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Bullish on Uncertainty

Our research uncovered a puzzle. Two highly successful investment banks were experiencing high uncertainty because globalization and industry deregulation demanded a new way of doing business. The two investment banks advised top executives of Fortune 100 companies about raising capital, taking companies public or private, and restructuring businesses. These tasks were becoming more complicated in the 1990s, however, because the environments around investment banking were changing rapidly. To assist bankers in making effective decisions amidst this turbulence, the banks designed work practices that managed uncertainty. But the two banks, "Individual Bank" and "Organization Bank," managed uncertainty in divergent ways. Individual Bank used familiar practices to *reduce* uncertainty for employees – explicit strategies and organizational structures, clear role definitions, careful feedback to bankers, and extensive training. Organization Bank, in contrast, used puzzling practices that *amplified* uncertainty, highlighting and even intentionally creating additional uncertainty for bankers. It deemphasized explicit strategies and roles, feedback was difficult to interpret, and training was full of contradiction and viewed as relatively unimportant.

THE TWO BANKS' APPROACHES

Individual Bank's approach followed traditional organizational theory. From this perspective, uncertainty is pervasive in business and, because it can impede decision making, its reduction should be a central priority for management (March and Simon, 1958; Simon, 1976). The management literature describes this priority clearly. Uncertainty reduction is viewed as a "fundamental need" for individual employees (Hogg and Mullin, 1999: 253;

Hogg and Terry, 2000), who experience uncertainty as frustrating, disorienting, and aversive (Katz, 1985; Schein, 1978). Reducing uncertainty for employees is thus crucial for organizational design and socialization (Ashford and Black, 1996; March and Simon, 1958). Companies have successfully adopted uncertainty reduction for decades (Colvin, 2006).

Run by managers with MBAs from prominent business schools, Individual Bank followed the advice of management theorists. It reduced uncertainty for its bankers by narrowing the amount of information they attended to and by providing them with guidelines – such as organizational concepts, values, goals, and standards. For example, as recommended by classic organizational theory (March and Simon, 1958; Simon, 1976), top management devised strategies that dictated the actions of bankers at lower levels, letting them know which clients to pursue, which opportunities to pass by, and how much revenue to generate. Bankers were reviewed and paid based on the goals that top management gave them. This reduced uncertainty because bankers did not need to evaluate business opportunities independently. All a banker needed to know was whether a company was on the banker's client list. Quarterly revenue goals further simplified the bankers' decision making because they did not need to attend to more complex considerations such as the longer-term implications of a particular deal or the resources they spent to get the business.

Individual Bank also cultivated "superstars." These were senior bankers with extensive experience in a given area and strong client relationships. They were celebrated for their expertise and courted publicity by commenting in the press and developing colorful public personalities. The bank developed banker expertise by repeatedly staffing superstars on deals in their areas of expertise. When a new deal came in, the bank assembled teams with the most relevant experience. This reduced the bankers' uncertainty because they were consistently confronted with familiar situations. The bankers advertised their deal-specific expertise to the client, and clients rarely made expert bankers feel insecure by challenging their knowledge.

Clients were pleased with this practice. As one client said, "We always invite at least three or four banks to pitch to us and we give the business to the bank that gives us the best banker team." Bankers from Individual Bank believed that its uncertainty-reduction strategy contributed to the bank's high performance. In response to an open-ended question about critical factors for a bank's performance, thirty-four out of thirty-eight senior Individual Bankers mentioned uncertainty reduction. They said that banks fail when bankers "are overwhelmed with the information they get or the tasks they have to do," "aren't given clear goals or directives," "do not get the training they need to know how to do their job," and "get inconsistent messages from the different HR [Human Resources] processes we have in place." The bankers also acknowledged the downside of their uncertainty-reduction approach, however. When one of its superstars left, the bank often could not fill the gap in that area of expertise, and this sometimes caused colleagues and clients to defect as well. Some of these mass exits forced the bank to abandon entire business lines – not an uncommon event in knowledge-intensive industries.

Individual Bank's uncertainty-reduction practices followed the advice of organizational scholars, the judgment of its bankers, and common sense. These practices were also successful, as indicated by the bank's leading position in the industry. Our puzzle is why Organization Bank, which faced the same challenges as Individual Bank and was just as successful, flaunted the time-honored uncertainty-reduction approach and *deliberately amplified uncertainty*. Organization Bank purposefully broadened the amount of information that its inundated bankers had to attend to, it withheld clear goals and directives, and it did not give bankers the training they needed to do their jobs. Even though outsiders admired the bank for its extraordinary profitability ("a money-making machine") and also considered the bank as "among the best managed in the industry," they derided these uncertainty-management practices as "organized chaos," "completely incomprehensible," and "defying everything we know to be true about how to manage a firm."

Organization Bankers did not, for example, receive client lists or goals. Instead, every few days they were given comprehensive information about the consequences of their actions – the amount of time they had spent on various types of projects, deals that were done by other teams, and the cost of the resources they used, including the time of other bankers and support staff and even the cost of their color copies. The bankers were supposed to use this information to determine which business opportunities to pursue and with which combination of resources. Strategies emerged only retrospectively, when many bankers had noticed and seized the same market opportunity. The absence of lists, goals, and strategic direction amplified uncertainty because bankers had to attend to more information, as compared to the Individual Bankers, and because they received few guidelines to assist them in making decisions. As one vice president commented, "The sheer demands on your attention and concentration are just mind-boggling. Not to mention the frustration that comes when you are trying to make sense of this mess of contradictory trends and information."

Another puzzling practice at Organization Bank involved the assignment of bankers to projects. Like Individual Bank, Organization Bank hired graduates with diverse educational backgrounds, including degrees in music, poetry, and the social sciences. Knowledge of finance was not a prerequisite. Unlike Individual Bank, however, it put these graduates to work on complicated deals immediately, asking them to produce leveraged buy-out analyses, common stock comparisons, and other products that most new bankers had never heard of. Newcomers often had to deliver these products overnight for deals in which billions of dollars, the careers of client employees, and sometimes the fate of an entire industry were at stake. Not surprisingly, the newcomers experienced uncertainty and extremely high anxiety. As one new associate said: "This is really difficult for me. I have always been the best at everything I took on. Now I am constantly in situations in which I feel completely helpless and incompetent."

The bank's puzzling practices ensured that even relatively senior bankers experienced persistent uncertainty. Unlike Individual Bankers, Organization Bankers were not assigned to projects based on relevant expert knowledge, but solely based on availability. When one Organization Banker went on vacation or was overloaded, other bankers seamlessly substituted on projects. One Organization Bank vice president said about this practice: "Even at my level I am still regularly confronted with deals about which I know relatively little." This was "unthinkable" at Individual Bank, as a senior Individual Banker noted: "It just doesn't work that way. You can't replicate what your colleague knows at the drop of a hat."

As a result of its unusual staffing practices, Organization Bank clients were presented with teams that included relatively junior and inexperienced bankers – and they often complained vigorously. As one potential client CEO said:

> What is this? The high school science project team? I have a granddaughter who is older than you are. . . . My ass is on the line here and this is the best that you can come up with? You know what this is? [pointing to a stack of business cards in front of him]. These are business cards from other bankers I am dealing with. [Reading off the name of the bank and the bankers' title] . . . head of investment banking, . . . head of sales and trading, . . . head of global corporate finance. These banks send in their superstars, their most experienced bankers. I want the same kind of attention from Organization Bank.

The Organization Bankers routinely declined such requests, responding: "We are fungible. We all do the same thing. We all draw on the resources of the organization."

Despite the fact that some clients were initially displeased, Organization Bank was at least as successful as Individual Bank. On some dimensions of performance, it was more successful. Both banks had comparable league table standings. (League tables are important performance indicators in investment banking. They rank banks according to how many deals they have done in a given area and according to the size of the deals.) Even though both banks were profitable, Organization Bank was relatively more profitable and had been so for a long period of time. In fact, industry observers often remarked on Organization Bank's profitability as the "envy" of the industry.

Organization Bank has also consistently adjusted to unanticipated market changes more successfully than Individual Bank. Like most of its peers, Individual Bank was known for being "one step behind the market," as an Individual Bank director noted:

> Look at the example of our [name of group]. We used to be number one in the industry. After the market [for that group] tanked, we became so nervous that we overreacted. We let go of 90 percent of our senior bankers, leaving a bunch of analysts, associates, VPs to work for two senior people. But that was at a time when Organization Bank was already ramping up its business [in this area] because it correctly anticipated that the market slump would be over soon. By the time it had dawned on us that this market was going strong again, we were way behind the curve in hiring. We couldn't get any business during that time because, with only a few senior bankers, clients questioned our commitment to the market, and they were right. And then, of course, we swung too far in the other direction as a result and overhired. By the time we had a big team together, ready to go, the market was heading south again and a new round of headcount reductions started.

Organization Bank was known as an innovator that noticed changing conditions early and also created important market changes, such as new types of products that other banks subsequently copied. For example, commenting on a draft of this book, one Individual Banker said about Organization Bank:

> One example that supports your theory is our industry's turn toward [a particular type of service offering]. While most of us are stuck with the typical investment banking products, at least for now, Organization

Bank has reinvented itself and now is a completely different type of animal than it was only a few years ago, and it is raking in unheard-of profits.

During many unanticipated market changes, Organization Bank was among the few industry participants that either were buffered from losses or even profited as other competitors suffered substantial losses. This consistently superior performance in the face of uncertainty led competitors and outside evaluators to conclude that Organization Bank's repeated successes were extraordinary and "defied logic."

Even when very senior and experienced bankers left the bank, Organization Bank did not suffer knowledge gaps or additional attrition. Clients stayed with the bank because they believed that the expertise they were buying resided in the organization as a whole, not in a particular banker. Commenting on the lack of a superstar culture at Organization Bank, one client said: "The advantage of having drones working on your account is that they bring in the knowledge of the whole hive." For similar reasons, other employees did not defect when senior bankers left. They were confident that the loss of one knowledgeable colleague would not mean that their group was doomed to collapse, as was sometimes the case at Individual Bank.

THE PUZZLE

The Organization Bank puzzle is this: A knowledge-based organization usually sells the expert knowledge of particular employees and reduces uncertainty so those employees can implement their expertise. How can a knowledge-based organization be consistently effective in situations where its participants do not have the requisite knowledge? Why would an organization deliberately structure itself so that its employees regularly confront unfamiliar situations and persistently face uncertainty?

Even though organizational theory and common sense would find these practices puzzling, uncertainty amplification is increasingly practiced by other successful organizations. Examples include Apple Computer's R&D unit that exploits employees' uncertainty for innovation (Walker, 2003), Google's "chaos by design" (Lashinsky, 2006: 86), U.S. Army officer combat training that creates "ambiguity and uncertainty" (Wong, 2004: 17), and John Seely Brown's former job as Xerox's "chief of confusion." Moreover, anthropological studies suggest that uncertainty reduction is a cultural choice – rather than a human imperative or a fundamental need –

and that other responses are possible. Levy (2001), for example, describes how certain Nepalese communities continuously place adolescents into new situations and deliberately create high levels of uncertainty for them.

Organization Bank had an unusual but effective view of what causes high performance. As already noted, Individual Bankers believed that banks fail when bankers are overwhelmed with information or do not get clear and consistent directives. In contrast, Organization Bankers believed that banks fail when "people think of themselves as experts and don't realize that their knowledge doesn't apply to a new situation," when "bankers develop these recipes for how to do things and forget that each situation is different," when "people put too much faith into what they think to be true," and when "bankers rely too much on what they think they know and too little on the organization's resources." Out of forty-two senior Organization Bankers interviewed, thirty-seven made similar references to uncertainty amplification. Not one Organization Banker mentioned uncertainty reduction. They said that banks succeed when they "continuously remind people of how little they know" and "create the 'insecure overachiever', someone who compulsively doubts what they know all the time." One managing director said: "Our most catastrophic problems came about because people thought they were the experts. They thought they knew what was going on even though the market had changed . . . . What we do around here has to do with dispelling these illusions."

The two banks thus managed uncertainty differently. Individual Bank sold the knowledge of its *individual* superstars. Because individuals have limited information processing abilities, Individual Bank's work practices reduced the amount of information that bankers had to cope with, thus allowing its bankers to function competently. The bank's reliance on individual experts is typical for contemporary professional service firms coping with environmental uncertainty and complexity. This departs from the approach taken by traditional industrial companies, which typically face more stable business environments and can rely on the resources and procedures of a whole organization. They could, for example, script individuals on how to conduct activities. Standardized procedures, however, do not work in investment banks where each client problem is different and where markets change rapidly. Contemporary banks therefore rely on the flexible judgment of highly educated and trained professionals to devise appropriate solutions in each situation (Nanda, 2005). As one Individual Bank director said, "When the environment is that complex, you cannot rely on an organization. Organizations are simply not agile enough. You need to rely on really smart, brilliant individual minds."

Organization Bank approached uncertainty from a third and less common perspective. Instead of providing rigid scripts like traditional industrial companies, and instead of depending on individual experts like Individual Bank, it spread cognitive demands across a higher-capacity *organizational system*. Because they had the resources of the entire organization at their disposal, bankers did not have to rely on their own judgment to make sense of difficult situations. This organizational system avoided the rigidity of traditional organizations because it did not consist of standardized procedures. Bankers were not scripted on what to do, but instead relied on interaction with the organization's resources to devise the best solution. For example, an inexperienced banker who was staffed on a healthcare sell-side merger assignment could speak to experts in the healthcare market, rely on project templates from previous sell-side transactions, and get feedback from other bankers. Organization Bankers did not rely heavily on their personal expertise, because they were consistently confronted with situations for which they had not developed much prior knowledge. They were forced to treat each client problem as unique and to devise appropriate solutions from the bottom up, driven by the situation's requirements instead of the banker's preconceived notions. The Individual Bankers, of course, also depended on the resources of the bank, but not to the same extent. Individual Bankers would not, for example, ask peers to comment on their client solutions because this was seen as a sign of incompetence.

Organization Bank did not tell or encourage its bankers to use the bank's resources. It *forced* them. In the following chapters, we describe in detail how incoming bankers at both banks initially preferred to rely on their own resources. They wanted to work as independently as possible to prove how competent they were. Other businesses that depend on knowledge professionals often experience this independence in the form of "silo effects," which keep professionals from interacting with and cross-selling the services of other departments, or the "not-invented-here syndrome," in which professionals do not utilize solutions that have been discovered outside their immediate group. As one of our informants, an industry expert, remarked: "The most important – and the most difficult – thing that banks have to do is get their people to talk to one another." Organization Bank counteracted its bankers' tendency toward self-reliance by repeatedly placing them in situations for which their own knowledge was insufficient. It believed that bankers only made effective use of the bank's resources when they were uncertain about the applicability of their own knowledge. Only by drawing on others could bankers who were lacking personal expertise deliver high-quality products under extreme time pressure.

It makes sense for a firm to want its employees to make good use of organizational resources. But was Organization Bank going too far? How could it expect inexperienced bankers to deliver complex products the next day when they did not understand basic things about the type of deal they were working on? This book answers these questions in two parts. Part One describes the two banks' approaches in more detail, explaining why the banks managed uncertainty in contrasting ways. It explores how and why Organization Bank made its unconventional choices, comparing these to Individual Bank's more familiar practices. We argue that Organization Bank's practices seem counterintuitive partly because of familiar cultural notions about what it means for individuals to be knowledgeable. We tend to think that individuals are knowledgeable to the extent that they *possess* concepts and skills that they apply to new situations. In this view, if a person does not have relevant concepts and skills he or she will not be able to complete a task. Organization Bank took a different approach to problem solving in which individuals *suspend* their concepts and skills to seek out the best combination of resources in a given situation. This approach is based on the view that the knowledge of one person does not matter because whatever the person does not know can be supplied by a different resource.

The second part of the book describes how junior bankers were transformed by their work in these two different contexts. It describes how newcomers at both banks learned to use cognitive resources in different ways – psychological resources, such as identity, cognition, emotion, and motivation, as well as social resources, which include other people, data, objects, and technology. We show how Individual Bank's practices caused bankers to internalize knowledge and guidelines such that bankers thought, felt, and acted in terms of concepts that they brought to a situation. Organization Bank, in contrast, intentionally withheld guidelines and forced bankers to think, feel, and act with respect to the details of particular situations. Organization Bankers became highly sensitized to the unique aspects of each problem, noticing changes in the environment and rapidly marshalling organizational resources to assemble unique solutions. We describe how the Organization Bankers did more than learn a different way of solving problems. They also were fundamentally transformed as persons. In addition to describing this transformation, the second part of the book describes how the banks' divergent practices yielded different performance consequences. We suggest that Organization Bank's less common approach is valuable because of beneficial consequences for both the participants and the organization, but we also acknowledge the costs and limits of this approach.

WHY STUDY INVESTMENT BANKS?

Investment banks are excellent places to study uncertainty-management practices, problem solving, and socialization for several reasons. First, these banks work in extremely dynamic, complex, and competitive business environments. They must innovate constantly, adopting new technologies, routines, and procedures often long before similar practices find their way into more traditional organizations. As bankers work in these rapidly changing environments, their basic psychological processes – such as cognition, emotion, motivation, and identity – can take new forms. Study of investment banks can thus illuminate the interdependence of psychological processes and organizational contexts, as well as the plasticity of basic psychological processes. We can also observe psychological processes in investment banks that may soon appear in other contexts as other sectors adopt practices from trailblazing organizations such as these.

Second, investment banks are prototypical knowledge-based organizations, a type of organization on which Western societies increasingly rely. Investment banks and other knowledge-based organizations use knowledge as a primary input, in the form of employees' expertise, and as the principal output, as, for example, advice to clients. Observations about our "technological society" (Berger et al., 1974), "information society" (Lyotard, 1984), or "knowledge society" (Drucker, 1993) describe how the West is increasingly governed by knowledge and expertise. Our research suggests that the idea of expertise as the property of an individual, which is prevalent in Western societies, is only one way in which expertise can be understood and enacted. Our comparison of the two banks' work practices shows that organizations differ in how they define what it means to be knowledgeable. The book articulates an alternative, distributed model of expertise that is not yet well understood, and we explain its consequences for knowledge-based organizations, their employees, and their clients.

Third, responding to uncertain environmental conditions, investment banks have developed unusually adaptive work practices that are increasingly used by more traditional organizations (Eccles and Crane, 1988;

Covaleski et al., 1998). Firms such as IBM and Xerox have shown how traditional companies can transform themselves into knowledge-based organizations, drawing on the kinds of work practices described here. Our description of the banks' uncertainty-management practices thus illuminates processes that structure significant parts of the economy. Understanding that there are different kinds of uncertainty-management approaches available, with different implications for organizations and individuals, is important for the increasing number of organizations that adopt these practices.

Fourth, investment banks influence the distribution of scarce social resources, the life chances of other organizations, and thereby products, services, and employment opportunities in the larger society. In contemporary Western societies, the investment banking industry is a pillar of the corporate economy. Microeconomics textbooks frequently use the metaphor of Robinson Crusoe to emphasize that, without something to invest, one cannot aspire to produce much. Crusoe first has to invest his own time and labor to create some productive capital infrastructure. Intermediaries such as investment banks can shorten this process. Organizations do not have to wait for profits to accumulate, but can instead create an infrastructure with money from investors. Strange (1994) has argued that the enormous economic growth of recent decades reflects this access to external financing. The decisions bankers make can thus improve the prospects of some organizations and hold back others. But the processes bankers use to make their allocation decisions are not well understood. This book describes important aspects of these processes in detail, showing how different types of uncertainty-management practices yield different outcomes for individual bankers, their firms, and their clients.

Fifth, and finally, investment banks are important because they attract many talented young people and produce influential economic, government, and cultural leaders – including Henry Blodget, Jon Corzine, Michael Lewis, Michael Milken, Hank Paulson, Donald Regan, Robert Rubin, John Thain, and Gary Winnick. These leaders are often chosen because their work in investment banking has trained them to respond successfully to unexpected challenges. Mandel (2006) differentiates between the "old economic thinking" embodied by government officials drafted from the industrial sector, such as Paul O'Neill and John Snow, and the current thinking, embodied by current Treasury Secretary Hank Paulson among others. Mandel calls Paulson "Mr. Risk," referring to the importance of risk management in an investment bank and Paulson's ability to apply his experience to government, where "risk shows up in virtually every economic issue of the day." Our perspective on investment banking does not emphasize the excesses and extravagant personalities that have captivated the public imagination in books and movies including *Wall Street*, *The Bonfire of the Vanities*, *Liars' Poker*, and *Money Culture*. We focus instead on the extraordinary discipline and sacrifice investment banking demands of participants and on the human resources that can be produced in the process. The book describes two very different ways in which investment banks produce individuals who often go on to play important roles in society.

We studied Individual Bank and Organization Bank intensively, over a period of two years, using information from four overlapping data sources. First, we used participant and nonparticipant observation. The most intensive observation took place during the first year of the study, when Michel observed 5 to 7 days a week (between 80 and 120 hours per week), mirroring the bankers' own schedules. The total observation time was about 7,000 hours. Michel both worked alongside bankers and observed them while they worked. She followed more than two dozen deal teams at the two banks, attending both team and client meetings and interviewing some clients. Her prior experience in investment banking assuaged the banks' concerns that the research might interfere with the bankers' work because they trusted her to be sensitive to the bankers' high pressure and fast pace. Michel's personal experience also made her more empathic toward informants and positioned her as an in-group member. This facilitated more trusting relationships. Bankers frequently invited her along to non-work events and sought her out for informal conversations, which provided important insights into the psychological processes this book explores. Second, Michel conducted 136 formal, semi-structured interviews, each lasting between 30 and 45 minutes. She interviewed the incoming junior bankers at both banks – who answered questions about socialization processes, specific learning situations, and their own development – as well as the senior bankers who interacted with these newcomers while doing their own jobs. Third, Michel conducted informal interviews with about 120 informants, including Individual Bank and Organization Bank employees and clients, employees of other investment banks, and industry experts. The informal interviews with the two cohorts of junior bankers, conducted at least once per month across the two-year period, focused on their learning and development. Fourth, we collected comparable documents at both banks, including training and recruiting materials and new bankers' work products, which consisted mostly of client presentations and the repeated rounds of feedback on these.

Researchers only rarely gain access to investment banks because of the industry's high confidentiality concerns. Our study is unique in the amount of detail we offer about these closed settings. Michel had such extraordinary access because of contacts she developed while working as a Wall Street investment banker herself for four years. As a banker, her primary responsibilities included conducting financial analyses, helping assemble client presentations, and managing some of the daily client interactions. During her fourth year, she worked in the bank's training department, which was re-evaluating its approach to professional development. Michel participated in this process by conducting a survey of best practices among comparable firms. The personal relationships she established during this research helped her gain access for the present investigation.

CONTRIBUTIONS OF THE BOOK

Our account of Individual Bank and Organization Bank makes four important contributions. It describes a counterintuitive but promising way that organizations can manage uncertainty, by amplifying instead of reducing it. It describes how individual development can take different pathways in different organizational contexts. It describes how basic psychological processes like cognition, emotion, motivation, and identity can function differently when organizations adopt divergent work practices. And it describes how apparently incompatible theories of human cognition can usefully be construed as local theories that account for different practices in the world. The next few paragraphs summarize each of these points, and the following sections elaborate on each in turn.

Uncertainty is central to contemporary organizations because it strongly influences how organizations structure their activities (Lawrence and Lorsch, 1967; Thompson, 1967; Williamson, 1981; Weick, 1979). It is also a crucial construct in the psychological literature on human development because uncertainty can catalyze cognitive development (Acredolo and O'Connor, 1991). Existing organizational and psychological accounts, however, assume that organizations can only manage uncertainty by reducing it. We challenge this fundamental assumption and describe *uncertainty amplification* as an alternative strategy for productively managing uncertainty in rapidly changing environments. We show how uncertainty amplification can yield counterintuitive results – how experts with less knowledge can be more effective, how giving people too much and contradictory information can help them think more clearly, how strategies work best when they are developed after the fact, and how employees can organize work more effectively when managers do not plan their activities.

We are not interested in uncertainty-management only for its own sake. Organizations' uncertainty-management practices influence how participants develop as individuals and employees. Few have studied how specific organizational practices transform individuals over time (Bauer et al., 1998), even though this type of transformation is at the heart of what it means to study socialization (Van Maanen and Schein, 1979). For a period of two years, we traced how a relatively homogeneous pool of participants, who all attended top American universities, became very different types of people as they experienced the banks' different uncertainty-management practices. Working in an environment that spells everything out for the individual – the kind of environment that Individual Bank and many other organizations aspire to create – provides different experiences than an environment that challenges participants to muddle through one crisis after another. As a result, human development takes different pathways. In describing the unusual pathway taken at Organization Bank, we introduce a novel and counterintuitive mechanism for learning and development. Learning is normally conceived as the accumulation of scripts, concepts, or texts that people *build up* through their participation in an organization, possessions that the individual can then use in new situations. At Organization Bank, in contrast, bankers learned by *clearing away* preexisting concepts and identities, such that that they were free to recognize situation-specific resources and devise unique solutions.

The longitudinal study of psychological processes not only is a separate "developmental" concern but also has to form the "very base" (Vygotsky, 1978: 65) of cognitive research: "it is possible to understand . . . mental processes only by understanding . . . the transitions they undergo" (Wertsch, 1991: 87). Our developmental research informs the book's third contribution, demonstrating how basic psychological processes work differently in different contexts. Traditional cognitive theory assumes that the laws of human identity formation, cognition, emotion, motivation, and development are the same everywhere (cf., Molden and Dweck, 2006; Higgins and Kruglanski, 1996). Research on organizational socialization examines organizational tactics and strategies separately from individual behaviors and outcomes, assuming that the laws of individual psychology remain constant (Bauer et al., 1998). But our analysis shows that there is considerable variability in basic psychological processes, within one society and even within one industry, when individuals experience divergent work practices. Our approach to the bankers' psychological functioning is distinctive in that we focus on whole persons, exploring an unusually broad range of psychological processes ranging from cognition to emotion, motivation, and self-identification. Most prior work, in contrast, has conceptualized development in terms of decontextualized "component parts of persons" (Lave, 1991: 64). We describe how these various psychological processes come together into two distinct modes of psychological functioning manifested by Individual Bankers and Organization Bankers.

Our analysis illuminates a debate between the two preeminent theories of human cognition. Traditional cognitive theories (Fiske and Taylor, 1991; Higgins and Bargh, 1987; Markus and Zajonc, 1985) locate psychological processes primarily within an isolated individual, as intramental phenomena. Sociocultural theories (e.g., Brown et al., 1989; Cole, 1996; Suchman, 1987) describe psychological processes as woven more deeply into their contexts, as distributed across people, cognitive tools, and the situations within which cognition occurs. Our study shows how organizations can enact one or the other of these orientations toward cognition, depending on how they organize their work practices. Individual Bank enacted traditional cognitive theories, emphasizing individuals' intramental resources. Organization Bank enacted sociocultural theories, emphasizing distributed cognitive processes.

Cognitive and sociocultural theories are typically presented as rival academic approaches, competing to explain how human cognition works (Anderson et al., 1996; Greeno, 1997). Our analysis shows that they are theories about not only the world but also practices in the world. We describe how the two banks adopt these theories, both explicitly as beliefs and implicitly in the organization of their activities. Instead of merely judging a theory by its accuracy, we suggest that theories should also be evaluated based on what they make possible for the people and institutions that adopt the theories in practice. We focus on the different types of individual transformation and organizational performance that these theories-as-practices facilitate, both the psychological development that they encourage in new bankers and the historical development that they encourage as the banks react to changing environments.

UNCERTAINTY REDUCTION AND UNCERTAINTY AMPLIFICATION

Uncertainty management is central both to the practice of investment banking and to academic accounts of how individuals and organizations function. All individuals and organizations face uncertainty. How they choose to address uncertainty shapes much of their behavior, including both everyday work practices and more fundamental transformations in individual and organizational functioning.

We became interested in uncertainty management because it was an important concern of our informants. Discussions of rapid and unpredictable changes dominated many weekly staff meetings at both banks. As described in Chapter 2, the banks confronted uncertainty caused by historically unique events, such as industry deregulation, as well as the chronic uncertainty that results from unpredictable business cycles. As external circumstances changed, bankers had to change deal strategies, the ways in which they thought about clients, the division of labor on projects, and the tempo of deal execution. Bankers routinely confronted unanticipated complications that could put their deals at risk. Clients and other firms involved in deals often failed to reach agreement over minor points, due diligence could reveal negative surprises, shareholders could threaten to reject the terms of a deal, regulatory issues could render planned business combinations illegal, or participants could simply change their minds. Because these external circumstances often changed in unpredictable ways, bankers routinely experienced uncertainty.

Our informants used "uncertainty" to cover a set of related issues, including both unpredictability and degrees of complexity that made situations difficult to understand. They used the term to describe the state of the business environment as well as the state of the person struggling to understand that environment. When we need to differentiate between these meanings, we use the term *uncertainty* to refer to the business environment and the term *cognitive uncertainty* to refer to a person's psychological state. Most of the book is concerned with cognitive uncertainty, however, and when this is clear we sometimes use the simpler term. Bankers who experienced cognitive uncertainty felt that they could not effectively solve a problem because they were missing important information, they possessed conflicting information, they could not discern cause-effect relationships, they sensed ambiguity about available courses of action and their potential consequences, or they were unable to distinguish between relevant and irrelevant information (Berlyne, 1970; Daft and Macintosh, 1981; Piaget, 1985; Trope and Liberman, 1996).

Both banks believed that their performance hinged on how effectively they could manage bankers' cognitive uncertainty. But they differed in their approach to this challenge because they had different beliefs about how cognitive uncertainty influences banker cognition. As noted above, Individual Bank considered cognitive uncertainty a problem because it could overwhelm bankers and impede their decision making. The bank therefore structured work practices to reduce uncertainty – providing strategy and structures, organizational roles, staffing, feedback, and training. In contrast, Organization Bank believed that cognitive uncertainty made bankers attend to the unique aspects of new situations and forced them to make good use of organizational resources. It also believed that, because people experience cognitive uncertainty as unpleasant, they are likely to find ways to avoid it – by, for example, confining themselves to familiar situations. Organization Bank wanted its bankers to experience persistent uncertainty, so it deliberately implemented work practices that amplified uncertainty. The two banks' divergent approaches to managing uncertainty shaped both how bankers solved problems and how new bankers developed during their socialization to the firm.

Uncertainty has been an important topic in academic research on organizations. Because the rational administration of people and tasks requires predictability, organizational scholars have viewed uncertainty as negative. Considerable research has investigated different forms of uncertainty that an organization can experience and has devised ways for managers to reduce this uncertainty (see Scott, 1992, for a review). Weick (1979) even suggests that the reduction of participants' uncertainty is the central purpose of an organization's existence. Most organizational research recommends that businesses reduce uncertainty by orienting employees toward shared concepts. These concepts often take the form of plans, visions, and strategies. They can also be embedded in organizational culture, routines, technology, and managerial systems (Leonard-Barton, 1992; Scott, 1992; Simon, 1976). Shared concepts reduce employee uncertainty because they impose consistency on messy facts, they restrict employees' attention to focused organizational goals, and they provide premises to guide action. It is important to recognize that this approach to uncertainty management orients participants toward *abstractions*. Employees make decisions by referring to organizational concepts, which are abstract entities meant to describe a class of actual and possible situations. Effective decision making, in this view, does not require that employees attend closely to situational complexity. It only requires that employees identify the type of situation they face and then follow organizational concepts and rules appropriate to that type (Scott, 1992).

Researchers have also recognized that uncertainty reduction comes at a cost (Bartunek et al., 1983; Weick, 1979; Walsh, 1995). Because they orient people toward abstract concepts, uncertainty reduction techniques can distance participants from concrete situations. They thus make it difficult to notice and act on information that diverges from participants' preexisting concepts (Gioia, 1992; Harrison and Carroll, 1991; Leonard-Barton, 1992; Tushman and Rosenkopf, 1992; Weick and Quinn, 1999). Fransman (1994), for example, explains how IBM had difficulties in the early 1990s adapting to a changing environment because of "a mistaken belief in the ability of the mainframe computer to sustain its profitability, growth and size, *despite the information which it possessed (and processed) contradicting this belief*" (p. 751, emphasis in original). The abstract, orienting concepts that IBM's leaders had developed in a previous market prevented them from noticing the readily available information indicating how the new environment contradicted those habitual assumptions.

Others have described similar problems with uncertainty reduction. Rubin (2003: 80) writes about his experience in the Goldman Sachs trading department:

> The now famous Black-Scholes formula was my first experience with the application of mathematical models to trading, and I formed both an appreciation for and a skepticism about [mathematical] models that I have to this day. Financial models are useful tools. But they can also be dangerous because reality is always more complex than models. Models necessarily make assumptions. . . . But a trader could easily lose sight of the limitations. Entranced by the model, a trader could easily forget that assumptions are involved and treat it as definitive. Years later, traders at Long-Term Capital Management, whose partners included Scholes and Merton themselves, got into trouble by using models without adequately allowing for their shortcomings and getting heavily over-leveraged. When reality diverged from their model, they lost billions of dollars, and the stability of the global financial system might have been threatened.

Rubin describes how these experts over-relied on devices that were designed to simplify their decision making, and he notes the negative consequences. As the Organization Bankers might have predicted, these experts acted according to their abstract models without noticing how the market had changed.

A dramatic illustration of the dangers associated with uncertainty reduction comes from the "mortgage crisis" of 2007, when several highly regarded financial institutions incurred unusually high losses. Observers attributed these problems to experts' over-reliance on models that diverged from the reality they were designed to represent. "A recurring characteristic of the 2007 trouble in financial markets was that many lenders, funds and brokerages were following statistical models that grossly underestimated how risky the market environment had become" (Sender and Kelly, 2007: C1). In this risky environment, seemingly unrelated markets affected one another. Stocks also "started moving not only in ways that commonly used models didn't predict, but in precisely the opposite direction from what was expected. Equally troubling, the moves were far more volatile than models based on decades of testing assumed were likely" (Whitehouse, 2007: B3). Speaking of this experience, Rothman, "a University of Chicago Ph.D. who ran a quantitative fund before joining Lehman Brothers [said]: 'Events that models only predicted would happen once in 10,000 years happened every day for three days'" (Whitehouse, 2007: B3). Summarizing the mechanistic nature of the uncertainty-reduction approach that underlies these problems, a consultant at Oliver Wyman (as cited in Silver-Greenberg, 2008: 62) commented: "banks have seen risk management as an industrial process where you have the machine, you have the data, and then you crank the handle."

Traditional businesses, the type of business considered by classic organizational theory, experienced relatively stable environments. In such settings, experts can use similar strategies repeatedly, and the resulting cognitive rigidity is less of a problem. Productive innovation has always been desirable, of course, but in more stable environments innovation can be located in a subset of the organization and implemented from the top. The rapidly changing environments now faced by organizations such as investment banks demand a new approach, however. They struggle with a historically high level of uncertainty caused by rapidly changing markets, globalization, and political instability. The habitual use of proven methods often is not effective in these environments. Uncertainty amplification, even though it has costs, is one successful way of combating cognitive rigidity and creating a more adaptive organization.

It is important to note that both banks were highly successful, which means that the uncertainty reduction practiced by Individual Bank can be a viable strategy even in rapidly changing environments. We argue that Individual Bank continued to succeed for two reasons. First, most of the banks' competitors also used uncertainty reduction as a central strategy. In times of market turmoil, such as the 2007 mortgage crisis, Organization Bank significantly outperformed Individual Bank and other competitors because it noticed and responded to early signs of the crisis. Individual Bank, in contrast, incurred substantial losses because bankers only noticed the market change when it was too late. Individual Bank did not lose its position in the industry, however, because almost all competitors made similar mistakes.

Second, both banks were aware of the vulnerabilities entailed by their respective approaches and structured their practices to compensate. Individual Bank recognized that its experts relied on personal resources and habitual strategies too often. Individual Bankers hesitated to ask questions of colleagues because they feared that they would look incompetent, which is a serious flaw in an expert-centered system. The bank compensated for such problematic self-reliance by requiring that bankers solicit input from other experts, with the types of relevant experts specified according to the type of deal. By mandating these interactions the bank removed the stigma that would otherwise be attached to the information-seeking banker, who under this arrangement was not admitting ignorance but merely doing his or her job. Some of Individual Bank's competitors did not have such compensatory techniques, and Individual Bank might have bested most competitors in part because it more effectively mitigated the problems caused by its uncertainty reduction strategies.

DIVERGENT DEVELOPMENTAL PATHWAYS

We focus on uncertainty management not only because it has far-reaching consequences for organizations but also because uncertainty plays a central role in psychological development. Uncertainty serves as a catalyst for psychological transformation (Acredolo and O'Connor, 1991; Campbell and Bickhard, 1986; Piaget, 1980, 1985). When they experience uncertainty, people often open themselves to new information and recognize alternative ways of understanding. Organizations' uncertainty-management practices influence participants' cognitive uncertainty and can thus influence their psychological development. When both sets of bankers began their jobs, they were similar on many dimensions. After about six months, however, the Organization Bankers diverged from the Individual Bankers' more typical trajectory. This happened because Individual Bank's uncertainty reduction practices oriented bankers toward abstract context-independent scripts, while Organization Bank's uncertainty amplification practices oriented bankers toward the concrete details of specific situations. This difference in the bankers' orientations caused them to display distinct forms of psychological functioning over time, which we discuss in the next section.

Since the cognitive revolution, cognitive psychologists have recognized that individual psychology is shaped by social processes (Asch, 1952; Bruner, 1957; Kelly, 1955; Piaget, 1985). Mainstream cognitive research, however, is dominated by a laboratory tradition that studies mental processes in a context-free way. Nonetheless, human mental functioning does not involve stable, universal mental processes that are simply applied to different contexts. Psychological processes are instead interwoven with social and cultural processes, such that thinking, feeling, and self-identification often happen differently in different times and places (Brown et al., 1989; Cole, 1996; Shweder, 1991). To capture how psychological and social processes coevolve, it is necessary to study people in a more contextualized and longitudinal way. Cognitive psychologists have recognized this (Levine et al., 1993) and sometimes study individuals in their natural environment. This research tends to assess the attributes of the individual alone, however, without measuring aspects of the context and developmental processes (e.g., Higgins et al., 1995). Our research, in contrast, studies persons and social situations together. The ethnographic methods we use are ideal for examining people as they are engaged in their daily activities and the mechanisms by which social and psychological processes codevelop over time.

Organizations such as investment banks are productive sites for studying how such psychological processes as cognition, motivation, and self-identification change in practice. Organizations must compete for advantage based on the expertise of their participants, so they experiment with different practices and thereby facilitate distinct developmental pathways for employees. New developmental conditions are more likely to emerge in rapidly changing organizations than in larger, less competitive, more conservative national and occupational cultures. By comparing practices and developmental trajectories across organizations, we can observe a relatively broad range of developmental processes in a relatively economical and systematic way. We thus propose a different type of conversation between psychology and organizational studies. Currently, this conversation flows one way, as organizational scholars apply "basic" psychological research to organizations. We demonstrate the merits of a reciprocal exchange in which organizations become one promising site for generating insight into fundamental psychological processes.

Our contrast between two investment banks allows us to control for many potentially confounding factors. Our subjects moved from a shared culture – with new recruits to both banks coming from the same elite American universities – into the banks' divergent workplace cultures. Chapter 4 explains in detail how the shared culture of origin holds many relevant variables constant. The two banks also differed primarily in their uncertainty-management practices and were comparable on many other dimensions that could affect psychological development. The banks were both located on Wall Street, had comparable numbers and types of employees, performed similar tasks in giving financial advice to the same set of clients, and paid bankers similar salaries at comparable levels of seniority and performance.

At entry, both Individual Bankers and Organization Bankers showed high uncertainty about their new work and their identities. To find out how things worked in the new context, both sets of junior bankers eagerly sought information and paid careful attention to specific situations. As one new Organization Banker said, "priority number one is to listen closely so that you can figure out the rules and norms around here." When bankers had questions, they went to the person who was most likely to have the needed information. As a new Individual Banker said, "This is a great way to learn the ropes and to meet important people." The junior bankers' behavior is consistent with the cognitive literature on life transitions (Higgins et al., 1995; Ruble, 1994). People prefer to use abstract concepts to guide their actions, but when they enter a new context they recognize that their existing concepts might not apply and attend to the concrete details of new situations.

After six months, the new Individual and Organization Bankers had experienced the distinct uncertainty-management practices of the two banks, and as a result they began to behave differently. For Individual Bankers, their initial uncertainty was transient. It spiked at entry and subsequently declined. After six months, the bankers knew what kinds of deals they would be working on, they had learned general concepts that they could apply to each specific deal situation, and they knew how to conduct themselves. At this point, the bankers could project the type of expertise that clients and colleagues expected. This expertise had a cost, however. Bankers sometimes misclassified new situations as familiar ones and applied their existing knowledge with undue confidence. They failed to inquire into the situations' unique aspects and failed to modify their standard scripts. As we describe in Chapter 2, these failures tended to occur when bankers were preoccupied with maintaining their identities as experts. In addition, because they did not want to reveal ignorance, Individual Bankers did not often consult other experts in the organization – instead asking only allies, even if the allies did not have as much relevant knowledge.

The Individual Bankers' developmental progression toward abstract understandings and scripts and toward preoccupation with their own identities, as well as the associated costs of this approach, are described by cognitive research on life shifts. As people become familiar with a context, knowledge representation becomes more abstract (Ruble, 1994: 167) and information processing more schematic (cf., Fiske and Taylor, 1991), which means that "information is organized in terms of existing conclusions and information consistent with these conclusions is more easily retrieved" (Ruble, 1994: 168). Because people know how to complete their tasks, they can shift attention to identity-relevant concerns and to "draw self-relevant conclusions that guide future action" (Higgins et al., 1995: 216). Eventually, "new information is not sought actively, and information that could change conclusions is resisted" (Higgins et al., 1995: 217). This cognitive research on problem solving and identity development accurately describes new bankers' development at Individual Bank.

This supposedly universal developmental pathway did not occur at Organization Bank, however. The Organization Bankers experienced *persistent* uncertainty. Throughout the two years of the study, they were staffed on deals for which they lacked relevant knowledge and in which they could not develop solutions by themselves. Because the bankers did not have enough abstract guidelines and scripts to direct their actions in these unfamiliar situations, they continued to attend closely to concrete, situation-specific information and to draw more widely on organizational resources. During their first six months, new Organization Bankers, like new Individual Bankers, were preoccupied with the identity-relevant implications of situations, they tried to project identities as competent bankers, and they failed to attend to task-related information. After six months, however, identity concerns were eclipsed by task-related concerns. Organization Bankers developed two types of behaviors that serve people well in a complex, dynamic business environment: sensitivity to the concrete and a prioritization of task concerns over identity concerns. The persistent uncertainty at Organization Bank also had costs, including the bankers' high stress level and the failure to meet clients' expectations that they would be served by individual experts. We describe more fully in Chapter 3 how the Organization Bankers mitigated these costs much of the time.

Our description of Organization Bank shows that the practice of uncertainty reduction and the associated development from close attention to the habitual application of established knowledge – processes which are presented as universal and "natural" in most cognitive psychological research – are only one way that organizations can structure task environments and develop their participants. When development takes the new form observed at Organization Bank, cognition, emotion, motivation, and self-identification function in different ways.

DIFFERENT FORMS OF PSYCHOLOGICAL FUNCTIONING

As we describe the divergent developmental pathways at Individual Bank and Organization Bank, we attend to a broad range of basic psychological processes that over time came to work together in two distinct ways. Identities, cognition, emotion, and motivation functioned together to focus Individual Bankers on abstract concepts and banker identities and Organization Bankers on concrete situations and resources outside the individual. Chapters 5 and 6 describe how these differences in overall psychological functioning formed different ways of engaging the world that generated different possibilities for action. We refer to these overall stances as different types of *involvement*. When individuals exhibited these two different forms of involvement, they oriented differently both toward their own psychological processes and toward external resources. The divergent developmental pathways that we describe, then, involved not only changes in the component processes of individuals but also changes in larger systems that included persons-in-situations.

Individual Bank cultivated in its bankers an identity as members of the bank and one or more of its subgroups (e.g., "I am a merger banker at Individual Bank"). Such identities are abstractions that contain theories about the self in relation to social context (Haslam, 2004). These identities carried social expectations about how to behave. To be a "good" Individual Banker, one had to be smart and an expert in some relevant domain. These expectations became very significant to Individual Bankers and influenced their behavior. When meeting with clients and other bankers, for example, Individual Bankers noticed whether other participants accepted their claims to expertise. When others did not, bankers often focused their attention on reaffirming their abstract identities even when this distracted them from the concrete task.

These abstract identities became focal points for Individual Bankers' other psychological processes as well. We call this configuration of identity, cognition, emotion, and motivation *identity-induced involvement*. Individual Bankers developed abstract concepts – including trait-based accounts of their own and others' identities, models for understanding standard situations, and guidelines for action – and they applied these concepts to understand and act in new situations. Bankers' emotions often registered the degree of alignment between identity goals and the actual situation. Alignment yielded positive emotions such as pride, while lack of alignment yielded emotions such as anxiety and fear. These emotions often distracted bankers from task-related concerns. Bankers were highly motivated to sustain their favored identities by realigning situations with them. Self-identification, cognition, emotion, and motivation thus all worked together as one integrated system that oriented Individual Bankers inward, toward their own abstract concepts, in ways that often disconnected them from concrete, situationally relevant cues.

One would not expect this outcome, given the praise that organizational and cognitive psychologists have for organizational identities. The literature promotes such identities as valuable tools for making participants think, feel, and act on behalf of a collective (e.g., Brewer and Gardner, 1996; O'Reilly and Chatman, 1996). Because these identities orient employees toward an organization's goals, some researchers even portray the creation of organizational identities as a "fundamental task of organizations" (Pratt, 1998: 171). As this literature would predict, the Individual Bankers did work very hard to reach the bank's goals. But their abstract identities distracted them from concrete problems and thus, ironically, undermined the achievement of these goals. Chapters 2 and 5 describe in detail how this happened.

Organization Bank provides an alternative. Instead of being oriented toward abstract identities, people can "forget" their identities and think, feel, and act in response to the concrete situation. Organization Bank's uncertainty amplification practices impeded the formation of organizational identities by continuously confronting bankers with unfamiliar situations and undermining their claims to expertise. The bankers could not apply preexisting concepts to determine appropriate actions because they often did not have any concepts relevant to the novel situations they faced. To complete tasks successfully, they needed to attend closely to situations and marshal organizational resources appropriate to particular problems. Organization Bankers realized that their successes were not the result of their own traits but instead reflected their use of organizational resources. Because personal identities, concepts, and scripts did not explain successful action, Organization Bankers focused more on situational cues and less on applying abstract knowledge. Wicklund (1986: 65) describes how individuals can "forget" their identities in situations like this: "it would serve no function ... to engage in the self-ascribing or other ascribing of dispositions. Each person is actively ... focusing on the relation between act and environment. To turn one's thoughts to membership in such categories as 'aggressive', 'creative', 'sportsmanlike', or anything of the kind would constitute moving one's thoughts away from task-related preoccupations."

We refer to the Organization Bankers' orientation as *direct involvement* because abstract identities, scripts, and models were cleared away and their cognition, emotion, and motivation engaged situations more directly. Unlike Individual Bankers, their actions were not mediated by standard, abstract resources imported from outside the situation. This does not make their actions unmediated. Instead, Organization Bankers used mediating resources attuned to concrete situations, with different configurations of resources used in different settings – whatever was appropriate for the task at hand. Bankers' emotions registered the relative progress that participants made toward situational goals, not the alignment of the situation with abstract standards and goals. Organization Bankers also experienced a broader range of emotions than Individual Bankers, including emotions that were unfamiliar. Unfamiliar emotions moved them to take actions that they experienced as relatively atypical compared to previous behavior. This further reinforced the bankers' perception that being a self does not involve exhibiting relatively stable traits and ways of behaving. Cognition, emotion, motivation, and identity thus worked together, as one integrated system, to orient the Organization Bankers *outside*, toward the current situation, connecting them to relevant social resources that they used to get the task done.

In identity-induced involvement, the person starts with his or her own concepts and molds the situation accordingly. With such an orientation, people act as if knowledge were the property of an individual. Individuals consistently apply their own ideas, and this reinforces a dualistic sense of being separate from the context. Psychological processes are consequently directed *inside*, toward the person's ideas and goals. They function as the intramental faculties of a person and serve the person's interests. Direct involvement, on the other hand, orients the person toward concrete, social resources, many of which exist outside the individual. People behave as if knowledge is the property of a system, even when the individual is working alone. Because psychological processes are directed outside, toward the concrete aspects of situations, they function in more relational ways, serving the interests of the overall situated system that includes but is not limited to the person.

As an example, consider the contrast between how Individual Bankers and Organization Bankers structured client meetings. Individual Bankers used client presentation books. These usually captured the bankers' understanding of the client's financial situation and their expert recommendations. In client meetings, most bankers walked through the book, page by page. The Individual Bankers used this strategy "to look prepared," "to show the client that we know what we are doing," and because "that's why they hire experts, to tell them what to do." This strategy applied preexisting banker models to client situations and helped assert the bankers' identities as experts. The book itself was relatively passive and static, merely expressing the banker's thinking without generating new ideas. Organization Bankers, in contrast, often approached clients with rudimentary materials instead of polished books, sometimes bringing only preliminary spreadsheets. As bankers and clients gathered around these spreadsheets, unreasonable assumptions were modified, new ones were introduced, and new potential solutions became salient. The Organization Bankers used this collaborative strategy when they were unfamiliar with client situations and therefore "could not make assumptions," "needed to gather more information," and "worked together with the client to figure out what is important and what is not and what solution would work best." In these situations, the spreadsheet was dynamic and active, not packaged and inert. It evolved as participants provided new data and bankers entered these into the spreadsheet. This prompted next steps, such as modifying assumptions, and often led to new insights. Like the persons who used it, the spreadsheet participated in generating ideas, acting together with the individuals' ideas and actions.

Our account of Individual Bank and Organization Bank shows that managing knowledge effectively might require more than individual expertise and more than sophisticated tools. Knowledge professionals must also use knowledge resources effectively in context. Surprisingly, this may be best accomplished not by providing abstract guidelines on how to use resources, but instead by clearing away people's preexisting identities, scripts, and models so that they can notice and use resources flexibly.

COGNITIVE AND SOCIOCULTURAL THEORIES AS PRACTICES

Individual Bank and Organization Bank adopted different practices to manage uncertainty, and bankers' individual paths diverged as they developed in the two settings. We propose that these differences can be productively understood as the banks' instantiation of two different psychological theories: *cognitive* and *sociocultural*. Individuals in the two banks explicitly and tacitly made the assumptions articulated by these academic approaches. Participants acted as if they were cognitive or sociocultural theorists without necessarily being aware of it. This book describes how the two banks enacted distinct psychological theories and how they created different kinds of people – as individual development would be predicted by these two theories – through the banks' divergent socialization practices. We document two distinct forms that human action can take and the social practices that create such distinct psychological processes.

Theories about psychological processes "embody a particular way in which human beings have tried to understand themselves . . . [and have also] played a constitutive role in shaping the ways in which we think of ourselves and act upon ourselves" (Rose, 1999: vii). All people have folk psychological theories that influence how they talk and think about themselves and others. In societies such as ours, formal academic theories also enter popular consciousness and combine with circulating folk theories. Thus, we must understand psychological theories not only as being about the world but also as things in the world. They are part of everyday practices and they influence people's actions, for good and for ill.

It turns out that the psychological theories enacted by Individual Bank and Organization Bank are the two dominant approaches to cognition in contemporary academic discussions. Psychology and related fields have recently experienced a "conceptual upheaval" (Sfard, 1998) in how to think about problem solving and individual transformation, a "sociocultural revolution" (Voss et al., 1995) that challenges the traditional cognitive perspective. Under cognitive perspectives, we include theories of social cognition (e.g., Fiske and Taylor, 1991; Higgins and Bargh, 1987; Markus and Zajonc, 1985) and cognitive developmental theories (e.g., Berlyne, 1970; Ruble, 1994; Piaget, 1980, 1985). These theories share an "unabashed commitment to mentalism" (Fiske and Taylor, 1991: 14), which means that they construe psychological processes as attributes of individual minds. From a cognitive perspective, development involves the accumulation and transformation of mental knowledge structures that people construct about a concept or domain. Sociocultural perspectives include work in *activity theory* and *situated cognition* (e.g., Brown et al., 1989; Cole, 1996; Greeno et al., 1998; Lave, 1988; Packer and Goicoechea, 2000; Scribner, 1999; Scribner and Cole, 1981; Suchman, 1987; Rogoff and Lave, 1999) as well as *practice theory* (e.g., Schatzki et al., 2001; Turner, 1994). These approaches all construe psychological processes as woven into social systems. Individuals participate in social settings and relationships, and their psychological functioning essentially involves both internal and external resources. From a sociocultural perspective, development involves changes across persons and social resources in addition to changes in mental representations and processes.

Debate continues between cognitive and sociocultural approaches (Anderson et al., 1996, 1997, 2000; Greeno, 1997). Our data reframe the debate. Instead of simply taking sides, we describe these theories as things in the world. We show how the theories are enacted in practice, how they are reproduced as individual participants are socialized into systems that presuppose one theory or the other, and how the theories have distinct consequences for the individuals and organizations that adopt them. Instead of treating the theories as mutually exclusive logical and explanatory systems, we propose that each theory facilitates a viable type of human functioning. The theories thus can be evaluated not only for how well they describe particular situations but also with respect to their consequences for the institutions and participants who enact them.

Sociocultural theorists criticize the traditional cognitive focus on abstraction, decontextualized knowledge, and the resulting dualism between mind and world (e.g., Lave, 2003; Lave and Wenger, 1991). Dualism presupposes two different types of entities, such as mental and material substances, and it is difficult to explain how these different substances can interact. Dennett (1991: 35–7) explains this problem in the following way:

> It [dualism] is the same incoherence that children notice . . . in such fare as Casper the Friendly Ghost. . . . How can Casper *both* glide through walls and grab a falling towel? How can mind stuff *both* elude all physical measurement and control the body . . . [since] anything that can move a physical thing is itself a physical thing. . . . This fundamentally antiscientific stance of dualism is, to my mind, its most disqualifying feature, and is the reason why . . . I adopt the apparently dogmatic rule that dualism is to be avoided *at all costs.* (Emphasis in original)

While sociocultural scholars have mostly shared Dennett's rejection of dualism, others have argued that the abstraction, decontextualization, and dualism presupposed by cognitive theories are best understood not as bad theory but as accurate descriptions of many Western practices. Lave (2003: 23), for example, describes this cultural preference:

> Abstraction from and generalizations across "context" are mechanisms that are supposed to produce decontextualized (valuable, general) knowledge. Along with this way of talking about decontextualization go several other claims. First, that movement toward powerful (abstract, general) knowledge is movement away from engagement with the world, so that distance "frees" knowers from the particularities of time, place, and ongoing activity.

Lave describes how many Western institutions encourage individuals to represent knowledge in an abstract form and to act as if their knowledge were independent of particular contexts. Our cultural preference for abstractions means that dualism has a "robust existence in *practice*, in the contemporary world. Euro-American culture instantiates it, and in many ways is predicated upon it. Beliefs, institutions, and a great deal of action operate in its name" (Lave, 2003: 24, emphasis in original). Individual Bank is a typical Western institution in this respect because it treats individuals as bearers of expertise who independently represent the world.

Sfard (1998) makes a similar argument. She describes how cognitive and sociocultural theories differ in the basic metaphors that they use to understand learning. Cognitive theories construe learning as the accumulation of concepts, the mind as a kind of container, and the learner as possessing durable attributes. Sociocultural theories use a participation metaphor to understand learning in more relational terms. From this perspective, the mind does not store abstract concepts but instead becomes attuned to and learns how to work with heterogeneous resources in specific situations. Like Lave, Sfard argues that the cognitive perspective has dominated educational practice in the West. It is thus difficult to conceptualize and organize learning in a way that does not aim at "generating," "constructing," "delivering," and "accumulating" knowledge and concepts. Sfard describes how sociocultural theories make these taken-for-granted assumptions about learning visible and begin to reveal alternatives.

This book takes the suggestions made by Sfard and Lave seriously. We take a *practical* approach to the debate between cognitivism and socioculturalism. Instead of treating cognitivism as an incorrect theory and dualist accounts as erroneous descriptions, we treat them as things in the world, as theories that people and institutions sometimes instantiate. Individual Bank did in fact orient bankers toward abstractions. In order to reduce uncertainty, it provided abstract concepts and guidelines that "freed" bankers from needing to think about the specifics of situations. These abstract, decontextualized concepts were an important part of dualistic practices that separated the person from the situation.

Once we treat cognitive accounts as situated practices, not incorrect theories, we can explore their consequences and the mechanisms through which these dualistic practices are sustained. We can also investigate alternative choices that organizations might make. Alternative organizational structures often exhibit the attributes described by sociocultural theories, such as a tendency toward understanding individuals in more contextualized ways, a focus on concrete and embodied activities, and a nondualistic understanding of persons and social contexts. Organization Bank, for instance, oriented bankers away from abstractions. It amplified uncertainty by withholding abstract guidelines and counteracting their formation. The overwhelmed bankers thus had to rely more on social resources instead of their own mental concepts and they enacted the distributed cognitive processes that sociocultural theory has described. In this book, we study Organization Bank's sociocultural practices in order to explore the practical consequences of enacting sociocultural theory.

One purpose of the book, then, is to give a detailed empirical portrait of decontextualization and contextualization, dualism and nondualism, as situated practices. We describe how the banks' distinct training, project assignments, role definitions, strategies, and procedures made contrasting aspects of persons and contexts salient to participants and how their different approaches to uncertainty management yielded more cognitivist and more sociocultural practices. We argue not only that the bankers held divergent implicit theories (Dweck, 1999) but also that they developed and enacted complex social arrangements, both material and ideological, that maintained the two distinct approaches.

The banks made these divergent choices not because of academic theories, but for practical reasons that we examine empirically. Organization Bank was originally structured in more dualistic, cognitivist ways. Like Individual Bank, it sold the expertise of particular individuals and its experts had preconceived notions about how markets behave that blinded them to sudden market shifts. During one rapid and unexpected market shift, the bank incurred severe losses and had to fire many employees. In reflecting on this experience, Organization Bankers decided that they must orient away from abstract concepts and toward the concrete aspects of particular situations. The bank also had limited resources and was forced to deploy bankers outside their areas of expertise. Instead of causing more chaos, this practice turned out to encourage in bankers a situational alertness that Organization Bankers aspired to. As a result, bankers self-consciously created practices that encouraged the desired mindset in individuals, such as staffing bankers fungibly, and eliminated practices that caused undue self-confidence in bankers, such as hiring superstars and providing extensive training.

We can only speculate about how Individual Bank and most other investment banks adopted more individualist, cognitivist practices. Individual Bank's management practices followed well-established management principles based on cognitive theories (March and Simon, 1958; Simon, 1976). These academic theories encouraged the bank's practices, both as bankers read publications and as recruits brought business school training with them to the bank. The bank also worked with management professors to devise training, feedback to bankers, and leadership strategies. Bankers used the practices described by professors and management consultants, priding themselves on "following the gold standards of management" and "doing management the right way." In addition, as Lave (2003) points out, a variety of interlocking Western institutions – including law, many media, popular culture, and schooling – enact cognitivist and individualist practices. These probably influenced bankers, making the individual expert and abstract knowledge seem natural. Individual Bank was also successful, so they saw no reason to change.

We do not claim that the banks exhibited "pure" versions of the academic theories, if such exist. While Individual Bank primarily instantiated cognitive theory, it also exhibited elements from sociocultural theory. Individual Bankers often learned through apprenticeship and followed the orderly trajectory from peripheral to central participants outlined by Lave and Wenger (1991). Similarly, despite their sociocultural tendency to question whether concepts transfer from past experience to new situations, Organization Bankers did believe that they acquired concepts and heuristics that helped in new situations. The two banks were not ideal versions of the two theories, but they differed substantially in their tendencies to instantiate one or the other theory.

Our argument, then, is that we can fruitfully treat cognitive and sociocultural theories as practices in the world that organize institutions such as Individual Bank and Organization Bank. We can then judge the theories not only on epistemological but also on practical grounds, in terms of their consequences for clients and participants. We inevitably adopt aspects of these theories ourselves as we make this argument. We focus on *practices*, as do sociocultural researchers, and we formulate abstract concepts that apply across situations, of the sort described by cognitivists. Borrowing an element from a theory has consequences, but one has to use the resources of available traditions to communicate effectively, and this does not necessarily require that one endorse the whole theory (Gergen, 2001b). Similar tensions remain in other theories. After critiquing cognitive theory for its focus on abstractions, for example, Lave and Wenger (1991: 38) point out the contradiction in their effort: "How can we purport to be working out a theoretical conception of learning without, in fact, engaging in the project of abstraction rejected above?" Sfard (1998) concludes that such tensions cannot be resolved.

Our analysis describes the performance consequences of the two approaches, and we note the costs and benefits of each. It turns out that Organization Bank outperformed Individual Bank in both adapability and profitability. It also created more cognitively flexible individuals, which we consider a desirable attribute. But in most market conditions Individual Bank performed very well. Furthermore, when one is navigating a society that constructs individuals as discrete bearers of expertise – as almost all of us learn in traditional individual-centered schools and as assumed in most other important Western institutions – Individual Bank's practices often may be more successful.

PLAN OF THE BOOK

Section 1 describes the banks' contrasting uncertainty-management practices. Chapter 2 shows how Individual Bank used five different work practices to reduce bankers' cognitive uncertainty: strategy and structures, roles, project staffing, feedback systems, and training. These practices oriented participants toward abstractions such as organizational guidelines and an organizational identity, which bankers were advised to internalize and apply across different situations. Chapter 3 describes how Organization Bank managed these same five practices quite differently to amplify bankers' cognitive uncertainty. The bank withheld organizational concepts and even counteracted their formation, forcing bankers to forego preconceived concepts and attend closely to concrete cues.

Section 2 shows how the newcomers who entered these distinct settings experienced different types of uncertainty and took divergent developmental pathways across their first two years on the job. Chapter 4 describes the comparable recruiting practices that the two banks used, establishing that Individual Bankers and Organization Bankers were similar at entry. This eliminates an important alternative explanation for our findings – that the bankers might have acted and developed in different ways because they were different to begin with. Chapter 5 shows how junior Individual Bankers experienced uncertainty as transient. They faced high uncertainty at entry, but it decreased rapidly as the bank provided newcomers with the knowledge they needed to perform competently. We describe how these uncertainty reduction practices reinforced in bankers an orientation toward abstract identities, scripts, and models, an orientation that they had entered with. Because the bankers felt that work demands were manageable, they monitored situations relatively more with reference to implications for their identities and they often applied abstract concepts instead of noticing specific situational cues. Chapter 6 describes how Organization Bank's uncertainty amplification practices caused junior Organization Bankers to experience persistent cognitive uncertainty. At first they tried to use abstract guidelines and protect their own identities as experts. The bank's practices blocked this, and in the first six months they experienced much higher anxiety than incoming Individual Bankers. After six months, however, they learned to orient toward organizational resources and function as part of systems – which included their own capacities together with those of other bankers plus physical and symbolic resources. Their earlier preoccupation with their identities moved into the background and they attended much more closely to the affordances of concrete situations. Chapters 5 and 6 also explain how these two distinct types of orientation made different types of performance possible for the individuals and the organization.

Chapter 7 returns to the constructs of identity-induced involvement and direct involvement, integrating patterns from the empirical analyses and outlining our theoretical contributions. The concluding chapter also discusses the implications for cognitive and sociocultural theories, and it presents implications for managers.