DECISION MAKING AND UNCERTAINTY: THE ROLE OF HEURISTICS AND EXPERIENCE IN ASSESSING A POLITICALLY HAZARDOUS ENVIRONMENT

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Heuristics have long been associated with problems of bias and framing error, often on the basis of simulation and laboratory studies. In this field study of a high-stakes strategic decision, we explore an alternative view that heuristics may serve as powerful cognitive tools that enable, rather than limit, decision making in dynamic and uncertain environments. We examine the cognitive efforts of senior decision makers of an inexperienced multinational, as they assessed a potential acquisition in a politically hazardous African country. They applied a diversity of heuristics, some with clear building block rules, to build small world representations of this very uncertain strategic context. More expert individuals drew on experiential learning to build richer representations of the political hazard environment. Copyright © 2014 John Wiley & Sons, Ltd.

INTRODUCTION

International strategy epitomizes decision making in "rugged landscapes" (Johnson and Hoopes, 2003), confronting decision makers with noisy, ambiguous information. These are ideal settings for addressing recent calls for strategy research to "increase its emphasis on *executive judgment* in the actual conditions of high-stakes, complex problem solving in organizations" (Powell, Lovallo, and Fox, 2011: 1377). Yet, little is known about how decision makers scan, evaluate, discard, and embrace different international strategy options (see Devinney, 2011; Hutzschenreuter, Pedersen, and Volberda, 2007).

A key source of uncertainty for multinational enterprises (MNEs) is the sovereign state. MNE decision makers must identify and analyze information that reduces their uncertainty about a country's *political hazard environment* and estimate its potential impact on an investment's value (Alvarez and Barney, 2005; Knight, 1921/1965). In an unfamiliar country, this challenge is especially acute, with outsiders struggling to discern the role and influence of myriad actors in shaping policy, regulations, enforcement regimes, and overall political, economic, and social stability.

Behavioral strategy research argues that such decisions begin with an explicit or implicit attempt to create a *small world representation* (SWR) of the environment in the "mind's eye" (Gavetti and Levinthal, 2000; Gavetti *et al.*, 2012; Simon, 1991). Based on boundedly rational foresight, these SWRs enable individuals to assess longer-term consequences of alternative courses of action, forming the basis for the ultimate choice (Gavetti *et al.*, 2012). Strategy research consistently emphasizes

the limitations of these cognitive processes (Kahneman and Klein, 2009), with framing errors and biases undermining decision making and, ultimately, firm performance (Camerer and Lovallo, 1999; Levinthal and March, 1993; Lyles and Thomas, 1988).

We believe this view is overly pessimistic, underestimating the effectiveness of expert judgment in complex environments and underplaying the adaptive capacity of human cognition. As Levinthal (2011) argued, cognitive models of strategic decision making should be premised neither on expectations of omnipotence nor on overwhelming limitations (see also Winter, 2012a). Research stressing limitations is typically based on simulation modeling and laboratory experiments. While such methods have mathematical and modeling precision advantages, they necessarily abstract from the contexts, time frames, and feedback loops of real decision processes. A question remains: Do these models of cognition correspond to the exercise of executive judgment in actual strategic decisions? (see Hodgkinson and Healey, 2008)

Extensive work by Gigerenzer and colleagues has directed attention to the heuristics individuals use to discover and analyze information, and their powerful role in focusing an individual's attention, by ignoring much of the information swirling around them (e.g., Gigerenzer and Gaissmaier, 2011; Gigerenzer and Selten, 2002; Todd and Gigerenzer, 2012). By focusing an individual's attention on specific cues, heuristics enable, rather than inhibit, knowledge and skill application to seemingly different contexts, without engaging in the effort-intensive tasks of identifying and weighting large information sets. We argue that critical, neglected research steps involve determining whether executives in the same firm really differ in (1) the cognitive resources they bring to strategic decisions, and (2) how they dynamically use these resources to discover, sort, and analyze information.

We tackle these questions by examining decision makers' cognitive resources and processes for assessing a roughly US$1 billion acquisition in a politically volatile African nation. We interviewed the MNE's senior executive team and board directors, triangulating their responses with confidential board papers, annual reports, and stakeholder letters. We also surveyed their career backgrounds. While the firm had made no previous foreign direct investments (FDIs), the respondents had extensive and highly varied, international and strategy experience. We focus specifically on their use of heuristics to build SWRs of the political hazard environment and to estimate its probable impact on the FDI.

Our study contributes to the emergent literature on strategy's microfoundations (Devinney, 2013; Felin and Foss, 2005; Felin *et al.*, 2012; Foss, 2011). We show how heuristics may be decision enhancing, rather than decision limiting, by enabling individuals to build SWRs, despite significant information constraints. We find that the executives and directors drew on a diversity of heuristics. This heterogeneity in cognitive processing suggests a key, possibly distinct contribution by individuals to a firm's nascent routines and capabilities. We, correspondingly, examine the relationship between the richness of individuals' SWRs and their experience, to ascertain the possible origins of expertise in political hazard assessment and strategic decision making, more generally. Rather than relying on persistence measures of experience (e.g., time spent working overseas), we develop measures encompassing task, organizational, and context experience, which provide clearer measures of potential learning and expertise. We thus extend prior research by identifying how experience depth, breadth, and variation within an expertise category influence the processes of building SWRs of a context and the decision implications (Gary, Wood, and Pillinger, 2012). Our results reveal prior executive- and/or board-level experience, specifically of FDI decision making and managing foreign subsidiary networks, is related to individuals building richer SWRs. These SWRs seek to understand the host environment's political hazard dynamics—how actors and events interact to produce changes—rather than to just identify actors and particular hazard events. These richer SWRs are also associated with the identification of a larger number of implications for the value and design of the FDI.

Our results support the growing criticism of international strategy research's reliance on firm-level experience measures to proxy learning and its impact on FDI decision making (Kirca *et al.*, 2012; Reeb, Sakakibara, and Mahmood, 2012). They also speak to the importance of establishing the microfoundations of strategic management and specifying with greater precision experience and learning variables based on theories of cognition. The next section outlines the empirical and theoretical importance of political hazard assessment in international strategy, and employs the key concepts

of heuristics and expertise to build propositions about strategic decision makers' assessments of such environments. We then describe our data and method, and present and discuss our findings. We conclude with implications for future research.

Heuristics and building small world representations

Standard theoretical models of internationalization decisions emphasize the critical role that location-specific factors play in investment decisions (e.g., Buckley and Casson, 1976; Hennart, 1982). A country's political power structure is a critical location-specific factor and confronts individuals with the tasks of assessing different players' influence (e.g., competitors, unions, special interest groups), evaluating the interrelationships between them, determining whether or not to enter the country, and designing an investment to match the country's power structure dynamics. Discerning an optimum solution in such an environment of "ambiguity driven complexity" is infeasible (Simon, 1996). As with most strategy decisions, the mentally demanding number of alternatives and interrelationships render the problem computationally intractable. Correspondingly, the probabilities of possible outcomes are unknowable at the time a decision is made, thereby leaving assessment to opinions and judgment, not rigorous analysis (Knight, 1921/1965: 225).

Devising a solution for judgment-based problems rests on an individual's ability to draw similarities between current conditions and knowledge recalled from memory. These cognitive processes involve building lower dimensional sketches—SWRs—of what an individual believes are the situation's salient characteristics to then determine an appropriate solution (Gavetti, Levinthal, and Rivkin, 2005; Simon, 1991).[1] Efforts to build a SWR trigger the brain's machinery to supplement problem solving with stored knowledge learned in particular contexts. Experiments have shown that, even in highly artificial conditions, automatic activation of prior knowledge occurs (Stanovich, 2003: 294). Learning through education, career, and life experiences shape an individual's cognitive structure of schemas or knowledge categories (Elsbach, Barr, and Hargardon, 2005). Within these schemas, heuristics function as initial decision rules about what information to search for and how to begin assessing it to build a SWR (Starbuck and Milliken, 1988).

Heuristic-based decision models have been characterized as less effective and desirable than optimization models that solve problems based on all available evidence and mathematical specification of alternatives. Such arguments ignore optimization models' weaknesses in uncertain settings, where full information is unobtainable, and relying on mathematical specification can overfit past trends to very different futures (Savage, 1954; Volz and Gigerenzer, 2012). Heuristics function by ignoring most information "with the goal of making decisions more quickly, frugally and/or accurately than more complex methods" (Gigerenzer and Gaissmaier, 2011: 454). They focus the decision maker's attention on specific decision task elements or cues and exploit core cognitive capacities encoded in schemas to make sense of a complex, uncertain environment.[2] From this perspective, heuristics underpin the strengths of human cognition to adapt to different contexts and make effective decisions, despite having incomplete representations in their mind of a problem environment. Such conditions typify strategy problems.

Extensive work by Gigerenzer and colleagues has sought to show how heuristics are not good or bad, but differentiated by the extent to which they trade off frugality (i.e., limiting the information volume required) against predictive accuracy (see Gigerenzer and Gaissmaier, 2011). Overspecification may limit a heuristic's generalizability to different situations, but frugality, in the form of too few parameters to search for and analyze information, risks bias due to the lack of flexibility.[3] To push past just generating heuristic lists and develop formal

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[1] These sketches have been variously labelled small world representations, simplified cognitive representations, mental models, and cognitive frames (e.g., Gavetti *et al.*, 2005; Grégoire, Barr, and Shepherd, 2010). We adopt SWR for consistency with the behavioral strategy literature (see Levinthal, 2011) and because we believe it best captures the cognitive processes we examine. As individuals build in their mind's eye a SWR of a country's power structure, they are approximating Savage's (1954) notion of a perfect small world, in which all alternatives, consequences, and probabilities are known and, hence, the future—in which the decision will be enacted—is certain.

[2] Core cognitive capacities encoded in schemas typically involve recognition, frequency monitoring, object tracking, and imitation ability (see Gigerenzer and Gaissmaier, 2011; Hertwig and Hoffrage, 2013).

[3] Put differently, the gap between reality and a heuristic's prediction will be greater than that due to variance.

models to answer how to make better decisions, attention has especially focused on three proposed building blocks of heuristics. These are best thought of as three simplified decision rules from which all higher-order heuristics are constructed (Gigerenzer and Todd, 1999): (1) search rules specifying in what direction the search extends in the information space, (2) stopping rules stipulating the information saturation level (i.e., when to stop), and (3) decision rules on how the final decision is reached.

An illustrative example is the *recency of last purchase* heuristic for deciding whether a customer is active or not. In a study of experienced retail and airline marketing managers, Wübben and Wangenheim (2008) found this simple heuristic had three building block rules: (1) search for most recent purchase; (2) stop when most recent purchase found, ignoring all other information; and (3) decide based on a nine-month threshold—if a customer's last purchase was more than nine months ago, they are inactive and unlikely to repurchase. With no parameter estimation to predict customer behavior, such as purchase frequency and spacing, this heuristic classified customers more accurately over a 40-week data window than a Pareto/negative binomial distribution model.

Although in its infancy, detecting building blocks is critical to the study of when and how heuristics underpin human cognition's adaptive capabilities in applying learning from one context to another (Hertwig and Hoffrage, 2013; Volz and Gigerenzer, 2012). Strategy decisions represent an ideal setting for investigating the decision-enhancing properties of heuristic models. While they occur over much longer time frames than the relatively discrete decision tasks studied by Gigerenzer and colleagues, they are characterized by the same conditions of complexity and high uncertainty levels that necessitate the use of judgment (Hodgkinson and Healey, 2008). As individuals' cognitive capacities vary systematically, we expect heuristics will vary (1) between strategic decision makers, and (2) in the extent of adaptation to different strategy decisions and, crucially, contexts (Gigerenzer and Gaissmaier, 2011; Hodgkinson and Healey, 2008). By studying an actual strategic decision, we thus seek to establish first that not all decision makers use the same heuristics and, second, to identify possible explanations for these cognitive differences.

Consistent with Teece's (2007: 1319) dynamic capabilities framework that focuses on how firms sense and shape opportunities and threats, seize opportunities, and protect existing assets, we propose that decision makers will draw first on *discovery* heuristics to determine what information to look for (and where) on a political hazard environment. Second, they will use *evaluation* heuristics to interpret the information and build a SWR of the environment. For consistency with the extant literature in strategy (e.g., Bingham and Eisenhardt, 2011; Bingham and Haleblian, 2012), we use *heuristic* to refer to a specific decision rule. Any grouping of heuristics that collectively constitute building block rules for a particular element of a problem environment, we label a *higher-order heuristic* (HoH). Therefore, our first proposition:

> *Proposition 1 (P1): Different individuals in a decision-making group will draw on different heuristics to search for (discover) and analyze information.*

Experts and heuristics

When framing a decision, each individual draws on a unique suite of referent past events. Learning is usually seen as a process of repetition and reflection, whereby experience matters to the structure and content of an individual's cognitive framework (Baron and Ensley, 2006; Gavetti and Levinthal, 2000). Through repeated application, decision makers hone their heuristics for specific domains, such as typical decision points, and become more expert (Dane, 2010; Ericsson and Charness, 1994). Expertise is distinguished by the ability to recognize and retrieve from long-term memory large numbers of chunks or patterns that are relationally similar to a problem at hand (Chipman, Segal, and Glaser, 1985; Pfeffer and Sutton, 2000). These patterns involve structural relationships among different features of an environment, rather than surface-level characteristics (Gentner *et al.*, 2009; Grégoire, Barr, and Shepherd, 2010; Lee and Holyoak, 2008). Their retrieval and application is a *structural alignment* process. A classic example is seeing new applications for a technology in markets that share few direct similarities with an existing application, such as customers or product design, but share underlying properties, as illustrated by laser technology's use in applications as diverse as medical equipment and desktop printing (see Prahalad and Hamel, 1990).

The analogical reasoning literature defines structural alignment as reaching the solution to one problem based on experience with a previous, analogous

problem (Gary *et al.*, 2012; Gavetti and Levinthal, 2000; Lovallo, Clarke, and Camerer, 2012). Analogical transfer is argued to involve three cognitive processes: identifying and encoding the current problem's salient characteristics, searching a library of experiences to retrieve encoded knowledge from a previous problem with similar structural relationships, and using these experiences to make inferences about the current problem. However, this process may be deeply flawed: source analogs (the encoded prior experience) sharing structural similarities to a current problem are retrieved only 12 percent of the time (Gary *et al.*, 2012: 1232; Gavetti *et al.*, 2005; Gentner *et al.*, 2009). These low success rates are believed to reflect lack of richness in decision makers' representations of the current problem (Gary *et al.*, 2012; Lovallo *et al.*, 2012). This points to the critical role of cognitive processes preceding analog retrieval and application: the initial processes of building a SWR.

For a cognitively distant opportunity, where distance may be defined by time or context (e.g., geography, functional expertise, or culture), a key question is what types of experience-based expertise shape the richness of individuals' SWRs. Drawing on Dane (2010: 582), we delineate *richness* by the number of interconnections identified between different actors, events, and outcomes. Demographic factors, from nationality to age and gender, have been dismissed as weak approximations, at best, of cognitive ability and diversity (Kaplan, 2011; Markoczy, 1997). Equally, simple *time in the chair* measures of experience tend to be crude estimates of expertise due to differences in individuals' learning. While learning is experiential, it is not automatic. Learning to see both difference and similarity is more likely to come from frequent problem engagement (Eggers and Kaplan, 2013), encountering deeper, more complex variants of the same problem (Gary *et al.*, 2012), and deliberate attempts to switch between valid and untested SWRs (Gavetti and Levinthal, 2000). Expertise is thus an outcome of reflection and adaptation. Opportunities for such will vary with the diversity of environments and problems for which an individual has built past SWRs.

For international strategy, little is known about the processes individuals engage in and knowledge they draw on to decipher a foreign location (Buckley, Devinney, and Lourviere, 2007; Hutzschenreuter *et al.*, 2007). How such expertise develops is even less understood, both regarding the types of

experience leading to international strategy expertise and how domain-specific this knowledge may be. The next section thus sets out one potential expertise domain, outlining the broad parameters of political hazard environments and experiences that may lead to expert political hazard heuristics.

Political hazard domains and cognition

Building on Henisz (2000), we operationalize the political hazard domain as the broad spectrum of possible actions and outcomes flowing from the sovereign state's monopoly control of formal rule setting and enforcement (e.g., laws, regulations, judicial decisions, policies), or from challenges thereto (North, 1990, 2005).[4] Decision makers need information on this domain to assess a FDI's potential exposure to political events. Based on the extensive literature on political hazards and MNEs (e.g., Henisz, 2000; Stopford, Strange, and Henley, 1991; Vernon, 1971, 1998), we developed a typology of hazards that MNEs may confront, potential hazard triggers, and assets possibly at risk. As Table 1 shows, we distinguish two power settings: (1) *status quo*, where an incumbent holds power or it transitions smoothly; and (2) *change in status quo*, where credible threats to incumbency exist and/or power handover is contested. Table 1 is not exhaustive, as each country's institutional environment is a unique mix of rules and actors and thus events, triggers, and impacts that will confront MNEs. It does, however, capture the key events where a change in the rules, by an incumbent or challenger, can adversely affect an MNE's operations.[5] For decision makers, the challenge is assessing the probability of changes occurring, their likely triggers, and associated loss probabilities.

Several broad political hazard categories stem directly from the power of incumbency. An MNE may be affected by asset expropriation or nationalization,[6] contract renegotiation, policies prejudicial to foreign firms, and discriminatory use of regulations and processes. As Table 1 shows, there are a range of possible actions and outcomes, with varied

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[4] We adopt Henisz's political hazard terminology as this distinguishes the actors and events about which the individuals need to build a SWR, from the political risks, which are the probabilities of events they are attempting to assess.

[5] Incumbents and challengers can simultaneously engage in actions that heighten the foreign investor's hazard environment.

[6] Expropriation: host government seizes assets without compensation; nationalization: affected owners are compensated.

Table 1. Typology of political hazards

| Political situation/setting	Potential political hazards		Possible assets and activities impacted	Potential trigger for political hazard
	Type	Example		
Status quo (e.g., incumbent retains power; (relatively) smooth transition to new government)	Expropriation	Asset seizure without compensation, nationalization	Physical facilities, licenses, brands, intellectual property (IP); all value chain activities potentially affected	Treasury needs/fiscal pressures, populist policy shifts, corruption, appealing to electorate, new incumbent policy
	Forced renegotiation of contracts	*Ex post* changes in performance requirements	Revenue streams (due to rise in costs), right to repatriate profits, IP	Treasury needs/fiscal pressures, new incumbent policy, rent-seeking by local lobby groups and businesses, corruption of bureaucrats
	Prejudicial policy treatment	Government procurement policies, foreign ownership restrictions, mandated joint venture arrangements, requirements to release commercially valuable information	Market share/access, IP, managerial autonomy	Domestic political agendas, corruption of politicians (and scope for extortion/bribery)
	Bureaucratic actions	Import and export licenses and quotas, occupational health and safety standards and inspections, zoning requirements, environmental protection standards and inspections, employment requirements (hiring and training of host country nationals, ethnic group quotas), immigration and visa restrictions	Market share/access, managerial autonomy, managerial and technical capabilities, human capital	Rent-seeking by local lobby groups and businesses, corruption of bureaucrats (and scope for extortion/bribery), domestic political agendas
Change in status quo (e.g., challenge to incumbent, failure of incumbent to hand over power (whether secured via election or uprising))	Violence/unrest	Civil war, military coup, terrorism, local blockades	Physical facilities, human capital, logistics; all value chain activities potentially affected	Tensions between tribes, regions, ethnic/religious groups or classes, powerful military
	Other threats to the physical safety of employees	Kidnappings and assassinations, destruction of property, riots	Human capital, physical facilities, managerial and technical capabilities	Loss of rule of law, regional splits (e.g., emergence of warlords), organized crime activities (and scope for extortion/bribery)
	Expropriation	Asset seizure without compensation, nationalization	Physical facilities, licenses, brands, IP; all value chain activities potentially affected	Regional splits (e.g., emergence of warlords), organized crime activities (and scope for extortion/bribery)
	Antiforeigner, anti-MNE protests, and campaigns	Boycotts of foreign branded products, labor strikes, disruptions to supply chains, local blockades, attacks on facilities	Revenue streams, production and distribution facilities, market share	Rent-seeking by local lobby groups and businesses, domestic political agendas, loss of rule of law
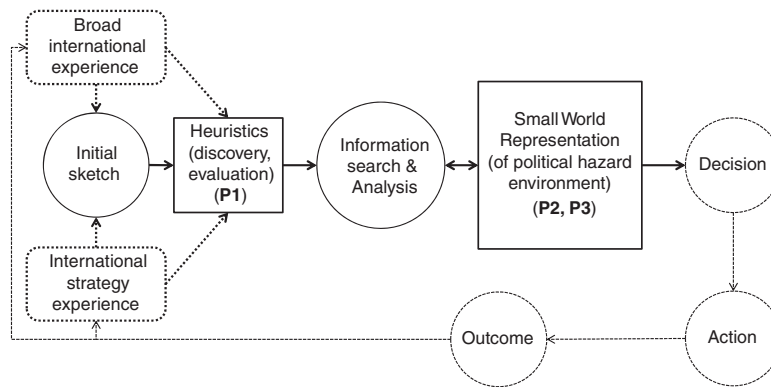
Figure 1.   International experience, richness, and heuristic application to political hazard assessment

impacts on the MNE's assets and activities. A wide range of forces may trigger these hazards, including fiscal concerns, electoral pressures, rent-seeking, and corrupt officials.

Decision makers also need to understand a second source of hazards: groups seeking to challenge for some or all of the state's powers. In Table 1, we identify four hazard types from changes to the status quo. New concerns include violence and physical safety threats. The triggers for these concerns, such as conflicts between a country's regions, tribes, or ethnic groups and the rise of warlords and organized crime, may also provoke asset seizure or damage, while MNEs may be explicitly targeted by antiforeigner campaigns. Such hazards require appraisal of the country's broader institutional fabric, including the depth of support for opposition groups and historical divisions playing into current events (North, 1990).

Decision makers' abilities to assess a foreign country's power structure will be a function of their prior political hazard domain experiences. Building on the previous section, we expect experience assessing investments in countries with different power structures raises the probability that an individual has developed expertise in assessing incumbents and rivals. Pertinent heuristics may look for actor interrelationships, their influence on policy outcomes, or their ability to force a status quo change. Hence, our second proposition:

Proposition 2 (P2): The richness of individuals' small world representations will increase with greater breadth (of countries/regimes) in their prior engagements with political hazard assessments.

We also argue that experience managing operations in different countries will be associated with expert heuristics seeking information on the incumbent's behavior and potential threats to them. We propose such experience potentially offers exposure to how the *rules of the game* can be changed and targeted to specific MNEs or sectors dominated by them (Henisz, 2000). We argue that the greater the number of operations and host countries an individual has engaged with, the higher the possibility they have learned to identify different power structure dynamics (Denzau and North, 1994). Such experience may feed into heuristics on the interrelationships between actors within a country and on these interrelationships' potential to trigger events adversely impacting an FDI. Other examples would be identifying actions to mitigate political hazards, including structuring transactions to minimize bribe demands, developing community engagement agendas, and using key employees to access local networks. Thus, our final proposition:

Proposition 3 (P3): The richness of individuals' small world representations will increase further when their prior experience includes international strategic decision-making responsibilities.

Figure 1 places our propositions (P1–P3) within a decision process. An individual adopts heuristics and builds SWRs (solid boxes denote cognitive tools) in response to an initial problem sketch.[7]

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[7] Bar (2009) argues a comparable neural process of perception → analogy → association → prediction, often at a subconscious level.

Heuristics guide information search and analysis; SWRs inform the decision (circles represent these steps). A feedback loop (dashed steps) to experience from a decision, action taken, and observed outcome emphasizes the iterative impact of decisions on learning. We argue that variations in cognitive tools (P1) stem from variances in prior experiences (dashed boxes). Strategic decision-making experience (P3) is distinct from broad international engagement (P2). Through an assessment of the adequacy of the SWR they formed, individuals may recalibrate their heuristics for future decisions (Gavetti and Levinthal, 2000). This learning, through feedback loops, encodes heuristics into an individual's cognitive structure.

The following section sets out our research method and design. We then present the heuristics that eleven strategic decision makers drew on to decipher a volatile African country's political hazard environment. We graphically present a subsample of respondents' SWRs, specifically focusing on their sophistication, based on the respondents' identification of structural relationships between actors and hazard events. Next, we analyze how experience relates to variation in SWRs, examining how individuals resolved what the risks and uncertainties, on balance, meant for the MNE's potential acquisition.

RESEARCH METHOD AND DESIGN

Researching the cognitive underpinnings of strategic decision making is complex, particularly when seeking to discern the content and architecture of cognitive structures (including heuristics), their possible origins, and decision consequences (see Walsh, 1995). As data depth and richness are critical to heuristics studies, we chose a case study method (Siggelkow, 2007). While our study cannot replicate the mathematical or modeling precision of computer simulations and laboratory experiments, it complements these approaches, by analyzing individual-level data on an actual strategy decision.

Case selection was based on intentional (theoretical) sampling (Eisenhardt and Graebner, 2007). We gained access to the senior executives and board directors of a large, Australia-headquartered mining firm (pseudonymously labeled Mineralco) within months of a major international acquisition. The FDI was in an African country host to a 10,000 strong United Nations' peace-keeping force

following cessation of a civil war three years earlier. Critical national elections had also been delayed several times.[8] In such settings, political power structures are particularly vulnerable to change (see Vaaler, 2008; Table 1). In-country activities by natural resource sector MNEs are also often high profile, politically sensitive, and characterized by location-specific investments.[9] This renders political hazard heuristics critical to the decision process.

The acquisition is a clear unit of analysis: Mineralco was considering buying Africamine (a pseudonym) for its value-adding activities in a politically volatile country. Critically for our study, this was Mineralco's first FDI decision.[10] Mineralco had a geographic diversification strategy to reduce reliance on a large, world-class operation in a highly risky developing nation. As Mineralco had no firm-level FDI decision experience, the case enabled us to clearly discern relationships between individuals' experience and their political hazard heuristics. This is important for establishing foundational causal links for future research on the shifts from individual to group heuristics and from group to firm capabilities (Siggelkow, 2007).

Data collection and analysis

Our study draws on 17 semistructured, 1.5-hour interviews with 11 individuals, participant surveys, annual reports, company announcements, media reporting, and confidential board papers. The first two data sources comprise our primary data. We confirmed the data's internal and construct validity through triangulation with the additional data sources (Eisenhardt, 1989), to address biases that can arise in self-reported information. These include fundamental attribution bias, whereby managers ascribe positive outcomes to their own and colleagues' actions, and unfavorable outcomes to uncontrollable external events (Bettman and Weitz, 1983; Huber and Power, 1985). We compared a sample set of the interviews and theme

[8] The country has been disguised to maintain participant anonymity, in line with the authors' universities' research ethics policies.

[9] Mining extracts a nation's nonrenewable wealth and risks environmental degradation. In disputes, international arbitral awards typically affirm states' rights to protect the greater good and alter contractual conditions (van Harten, 2010; Sornarajah, 1994).

[10] Spun out of a very large MNE, Mineralco attained full independence in late 2005, with a new executive team and board of directors. It ranked in the top 10 firms in the S&P Global Index for its mineral group, with ~US$9 billion market capitalization.

maps with confidential board papers and corporate announcements, verifying the accuracy of discussion recollections and decision timing against these official records.

We conducted interviews with all executives and board directors but one (unavailable due to illness), and a senior manager who led the country investigation visit. The interviews commenced within two months of the acquisition decision. Most participants were interviewed twice, using a mix of direct and indirect questions (Eisenhardt, 1989).[11] The interviews focused on each individual's perspective on the decision process steps, with interviewees typically discussing a wide range of issues specific to the strategic opportunity, firm resources, and the like. We asked direct questions about the information each individual sought, what they saw as important, and what concerned them about the acquisition. We explicitly asked them to focus on their actions and considerations, and to distinguish information or opinions offered by their colleagues or external parties in formal and informal settings. We did not ask them to identify the country's power structure and possible political hazards; the patterns in the data are based on self-identification.[12]

From the interviews and company documents, we established a time line of events and decision processes to build maps for each participant, establishing patterns of relationships between questions and themes. We then developed coding tables, informed by the theoretical and empirical literatures (Axelrod, 1976; Eisenhardt, 1989). Construct coding was an iterative process involving three researchers to increase validity (van de Ven and Poole, 2002). Parent and child nodes were recursively combined and recombined until we agreed on the constructs and relationships. We then developed a table of individuals' discovery and evaluation heuristics, and diagrams of their political hazard environment SWRs (see Results).

From the work history surveys, we constructed individual experience indices (detailed in online supporting information Document S1, Appendix S1) on four dimensions: (1) *Depth* (years worked internationally), (2) *Breadth* (number of countries worked in), (3) *Decision* experience (number of internationalization decisions made—distinguishing those made as a senior executive and as a board member), and (4) *Diversity* (of countries encountered, using Henisz's (2000) Political Constraints index). The first two replicate typical MNE-level experience measures at the individual level. The latter two are innovative indices of potential settings for engaging in the learning and feedback loops modeled in Figure 1. Each respondent was classified as Low, Medium, or High along each dimension based on their relative rankings compared to the other participants.

RESULTS

For the executives and directors, a simple recognition heuristic was the first invoked, casting the host country as likely to be politically unstable, violent, and corrupt.[13] This initial response did not preclude further investigation (see Figure 1). All decision makers had experience of the politically hazardous country host to Mineralco's largest operation and key actors (CEO, general manager/corporate development [GM(CD)], and Directors A and D) had high diversity experience (as discussed below). The new host country's inferred characteristics triggered recognition that the political environment's dynamics and implications would be key elements of their scrutiny process:

> "*The non-geologists were immediately more concerned about being able to operate in a politically less stable environment. One where it was assumed there would be the potential for graft, corruption, unstable regimes—a country that had been in a civil war.*" (Director A)

Building small world representations with heuristics

Table 2 summarizes what decision makers described they looked for, and how they analyzed

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[11] To improve reliability, two researchers were present at each interview and made detailed post-interview notes (Kaplan, 2008).

[12] We acknowledge a contemporaneous "think aloud" protocol would be an even more effective research method to reduce recall errors and revisionism. However, given the serendipity required and public disclosure constraints for listed companies, gaining MNE access is extremely difficult. Although we were negotiating with Mineralco during the decision process, such concerns were paramount and access was secured only on the deal's conclusion. Interview triangulation with contemporary board minutes and other internal documents, as well as full respondent data mapping, are accepted techniques for addressing recollection bias issues.

[13] Recognition heuristics work well for simple tasks (e.g., recognizing faces), distinguishing truly novel information from that previously experienced by the individual, using no information recalled from memory to do so (Goldstein & Gigerenzer, 2002).

Table 2. Discovery and evaluation heuristics of Mineralco decision makers

	Discovery heuristics	Evaluation heuristics
CEO	Does government respect international rule of law? How has previous unrest affected operations and reputation?	Long-term political stability more important than short-term events Governments with experience of FDI more welcoming/less prone to expropriation Goodwill can come from overlooking/working through political unrest
GM (corporate development)	Is there evidence bribes have been paid? Does target company share our attitudes/practices? How welcoming is the government to FDI?	Country-specific issues are more important than regional issues and perceptions
CFO	Can we repatriate earnings? Is mining legislation in place and observed? Has lack of a mining industry created risk or openness to attracting miners?	Due diligence on country risk must not expose potential acquisition Need to be sure CEO/GM CD are asking the right questions Local community expectations around employment need to be low
GM (community relations)	Can we avoid low-level corruption? Arriving at the airport, is there a system in place? Are people actually getting paid on a monthly basis so the government works? How does government services quality (health, education, roads) compare to other developing countries? What's police presence? What are they checking at road blocks? Do they ask for payments?	
Corporate counsel	Is there a legislative clause enabling the Ministry of Mines to stop the acquisition?	
Director A	How do people perceive the country? Will there be elections? Which MNEs are already there? How long have these MNEs been there? What are their ethics? Can the local community shut us down?	Increased project size raises corruption exposure Practice in current host country of "waiting out" bribe demands will not work: lack connections to power structure Pre-acquisition will not be able to determine definitely if target has engaged in corruption Need more than one visit to understand the country's power structure Need to ask same types of questions from multiple angles to understand power structure Need to understand information flows and interdependencies between local communities
Director B	How does the different ethnic mix (from more homogenous current host country) affect appetite for political change? What other MNEs are there?	Must cross-check management's information on political risk with independent source Ethnic and economic tensions as hazard We cannot invest where there is a risk staff will be killed

Table 2.   Continued

	Discovery heuristics	Evaluation heuristics
Director C	How have other MNEs handled this location? What are they concerned about?	If bribery is low level, less concerning than wholesale corruption
Director D	Any public control over government power to grab assets? Is there any high-level litigation outstanding against Africamine?	Assess probability of civil war for threat to asset ownership and employee safety. Need to have locals and native speakers on the ground to understand political situation
Director E (chair)	What are the probabilities of things going wrong politically? Is there evidence bribes have been paid? What are the risks assets will be damaged by anarchic action? How have other MNEs managed? Have they paid bribes?	Political instability threatens entire investment. Must cross-check management's information on political risk with independent source. Assistance/influence from home-country government is important
Director F	Does the country have the same political issues as our current host country?	If hazard is < current host country can proceed

the resultant data. In line with P1, we discern discovery heuristics to identify information (framed as questions guiding data source and content) from evaluation heuristics to interpret the information (statements). Individuals were trying to estimate the probability that hazard events would occur and materially impact the acquisition. They needed to identify and understand the key actors, interactions, and interrelationships between actors, and between actors and hazard events (see Table 1). From their SWR of this previously unfamiliar context, each was trying to project a range of possible future scenarios that could affect Mineralco:

> "*The first thing you're always trying to do with these things is find a reason not to do it. So it is that sort of fatal flaw analysis. The one that was going to jump out was political risk.*" (CFO)

> "*I thought initially there was some probability that our asset would be greatly damaged by some anarchic development. I thought then—well right at the beginning I felt I needed more information, I needed a better assessment of the probabilities of this being a really good show financially.*" (Board Chair)

There was considerable variation in the number and content of respondents' heuristics. For the executives, this appears to be partly role driven: the CFO, counsel, and the GM community relations (CR) particularly focused on their portfolio responsibilities (see Table 2). The CFO honed in on earnings repatriation, the counsel concentrated on legislative issues, while the GM(CR) looked to social service provision and local infrastructure. The final decision process was a collective undertaking: the individual-specific approaches were overlaid by group-level understandings. The executives framed hazard assessment through an intergroup evaluation heuristic that if a hazard was less than in their current host country, then it was not a barrier to the investment. The board then set one overriding decision rule:

> "*We asked management to do some specific things and I was concerned at the reputation for corruption. We set a very clear rule for management: they and we had to be satisfied we could operate successfully without ever*

making a corrupt payment. That was always top of our priority. The board always made that clear." (Board Chair)

We discerned several HoHs and their building blocks, including two employed by multiple respondents (see Table 3). The first focused on how other MNEs had managed the political environment, particularly corruption and ethical behavior: if reputable MNEs could operate without paying bribes, then Mineralco could manage the corruption environment. This is consistent with the board's overriding rule that Mineralco must operate without paying bribes. A second HoH considered the government's adherence to key legislation. While there was no specific final building block, this second HoH's focus on the consistency of the government's adherence to legislated commitments possibly contributed to an overall assessment of the government's propensity to manipulate the FDI environment (see Table 1).

We also identified eight HoHs used by specific individuals (Table 3). Several involved more specific iterations of the common heuristics, such as the bribe-paying facet of corruption concerning Directors B and E. Director B applied a search rule of using a knowledgeable contact. Other heuristics explored distinctive issues, such as the counsel's role-specific HoH. Similarly, the GM(CR)'s notably detailed heuristics in Table 2, reflecting his on-ground lead investigator and corporate CR roles, collectively comprised a HoH on government stability. This looked to the reliability and quality of public service provision and, as such appraisal can be extremely complex, his building block heuristics focused on performance indicators for a few critical services. He assessed (1) airport passport and customs control systems, (2) policing, and (3) health and education. While the first two are ripe for corruption, the latter are expensive, long-term investments often neglected by governments more interested in (ab)using their power to maximize private wealth extraction (Rose-Ackerman, 2003). The GM(CR) noted his long experience of developing country mining operations and, specifically, CR drove his information search and decision outcomes on these cues.

Director A had two HoHs, both focused on identifying structural relationships in the environment. The first concerned local communities' power to subvert Mineralco's activities: searching for cues on the value placed on ethical behavior and the extent of information exchange between communities. If local communities valued corporate ethics, then Mineralco needed to attend to their power to disrupt operations. The second HoH then sought to determine Mineralco's ability to operate ethically in the location and looked specifically for MNEs known to have strong programs of corporate social responsibility.

While we found evidence of HoHs, the building block evidence was less clear, particularly for stopping and decision rules. Usually, the stopping rule simply involved cross-checking data, sating a binary need (e.g., find a competent data source), or feeling comfortable with data comprehensiveness. Similarly, the third building block decision rules often took an if– then structure, whereby the data gathered could be interpreted as (dis)confirming a hazard concern. The absence of clear saturation rules may reflect respondents were still engaged in learning processes that would subsequently refine their cognitive toolkit. We also acknowledge that the research design contributes to the lack of clarity: we did not explicitly ask why or when respondents stopped their evaluation. We return to this point in the directions for future research.

Mapping small world representations

The heuristics in Tables 2 and 3 were applied to information collected by the respondents and the company, through internal sources, consultants, and corporate advisors. To investigate the SWRs built from this information, we first developed a high-level satellite map of the hazard environment, drawing on Table 1, the country's history, and the acquisition specifics. We used this map as an anchor point to develop each decision maker's SWR. Figures 2–6 show a sample of the respondents' SWRs, chosen from across the experience spectrum.[14] These diagrams capture only those actors, relationships, and events that a respondent explicitly identified. Absence of an item (e.g., an event) does not imply a lack of awareness; it indicates an absence of importance to the individual as they described their assessment process. Actors and events are co-located on the diagrams based on geography or spatial association (e.g., businesses, local organizations). Rectangles denote

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[14] For the environment map, see Document S1, Appendix S2. For the SWRs of the remaining six respondents, see Document S1, Appendix S3.

Table 3.   Building blocks and higher-order heuristics of Mineralco decision makers

	Higher-order heuristics	Search rules	Stop rules	Decision rules
Multiple respondents	How do other MNEs manage?	Which MNEs are already there? For how long? What has caused them concern? Have they been able to function without paying bribes?	When cross-checked with independent sources	If known MNEs operate without paying bribes, corruption environment can be managed
	Does the government honor critical legislation?	Has the government put in place and honored necessary legislation (e.g., repatriation of earnings)?	When cross-checked with multiple, independent sources (beyond target firm sources)	
Individuals				
CEO	Is rule of international law applied?	For evidence the national government has signed FDI contracts agreeing to UNICTRAL provisions	[Not clear]	If UNICTRAL provisions are included, then government is serious about rule of law
GM(CR)	Are government services functioning (as a sign of incumbent stability)?	For evidence on: customs and immigration systems public servants paid regularly quality of core public services in hospitals, roads, education police presence	When have observations on each element	If key government services are in place and paid for, then have evidence of stability and functioning at sufficient level to proceed with investigation of specific hazards
Corporate counsel	Can the Ministry of Mines stop the acquisition?	Check with experienced legal colleagues with exposure to a location to identify local legal firms	When identify competent local legal firm	Engage legal counsel to establish legal rights and legislative precedent
Director A	Can local communities shut us down?	For cues that local community values ethical behavior and for links between different communities that may exchange information on firm behavior	When find evidence of local community expectations of firms	If communities are focused on ethics, then must buy license to operate from them, not focus on government as "authorizer" of rights to operate
	Can we operate ethically in location?	For information on which MNEs are there, for how long, and evidence of their ethics	When cross-checked with independent sources	If MNEs known for having strong CSR programs have been in country for long periods, then conclude can operate ethically and implement existing company policy of not paying bribes
Director B	How do other MNEs manage?	Check with knowledgeable contact who has direct experience of companies already in country	When have information on whether known MNEs can hold to a line of not paying bribes and still operate effectively in the country	Can/cannot apply strict company policy of not paying bribes
Director D	Is there public control over government power to grab assets?	For evidence of government spending on large scale projects	When have observations on types of large scale projects government spends public funds on	If evidence is found of spending on "grandiose," nonproductive projects, seek ways to stage investment and finance out of free cash flow
Director E (chair)	What is the incidence of bribery?	For evidence of bribes being paid by other MNEs	[Not clear]	If other MNEs can operate without paying bribes, corruption environment can be managed

Note: No building blocks and HoHs were identified for the GM(CD), Director C, or Director F.
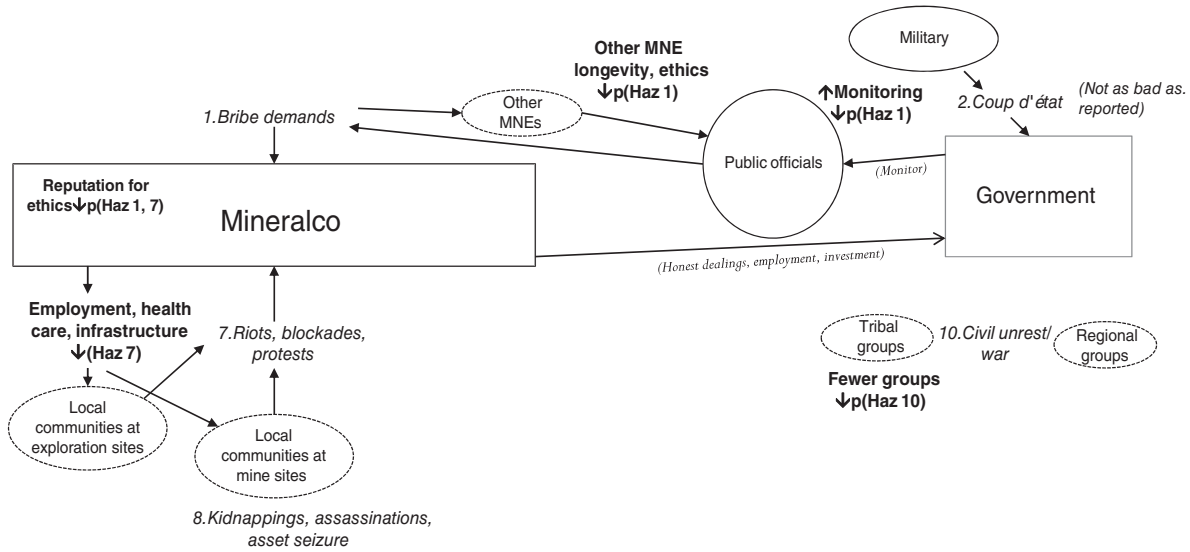
Figure 2. Small world representation of political hazard environment—GM (corporate development)
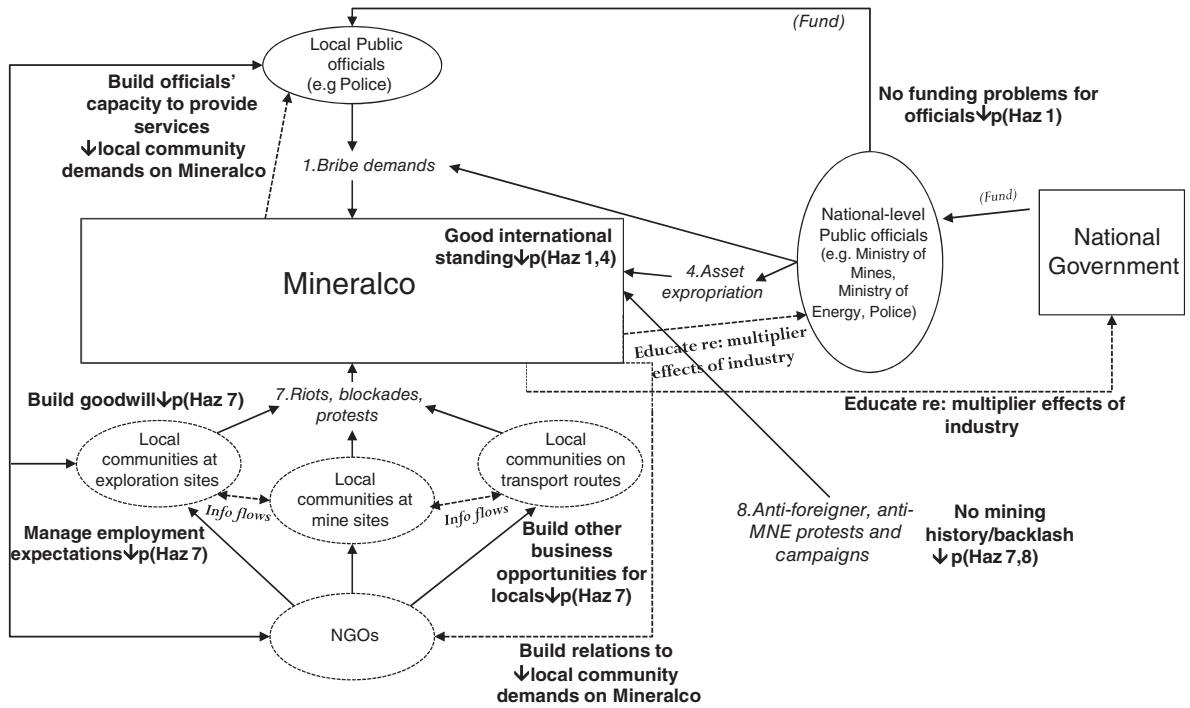

Figure 3. Small world representation of political hazard environment—GM (community relations)

single or unified actors (e.g., Mineralco, national government). Circles represent groups of actors (e.g., local communities, tribal groups), with solid or dashed lines denoting the extent of internal cohesion. Arrows indicate direct relationships between actors, and actors and events, with text summarizing their nature or content. Finally, numbered italic

text indicates political hazard events.[15] Critically, the diagrams include the respondents' assessments of (1) factors triggering/attenuating a hazard, and

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[15] Our satellite map provided a total of 10 numbered hazards that individuals might identify. We recognize this list is not exhaustive; it captures the total range across our respondents.
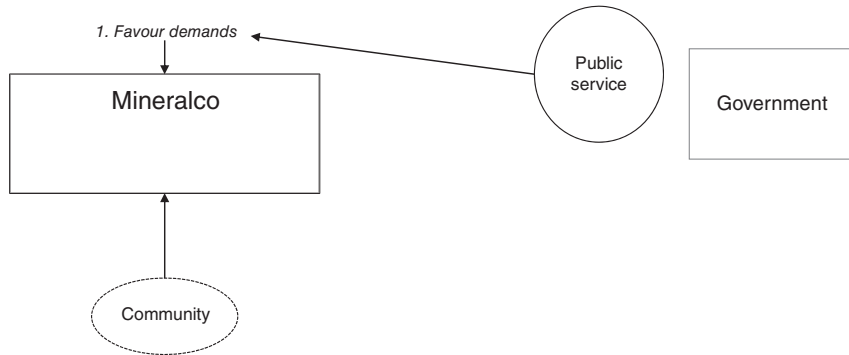
Figure 4.   Small world representation of political hazard environment—Director A

Figure 5.   Small world representation of political hazard environment—Director D

(2) possible mitigating actions to reduce a specific hazard's probability of negatively impacting Mineralco.

The most complex diagram (Figure 4), which we argue illustrates the richest SWR of the hazard environment, shows that Director A identified 10 different actors, seven political hazards, 10 inter-relationships, and 16 mitigating actions or relationships lowering an event's probability of adversely affecting Mineralco. Among the structural

Figure 6.   Small world representation of political hazard environment—Director F

relationships identified were links between Mineralco, Hazard 7 (riots, blockades, protests), and local communities. These constitute two sets of interrelationships (between each local community and Mineralco, and between local communities at different locations) influencing the hazard's probability of affecting the company (see the three sets of bolded text indicating factors reducing or increasing Hazard 7's probability). They also reflect his two specific HoHs, as detailed further below.

Table 4 summarizes the richness of respondents' SWRs, detailing the number of actors, events, interrelationships, and mitigating factors identified. Interrelationships are more than singular, unidirectional linkages between actors and/or events: they indicate recognition of bidirectional interplay between actors and events, and/or flow-through effects, whereby more than two actors or events interact. The table shows considerable variation in SWR richness. Directors A and D, and the GM(CR) had counts on all SWR measures at or above the average, while Directors C and F and the counsel were well below average. Table 4 also details the respondents' experience measures used to assess P2 and P3 below.

Heuristics and small world representations

Our analysis of Tables 4 and 5 and Figures 2–6 focused on how individuals articulated their understanding of the interplay between actors and events, and the scope for Mineralco to influence such relationships. Director A provides a clear example of the relationship between his use of various heuristics and his resulting SWR:

"*I was looking for an understanding of how people perceived the country; what foreign*

companies were operating in the country; how long they'd been there; what was the type of ethics of the companies."

He linked other MNEs' operating honestly to a lower estimated probability of Mineralco facing bribe demands, expropriation threats, or antiforeigner protests (Figure 4). He also believed local communities, not the national government, were key to Mineralco's hazard environment, as captured in his two HoHs:

"*It's all around being able to work with local communities. They can stop us producing, so work in harmony and not with the government if you like, but communities. That sort of conceptual license to operate is probably more important in the end than it is anywhere else we operate.*"

We do not claim Director A's representation is more accurate than other respondents', but that it was at a higher level of resolution. From the cognitive resources he brought to the information discovery and analysis processes, this director developed a SWR of the host country's political hazard environment that sought to understand the actions of a greater number of actors, events, and their interrelationships (see Figure 4).

In contrast, the GM(CD) had several discovery and evaluation heuristics to explore and assess the environment, but they did not coalesce into any HoH, nor did they particularly overlap with the two group heuristics identified earlier. His heuristics lacked specificity on the information cues to assess, for example, the government's openness to FDI or discovering whether the acquisition target

Table 4.   Summary of small world representations and international experience[a]

	Small world representations				International experience			
	# actors	# events	# interrelationships	# mitigation factors	Depth	Breadth	Decisions	Diversity
CEO	4	5	3	13	High	High	Low	High
GMCD) (Figure 2)	8	5	3	6	Low	High	Low	High
CFO	6	2	1	4	Low	Medium	Medium	Low
GMCR) (Figure 3)	7	4	6	8	Low	Medium	Low	High
Corporate counsel	3	2	0	0	Medium	Low	Low	Low
Director A (Figure 4)	10	7	10	16	High	High	High	High
Director B	5	5	5	4	High	Medium	Medium	Medium
Director C	4	2	1	0	High	High	Medium	Medium
Director D (Figure 5)	5	7	5	10	Low	High	High	High
Director E (chair)	6	5	5	5	Medium	High	Low	Medium
Director F (Figure 6)	3	1	0	0	Low	Low	Low	Low
Average	*5.5*	*4.1*	*3.5*	*6.0*				

	Depth	Breadth[b]		Decisions
	Number of years international	Number of countries worked	… including projects	Number of internationalization decisions
High	> 10	> 4	> 8	> 8
Medium	5–10	3–4	5–8	4–8
Low	< 5	< 3	< 5	< 4

	POLCONV for projects—mean[c]	POLCONV for projects—S. D.	Count - POLCONV < 0.50	Count - political risky countries	Count - developing countries	Count - least developed countries
High	< 0.60	> 0.30	> 4	> 2	> 6	> 2
Medium	0.60–0.70	0.20–0.30	2–4		4–6	1–2
Low	> 0.70	< 0.20	< 2	< 3	< 4	0

[a] Data behind experience classification thresholds shown in Document S1, Appendix S1, Tables S1.1, and S1.2, and summarized below.
[b] The higher of the two breadth counts was taken.
[c] An overall diversity classification was generated by averaging across the six-item classifications.

had engaged in bribery. His SWR encompassed fewer actors and interrelationships (see Figure 2). He repeatedly referred to "the government" without distinguishing local from national officials and only identified relationships with one other actor (the military) and one hazard (corruption). While aware of local communities' importance to mining activities, he did not identify, for example, the prospect that geographically close communities may share connections, information flows, and co-ordinate their actions. Compared with Director A's efforts to triangulate data when applying heuristics (Tables 2 and 3), the GM(CD) relied on the target for information:

"*We had to really make ourselves comfortable we weren't getting into a company where they*

were handing out brown paper bags … my relationship with [the Africamine CEO] was good enough to know if I asked him whether they had gotten themselves to that point, if he said no, then I could take that as a truthful statement."

"*I guess I took it pretty well as read that we would operate in a certain manner, just like we operate in [current host country] in a certain manner, and that [Africamine] hadn't operated in a manner that was contrary to how we would operate and, therefore, it was all OK. I was unprepared, probably naively so, for the amount of [board] interrogation that I got on that aspect.*"

These quotes show an unstructured willingness to accept data at face value, rather than subject

Table 5. Implementation assessments of Mineralco decision makers

	Implementation assessments
CEO	Maintain consistency of government relations personnel
	Maintain elements of target firm's brand in subsidiary name as recognition of political goodwill
CFO	Need to win hearts and minds of local communities to ensure license to operate is revalidated every day
GM(CR)	Need to remain politically neutral and not make political donations
Corporate counsel	Need to increase local workforce participation
Director A	Need to treat investment as if it is Greenfield, given few developed relationships, systems, structures
	Need to "buy" license to operate from the local community through ethical behavior
	Need to put in place people who understand social sustainability to work in harmony with local community
	Need local employees who are networked into the power structure
	Need to get a former diplomat/senior MNE executive active in Africa on the board for future growth
	Cannot expect the rule of law to step in if something goes wrong
Director B	Need to manage visible exploration expenditure to lower community expectations of new wealth sources
	Need to attend to local community concerns, as much as national government's
	Must enforce clear no exceptions to no-bribes policy
Director D	To lower risk, investment must be staged and expansion financed out of free cash flow
	Must have a direct line of communication between corporate HQ and the national government
Director E (chair)	Need local people in place to facilitate future expansion
	Must have clear rules that no bribes are to be paid

Note: No implementation assessments were made by the GM(CD), Director C, or Director F.

it to scrutiny. His SWR (Figure 2) exemplifies a more surface-level representation than those in Figures 3–5. He identified fewer actors and events, and there is an absence of interrelationships and detail on relationship content.

Finally, Figure 6 (Director F) illustrates the most basic SWR of the problem environment. A lack of heuristics is associated with an overall conceptualization that identifies only three actors, one hazard, no mitigating factors, and no interrelationships (see Tables 4 and 5). The sole hazard is that identified by the intergroup heuristic and the issue that dominated discussions within the board and overall decision process.

Assessing alternative scenarios: implementation assessments

A key element of analyzing the respondents' SWRs of the political hazard environment was their appraisal of what it meant for the acquisition. Table 5 sets out actions that respondents believed Mineralco needed to take or be aware of. Again, there was considerable variation, as the respondents projected different scenarios and implications for the acquisition. Several highlighted the importance

of sensitivity to local communities. This is unsurprising: many had worked at mine sites, experiencing local communities' demands for employment, infrastructure, and financial compensation to access *their* minerals.[16] As the GM(CR) commented:

> "*Most mines do end up being a magnet for people. You bring economic benefit and everyone wants a part of the action. So managing that will always be a challenge. Again, do we do it ourselves? For me personally, we don't. We set up the partnerships with the various NGOs and other experts, who are doing this as their bread and butter.*"

As noted earlier, not all respondents linked the risk of such activities to the broader hazard environment dynamics. Turning again to Director A (Figure 4), he indicated that Mineralco needed to develop links into national and local power structures, and employ locals able to interpret issues and help Mineralco act ethically in the local

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[16] At Mineralco's existing mine, traditional ownership rights issues were significant, requiring considerable effort to manage.

communities' eyes (clearly reflecting his HoHs). He recognized that the rule of law was unlikely to provide much assistance if trouble arose. Local community goodwill was seen as an essential buttress to avoiding locally generated problems and resisting those from further afield (e.g., militia groups attempting to hold up Mineralco's activities). Director B similarly argued:

> "*It's no use the fat cat politicians in [the capital] getting all of the strategy. [We need to] focus on what we call the sort of connected villages around [the mine] and with the subdivisions, where so much is happening and establishing targeted support programs, be they employment, health, all of those things at those levels so that we manage each level … It is absolutely key to the license to operate. We stuff that up and we're gone.*"

Political hazard experience, representations, and implication assessments

Richer SWRs identify complex interrelationships between different actors and events, rather than surface-level connections. In P2, we contend that such richness will reflect the breadth and extent of an individual's prior political hazard assessments. We overlaid the SWRs with the four experience dimensions (*Depth, Breadth, Decisions, Diversity*) to explore the multidimensional relationships between experience, development of domain expertise, and an individual's cognitive resources.[17] Grouping respondents into High, Medium, and Low for each experience dimension and comparing the SWR element counts revealed the High groups had the highest means in 15 of the 16 experience-element pairs, but *Depth* and *Decisions* experience were nonlinear in their impact: Low respondents' means slightly exceeded their Medium counterparts.[18] As shown in Table 4, the most notable differences in individual SWRs were also associated with the *Decisions* measure.

This aligns with P3: the richness of individuals' SWRs increases when prior experience includes strategic decision-making responsibilities, but may be subject to threshold levels of context diversity and decision experience (see also Figure 1). Those with more extensive FDI decision-making experience also generally had the foundations for HoHs and more complex implementation assessments (see Table 5).

The two most experienced decision makers—Directors A and D—identified a much higher number of interrelationships (10 and 5, respectively) and mitigation factors (16 and 10) than their fellow directors (with only Medium or Low decision experience), who typically had below-average counts. As noted, Director A's SWR showed him seeking to identify structural relationships in the problem domain and estimate their impact on the potential FDI. He was the only respondent to be above average on all four SWR and experience dimensions. Of particular note is his extensive role experience as a parent executive managing a very large subsidiary network across 25 diverse countries.[19] This involved making foreign entry, growth, and exit decisions, and almost daily exposure to how different political hazard environments impact offshore activities. This included making (and observing) hazard management decisions and interactions, providing rich feedback loops on different actors' actions, and their implications, as outlined in Figure 1.

Like Directors A and D, the CEO had high *Breadth* and *Diversity* experience, and he identified mitigation factors well above the average. His most senior prior role was as subsidiary manager in another politically hazardous African nation, providing exposure to a range of managerial challenges and remedial actions. Yet, he had low *Decisions* experience, which may be a factor in his below-average identification of interrelationships. This suggests experience diversity (e.g., in multiple locations) may not be as influential in shaping an individual's expertise as repeated senior level decision making across (and about) locations. The chair had high *Breadth* experience, but mainly in nonbusiness settings, and no experience of managing subsidiary networks or working in a corporate executive role. His *Decisions* experience was

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[17] Untangling the impact of organizational roles is challenging. Individuals did focus on tasks and landscape elements within their role-specific mandate. The GM(CR) looked to community relations, the counsel focused on property rights, due diligence, and rule of law, while the directors were more idiosyncratic, in light of their backgrounds in other organizations and contexts. The impact of roles is explored further in the section Discussion of Results.

[18] See Document S1, Appendix S4.

[19] Director A had made 13 FDI decisions in his capacity as an executive board member. Director D had made five such decisions as a senior executive in a MNE headquarters, and 13 more as a nonexecutive board member.

Low and his SWR was just above average in terms of the number of constituent components. Two individuals with few identified heuristics and the least complex SWRs (Counsel, Director F), also had Low-Medium experience on all four measures. In every instance, High *Diversity*—indicative of working in a wide variety of political hazard contexts —coincided with an above-average count on mitigation factors identified.

In summary, we find individuals brought very different cognitive resources to the decision, presenting evidence of HoHs and their building blocks of search, stop, and decision rules. These diverse heuristics built significantly different SWRs of the political hazard environment, particularly of the number of actors, events, and structural relationships. We did not study these SWRs' accuracy. Rather, we argue differences in respondents' heuristics and SWR richness (particularly attempts to discern structural relationships and the implications drawn for the acquisition) correlate strongly with individuals' past hazard environment experience, especially assessing and managing such contexts. In particular, experience of senior parent decision making involving multiple countries looks highly influential. In the next section, we set out the implications for behavioral and international business strategy, and offer suggestions for future research.

DISCUSSION OF RESULTS

Our study offers rare insight into how executives exercised judgment in an actual, high-stakes strategic decision (Powell *et al.*, 2011). Our respondents faced a problem setting that behavioral strategy argues managers struggle to decipher and understand: a cognitively, geographically, and institutionally distant set of options. We chose a clear baseline case for future research. The firm had no prior experience and, thus, no routines, capabilities, or overriding firm-level understanding of FDI assessment (see Gavetti and Levinthal, 2000: 117). Hence, firm-level factors did not confound individuals' processes. Rather, they reflected their attempts to exercise judgment. Moreover, the problem setting of a politically volatile country emerging from civil war was not one where an algorithm (or decision making based on optimization modeling) could outperform human judgment. In such a high-demand setting, expertise should enable identification of structural, rather than surface, relationships and

the estimation of the probable hazards impacting a FDI.

In line with P1, diverse heuristics were used (see Tables 2 and 3), reflecting the different cognitive resources individual decision makers brought to the decision process. Table 4 (and Figures 2–6) captures their cognitive strengths in adapting to an unknown environment. The patterns of meaning they derived from these information flows are also reflected in Table 5's implementation assessments. While the clearest links from experience to SWR richness were for those with little international and decision experience (they saw the environment in very simplistic terms), unpacking the variation in SWRs and assessments showed that the impact of nontrivial international experience on cognitive structures varies along multiple dimensions. Medium *Depth* and *Decisions* experience appeared to have limited impact on SWR richness, whereas *Breadth* and *Diversity* looked to have more positive linear impact. This supports a version of Figure 1 (and P2) in which a threshold number of repeated feedback loops across a threshold diversity of uncertain environments are needed for learning to be encoded as expert knowledge in hazard assessment.

Further, the capacity to translate these SWRs into managerial implications was inconsistent. For example, multiple respondents' implementation assessments (Table 5) stressed the need to win local communities' "hearts and minds," buy Mineralco's license to operate from them, and employ locals to build trust and facilitate future expansion. Yet, few articulated discovery and evaluation heuristics focused specifically on the local community, suggesting that, while many had long-term, multicountry experience of mining operations, this experience was yet to be encoded as specific political hazard heuristics. In-country roles where sensitivity to local community needs was a central concern seem to have honed skills in engaging with these communities, but not necessarily in identifying local communities' positions in broader networks of political power. Such expertise looked to flow from very different types of task experience.

In particular, those with High executive and board-level experience of FDI decision making were more attuned to power structure dynamics playing out at multiple levels. Their above-average mitigation factors and interrelationships in Table 4 (and Figures 2–6) reflect their conceptualizations of these complexities. Consistent with P3, the relevant

experience appears to involve the specialized tasks of assessing and managing political hazards in different locations on an ongoing basis. These tasks include government negotiations, corporate policy design for different political contexts, and resource and capability transfer or acquisition to manage on-ground hazards. Director A's HoHs and implementation assessments exemplify this.

These findings do not imply that other respondents brought little expertise to either the political hazard assessment or the overall decision process. The HoH findings indicate that individuals with specific disciplinary expertise and/or roles, such as the counsel, GM(CD), Director C (a career-long consultant mining engineer), and CEO, harnessed their experience to very specific hazard environment aspects contributing to the ultimate group decision (see Table 3). Equally, individuals without extensive strategy experience, but whose backgrounds involved roles outside their original functional or disciplinary training (e.g., finance, exploration, extraction) and had particularly spent time in non-functional managerial roles—Director B, the chair, CEO, and GM(CR)—were able to develop SWRs of moderate complexity and identify above-average implementation assessments. Those lacking career experience in adapting their cognitive structures to new expert tasks, such as Director F and the counsel (career lawyers), and Director C, appeared less able to look outside their specialist training to perceive the broader political hazard canvas.

Our findings speak directly to the nature of learning and expertise, and a need to focus specifically on the nexus between different types of experience and their encoding in cognitive structures. First, our results extend prior research by identifying the possible influence not just of depth versus breadth of experience, but also of task variation within and across expertise categories (Kolodner, 1997). Our results also support growing calls to investigate what constitutes expert knowledge in strategic decision making and how it is acquired (see Powell *et al.*, 2011). While experts necessarily have highly complex domain schemas, these also tend to be highly stable, prompting assertions that cognitive inflexibility accompanies expertise (Fiske and Taylor, 1991; Sternberg, 1996). Domain-specific expertise is thought to limit an individual's ability to generate, combine, and reorganize knowledge and information in ways that create new ideas. It cognitively "handcuffs" individuals, disabling their adaptiveness to new circumstances, such as disruptive

technologies and business models (Jansson and Smith, 1991; Saariluoma, 1992). However, Dane (2010) contends an expert's cognitive handcuffing may be critically moderated by their (1) focus on tasks and information outside their expertise domain, and (2) encounters with environmental dynamism, in which events rarely proceed as anticipated and individuals must be prepared to cognitively adapt to changing circumstances.

Our findings are also consistent with analogical reasoning studies arguing that experience may be critical to an individual's ability to structurally align current and previously experienced environments (Gary *et al.*, 2012; Lovallo *et al.*, 2012). Gavetti *et al.* (2005: 704) found, in a mathematical simulation, teams with greater breadth of experience steadily improved their performance, but depth of experience in a particular problem landscape produced rapidly diminishing returns. Similarly, Gary *et al.* (2012: 1242), in a laboratory study of analogical reasoning, suggested structural alignment was enhanced by working on increasingly more difficult variations of strategic challenges, rather than working on the same, repeated decision task.

Our findings indicate the path to answering why experts are able to adapt their cognitive resources to new contexts and identify structural relationships may lie in identifying how learning is encoded in HoHs and their building blocks, rather than focusing on processes of retrieving and applying similarly experienced problems and their solutions. As Gentner *et al.* (2009: 1343) noted, "There is abundant research demonstrating, first, that analogical transfer can lead to considerable insights *when it occurs*; and, second, that it very often fails to occur," particularly in new contexts. Heuristics contain encoded knowledge from prior experiences and function by focusing the decision maker on a specific context's structural relationships, not similarities with previously encountered contexts (see Figure 1). Identifying the heuristics and HoHs strategic decision makers' use may particularly drive development of prescriptive norms for managers, extending the popular case-based approach to management education to a possible identification of a heuristics-based logic for exercising judgment in ambiguous and uncertain contexts (Lovallo *et al.*, 2012).

The scope and complexity of expert heuristics are potentially valuable firm resources. Given managers are often myopic—more effective in conceptualizing alternative outcomes close to a firm's

current activities—we support Gavetti's (2012) arguments that managers able to build SWRs of cognitively distant opportunities may be the ultimate source of competitive advantage. Individuals' heuristics can also be seen as important precursors to firm-level routines and capabilities. Recent empirical research has linked firm-level portfolios of heuristics built on prior experiences of implementing international strategies to performance, especially in fast-moving, unpredictable environments (Bingham and Eisenhardt, 2011; Bingham and Haleblian, 2012). While these studies provide valuable examples of firm-level heuristics as rational adaptive responses to uncertainty, they do not assess the role of individuals' prior experiences as sources for and drivers of the emergent rules and, ultimately, their performance effects. By using just such data, we offer a new lens into the specific elements of decision makers' heuristics, expertise, and sense making, and possible origins of routines and capabilities. We found a diversity of cognitive tools among our senior decision makers, as well as insights into the impact of diverse backgrounds (countries, roles, and responsibilities) on heterogeneity in SWRs and assessments. These may all serve as microfoundations for future capabilities. Indeed, this study can be seen as a response to Winter's (2012b: 1404) proposed question for microfoundation studies: "When a specific capability first appears at a specific site, where does the requisite knowledge come from?"

DIRECTIONS FOR FUTURE RESEARCH

Our study offers strong insights into individual-level heuristic precursors. We see evidence of group decision rules emerging, but there is much to explore in terms of ongoing advantages derived from heuristics. We illustrate relationships between experience, HoHs, and their building blocks, SWRs, and decision assessments, but based on a single case. With no direct measure of expertise, we developed multifaceted measures of international and task experience, as proxies for learning encoded in decision makers' heuristics. To elaborate these links, future research should study firms also embarking on their first international investments, plus investigate how individual-specific heuristics may evolve into firm-level heuristics through repeated decision processes (see Eggers and Kaplan, 2013).

Our results highlight the need to better understand the relationship between uncertainty, decision making, and expertise. Strategy, as the projection of alternative actions in decision spaces of many actors and events, inherently entails uncertainty. As their causal structure is highly unpredictable, such settings are characterized by low validity, which is argued to render expert judgment unreliable (see Kahneman and Klein, 2009). However, such arguments conflate high variability in possible outcomes with the problem of novelty, for which considerable research shows the exercise of expertise is problematic (see Dane, 2010). Future research on strategic decision-making expertise should carefully distinguish decision space attributes that are highly dynamic (and uncertain) from the genuinely novel (e.g., not previously experienced by the individual). This is important for two reasons. First, repeated exposure to dynamic, versus highly stable, events appears associated with repeated feedback loop opportunities on the deeper structural relationships operative in an environment and the development of adaptive domain expertise (see Figure 1). Second, novelty as a construct of experience, whereby it captures zero or little experience, then provides clearer insights into the relationships between cognitive performance and the problem space. While our study's setting was arguably novel to all the respondents, as none had direct country experience, specific experience types were closely associated with richer SWRs and assessments of the power structure's impact on the FDI.

There are avenues to extend our investigations of strategy expertise into other strategy contexts, such as high velocity industries, economic bubbles and crises, emerging economies, and mature markets. Delving into the origins of decision makers' cognitive resources will contribute to the growing literature on strategy's microfoundations (Felin and Foss, 2005; Felin *et al.*, 2012; Gavetti *et al.*, 2012; Powell *et al.*, 2011). Our contribution illustrates how individual-specific experience and expertise heterogeneity led to varied environmental assessments. Further research should also explore how firms can engineer executive team composition to match different decision-making contexts, such as domestic versus international settings, disruptive technologies, innovation, and financial crises, and design career paths to acquire expertise in different strategic decision-making areas. Laboratory and simulation studies have much to add in these areas,

particularly in clearly identifying the building blocks of HoHs, while field work provides valuable insights into how executives in their natural settings work through strategic decisions.

Investigating cognitive resources and decision-making processes may also be the crucial missing driver of the controversial relationship between an MNE's decisions and performance (Hennart, 2007; Tallman and Li, 1996). For example, the locus of MNE decision making may be of greater significance to performance than the extent of internationalization or mode choices. In-country management tasks may offer different or less impactful learning opportunities than parent/regional HQ decision roles (due to the higher number of feedback loops from engaging in strategic decisions and managing issues simultaneously across multiple countries). Equally, development of MNE-level routines and capabilities may rest on a mix of expertise derived from in-country and HQ opportunities.

CONCLUSION

Successful MNEs and managers adopt strategies that fit the external environment, but different decision makers perceive the same environment differently. Mineralco's decision process highlights the diversity of cognitive resources that individuals bring to a decision process and the value of drawing on each decision maker's different resources. While heuristics have long been associated with cognitive limitations, our study reveals their potential strength as tools enabling decision making in dynamic and uncertain environments. The ability to build a complex SWR of a political hazard environment is a key component of an individual's international strategy expertise. In our study, cognitive resources reside almost exclusively at the level of the individual decision makers, and their expertise looks to have been built from their varied experiences in previous roles, geopolitical situations, and strategic contexts. As behavioral strategy argues, "Sound executive judgment, and contextual architectures that can promote sound judgment, can enhance firm performance" (Powell *et al.*, 2011: 1370). Building upon the microfoundations of individuals' heuristics, such as we observe in this case, firms and strategy scholars may well build better tools to collectively understand firm-level advantage across a wide range of environments and contexts.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article:

Appendices. (1) Construction of experience indices. (2) Mapping Mineralco's political hazard environment. (3) Additional small world representation figures. (4) Additional data on small world representations and international experience.