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Jennifer Mondale

*London School of Economics and Political Science*

Susan V. Scott

*London School of Economics, s.v.scott@lse.ac.uk*

Will Venters

*London School of Economics, WVENTERS@LSE.AC.UK*

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# KNOWLEDGE MANAGEMENT AS AN IMAGE OF THE ORGANIZATION: INDUSTRY STANDARDS AND PROCESSES OF KNOWING IN CREDIT RISK MANAGEMENT

Mondale, Jennifer, London School of Economics, Department of Information Systems, Houghton Street, London, UK.

Scott, Susan, London School of Economics, Department of Information Systems, Houghton Street, London, UK, [s.v.scott@lse.ac.uk](mailto:s.v.scott@lse.ac.uk).

Venters, Will, London School of Economics, Department of Information Systems, Houghton Street, London, UK, [w.venters@lse.ac.uk](mailto:w.venters@lse.ac.uk)

## Abstract

*There is often a discrepancy between an organization's theory of its work and its practices. Drawing on evidence from credit risk management in a major international bank we show that management-led knowledge management (KM) initiatives have reinforced this tendency. We show that, in a direct reflection of the rational economic image of financial markets, training programmes and KM projects focus on technical mechanisms to manage credit risk and under-emphasise the way in which these standard approaches are situated in processes of knowing. Using a conceptual scheme developed from Ashby's Law of Requisite Variety we maintain that the assessment and management of risk involves both the attenuation and amplification of variety. Information intensive infrastructure-based businesses need processes of standardization (as attenuation) that facilitate globalizing business flows and the creative capacity (as amplification) to respond to uncertainty and innovation. In conclusion, we present further evidence to suggest that standard, technology-based solutions to knowledge management should be part of a broader portfolio of (dis-) organizing practices designed to support knowledge workers in a community of practice.*

*Keywords: Knowledge Management, Credit Risk, complexity.*

# 1 INTRODUCTION

Credit Risk is the risk that a change in the credit quality of a counterparty (a credit customer) will affect the value of a bank's position (Bloomberg 2003, Crouhy et al. 2001). Over the past three decades, risk research has focused management attention upon the development of methods and procedures for risk evaluation, analysis and management, particularly for dealing with credit risk (Lombardi 2003). Such research grew out of a rationalistic tradition that has been a mainspring of Western science and technology (Checkland 1981).

According to this research, financial risk stems from the fluid, unpredictable, complex nature of the marketplace; if financial analysts can reduce elements of complexity, they can increase their ability to predict market fluctuations and as a consequence they can regulate the amount of risk they accept with an investment (Mueller 1981). Even as risk research generates new methods for reducing risk, these traditional approaches – focused on the elimination of complexity and uncertainty as critical obstacles in risk regulation – remain at the heart of the risk management challenge for financial institutions.

While criticism of rational approaches to risk is not new (see Knight 1921), risk management has become a far greater priority for global organisations in the wake of September 11, Enron, and the financial collapse of Argentina (Lombardi 2003). Alternative perspectives offer criticism as well as new insights into the understanding of risk and align with ongoing debates over rationalistic and subjective views of knowledge management (Schultze, 2004).

In this paper, we present evidence from a major international financial services organization to illustrate a critique of the knowledge management literature ability to contribute to such debates within knowledge management. Our research explores the extent to which the theory and practice of credit risk management has been reflected in this organisation's approaches to knowledge management within the credit risk process. With this motivation in mind we critically examine the assumptions underlying credit risk management, reviewing both rational and social constructivist risk literature in the process. We consider how rational approaches to complexity, systems, and uncertainty have dominated a theory of markets, shaped the image of financial services organizations, and subsequently influenced their approaches to knowledge management.

In the next section, we present a review of the functionalist and social constructivist literature on complexity, systems, risk and uncertainty, and contrast this with knowledge management literature. In the third section, we introduce a conceptual scheme developed from Ashby's Law of Requisite Variety and Raul Espejo's related research as a means to explore and explain contradictions between processes of standardization represented by the technical models associated with credit risk management and the range of socio-technical information systems used in practice. In the fourth section, we describe our research methodology and provide background for the case study. In the fifth section, we discuss use empirical material to illustrate our research findings and provide further evidence to suggest that standard, technology-based solutions to knowledge management should be part of a broader portfolio of organizing practices designed to support knowledge workers in a community of practice.

# 2 LITERATURE REVIEW

Fundamental to the risk management process is the reduction of uncertainty, for where there is uncertainty and complexity we are faced by risk. The focus of this review is thus upon the various approaches to uncertainty within the literature, and how such approaches might be supported through knowledge management. This is achieved by contrasting the functionalist traditions embedded in current orthodox risk management practices (which we will later argue represent the "espoused theories" (Argyris, 1995) of the case study towards risk management and KM), with a social constructivist literature (which we will demonstrate as the "theories-

in-use” (Argyris, 1995) within the case). These views will consider decision making in complex environments as a fundamental element of such risk management, by drawing upon literature on complexity, systems thinking, risk and knowledge management.

The broadly functionalist traditions of risk management literature focuses primarily on attempts to quantify and objectify risk through financial analysis (Farrelly et al. 1985) and hence focuses on quantification. Risk management systems are thus designed to provide reliable financial data which can then be manipulated in models as a means of reducing uncertainty – to “simplify complicated structures” (Crouhy et al. 2001). General systems theory proposes that understanding be achieved through experimentation with models of the real world (as systems) constructed from information about the world (Heylighen 1996, Lissack 1996, Checkland 1981). Complexity theory highlights that complexity increases with each additional component and connection so that in complex systems no component can provide sufficient information to predict behaviour (Heylighen 1996). Hence traditional risk management’s models (e.g. Markowitz’s portfolio analysis) are based on idealistic simplified models of the environment often expressed as systems. Their success can only be judged upon their predictive power (Friedman 1953) after use (Bowman 1982) and as “The application of the analytic method in any class of problems is always very incomplete” they are therefore risky (Knight 1921). From such a perspective risk is thus generally perceived as an exposure to potential loss or damage over which one has no or little control (Bryan 2002, Mueller 1981) and risk elimination is “maximising the areas where we have some control over the outcome and minimising the area where we have absolutely no control over the outcome and [where] the linkage between effect and cause is hidden” (Bernstein 1996). This illuminates the incomplete nature of these functionalist methods designed to manage risk through the reduction in complexity and uncertainty.

In contrast, social constructivist perspectives consider uncertainty to reflect the impossibility of obtaining all relevant information (Camerer and Weber 1992). Since the future cannot be anticipated so possible events cannot be predetermined, although some events are more uncertain than others (Dequech 2001). Uncertainty is thus minimised when there is trust in an institution, person, or data set, but is magnified when there is mistrust. It is therefore a social construction and a permanent feature of the world. Increased information only eliminates the perception of uncertainty, and systems (as “soft systems”) can only be employed as interpretive devices (Checkland 1981) to make sense of a complex world (Weick 1995) rather than to model it. Risk is influenced by social, economic and political change (Scott and Walsham 2002) and perception of it is shaped by institutions (Kasperson and Kasperson 1996). It is therefore argued that risk management requires a holistic appreciation, but unfortunately the literature does not offer prescriptive mechanisms to do this (Dhillon and Backhouse 2000).

In summary, while traditional management literature has developed sophisticated mechanisms to regulate risk, these mechanisms are limited by their incomplete appreciation of risk within a complex system. In contrast, social scientists argue for a holistic understanding of a complex system to understand its risk, but have failed to develop methods to assist financial organisations with its management. This study therefore turns to knowledge management as a practical method of achieving a holistic understanding of complex systems.

Within knowledge management the dichotomy between the dominant functionalist perspective and the constructivists may also be observed (Swan and Preston 1999). Broadly functionalist views consider knowledge as an object waiting to be discovered (Schultze 1998, 2002) and capable of codification in systems (Nonaka et al. 1995). Such approaches have been criticised for “over-emphasising technological issues and for neglecting social and cultural factors” (Hislop 2002) so reducing KM to little more than data or information management (Galliers and Newell 2001, Swan and Preston 1999, Walsham 2001). Functionalist views also emphasises classification and taxonomy as a means of generating, sharing and managing knowledge (Schultze 1998, Tsoukas 1996), with technology as a central element in this .

In contrast social constructivists argue that knowledge is inherently social and indeterminate, generated through everyday interaction between individuals and their environment (Berger, 1966). It grows out of action, understanding and communication (Stacey 2001). Tacit knowledge (Polanyi 1966) is therefore not capable of codification (Nonaka et al. 1995) as it is a dimension of all knowledge (Polanyi 1966; Tsoukas 1996). Classification and objectification of knowledge therefore restricts knowledge use and impede knowledge creation (Schultze 2000). Crucially however corporate cultures (with a broadly functionalist tradition) generally view ‘objective’ factual data as conveying authority and credibility, and hence individuals within such organisations must overcome the challenge of sharing subjective knowledge (Schultze 2000). The social constructivist perspective thus argues that knowledge management should focus on social actions among so-called “communities of practice” (Lave and Wenger 1992, Lave 1990, Stacey 2001) and wider organisational groups (Van Maanen and Barley 1984) within a supportive shared context (Nonaka et al. 2001). Training is thus about legitimacy to participate in a such groups rather than acquisition of mandated objective facts (Lave and Wenger 1992). The focus is upon “becoming” as knowledge is created through ongoing interactions and improvisations performed by employees “trying to make sense of and act coherently in the world” (Orlikowski 1996). From this perspective knowledge management technology should thus aim to facilitate communication, self-reflection and debate in order to support such processes (McDermott 1999, Schultze 1998).

From the discussion of the literature, it is clear that critical gaps exist between functionalist and social constructivist perspectives on how to cope with risk. Traditional management literature argues that to manage risk one must reduce complexity and increase predictability through data transparency. In contrast, social constructivists argue that one loses a critical understanding through such methods and assert that one must develop a holistic appreciation of a situation to understand risk but offers few mechanisms for coping with risk in finance. To address these shortcomings, the next section will develop a theoretical lens that will be used in the ensuing analysis and discussion to gain a greater understanding of credit risk management in practice.

### **3 CONCEPTUAL SCHEME**

The basis of our conceptual scheme begins with Ashby’s Law of Requisite Variety (Ashby 1956). This theory is used to consider ideas of regulation and control – a strength of traditional management perspectives – drawing upon this to examine these ideas from a holistic, soft systems thinking perspective (Checkland 1981), thereby including a strength of social constructivist approaches. As discussed earlier, soft systems thinking implies that for continued existence in ever-changing environments, an organisation must respond to feedback and generate alternatives to survive (Checkland 1981).

Ashby’s (1958) law argues that in order for a system to regulate itself and maintain stability between its boundary and its environment, the variety in the system (that is number of distinct states a system can exist in) must be equal to or greater than the variety in the environment. As the system receives feedback from the environment, the system must have an adequate number of responses – or requisite variety – to respond to the feedback appropriately. From this perspective, the greater the variety of a system, the greater its ability to reduce the affect of variety in its environment through regulation; “Only variety [in the regulator] can destroy variety [in system or environment being regulated]” (Ashby 1958). Going back to ideas of complexity<sup>1</sup>, in order to control a complex system, a regulator must have a sufficiently large variety of actions in order to ensure a sufficiently small variety of outcomes (Ashby 1958, Heylighen 1992).

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<sup>1</sup> We equate variety with complexity within this paper as they have many similarities. Space is not sufficient to describe their differences.

Seen from the perspective of a business organisation, the organisation – as a regulating system – must effectively respond to the complexity found in its constantly evolving business market (its environment) by matching its internal diversity to react to the diversity found within the environment. As cited in Denison et al (1995):

“Diversity is the rule of human life, not simplicity: the human animal has succeeded precisely because it has been able to diversify, not specialise: to climb and swim, hunt and nurture, work alone and in packs. The same is true of human organisations: they are healthy and survive when they are diverse and differentiated, capable of many responses; they become brittle and inadaptable and prey to any changing conditions when they are uniform and specialised”.

In order to draw Ashby’s law into soft systems thinking we explore Raul Espejo’s (1993) discussion on “giving Requisite Variety to Strategy and Information Systems” where he argues that the ability of a manager to create purposeful change in the environment depends upon her ability to reduce or attenuate environmental complexity, while amplifying the managers’ capacity for action (so called managerial complexity). According to this view, control is established through the balance between these two elements, by the “internal coherence of the system and not by information about external events. Change may be triggered by information but it is not determined by it” (Espejo 1993). It should consequently be the goal of the organisation to use appropriate tools to amplify managerial complexity while reducing the environmental complexity to enhance the managers understanding (Espejo 1993).

Espejo suggests that attenuation occurs through mechanisms like information systems. He argues that amplification occurs through individual employees’ ability to communicate and respond to its environment and therefore recommends decentralised organisational structures (Espejo 1993). Additional literature suggests that complexity from the manager’s perspective requires the ability to respond to a host of unpredictable and contradictory forces; an effective leader is one who has the capacity to “recognise and react to paradox, contradiction, and complexity in their environments” (Denison et al. 1995). The consequence of these ideas for this discussion KM in credit risk management is that in order for a credit officer to monitor and manage risk effectively, there needs to be mechanisms for credit officers to gain information (or feedback) about their environment, mechanisms to attenuate these observations about the environment into something meaningful, and a means to recognise and implement the required response from a variety of options. Through our empirical case we will explore the way KM may aid such activity. The next section describes the research methodology and provides background for the case study.

## **4 METHODOLOGY**

We adopted an interpretive, case study-based approach to this research. Exploratory data collection focused on the work practices of credit officers in a major London based international bank (henceforth GB). Evidence was collected by: direct observation and interaction with GB credit risk employees over a 10-week period; twelve semi-structured one-hour interviews with GB credit officers; and a thorough review of corporate materials including training presentations. In addition three weeks were spent working in the credit department on tasks directly related to the operations of the credit risk management systems. These methods were used to help develop an understanding of the practice of credit risk management, including the knowledge, information, technology, and social networks that credit management and officers perceived as useful to risk management.

Analysis of gathered information was qualitative and informed by prior academic research in knowledge management. Much of this analysis involved multiple readings of formal interview notes together with GB documentation and field notes, following Rubin and Rubin’s (1995) approach for relating material, drawing out themes and grouping ideas. Preliminary findings were shared with two credit officers following their interviews. Since the credit officers did not disagree with any of the findings, the ensuing discussions elaborated on

specific ideas but did not yield additional insights. Given the exploratory nature of this research, no attempts were made to triangulate the data.

The major bank in our study is one of the leading international financial service providers. Since the impact of risk on financial institutions is significant, risk management is perceived as a necessary competency for banks, both from the perspective of the institution and from regulatory bodies. Although GB credit risk management offers sophisticated instruments for managing risk, GB confronts the same factors of complexity and uncertainty found in any financial market. GB was selected as an appropriate research setting for several reasons, including its high reputation in credit risk management and information systems and its expressed interest in the potential usefulness of knowledge management to credit risk management.

Within GB, credit risk management focuses on “reducing the likelihood of default and the potential impact of that default” (GB 2003). It is perhaps important to note that GB makes money from deals and trades in complex, uncertain situations. Although the credit officers structure deals to minimise risk, the goal is not the elimination of the uncertainties which create risk, but their management to ensure they suit the bank’s current risk appetite.

## **5 DISCUSSION**

In the literature review section, we note that while functionalist management perspectives focus on the reduction of complexity, social constructivists perspectives emphasise the development of a holistic appreciation of risk. The conceptual model introduced at the end of the review provides a lens through which to view these issues, suggesting that both the attenuation and amplification of variety are necessary to support risk management practices. In this section, we use the empirical material to argue that although credit risk training programmes focus on financial models and formal information systems, in practice credit officers rely heavily on social interaction and their professional experience when making their assessments and evaluations. While financial data and models are critical to credit work, they are typically used to confirm credit officers’ predictions of counterparty performance, to identify poor performers, and to compare counterparties across a portfolio or industry. Technology is used primarily as a way to manage data and to gain quick access to current information.

### **5.1 Training Emphasises Industry Standards**

GB’s risk management training demonstrates a traditional view of credit risk regulation as the orthodox within GB and suggests that decisions about credit risk are made purely on the basis of financial data and models. According to one training presentation, credit risks can be “properly managed only if they are quantified according to the standardised measurement methodology” (GB credit risk management training presentation, dated February 2002). Other presentations assert that specific models, such as RAROC (risk adjusted return on capital) offer credit officers the ability to quantify risk much the same way that capital and profit can be quantified (GB credit risk management training presentation, dated March 2003). GB’s credit risk management systems similarly reflect an emphasis on explicit financial data and analysis. In 2002 GB credit risk management implemented the “Global Credit Risk Management System” to make local spreadsheet-based data publicly available. This information includes approved credit limits, current exposures, assigned credit officers, as well as imported market data and analysis from Moody’s and Standard and Poor’s. In interviews, senior management emphasise formal approaches to risk management, presenting a vision that risk-management be successfully achieved through improved computer-based systems through their quantification and objectification (Farrelly et al. 1985) in “reliable” (Crouhy et al. 2001) financial models and systems. Information systems will hold (in their words) “all the data and information necessary” for credit officers to perform their work.

The theoretical lens explains that the greater the variety within a system, the greater its ability to respond to variety in its environment (Ashby 1958). Seen through this lens, a modelled socio-technical system can only regulate to the extent that it has sufficient internal variety to represent its environment (Ashby 1958, Heylighen 1992). As discussed in the literature review, financial models are only an “approximation... of the situation as a whole” (Knight 1921). Since financial models cannot sufficiently acknowledge all the potential alternatives in a complex, uncertain world, they limit the user to the variety anticipated by the model (Heylighen 1992). For example, while financial data and technical resources provide critical feedback about the performance of a company, these mechanisms cannot predict the effect of terrorist acts on travel, capture the nuanced impact of international politics on markets, or capture fraud or other potential risks to investments. Current financial models and systems do not internally offer the level of variety necessary to represent fully the number of options for dealing with complex, uncertain financial markets.

However, for the same reasons, these approaches serve as effective mechanisms to attenuate the affect of environmental variety. Credit officers are inundated daily with “massive amounts” of data. Standard models and formal information systems help the credit officers to focus on the feedback relevant to their specific needs. Several credit officers mentioned using Excel to “get their head around” long lists of numbers and stated that financial models are critical tools to help them “see through” all the data. While models and systems are not able to regulate risk independent of other mechanisms, they serve as effective tools in the attenuation of environmental complexity.

## **5.2 Practice Overflows Standard Credit Risk Management Models**

The discipline centred hegemonic logic of the training programme contrasts with our observation of credit risk management in practice. Consistent with the theoretical lens, our evidence suggests that – in practice – credit officers do not rely exclusively on mechanisms that reduce complexity. Credit officers described financial data, models and systems as “only part of the puzzle” in making risk management decisions. It seems that credit officers supplement their use of financial data, models and systems with information gained from informal knowledge sharing, advice and personal experience.

For example, in evaluating a credit customer (counterparty), a credit officer will review a company’s financial information, as well as specific financial models like RAROC in order to get a “snapshot” of the counterparties’ recent performance and compare their performance to the rest of the portfolio. Yet the credit officers in this study suggested that a more critical aspect of the due diligence and on-going monitoring of a counterparty emerges from face-to-face meetings.

According to interviews, these meetings are used to determine the capability of the management and financial managers as well as to gauge the company’s long-term outlook and corporate strategies. According to one credit officer, “These meetings help you get a sense of who you’re dealing with.” One credit officer explained that they would, for example, turn down a sophisticated trade if they felt that the financial management of the company was not capable of assessing all the risks involved. Although these practices are not discussed in traditional credit risk management literature, credit officers clearly find these meetings to be vital in their assessment of risk.

Our conceptual scheme helps us to understand these contradictions further. According to Ashby and Espejo, effective regulation of a complex system depends upon feedback about the environment. The credit officer must, therefore, receive a steady flow of information about their environment, an environment of intertwined financial markets, industries, counterparties and other related systems which impact exposures.

Financial data and analysis serve as one form of information about their environment, but interviews with credit officers indicate that they also heavily rely upon ‘soft’ or unofficial conversations with peers and other contacts to feed their understanding of the market. During



interviews credit officers discussed the importance of “the word on the street”. Credit officers emphasised the importance of informal market commentary as an indication of problems such as fraud and mismanagement, which might not appear in financial data.

One credit officer illustrated this by alleging that credit officers in Singapore had already reduced or eliminated their exposure to Barings before it collapsed, because there had been local rumours of corruption in its Asian dealings. Formal standard models cannot anticipate the kind of environmental input provided by ‘soft sources’. Yet according to credit officers these soft sources appear to provide critical knowledge about the environment that can impact the bank’s risk exposure.

Such soft information sources are crucial because they reflect the perceived risk. For example, in emerging markets (EM) credit officers depend upon soft sources even more heavily. According to one credit officer, some markets are “ruled by gossip”, and so they must keep close and regular contact with those within that country to “keep them in the loop”. In other countries they rely upon local contacts for rumours of political instability.

In addition credit officers have to be sensitive to investments that look great on paper but which offer significant reputation risk, like unethical investments or investments in “rogue states”. As discussed in the social constructivist literature on risk management, “...risk management has the practical function of teaching how to avoid regret of regrettable actions...” (Luhmann 1990). If risk is socially constructed, as argued throughout social constructivist literature, then the fundamental financial stability of a company plays only a partial role in its associated risk; social perception of the company plays an equal or greater role (Scott 2005). Although the provided examples relate to emerging markets, corporate institutional banking is dominated by publicly traded companies whose ability to borrow and repay debt is directly linked to public opinion through their stock and bond prices (Crouhy et al. 2001). Informal knowledge sharing of gossip and similar sources allows credit officers to tap into social perception as a form of environmental feedback and potentially anticipate the resulting impact to their counterparties.

Experience and advice from a professional network of peers improves credit officers’ ability to react to complex situations thereby amplifying their capacity to analyze complexity. All of the credit officers interviewed indicated that they discuss problematic situations with their peers, either with the most experienced members in their group or the person they believe to have the deepest knowledge in the area. In these situations, credit officers are not exchanging formal information, but rather exchanging stories or responses gathered through experience. Senior credit officers stated that they will turn to peers in other banks “to bounce ideas” because, as the most senior credit officer for an industry, they do not find an equal level of experience and judgement among colleagues in their own organization. Asked why they find these conversations helpful, credit officers indicated that this kind of informal communication “helps you do your job better”. According to one, “You learn a lot about how to handle [a situation], just from the senior guy sitting next to you”. One credit officer described another senior credit officer who sits in an office rather than with other credit officers as “foolish”, and claimed, “it’s going to affect his performance”.

In our conceptual scheme managerial complexity implies the ability to “recognise and react to paradox, contradiction, and complexity in [the] environment” (Denison et al. 1995). In order to amplify this ability, credit officers look to their peers for advice and joint problem solving. This constant stream of what Thompson and Walsham (2004) refer to as a “bardic tradition” of knowledge sharing enables credit officers to gain a better understanding of a situation and the appropriate response by offering them access to a variety of perceptions and ideas.

In addition to seeking out peers, credit officers draw upon their past and leverage a subjective interpretation of their own experience as a risk manager. For example, asked how they develop the necessary skills to make these decisions about counterparties, interviewees suggested it takes time, not just talent, to become a senior credit officer. According to one, “there is no greater knowledge than experience. The grey hairs [older credit officers] have

experienced five or six credit cycles [declines in specific credit markets such as housing]. I've only experienced three. They can see things in the market I never could". Indeed when asked what drives risk management decisions about a counterparty or industry, many of the credit officers immediately maintained it was either "experience", "judgement", or "gut feeling". Such assertions are consistent with interpretivist literature about sensemaking, which views experience as a critical aspect of how individuals make sense of new situations and information. According to Weick (1979), individuals create or 'enact' their environment by bracketing prior experiences and incorporating new information from the present situation. A sensemaking process (Weick 1995) is triggered when new information requires attention because it does not fit with the individuals' prior experiences or reflects a degree of complexity or uncertainty. The individual must then interpret these events through a process of enactment, selection, and retention. Enactment occurs as people perceive raw data in the environment and recognise it as ambiguous and requiring interpretation. Individuals use past experiences like a template to understand and interpret the present information and to generate cause-and-effect explanations for events. Retention involves the storage of these interpretations of events for future use (Weick 1979). If we consider this process in the context of our discussion, we see that the credit officers use a combination of financial data and experience to identify problematic counterparties, and then understand and interpret new information through a lens of prior experience.

We see these ideas demonstrated in how the credit officers respond to variety in, for example, the current market. As one credit officer expressed:

"You hear such mixed signals on whether the US economy is turning around – one economic report says one thing – another tells you the opposite. But experience shows you that this is exactly what happens when a market is turning around – this is what happened last time. You rarely get all the signals pointing upward until you are near the peak in a market. But you learn that when certain key signals like bond markets start making key indications, you start to get a sense of direction of the economic outlook. This informs your gut feeling and the predictions for key industries."

Such statements reflect the importance of personal experience and the value of experienced colleagues in the interpretation of credit risk. Within social constructivist literature (see Scott 2000), experience is perceived as a valuable source of understanding in complex, uncertain environments and can result in more effective acts of improvisation and bricolage. Weick (1995) maintains that depth of experience in an environment enables one to make sense and gain control by unifying knowledge and design into action in highly situated, emerging circumstances. The bardic tradition of informal market commentary is a form of highly situated knowledge sharing. For the credit officers, advice from other knowledgeable, experienced credit officers enables them to amplify their capacity for action in response to the information (or feedback) they receive from the environment.

### **5.3 Knowledge Management Projects as a Mirror for the Organization's Theory of Itself**

Our analysis thus far reveals that traditional management mechanisms for credit risk management provide information about the environment and enable a credit officer to attenuate environmental complexity. Knowledge sharing and experience supplement the information about the environment and serve as useful mechanisms to amplify managerial complexity. Informal knowledge sharing is thus demonstrated to be a critical element of managing risk within GB. The discussion now explores the potential value of formal knowledge management programmes to credit officers. The term 'formal knowledge management programme' is used to reflect deliberate processes, organisational structures and technologies put in place with the intent of expanding or improving knowledge sharing.

In 2002, GB's management created a knowledge management project team. The organizing vision created by this team was one of objectivity and the project produced recommendations

that focused exclusively on technical enhancements to the current credit risk management system. Our interview data suggests that informal knowledge sharing was taken for granted.

When asked how the relationships leveraged by credit officers as an informal knowledge-sharing network are formed the response came back “by asking around” or joining external organisations. One junior credit officer joked that he makes the best internal GB contacts at external social functions. Such findings not only illuminate the usefulness of informal knowledge sharing, but also suggest the need for more recognition and organizational effort to support them within financial services organizations.

Yet some senior managers within GB do not appear unaware of the value of shared experience but aim to improve this through more formal means. For example, the Chief Credit Officer created a programme to share “post-mortems” (presentations prepared after a major loss by the bank detailing the lessons learned) more broadly. One credit officer identified this programme as “probably one of the best things [the Chief Credit Officer] has implemented”, saying that “experience is what you get from them”. However, not all credit officers share this view. Credit officers who work with hedge funds find these post-mortems “a total waste of time” because, although hedge fund credit officers are required to attend, all the issues raised in the presentations focus on standard credit risk products and would never apply to hedge fund risk.

GB’s mentorship programme reveals similar flaws. A credit officer complained that a new mentor programme that assigns junior officers a mentor on their first day of work fails to consider shared interests or “chemistry” between the two credit officers. According to the credit officer, “without that chemistry, the mentor relationship doesn’t work”. These misguided knowledge management efforts seem to apply a “one size fits all” approach to the delicate social processes surrounding knowledge sharing. As a result, it was felt that GB’s formal KM efforts do not seem to consistently enhance or improve the way credit officers use knowledge or respond to new information.

Indeed such static knowledge management approaches do not reflect the way credit officers accumulate or apply their knowledge. Each of the examples of informal knowledge sharing at GB reveal knowledge to an active process of relating information to action, situated in a specific moment for a specific purpose (Blackler 1995, Stacey 2001). Knowledge enters practice, not as “compartmentalised and static” objects but in action, as credit officers intertwine all of the explicit financial data, overheard telephone conversations, gossip from overseas, industry analysis, and prior experience into something meaningful, something that enables them to make an informed recommendation about a counterparty or transaction. As a consequence of this processes of knowledge (von Krogh et al 1998) a counterparty presenting identical financial information in superficially similar markets might receive different recommendations because industry drivers, or country exposure limits, or the public’s perception of the counterparty may have shifted.

The experience of major financial institutions in the wake of 9/11 illustrates the sensitivity of knowing processes to the dynamics of organizing and disorganizing (Buenza and Stark 2002). A trading room previously divided over multiple floors in impact zone was relocated to an aircraft hanger and teams were re-organised over a single floor. Signs with the destroyed WTC floor numbers were hung in order to help the teams find their desks. Until the computer-based information systems were installed, the trading teams were unable to work, illustrating their dependency on technology. However, once the technical systems were installed, managers reported high levels of product and service innovations emerging among those that had been vertically divided between floors and were now horizontal neighbours. Insights such as this suggest that knowledge management in organizations needs to consider heterogeneous strategies embracing plural processes of knowing that enable both attenuation and application of complexity.

## 6 CONCLUSION

In this paper we link Argyris' (1995) thesis that organizations have a tendency to reflect what they think they do (their 'espoused theories'), rather than what they do (their 'theories in use'), in their adoption of knowledge management practices. Using empirical evidence from financial markets we show that organization's management have a tendency to replicate their espoused theories. We illustrate this with data from training programmes and knowledge management initiatives at a major international bank, which focus on reinforcing the efficiency of standardized technical mechanisms to manage credit risk rather than supporting the processes of knowing used in practice.

Our data shows that credit risk management in contemporary financial markets involves multiple forms of socio-technical information systems to support perspective-making and taking (Boland and Tenkasi 1995). The plurality of hard and soft approaches to knowledge in these organizations provides insights about the management of information intensive organizations.

In theory, financial markets organizations focus on credit risk management mechanisms that attempt to eliminate complexity and uncertainty. In practice, credit officers seem to balance their use financial data, models and systems with less formal processes of meaning making within a community of practice. In other words, while credit officers use standard financial models and information systems to attenuate environmental complexity, they supplement these mechanisms with informal information sharing, advice, and personal experience as a means to amplify their capacity for action.

Building on the work of Ashby and Espejo, we maintain that a similar balance needs to be found between hard approaches to knowledge management that attenuate complexity and soft approaches that amplify alternative processes of knowing. Our objective is to counter the tendency to vilify hard approaches in recent knowledge management literature and instead highlight its position as part of a portfolio of approaches that help managers cope with the challenges involved in supporting knowledge workers in information intensive, infrastructure-based industries. Critiques of knowledge management have asserted that it is the "fad that forgot people" (Swan and Preston 1999), and further that it is little more than "data management" (Galliers and Newell 2001) so polarising the literature between objectivist views of knowledge as objectified asset (Grant 2003, Treece 2003) and subjectivist approaches. From this research we argue that such polarised perspectives, while useful for research, fail to address the nature of risk management activity, in which practice relies on both codification of knowledge as object and social practices. We assert that a pragmatic reappraisal of such factions should be undertaken in order to provide a socio-technical vision of KM relevant to organisations such as GB; and that consideration of the attenuation and amplification of complexity may aid such reappraisal.

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