There were 38 interviews conducted across the four capabilities and 75% of MinCo’s mine sites. We continued interviews until the data being gathered ceased shedding new light on our research question. Two members of our research team were present at each of these interviews. In total, approximately 60 people formed the technical core of these capabilities. The 38 people interviewed were selected based on the theoretical sampling approach outlined below. Each interview was digitally recorded and transcribed; interviews ranged from 45 min to 2 h. We drew on Spradley’s (1979) approach to ethnographic interviews to help elicit rich descriptions of the search process (e.g. the use of “tour” questions to elicit informant experiences). With the exception of one interview conducted by phone, due to a scheduling complication, all the interviews were conducted on the mine sites where the informants worked.

Early in the investigation, our line of inquiry was largely focused on broad descriptive questions, such as “How do you get your job done?”; “When you run into a problem how do you go about solving it?”; and “How do your relationships with people on other mines sites influence your work?” As our understanding of the search process improved, questions increasingly focused on probing specific elements of the search process, such as “Why did you contact person X and not person Y?”; “Why did you phone person X instead of asking colleagues onsite?”; and “How often would you contact people on other mine sites for help solving a problem like this?”

3.3.2 Nonparticipant observation

Six periods of observation were conducted to provide insight into the social processes driving interaction within each capability. Direct observation of such behavior helped inform emerging theory and both triangulate and guide the collection of data through interviews, which was largely based on respondent recall. Observations centered on inter-site meetings conducted within each capability, but also included trips to conduct interviews at the mine sites. The technical meetings ranged from 1-h teleconferences to 2-day face-to-face meetings and happened quarterly. None of the meetings were recorded due to commercial confidentiality, but extensive field notes were taken regarding issues

7 An alternative approach could draw on theory about how cognition shapes organizational search (Gavetti and Levinthal, 2000). For example, this approach might shed light on the different types of “framing contests” (Kaplan, 2008) that unfold when the environment varies between benign and malevolent. Our thanks to the editor for pointing out this alternative.

of interest to our research project. The observations included HP (two face-to-face meetings, one phone meeting); Excavation (one phone meeting); RE (one face-to-face meeting); and BI (one face-to-face meeting).

3.3.3 Informal discussions

Over the 2 years of qualitative research, we conducted hundreds of discussions about the project and our emerging results with people at MinCo and ResCo. These discussions regularly focused on theoretical sense-making (Langley, 1999) and occurred over a wide variety of contexts, such as while sharing meals with informants at outback pubs, touring the sites to gain an appreciation for how work was conducted, follow-up telephone calls, and e-mail exchanges. These interactions were not (with the exception of email) digitally recorded. However, field notes were regularly made based on these interactions, and memos were made to guide data analysis and theory building. These conversations provided an important way for us to test the communicative validity of our emerging findings (Sandberg, 2005).

3.4 Data analysis

As mentioned above, our specific focus on the *nature* of the search environment emerged unexpectedly during our broader study of problemistic search. We originally began our research with the goal of using a quantitative deductive study to contribute to existing theories of how intraorganizational search influences organizational learning (Hansen, 1999; Singh *et al.*, 2010). An important assumption in this study's design was that search is locally biased in that "the search is originally local to the organizational unit where the problem occurs" and then sequentially expands out to more distant location if a solution is not found (Greve, 2003: 14). During exploratory conversations with our key informants, we were confronted with a revelatory episode that saw us rethink our research program and shift course to conduct a more inductive study of intraorganizational search. We recount the episode here, before moving on to our analysis, in an effort to provide a window into what Locke (2011: 630) calls the imaginative "conjunctural activity that drives the emergent research design and transforms observing and indexing into articulated analytic claims."

The episode emerged during an early series of presentations our team made to three senior executives sponsoring the research at MinCo. These sponsors became our key informants. The presentations were aimed at familiarizing the sponsors with the research project and sensitizing ourselves to the context of the organization. The revelatory moment sprung from the last of three sponsor presentations; this presentation was with the General Manager⁸ responsible for MinCo's research, engineering, and BI department. He was widely acknowledged as being an expert on the transfer of knowledge across ResCo's global operations, having visited hundreds of mine sites across North and South America, Africa, Europe, and Asia while working on a large multi-year study of best practices across the firm's global operations. The informant stopped us early on in the presentation to challenge a minor bullet point, which stated that search was "locally biased." The informant argued that in his experience search was anything but "locally biased" and proceeded to detail numerous examples that involved people on mine sites opting to start their search at a distant site (organizational unit) rather than contact a neighboring site owned by MinCo.

This seeming departure from existing theory sparked our curiosity, and we decided to probe the issue further. Reflecting on the argument, one of our team suggested to the room that perhaps the term "local" had led the informant to interpret the idea of "local bias" specifically in terms of geography instead of the more general imagery used within the Carnegie tradition (Rosenkopf, 2008). He asked the informant whether some form of latent technological or experience characteristic specific to the problem might have made these geographically distant sites "local" places to start the search. For instance, the geographically distant search target might work on a processing plant of the same vintage as the searcher. The informant disagreed, pointing to MinCo's industry as an example, he argued that in fact it was the neighboring sites that were more likely to fit the conditions of "local search"; they mined the same mineral, used similar equipment and processes, worked in the same legislative environment, spoke the same language, were socially closer (e.g., employees were more likely to transfer between neighboring sites), and had a much lower organizational distance between them (e.g., were both located in the same division of ResCo).

When asked what he thought caused this pattern of behavior, the informant explained that it was "sibling rivalry" which he described as a general sentiment that "he's my brother and I am going to do better than him." He believed

8 His position was one step below COO. General Managers either headed a "support" function or a mine site.

this competitive sentiment made people reluctant to start their search locally in situations where they might lose “face” in front of these “competitors.” In such situations, he observed, as a searcher one is “opening yourself up to ridicule—ridicule is the wrong word, you’re opening up yourself to risk.” Our informant was painting a picture of the intraorganizational search environment that differed markedly to that found in the literature on organizational search. We went back to the two other key informants to investigate whether their experience of search was similar. They believed it to be a fair characterization of organizational life.

These data served as a first indicator that a form of competition could transform an individual’s perception of the local search environment, and bias the trajectory of search toward distant locations, locations where one is not exposed to the potential negative evaluations and actions of similar others (e.g., “brothers”). These data suggested an important problematization (Alvesson and Sandberg, 2011) of one of the core theoretical assumptions we went into our research with, and one that is central to existing explanations of organizational learning—search is locally biased. This initial analysis indicated that there was potential for the construction of a grounded theory that would explain what appeared to be a crucial, but overlooked, aspect of intraorganizational search and learning.

To pursue this problematization, we drew on the idea that intraorganizational competition could create “risk” as an interpretive lens to reexamine the early formulation of the local search bias argument. March and Simon (1958: 50) became particularly salient when read with this new lens, with a key part of the broader theoretical apparatus underpinning their model of search—the assumption that the search environment was “benign”—taking on new meaning. To the best of our knowledge, this assumption had gained no subsequent attention in the literature, and yet, it provided a useful theoretical lens through which to organize and anchor the stories our sponsors were telling us about how the risk of suffering ridicule could shape patterns of intraorganizational search. The prospect of suffering ridicule could cause someone to view the local environment as non-benign, which in turn could bias search trajectory away from this environment.

March and Simon (1958) clearly identified this as an assumption of their search model, but they did not theorize why a searcher might view the environment as non-benign. This is where we focused our 2-year qualitative study, pursuing two research questions: (i) *Why might people perceive the search environment as non-benign?*; (ii) *What are the consequences for organizational learning?* We believed that the rediscovery and problematization of this assumption were potentially fruitful. It provided a promising theoretical avenue for developing new explanations for search trajectory, which could usefully elaborate those found within the Carnegie School of organization theory, and thus might improve our ability understand this important aspect of organizational learning.

We used the techniques of constant comparative analysis and theoretical sampling (Glaser and Strauss, 1967: 45–117) to inductively develop our theory through a series of iterative analytical steps. Our line of inquiry focused first on understanding the day-to-day, week-to-week work conducted by each of our informants. We were particularly interested in understanding how they went about solving performance problems and how our informant’s perceptions of the search environment might have influenced this process. Two clear themes emerged when analyzing these data. First, our informants saw concrete benefits in learning from their counterparts on other MinCo sites. They did nearly equivalent jobs, a fact that saw them face similar streams of problems and solutions. However, our analysis also revealed a distinct second theme; this same equivalence meant that the relative performance of these counterparts could be, and regularly was, compared when others formally and informally evaluated an individual’s performance. This comparison process fed a sense of rivalry between people within the local environment. Rivalry within the local environment could spillover into conflict and thus played an important role in shaping whether people viewed the intraorganizational search environment as benign. Therefore, consistent with the technique of theoretical sampling, we decided to focus in on the nature of rivalry within the local environment to explain why people might view the intraorganizational search environment as non-benign and how this might shape the trajectory how search and learning.

The data structure in Table 1 provides as a high-level summary of our coding process running from right (individual quotes, facts, or incidents) to left (third-order codes) according to the level of abstraction and theorization. In the next section, we step through the inductive analytical process by which our findings gradually aggregated up from individual instances (e.g., “chest beating exercises”), to theoretical mechanisms (e.g., equivalents as competitors for status), to a general theoretical insight that explains the source of the non-benign search environment in our study (e.g., social risk), and to the paradox we see facing actors searching within such environments (e.g., “Paradox of Local Equivalence”).

Table 1. Data structure: the origins of social risk and a non-benign environment

Third-order codes	Second-order codes	First-order codes	Illustrative quotations, facts, or incidents
Paradox of local equivalence	Equivalence as a source of opportunity	Benefits of counterpart search	<p>“So I just raised it with them that we have the polymer cyclones and we wanted to transition away from them because of wear concerns and maintenance concerns and said we were going to move away from that and [by talking to my counterparts about this problem, I] got a whole lot of replies to say ‘yeah we’re running these, we’re running these, we’re running this sort, these are the critical things you need to make sure are alright’.” <i>(Interview)</i></p> <p>“...[by working more closely with my opposite numbers on the other sites] we’ve also managed to cut down the amount of repeat work that we were all doing. So instead of all of us getting shit [i.e. new equipment or practices] and trialing it, one or two sites would trial stuff and then feed back results to the others and it cuts down the amount of time that it takes to get a new item or a new idea into practice.” <i>(Interview)</i></p>
	Equivalence as a source of social risk	Equivalence as a source of performance comparison	<p>I think for some people it’s “I don’t want to change” [they’re] basically saying that “I [don’t] want to be able to be compared to someone else” [it] indicates that 1) you can compare me to someone else, which threatens some people, so there’s some people there like that. Some people are just threatened being measured by someone else “so they’re better than me, I don’t like that.” <i>(Interview)</i></p> <p>“I remember, we had an excavation collaborative [workshop meeting for the capability] and there was real angst in the group and it was about something that we were doing and we weren’t actually imposing it on anyone else, we were looking at reducing the weight in our system. . .[Different mine sites] were all going different ways, but it was a feeling that everybody had to go the same as [us]” <i>(Interviewee describing the effect of operational benchmarking and influence derived from superior performance)</i></p>
		Equivalents as competitors for status	<p>“I actually enjoy [collaborating with people at other firms] more so than [with those in the capability]—it was funny: when we first started this external [community] there was the mine manager from [another firm], said that ‘we’re all competitors here and we shouldn’t be. . .’ well I don’t see [external] maintenance engineers as competitors, we might compete on selling [mineral] but, you know, it’s all working together and understanding. . .where my dealing in [capability] you do actually have competition, there is a competitive, you know, and sometimes—I’ve been a little bit disappointed in some of the collaborative forums or the meetings you have that, you know, looking for a better word. . .it’s ends up being a bit of a pissing competition: in that we’ve done this and look how good we are.” <i>(Interview)</i></p> <p>“Yeah you’re always a bit nervous when [other members of the capability] come and visit you, there’s nowhere to hide! [. . .] we’re all competitive cause otherwise we wouldn’t go for these roles and work for a company like MinCo because we’re competitive, we go up the ladders and we follow those things and we’re competitive I guess.” <i>(Interview)</i></p>

Note: [] denotes where words have been added to clarify the meaning from a verbatim quote.

3.5 Findings

Our analysis of the qualitative data enabled us to develop an explanation for the origins of the non-benign environment we were observing and provide inference into how this shaped search. Non-benign perceptions of the environment were generated when searchers perceived there to be a nontrivial risk associated with a given search trajectory. The risk we learnt was a social one, in that our informants were concerned with whether a specific search action might cause them to lose standing in the eyes of others within their community. We interpreted this theoretically as concern about the risk of losing one's status⁹ within a community. We termed this feature of the environment "social risk" and traced its emergence to the existence of interpersonal role equivalence. Such equivalence is normally thought of as having a primarily beneficial influence on search. However, we show that it also set the stage for two interrelated mechanisms to generate our informant's perceptions of social risk: *performance comparisons* and *rivalry for status*. We now turn to a detailed discussion of each of our analytical steps, ground each mechanism in the data, and show how their combination can help to explain what social risk is, how it is generated, and why it is capable of producing a non-benign search environment. This explanatory theory highlights a paradox of equivalence at the heart of search and sheds new light on why and when intraorganizational learning could be biased away from the local search environment.

3.6 The paradox of equivalence

To begin our research, we set about investigating how our informants searched when confronted with performance problems and, more specifically, what role (if any) their counterparts on other sites played in this process. Much of their work involved solving these sorts of problems, which were largely associated with the use of equipment. The equipment ranged from excavators through to vibration monitors. The below example is typical of the day-to-day problems our informants encountered¹⁰:

...a couple of weeks ago the maintenance superintendent at [Site] [person's name] he rang me up 'cause we've got, we've both got these pieces of equipment called rotary breakers and the rotary breaker is a big barrel and it runs on a steel tyre and [two other sites] have got the same rotary breakers. [He] said "oh look what do you use to stretch the tyre on ya breaker?" because their tyre was getting a lot of corrugations in it [which produces friction and impairs the performance of this piece of processing equipment]. (Interview, processing capability)

Both these maintenance superintendents had rotary breakers¹¹ in their plant, and the searcher thus suspected his counterpart had had to manage the corrugation problem previously. We initially coded instances such as these as "benefits of counterpart search." These instances revealed an important feature of the search environment, contacting one's counterparts was useful because they faced similar streams of problems and solutions, thus providing information and skills that could be of use in identifying a solution. As our data gathering and analysis progressed, this category was refined to better capture the important impact role equivalence had on how informants viewed the search environment. We came to realize that the equivalence of actors within the local environment (capability) meant that the search targets most likely to be of assistance were our informant's counterparts in equivalent positions within the firm's organizational structure. This insight led us to use a more abstract code—"equivalence as a source of opportunity"—to better capture the nature of the theoretical mechanism we saw driving relationship. Table 1 provides illustrative data for this code.

This finding is consistent with the literature on search and goes to why local search can be such a powerful strategy for learning (Lazer and Friedman, 2007). Baum and Dahlin (2007: 370) explain the logic here well, the "value of others' experience for learning depends on comparability; the more comparable the [actors], the more similar the situations they face, and the greater the potential relevance of their experiences to the observer." However, in parallel to this direction of inquiry and motivated by the initial conversations with our sponsors (reported above), we sort to probe deeper into the search process, identifying whether the happily divulged stories of successful search paths might

- 9 We use the term "status" here in a general sense to describe a person's "relative standing in the informal technical hierarchy" (Sutton and Hargadon, 1996: 705). Reputation and status are difficult constructs to disentangle (Sorenson, 2014). We explain our reasons for using status in detail below.
- 10 Square brackets [] are used within our quotes to indicate where we have added text to clarify meaning and identify our informants, thus conforming with our obligations under our university's guidelines for ethical research. All quotes are otherwise provided verbatim.
- 11 A rotary breaker is a large cylindrical machine used to break down a mineral feedstock prior to finer processing.

exist alongside others. In particular, we began asking about and observing the conduct of our informant's relationships with counterparts and whether they would feel comfortable targeting anyone at any time while searching within their capability.

Our investigations began uncovering a degree of competitive tension between people working within the capabilities. For instance, one long-term member of the Excavation Capability contrasted his interactions with counterparts within the organization to those outside it:

...I don't see other maintenance engineers as competitors [i.e. external to ResCo], we might compete on selling [mineral] but, you know, it's all working together and understanding [the job]...whereas with my dealing in [the Excavation Capability within MinCo], you do actually have competition... (Interview)

And others referred to such tensions when explaining different search trajectories, as did this reliability engineer at Site3¹²:

[Site5] have done some really good work in the last couple of years. They've got a new maintenance manager, [Person X], and certainly [according to] their "Mean-Time-Between-Failure," which is a [performance] measure we use all the time, their truck fleet is much better than ours [i.e. Site3] now, but again our people in charge just say "oh they must be [fudging] the numbers!" you know! Don't want to accept that maybe they've actually done the right thing. [This results from] competition from multi-levels, I don't see it here at my level, but superintendents probably, you know, their equivalent over there, especially with, you know, our trucks are on the tenterhooks over there (*points to maintenance shop*) and [Site5's] trucks are miles ahead of us on mean time between failures (MTBFs), [the superintendents here] probably thinks, oh you know "oh might be making me look bad," so instead of actually trying to figure out how he can learn from them, he'd rather just deny it and say "they must be fudging it" you know! (Interview)

In contrast to the notion of equivalence as a source of opportunity, what began to emerge was an alternative narrative; equivalence could also be a source of competitive tension and rivalry. We began using the preliminary code of "rivalry" to help organize and index these instances.

To begin understanding why our informants experienced this competitive tension, one must understand something of organizational life within these capabilities. Engineering expertise was a prized asset, both financially and socially, and the performance of people and machines was closely observed, measured, and discussed. Monitoring was conducted using techniques such as condition monitoring (e.g., vibration analysis; oil analysis) or simple output targets (e.g., tons of mineral excavated, implementing "single point lessons" for operators). Consequently, performance data were easily accessible within each capability, making it simple for people within the organization to compare and contrast our informant's performance. As one of the members of the RE capability pointed out during an interview:

So this is different cost by hour to run [a type of bulldozer] at four of our sites. Some people run at \$186/hr and some people run at \$136/hr over their life and if you take a task—say changin' out an engine—at each different one, the best, the best task from each one can give us a reduction and run all our dozers at \$97/hr [...] But let's just, pick some [different lifecycle costs for components] (*pointing to a document*): truck frame overhaul, site "D" does it for \$14.70, site "B" \$3.41. Here's the engine one, this [performance score] is the killer \$41 compared to the rest.

Furthermore, not only were performance data available but also as these counterparts were doing equivalent jobs, they felt uniquely qualified to pass judgment on each other's performance. The instances we witnessed varied from public critiques through to private gossip-like discussions. For example, during a regular meeting of the BI capability, the assembled members ($n = 10$) went on a site tour to inspect how Lean Boards¹³ were being used to measure and monitor performance across different organizational functions. They were unimpressed and a raucous debate broke out concerning the failings of this site's attempt to implement the Lean Boards. Everyone had an opinion—none positive. Eventually a senior member stepped in to deescalate the situation. He explained that this site was on a "journey" which had only just begun and they should all shift their energy from criticizing the site's performance, to helping them improve.

Rivalry between such equivalent actors was emerging as a common theme from the analysis of interviews and observational field notes. Interpersonal rivalry played out in public and private arenas. We witnessed private gossiping

12 We use a random number to refer to mine sites (e.g., Site1) to preserve anonymity.

13 A Lean Board (also referred to as a Lean Communication Board) is a whiteboard that has been adapted to visualize and track the performance data associated with an organizational unit, such as key performance indicators or ongoing problems. Lean Boards are a common tool used within the Lean Management tradition.

about the performance of counterparts during meetings which we were observing, and informal discussions we sat in on. Topics ranged from a person's trustworthiness (e.g., whether a specific member in the Reliability Capability could be relied on to return a favor) through to a person's technical competence (e.g., the alleged ignorance of one particular member of the processing capability when it came to understanding how the plant's components interacted). Public forums such as face-to-face meetings and conference calls appeared to mostly be used in efforts to reinforce or add to one's status within the community. People tried to achieve this result by publicly competing to offer solutions to their counterpart's problems, and by strategically presenting the results of their own successful attempts to solve problems they had encountered on their own site. Instances ranged from how to ensure external contractors were conforming to MinCo's health and safety guidelines in the BI capability¹⁴, through to ways to reduce the costs of servicing the buckets/scoops used in the Excavation Capability.

These contests could occasionally spiral out of control and into conflict. Informants across the Capabilities referred to such outbreaks of rivalry in a derogatory fashion, calling them "pissing contests," "dick measuring competitions," or "chest beating exercises." One such rivalry was behind the collapse of formal face-to-face meetings in the heavy vehicle operations capability we had hoped to study. Two of our key informants had first-hand knowledge of this episode, and they independently explained that the quarterly meetings within this specific capability (designed to facilitate intraorganization learning and drive innovation) had been put on a year-long hiatus after previously dissolving in bitter conflict and rivalry. However, given the capability's strategic importance, these meetings were being put back together with the goal of encouraging future knowledge exchange. Unfortunately, the above history meant that the manager responsible for coordinating the new initiative refused to provide us with access to study this capability. He was afraid the presence of researchers might "scare the horses"; however, he did confirm the reasons for the previous dissolution.

We were discovering that role equivalence had two faces and that their combination presented those searching within the Capabilities with somewhat of a paradox. For many of the problems our informants ran into during organizational life, the search targets most likely to be of assistance were those in equivalent positions within MinCo's organizational structure. For instance, in our empirical setting, the superintendent of the HP plant on Site1 would usually have most to gain by targeting his search at the superintendent of HP at Site2. However, the searcher's performance within the organization was also most likely to be evaluated via formal and informal comparisons to these equivalent counterparts. As a result, counterparts could view each other as competitors. This insight led us to reconceptualize these equivalent counterparts as potential competitors, not just valuable sources of information and expertise. We created a third-order code called "the paradox of local equivalence" to help capture the complex nature of the relationship in our data.

Our investigations to this point had established that interpersonal rivalry existed within the capabilities and that it seemed to play a role in shaping our informant's perception of risk within the intraorganizational search environment. Therefore we began directing our attention to better understand and theorize the origins of this rivalry and how it might affect the process of intraorganizational search and learning.

3.7 Problemistic search, status competition, and the emergence of social risk

The theoretical link between rivalry and search began to become clearer as we focused data collection on the motivations our informants had for selecting search targets. Informants revealed that having to target an equivalent actor during search efforts could be an expression of "weakness." When combined with our earlier identification of the importance of performance comparisons, this insight led us to recognize that the competitive tension we were seeing between counterparts emerged because their equivalence meant that (a) performance could be easily compared, and (b) they viewed each other as competitors for status. This shift in our emerging theory suggested a more nuanced way of understanding the nature of rivalry and how it might be influencing perceptions of the search environment. We began using the codes of "equivalence as a source of performance comparison" and "equivalents as competitors for status" to capture this nuance. We pursued this insight in further interviews and discovered that our informants valued their status within these capabilities, not only due to its influence on their identity as a competent practitioner (Wenger *et al.*, 2002) but because they believed that status within the Capability had consequences for organizational life. For

14 This is the sort of problem that keeps a manager up at night; industry statistics show that 90% of fatalities involve external contractors (DNRM, 2013).

example, during one of the interviews, an informant from HP was asked to explain why he and his colleague put so much effort into framing a presentation being given to their counterparts from other sites about the problems they were grappling with. While we were very careful never to mention status in our interactions with him, he explained:

I guess it's a status thing maybe, or maybe job security even plays a role in it I guess, or career advancement. All those things would play a role in it. Which leads into life sort of things, life goals. Because those things are big-ticket items for us: you have to make sure you get it right and ideally present the good stuff and keep the bad stuff behind us of course—I am not holy here.

What this case illustrates is that search decisions, which in this case involved the appropriate way to frame a problem, were made in the context of interpersonal rivalry. The counterparts within their capability were not simply comparable *others* who could be drawn on for advice and assistance but also potential rivals within the organization whose opinions mattered to one's standing within the capability and broader organization. Our informants realized this and it could influence how they searched.

Our informants' logic was nicely summed up by an interviewee who, when explaining his observation that people often preferred to search outside the firm for knowledge, stressed that individual technical expertise is a highly valued asset within the firm and *therefore*:

...to ask a question is often a weakness. So you don't expose yourself to that. So you ring someone up the road [i.e. at another firm]—'cause what's the consequences of, you know—at the end of the day, you ring the guy up the road, if he thinks you're a tosser [i.e. stupid], does that have any consequences for your salary review this year, your career? No! (Interview, Excavation Capability)

In trying to make sense of this causal linkage, between asking a counterpart a question (search) and perceptions of weakness, we approached a colleague from social psychology, and they pointed out that this observation fit well with findings in the help-seeking literature of social psychology (Bamberger, 2009). Research in this tradition emphasizes an individual's desire to maintain a positive public impression and self-image and argues that help-seeking behaviors often put these aspirations at risk (Lee, 1997). These aspirations are put at risk because the act of seeking help can involve acknowledging incompetence and revealing inferiority within a particular area (e.g., knowledge; skill, resource). We recognized this pattern of behavior, with our informants expressing similar sentiments when asked about how they searched within the Capability when their performance was below aspirations:

Yeah, and you don't wanta say too much, you don't wanta put your hand up and say “look our site is doing this” and then everyone else thinks we're shit: “you guys are pretty useless why haven't you fixed that” (Interview, HP Capability)

I don't mind everything being in the public normally...but sometimes you just, you know (*awkward laughter*), I don't really want to put out [to the other people in the technical capability] that we've really dropped the ball here, we've really screwed this [...] “We're shit guys can you help us out?” So we'd maybe be a bit more diplomatic in figuring out who you should be talking to and where you can get an answer to an issue. (Interview, RE Capability)

Our informant's relative standing among these counterparts mattered to them. Though not *only* for reasons of self-image but because they also saw a link between their status¹⁵ within the capability and their ability to successfully compete for organizational resources (e.g., capital expenditure requests) and opportunities for advancement (e.g., job openings within the firm). These beliefs correspond well with research on social status within social psychology, which shows that people who hold high-status positions get greater decision rights, and realize greater gains when negotiating (Huberman *et al.*, 2004).

This finding helped make sense of why our informants could be reluctant to search within their local environment; problemistic search is motivated by performance falling below aspiration levels (Greve, 2003), and thus the act of searching within their capability broadcasts a potentially risky signal about performance. If the comparable others (Baum and Dahlin, 2007: 370) within their capability were viewed as rivals rather than allies, this could expose our

15 We interpret our findings through the lens of status, and competition for status, for two main reasons: (i) the risks perceived by our informants were most clearly associated with losing their relative standing vis-à-vis counterparts; and (ii) outbreaks of conflict among multiple counterparts (e.g., see “dick measuring competitions” below) fit well with descriptions of status conflict within the literature (Owens and Sutton, 1999; Lazega and Pattison, 2001). The relative and positional nature of this competition is associated with idea of status rather than reputation (Sorenson, 2014).

informants to the sort of negative evaluations that would put their relative standing within the capability at risk. Such a loss in social status would put many things that they cared about at risk (e.g., self-image, promotions, bonus, capital expenditure requests, etc.). We used the term “social risk” to describe this perception and introduced the code of “equivalence as a source of social risk” to capture how the mechanisms of performance comparison and status competition could combine to generate the perception of a non-benign environment for search (see Table 1).

We observed two strategies for dealing with the social risks our informants saw as making the local environment non-benign. The first was not to search at all and thus create no (search-related) signal. The second was to shift search trajectory away from the capability—where the presence of one’s rivals made the local environment non-benign—to the world outside (the “non-local environment”). As one of our key informants explained:

...we started [up a new program at MinCo] and we had some good successes, a few business units within ResCo picked up on those and tried to mimic those and [Business Unit X] did that, [Person X] was the guy leading that, saw what we were doing and just mimicked it, [Business Unit Y] saw it and mimicked it...In [Business Unit Z, the division within ResCo traditionally considered to be the most similar to MinCo] they spent a year or six months designing a process, wouldn’t come look within MinCo, went to [a firm in another industry] to see what they were doing and designed a process based on what [the firm in the other industry was] doing. Even though they had all access to our stuff...[it was very much] “I’ll take it from someone who’s not a threat to me.” (Interview)

Our informants saw a logic of “avoidance” as motivating this strategy: the signal from this sort of nonlocal search would be less likely to leak back to rivals. As such, this setting could appear a less risky—and thus more benign—location in which to search for a solution to performance problems.

Even if this search strategy was considered a less risky option, it did not completely eliminate the possibility of discovery. For example, we uncovered an interesting case where one member of the Excavation Capability (“Warren”) discovered that another (“Barry”) had deployed this strategy. Warren had been asked by senior management to help with a problem Barry’s site was having with an expensive piece of excavation equipment. The piece of equipment was not performing to the level expected. We watched as Warren began hypothesizing about the cause of the performance problem with a senior manager visiting his site. Each was initially baffled as to how things had gotten to this point. They wondered why Barry had not contacted his counterparts in the Excavation Capability for advice prior to this. Approximately 15 min went by as they worked to piece together information that had independently filtered through to them from across the organization. Their conclusion was damning; Barry had engaged an external consultant to help fix the performance problem instead of engaging with his counterparts within the capability. Barry had, they concluded, been trying to avoid the scrutiny of his colleagues. Warren was frustrated and described the situation thusly; “there’s a bit of a camouflage deal goin’ on there!” Information about this was now coming to light because the problem had not been resolved by Barry’s consultant and could no longer be hidden. Barry and his consultant were described as “loons” who had proved that they did not know what they were doing and had as a result “friggid” the equipment. Barry’s standing in the community had taken a substantial blow.

4. Discussion

Our findings show that equivalence, performance comparisons, and interpersonal rivalry create social risks for searchers and thus constitute a logical reason for people to view the local search environment as non-benign. Given this, it would be a mistake to assume that the intraorganizational search environment facing actors is *always* benign. To be sure, there are social worlds where an individual’s performance has no influence on another’s payoffs, enabling individuals to learn freely “from each other about what does and does not work” (Lazer and Friedman, 2007: 668). However, there are also other worlds—such as the one we study here—where the search environment is perhaps best characterized as somewhere between benign and malevolent.

Discriminating between these worlds is vital for our field’s ability to advance behaviorally plausible and empirically robust explanations of organizational learning. Our study contributes to these efforts by re-conceptualizing the search environment as ranging from benign to malevolent, establishing this parameter as an important component in the model of action used to theorize behavior in studies of organizational learning, and identifying a *paradox of equivalence* facing actors in non-benign search environments. Below, we discuss how our more socialized account of search contributes to existing explanations of intraorganizational learning and how the insights flowing from it hold important implications for understanding organizational behavior more generally.

4.1 Reassessing organizational search and learning

Changing [March and Simon's \(1958\)](#) assumption of a benign search environment is a useful revision to existing theory because it provides a novel and behaviorally plausible explanation of search trajectory that remains largely unarticulated in the Behavioral Theory of the Firm, or even the broader Carnegie School of organizational theory. Research in this tradition typically argues that the trajectory of the search process is locally biased due to myopia in organizational learning ([Levinthal and March, 1993](#)). As a consequence, actors observed to be searching nonlocally are, as [Rosenkopf and Nerkar \(2001\)](#) point out, often celebrated for (supposedly) engaging in exploration and innovation. However, changing the assumption of a benign search environment contributes a new explanation for these observations of nonlocal search and introduces an important boundary condition for predictions of local search bias; if actors perceive the local environment to be non-benign, the trajectory of search is likely to be either (i) nonlocally biased or (ii) nonexistent. This boundary condition can be parsimoniously incorporated into the standard model of problemistic search ([Greve, 2003: 15](#)), as illustrated in [Figure 1](#) below¹⁶.

Consequently, actors observed to be searching nonlocally, such as searching for a solution in a distant organizational division ([Hansen 1999](#)), may in fact be motivated by a desire to avoid potential “harm” caused by conflict in the local environment, instead of a desire to capitalize on a novel opportunity. For instance, imagine a scientist who works in an organizational unit where R&D management processes are highly formalized and the act of “bootlegging” innovation ([Crisuolo et al., 2014](#)) is viewed with hostility. If the scientists within this unit were competitors, the act of searching locally for input on one’s bootlegging project (e.g., advice; resources; collaborators) could expose a scientist to harm (e.g., a rival reveals to your manager that you are working on a bootlegged project). Searching beyond the organizational unit in such a setting is less likely to be about making “exploratory” leaps and more about conducting one’s search in a comparably benign environment, where the scientist has no rivals and her actions are more difficult for competitors to monitor.

The nature of this assumption is not an abstract theoretical concern; rather it creates persistent obstacles for understanding how learning happens within organizations. To illustrate this point consider how changing [March and Simon's \(1958\)](#) assumption of a benign search environment would influence two of the studies that have gone furthest in examining how intraorganizational conflict shapes the dynamics of search and learning—[Hansen \(2002\)](#) and [Hansen, Mors and Løvås \(2005\)](#).

[Hansen \(2002: 233\)](#) aims to add a “richer understanding of search processes for knowledge use in multiunit firms” to existing theory. The perceptions and actions of the actors doing this searching are back-staged in one important respect. Although the possibility that potential search targets might “deliberately withhold aspects of what they know” from the project team doing the searching, the inverse is not considered ([Hansen, 2002: 234](#)). That is, it is implicitly assumed that the motivating factors that lead potential search targets to withhold knowledge, such as when this knowledge might reflect badly on the target ([O’Reilly, 1978](#)), do not also equally apply to the actors *doing* the searching. Yet, it seems logical to expect that the desire to withhold knowledge would not be confined solely to search targets. As we show above, when search is initiated by performance falling below aspiration levels, the actor/s doing the searching might be concerned that contacting internal rivals for assistance would reveal that performance targets are being missed. Under such conditions, the actors doing the searching might deliberately avoid specific search targets, even though they know that these actors are likely to possess the knowledge required to solve the problem. [Hansen's \(2002\)](#) study can be characterized as assuming that the *transfer* of knowledge from the search target to the searcher happens within a potentially *non-benign environment*. In contrast, the searcher is implicitly assumed to treat the environment as *benign* when searching.

The idea that internal competition and rivalry might influence search efforts is formally introduced in [Hansen et al. \(2005\)](#). However, the focus on the perceptions of search targets is continued; only the search target’s perceptions of competition and rivalry are acknowledged as influencing search ([Hansen et al., 2005: 780–1](#)). The way in which the searching actor perceives the environment is thus implicitly assumed to be of little importance. Further, because the perceptions of competition and rivalry are only considered to matter in relationships where knowledge has been transferred, it is not possible to gain any insight into whether an actor’s perception of the level of competition

16 We exclude the “don’t search” option from the adapted model in [Figure 1](#) to keep with the original model’s structure and ensure parsimony. However, we have added a “No” path from “Expand domain of search” to the decision-making part of the model to clarify that it is possible that the searcher does not find a solution and then must decide what to do about this (e.g., adjust the goal). See [Greve \(2003: 39–75\)](#) for an overview of how this adaptive process works.

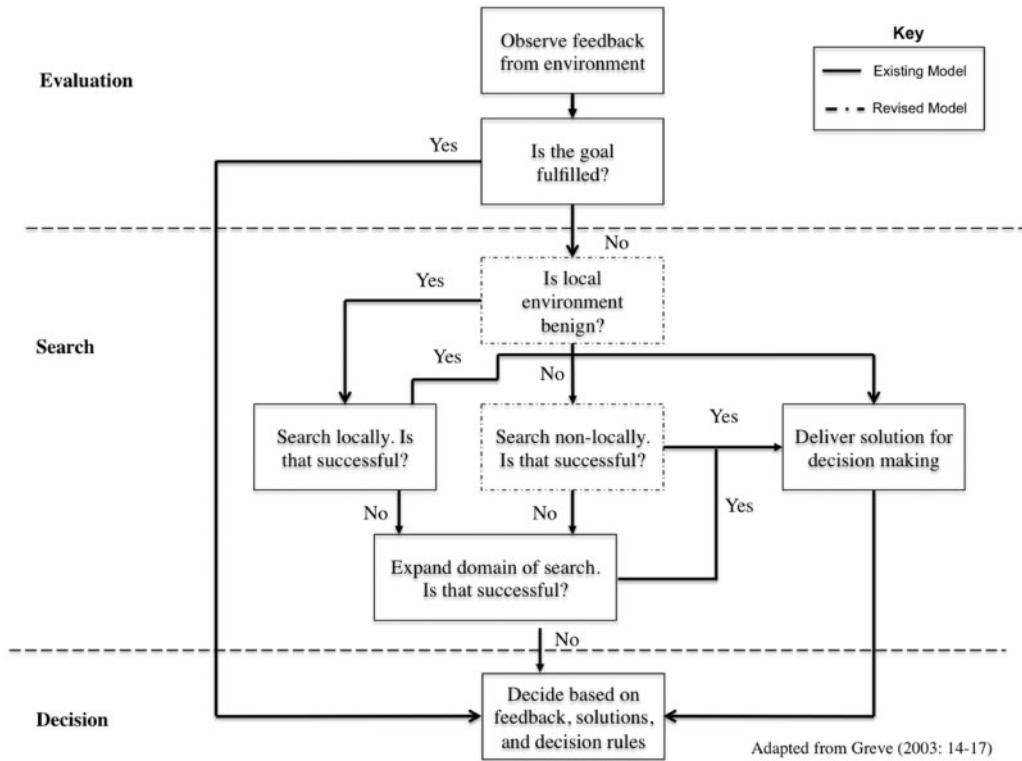


Figure 1. Revised model of problemistic search.

and rivalry outside this system of exchanges has in fact influenced the actor’s choice of search trajectory. For example, a specific project team may have only pursued one search target due to their perceptions of competition or rivalry with the other potential search targets within the organization. In this sense, focusing solely on search targets that *have been pursued* risks missing explanations of search trajectory that depend on the nature of the broader search environment facing actors. Altering the implicit assumption that the search environment facing the searchers (not just the targets) is non-benign would suggest an alternative explanatory framework for the patterns of knowledge exchange observed and encourage data collection on the perceptions of rivalry held by both the searcher and target. Instead, such variables are currently omitted from the analysis.

This explanation of nonlocal search is not currently widely understood by scholars studying organizational learning through the lens provided by the Behavioral Theory of the Firm. By assuming a non-benign search environment, studies of intraorganizational search neglect an important aspect of organizational life and risk omitting a crucial mechanism from models used to explain search and organizational learning.

There is also an important theoretical issue at stake. The broader Carnegie School of organizational theory has long emphasized the importance of providing explanations of organizational behavior that are grounded “in a plausible account of what typical agents do and why they do it” (Dosi and Marengo, 2007: 492). The notion of unresolved intraorganizational conflict, which stems from organizations consisting of multiple conflicting goals and coalitions, helps capture this realism and constitutes a key point of difference between organizational theory founded in the Carnegie School and alternative approaches (Pitelis, 2007). Our article continues in this tradition, showing that the assumption of a benign search environment can blind scholars to useful information about how conflict influences intraorganizational search. Reconceptualizing the search environment as (potentially) non-benign provides a valuable new way of incorporating the reality of intraorganizational conflict into the model of action used to explain search and learning. For example, it provides a new way of linking this literature to empirical findings that show intraorganizational conflict and competition help to explain the way knowledge is valued (Menon and Pfeffer, 2003; Menon

et al., 2006) and recombined (Taylor, 2010; Truelove and Kellogg, 2016) within organizations. In doing so, our approach contributes to the emerging stream of literature attempting to build new, more appropriately socialized models of search (Nigam *et al.*, 2016).

Beyond this core contribution, the notion of a non-benign search environment offers broader implications for how scholars think about organizational search within the literature on innovation and strategy.

4.2 Search is a signal

The current study is empirically focused on problemistic search. An interesting and important question for future research building on our study is whether the type of search being pursued influences an actor's sensitivity to the nature of the search environment. Organizational scholars usually focus on two distinct types of search process: problemistic and slack (Laursen, 2012). Problemistic search is initiated when an actor's performance falls below aspiration levels (Monteiro *et al.*, 2008), whereas slack search is initiated solely by the existence of slack resources (e.g., surplus funds; spare time) (Greve, 2003). Since problemistic search is initiated by a failure to meet performance aspirations, actors conducting this specific type of search may be more sensitive to competition in the search environment. This insight flows from the recognition that the act of searching is a *signal*.

Actors engaged in problemistic search are signaling that they have failed to meet performance targets, whereas those engaged in slack search are signaling that they have slack resources. Each signals something important to potential observers. For example, one could hypothesize that actors conducting slack search will have lower perceptions of social risk than those conducting problemistic search due to these actions not signaling the poor performance that can make the searcher vulnerable. However, also worth considering are the interpretive consequences of conducting slack-based search. For example, slack-search not only signals that slack resources exist but might also divulge their location (e.g. within a specific budget or department). Therefore, in a non-benign environment, there may also be good reasons for people to be strategic about the trajectory of search and how this impacts who is observing a slack-induced search. For instance, one might seek to keep information about one's level of slack "below the radar" in an effort to avoid that slack being reallocated to tasks others view as more pressing. Indeed, this is one common explanation for why bootlegging behavior happens "underground" (Crisuolo *et al.*, 2014).

The interpretive dynamics at play here suggest future research would be well served by investigating whether actors adopt specific "behavioral strategies" (Greve, 2013) for managing these risks and the consequences these may have for learning. For example, a non-benign environment might lead searchers to carefully encode search actions in an effort to reduce their visibility (Bernstein, 2012), and this may, in turn, reduce others' ability to learn vicariously. Indeed, beyond the strategy of avoiding the non-benign portion of the environment or encoding actions, another plausible strategy is to choose not to search. This non-search decision is an interesting one and worthy of further study alongside other behavioral strategies.

4.3 Search signals, strategies, and competitive dynamics

Organizations are predicted to search intensely in the vicinity of their existing solutions when beginning a search to solve a technical problem (Nelson and Winter, 1982). However, there is good reason to suspect that our boundary condition for predictions of local search bias in intraorganizational search might also apply here at the organizational level. The act of initiating such a search can send out at least three strategically valuable signals about the focal organization: (i) it does not know the solution to a specific problem; (ii) it believes that solving this problem has strategic value; and (iii) it is allocating resources to this specific activity. Each of these signals can be classified as competitive intelligence and form the basis for strategic action (Porter, 1980: 47–75). This is a key reason why industrial research is often cloaked under secrecy until an effective value appropriation regime is designed (Alexy *et al.*, 2012) or obscured through strategic feints (Hendricks and McAfee, 2006).

Yet, there are occasions when search efforts cannot be kept secret. For instance, when an organization fails to solve technical problems internally and thus turns to the market for a solution (e.g., "broadcast search" in Jeppesen and Lakhani, 2010), or engages more strategically in search as part of an open innovation policy (Afuah and Tucci, 2012; Lopez-Vega *et al.*, 2016). When this happens in a competitive market, there are strong incentives for the searcher to put significant space between the vicinity of their strategy and the problem that they are trying to solve. This act makes it more difficult for competitors to make strategic sense out of the observed search trajectory. To do this, the search parameters can be specified in a more nonlocal way than would normally be the case were the

organization searching non-publicly. This specification of the search boundaries (nonlocal) is not simply motivated by a desire to discover a radical solution to the organization's problem through search breadth, as explained by the Sherwin Williams manager interviewed by Lopez-Vega *et al.* (2016: 132). Instead it is motivated by a similar mechanism to that identified in this article—competition in the local environment. As one of the managers quoted in Alexy and colleagues' (2012: 129) study of managing unsolicited innovation explains:

“We think about it in terms of trying to share enough so that people know what we are looking for, but not so much that we are giving away our strategy.”

This explanation of search trajectory, based on strategic framing efforts, is unavailable when the search environment is assumed to be benign, and myopia is the sole explanation for search trajectory.

Recognizing that search is a signal is only nontrivial when there are observers present to interpret the signal. It is the aggregation of these observers, with their various actions and reactions, which helps generate the search environment. The existence of observers suggests an important link between the strategic and interpretive considerations associated with search and the conceptualization of the environment in the context of competitive dynamics (Katila and Chen, 2008). This view implies an alternate and more socialized representation of the search environment. Central to this representation is the notion that the search environment can *react* in response to being searched. The image here is not of an abstract treasure map but a dynamic social world. This way of theorizing search constitutes a significant departure from the tradition of modeling organizations as unitary actors searching across passive environments whose nature is exogenously determined (Knudsen and Levinthal, 2007; Knudsen and Srikanth, 2014). The literature has recently begun taking important steps in this direction with the construction of search models driven by multiple actors (Knudsen and Srikanth, 2014) and the formation of coalitions (Reetz and MacAulay, 2017). We believe that relaxing the assumption of a benign search environment provides a useful new way of integrating the role of conflict and rivalry, traditionally seen as central to behavioral theory of the firm, into the model of action used in such efforts.

4.4 Limitations

Our aims in this article were focused on theory building and, as we discuss above, the mechanisms elucidated in this article appear to be useful for understanding search across other settings characterized by competitive dynamics. The degree to which they will generalize is of course an empirical question. However, one interesting idiosyncrasy from our study that should be investigated further is gender. Almost all employees in the industry we studied were male. Whether men are more prone to such competitiveness, or whether gender homogeneity might heighten the salience of performance comparisons, is an open question that our study was not designed to explore.

Beyond this limitation, our findings beg an important question: Why have non-benign search environments garnered so little attention in the literature on organizational learning? We see two possible explanations. First, as Winter's (2006: 1104) quote at the beginning of this article so astutely notes, seemingly temporary assumptions can become difficult to revisit as a field moves on. They become taken-for-granted and unproblematic. Second, we suspect that research design choices have helped channel our field's attention away from such dynamics. Many of the recent advances made in the study of search have happened through large sample quantitative analysis (Olsen *et al.*, 2016), experiments (Laureiro-Martínez *et al.*, 2015), and simulation models (Vuculescu, 2017). These methods have many advantages, but inductively discovering and explicating factors that could give rise to perceptions of a non-benign environment, such as social risk, are not among them. In some respects, the act of searching nonlocally in response to these perceptions is a form of deviant behavior that is motivated by perceptions of threat and vulnerability. The fact that our research site required us to spend a lot of time in remote locations allowed the building of trust and rapport with informants who then felt able to reveal the shadow world of their search practices rather than repeat the company line, expressed in promotional material and the like, that a successful learning organization had been created.

We hope that this article demonstrates the importance of using qualitative methods to understand search and encourages future researchers to extend our work through more processual studies of search (Van de Ven and Huber, 1990; Langley, 1999; Langley *et al.*, 2013). Search is often a multi-step process and involves many interactions with other people within and often outside the organization (Fleming, 2002). Toward the end of the study, we experimented with the use of “chaining methods” to collect data on people's search steps and the reasons

driving its trajectory (Erickson, 1979). These methods need further refinement but could be suitable for tracking these processes and developing more granular and dynamic theories of search, where social dynamics and perceptions of status and risk change over time. Search tends to be a sporadic event, and this makes research design a challenge. However, it is clear from our study of MinCo that methods offering deeper insights into the social embeddedness of search decision-making would help advance existing theory both within organizational studies and beyond (Granovetter, 2003).

5. Conclusion

The theoretical assumptions we make about the nature of human beings and the worlds they inhabit are foundational to social science. As Simon (1985: 303) noted, these assumptions set our research agendas, inform our methods, and shape the normative implications we see flowing from a research program. Our study has focused on one such assumption—that of a benign environment—and shown how it inhibits the ability of organizational scholars to explain the trajectory of search, and possible sources of organizational learning. Relaxing this assumption revealed a paradox that lies at the heart of intraorganizational learning. The search targets whose skills and knowledge were most likely to be of assistance to our informants were those in equivalent positions within the organizational structure, and yet their equivalence could make these counterparts potential competitors. This paradox poses a nontrivial decision problem for a searcher to solve, suggests a different image of the search environment than currently found within the literature, and sheds light on previously unrecognized explanations for nonlocal search.

The world we theorize about is one where intraorganizational conflict over goals is endemic and organization necessitates politics (March, 1962). Modern treatments of the behavioral theory of the firm have tended to downplay this characteristic of organizational life (Gavetti *et al.*, 2007: 524). Our article provides a new way of theorizing the influence that this conflict has on organizational search and firm behavior more generally. We argue that this approach provides for a better socialization of the traditional Carnegie School model of action and thus contributes toward the construction of a more behaviorally plausible and decision-centered perspective on organizational learning. For, as Gavetti and colleagues (2007: 524) argue in their important paper on the future of the Carnegie School: “[If] we think individual choice is relevant and that these individuals play distinct roles in an organizational structure, then we need to incorporate some shadows of this belief in our theories and formal models.” We are in agreement and hope that this article provides a useful foundation for pursuing these goals both within the context of intraorganizational search and beyond.

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