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Conference paper

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SHIFTING BOUNDARIES AND NEW TECHNOLOGIES:
A CASE STUDY IN THE UK BANKING SECTOR

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Abstract

This paper describes case study based research on the use of innovative computer-based decision support systems introduced into corporate lending processes in a major UK bank. It describes how the new technology was implicated in shifting boundaries: within the sector as a whole and in specific organizational de-layering; between local/global dimensions of the loans process; and in the status of expertise and personal/professional risk. The case study is connected to broader debates in IS and social transformation through an analysis that relates aspects of the empirical material to themes from social theories of reflexive modernization. Some implications and conclusions are drawn for both the banking sector and IS research.

Keywords: Interpretivist perspective, banking industry, organizational change, strategic IS, computers and society.

1. INTRODUCTION

Information and communication technologies highlight and accentuate some of the most important characteristics of the era in which we live. Indeed, the radical impact of these technologies on modern western society may be compared to that of the printed text. Together with the printed text, they can be regarded as modernity's "own media," bound up in the development and expansion of modern institutions and increasingly mediating our experience of the world, especially certain important social and economic exchanges (Giddens 1991). One such exchange, the risk assessment in UK retail banking on corporate loan applications and the introduction of computer-mediation into this process, will be the subject of this paper.

Drawing upon critical, empirically-based analysis of practice and the innovative application of recent social theory, we will highlight the way in which information and communications technologies enable seemingly stable organizational boundaries within and between division, sectors and so on, to become malleable. Our intention is to explore the way in which new technologies are involved in the displacement and redefinition of traditional boundaries in the UK retail banking sector and, in doing so, to locate this process and its implications within a broader context of social transformation and social discourses.

The major clearing bank in the case study, known for reasons of confidentiality as UK Bank, was the first to attempt to introduce a computer-based decision support system into middle market corporate lending processes in the UK retail banking sector. The system chosen by UK Bank, called Lending Advisor, represented a leading edge technology within UK retail banking and as such evoked considerable interest in the sector. Other major retail banks have since developed similar computer-based DSS for their UK credit risk management divisions.

The rest of the paper is organized as follows. The next section will detail the methodological approach adopted in this research and, in particular, the method used to gather case study data. Section three provides a description of the case study, and our analysis of shifting boundaries is given in section four. Finally, we draw some implications and conclusions that link the research with concerns in information systems theory and the UK banking sector.

2. METHODOLOGY

The findings in this paper are based upon a research project that was undertaken using an interpretive approach. At the heart of the research project was a longitudinal case study conducted between 1993 and 1996 in UK Bank. The case study began in 1993 when Lending Adviser (LA) was in its pilot stage, and followed the implementation of the system through to "business-as-usual" status.

The primary method for gathering data was extensive in-depth interviews with project stakeholders. The fieldwork involved a total of 140 formal interviews (see appendix). The interviews were semi-structured in nature and conducted on-site at the interviewee's premises. A set of basic interview questions was developed which covered a variety of issues. These were tailored for different stakeholders, but an emphasis on expectations and perceived benefits relating to LA remained the same for each interview. Some mainly technical or factual interviews were tape-recorded; otherwise, out of sensitivity to the high-level of job insecurity and in-house politics, notes were discretely taken.

The bedrock of the empirical work was a study within two regions of UK Bank: London (central) and Cambridge (district). Twenty Lending Advisor users were interviewed in the two regions at the regional offices, UK Bank business centers and in local branches. Their progress with Lending Advisor was studied over a period of 18 months through a series of follow-up interviews. There were interesting differences in the data from the two regions: however, we have chosen to focus here on commonalities, as we feel that they focus on important issues within the themes of this paper.

Both the interpretive research methodology, and the qualitative method employed, supported the study of complex, dynamic social phenomena that are "both context and time dependent" (Orlikowski and Baroudi 1991). The intention was to construct an informed interpretation and analysis of the events which would contribute to the cumulative research approach underway in information systems (Smithson, Baskerville, and Ngwenyama 1994), which aims to develop a range of case studies available to the IS research community. We analyzed the case study attempting to identify "tendencies" (Bhaskar 1979) that had emerged in the course of the research which helped us to make sense of past data. These were organized into logical clusters and communicated in the form of issues, themes and concepts held within a coherent analytical context.

3. THE LENDING ADVISOR CASE STUDY

This section presents the case study. It follows the transition from the traditional manual corporate loan process to computer-mediated risk assessment. It is constructed from longitudinal fieldwork centered on middle management users of the new technology (LA), but also reflects data gathered from other stakeholders (see Table 2 in the appendix).

3.1 Sector Background

Until recently, banking was a deeply traditional sector in the UK and, in many respects, had remained virtually unchanged for nearly 200 years. Historically, the activities of financial services providers in the UK were bounded and legislation confined retail banks to certain types of business. Cross sector competition was, therefore, limited with retail banks focused on financing industry and providing money transmission facilities, while building societies were restricted to savings and mortgages. Since the 1960's, retail banking in the UK has been dominated by the "Big Four": Barclays, Lloyds, Midland, and National Westminster.

The origins of the bank in the case study, UK Bank, go back to 1896 when 20 family-owned banks amalgamated. The administration within UK Bank was traditionally organized along scientific management lines into a functional hierarchy by region with customer contact maintained through a local branch network. The local bank and the local bank manager have been important actors in their community, embedded in a powerful local network that included teachers and clergy. From the 1950s to the 1980s, a career in a major UK retail bank was regarded as a respectable, traditional occupation with considerable status that tended to be a "job for life."

The stability that had characterized this sector saw its first significant challenge during the 1960s, when the Big Four were referred to the Monopolies Commission. A high level of cooperation had developed between the major retail banks and they found themselves accused of being an oligopoly and of cross-subsidization. Thus began a slow process during which restrictions were loosened in order to encourage greater competition in the banking sector, culminating in landmark legislation in 1986 that brought about deregulation of the UK banking industry.

After deregulation, continuous commitment to a free-market economy by successive UK Conservative governments, helped to generate conditions of "hypercompetition" (Zuboff 1996). Traditional lines of demarcation within the sector were broken down and competition widened to a broader product range (Thwaites 1991).

3.2 The LA Project

During the late 1980s and early 1990s, the UK experienced an economic recession. On August 6, 1992, UK Bank cut its dividend and announced that it had written off £2.6 ($4.1) billion of bad debts. UK Bank were by no means the only ones to suffer losses during this period, but their losses were perhaps the most dramatic among the major UK retail banks. A major problem was that the £40 billion portfolio generated by UK Bank was difficult to monitor and manage. The recession had revealed UK Bank's over-dependence on property as security for loans in an over-heated market.

In response to this situation, senior management decided to appoint a managing director to review the risk process. The managing director formed a team that focused on some fundamental questions: What is the basis of our lending expertise? What are the best practices in lending? What is a quality portfolio? When the project team asked UK Bank loans managers to define "quality" lending practices, they were often told that this could not be done, since although lending was part science, it was also part art. "I had to cajole them and...over time we broke down the structure of how these managers went about lending" (LA project director, 1996). The conclusion of the LA team was that a quality portfolio was achieved by the "rules" that guide the loan assessment process.

During the course of their research, the LA team went to the USA, where the financial services industry, especially the credit card companies, had already begun to try and harness the data on mainframe computers through their use of decision support systems. The LA team decided that the LA technology fitted with their strategy and was the means to achieve some necessary changes within UK Bank.

The concept behind Lending Advisor is that it provides lenders with an analysis of a borrower's capacity to repay debt out of future cash flows. The loans manager enters data gathered from an interview with the customer and historic management records

into the relevant fields of up to 52 Lending Advisor screens which are laid out like business forms. LA calculates the probability of a loan defaulting, drawing upon data profiles of companies who have defaulted on loans in the past (Duda et al. 1987).

The parameters of these calculations are weighted to reflect data gathered by knowledge engineers who have attempted to find "best practices" from selected loans managers. The LA assessments are shown graphically as fuzzy gauges that are call "meters." If the initial Lending Advisor assessment is negative, the loans manager either abandons the application, pursues additional data that might influence the meter further, or "overrides" the meter reading by writing a "footnote" mitigating why it is negative.

Once funding had been approved for LA, and news about the capability of this new technology circulated, other departments within UK Bank realized the opportunity that LA represented. The project director told us:

> LA emerged out of an initiative led by a functional line, not a corporate line—a functional line….The world was changing around us and we knew that, but a lot of the consequences of LA are a "chicken and egg" situation. Once the other functional lines began to recognize the potential opportunities presented by LA they began to structure changes around it. LA enabled the bank to make changes. It enabled the flat [organizational] structure, but [that] was not part of the original project. [LA team director, 1996]

LA became part of an extensive public relations exercise aimed at UK Bank's anxious shareholders. The project was heralded as UK Bank's response to the need for more effective risk management which would help protect the organization from major losses in the future.

3.3 Implementation of Lending Advisor and the Emergence of a Program of Change

The concept of LA was introduced to the loans managers in a political campaign of acceptance led by figureheads within UK Bank carefully selected by the LA project director. Survival rhetoric abounded and the managers were told that UK Bank had no choice but to implement LA. The project director said: "I had a burning platform to work with—always a great ally to a change agent."

There was considerable concern among the loans managers as they faced the prospect of using computers in their job for the first time. The study of users revealed positive aspects of the Lending Advisor system: an organizational memory; central access to organizational data; an extended aide memoire function; what-if analysis capability; and electronic transmission of applications. However, it also revealed negative aspects, the most significant of which were the constraints imposed by Lending Advisor on work practices and heightened anxiety regarding job security due to extensive reorganization.

The most significant impact on working practices centered on loss of autonomy, longer working hours, and the way in which the loans manager's job was disembedded from its traditional social context. For example, whereas loans managers could write a paper-based assessment at a customer site or at home after their family had retired for the night, they were now effectively chained to a desk by their office desktop computer, as the release of laptops was considerably delayed.

This loss of flexibility was compounded by the length of time it took to load a business case on LA. The loans managers were told that a risk assessment on LA should take them between 45 minutes to one hour. The data collected from loans managers gave a very different picture: straightforward cases took about four to five hours to load and more complex cases more than 15 hours. The loans managers found themselves working long hours under considerable stress to meet unrealistic targets.

Senior management seized upon the opportunity presented by the implementation of LA to introduce a series of extensive organizational changes. UK Bank credit policy underwent a radical shift to reflect a new approach to portfolio management which focused on the "safer" parts of the market; small businesses at the riskier end of the credit spectrum were placed on immediate "exit policy" as criteria for creditworthiness shifted to the more quantitative LA measures.

These shifts in corporate strategy were accompanied by changes that disembedded the loans manager from their traditional local social context. Secretaries, valued by some as a management status symbol, were made redundant in large numbers. Loans

managers were expected to do their own typing, a consequence of LA use which many resented. The title of "local branch manager" was abolished and newly named "corporate managers" were brought together in cluster teams whereby each manager serviced an area or business sector rather than a local community. Management grades were reduced from eight to three, sweeping away the historic credit risk management career path. Regional and local head offices, the bastions of tradition and formality associated with the dominance of the old family hierarchy, were rationalized and dissolved into business areas.

Senior management talked of a "new breed" of bank staff, and of replacing the traditional culture of formality with one of discipline. A significant demographic shift took place within UK Bank. All of the loans managers over 50 years of age interviewed in the regional study received early retirement. Younger staff were given opportunities and responsibilities previously reserved for long serving loans managers. However, they had to face these new roles with less training and experience to guide them, and less pay than their predecessors.

Compulsory redundancies ravaged the traditionally placid dynamic between the UK Bank and its employees. The job for life standard was gone, and many employees were insecure about their career interests, not just within their own bank but across the sector. Trades unions, which had never been a powerful force in UK banking, made limited attempts at industrial action, but on the whole, staff seemed to accept that many of the changes were of a regrettable-but-necessary nature in light of the intense competition in the industry.

By the end of the study, managers seemed to feel divided between a sense of satisfaction that the old family dominated hierarchy was tumbling before their eyes, and anxiety about their role in the future. As one managers said: "In the future, the job will be driven much more by profit, and not so much by status or grade. This is a good thing" (user/manager LL, 1996). It was not clear, however, who would be the beneficiaries of this "good thing." As another loan manager put it: "The days of golf in the afternoons are long gone. If you go out to lunch with a customer it means you have to stay late to catch up on the work that you would have been doing had you have been in the office....Technology just makes those in work, work harder" (user/manager SL, 1995).

4. ANALYSIS

The Lending Advisor study draws our attention to the way in which computer-based information systems have enabled the modernization of a major UK retail bank; however, it only represents a single case. In order to establish the status of the interpretive generalizations (Walsham 1995) that we derive from the LA case study, we draw upon certain social theories that locate the LA case study and its implications within a broader context of social transformation. Constructing an analysis against a "backcloth" of social theory not only supports and focuses our attention on certain aspects of the case study, but also connects us to these broader social debates.

We will now briefly outline the particular social theories drawn upon in our analysis of the LA case in this paper, before going on to our analysis of shifting boundaries illuminated by these theoretical perspectives.

4.1 Reflexive Modernization: The Work of Beck, Giddens, and Wynne

The recent work of Anthony Giddens, Ulrich Beck, and Brian Wynne has a common concern with the idea of reflexive modernization. Giddens introduced the term "reflexive modernization" in his book *The Consequences of Modernity* (1990). Beck adopted it as part of his landmark thesis *The Risk Society* (1992). Wynne (1996), while perhaps not so well known as the former two, is included as he has provided one of the most significant critiques of Beck and Giddens' research on reflexive modernization.

Reflexive modernization refers to the possibility of a creative (self-)destruction for an entire epoch: that of industrial society (Beck, Giddens and Lash 1994). In contrast to the pessimism of post-modernity, it suggests that we are witnessing not the end, but the *beginning* of modernity that is, a modernity *beyond* its classical design (Beck 1992). Beck, Giddens and Wynne are part of a community of researchers attempting to outline the influences that will shape this future (e.g., Beck-Gernsheim 1996; Franklin 1998; Goldblatt 1996; Lash, Szerszynski and Wynne 1996).

Table 1. Main Themes on the Role of IS in Shifting Boundaries

Boundary	Significant shift	Role of IS	Theoretical Linkage
UK retail banking sector	• New entrants shift provider/customer interaction • Dismantling of organizational layers	• Electronic infrastructure enabled new entrants • IT-enables new and accessible flexible ways to do banking	• Beck (1992) on second rationalization: seemingly stable organizational boundaries become malleable
Local/global	• Local decisions no longer main focus • Loans decisions disembedded from time and space	• LA enables dynamic interaction between loans managers and central management	• Beck/Giddens/Wynne on process of globalization • Beck (1992) on IT-enabled transformation in temporal and spatial assumptions about work
Status of expertise: personal and professional risk	• Tension between local specialist knowledge and global rational-scientific knowledge • Autonomy/control balance • Personal and professional insecurity	• "Informating" capacity of new technologies like LA • Competing definition of "expertise" within UK Bank: human/LA • IT-enabled codification of knowledge	• Wynne (1996) on the value of specialist lay knowledge • Wynne (1996) on acknowledgment of dependency on performance-related criteria • Giddens (1991) on new trust systems

There is not enough space here to provide a detailed review of each author's work on reflexive modernization; therefore, we have chosen to briefly introduce selected key themes before discussing them in the context of the case study. All three authors are concerned with the social construction of risk and identity. The term "risk" is used as a metaphor to characterize life in a society experiencing an intensification of reflexivity; a "runaway society" (Giddens 1991) in which the scope, speed, and profundity of change can seem almost overwhelming.

In reflexive modernization, traditions and traditional institutions (like family, marriage, career, trade unions, and institutional politics) are questioned, defined, redefined, and consequently change in status. The basis of scientific-rational expertise is publicly debated (e.g., the UK mad cow disease crisis, global warming, alternative medicine) denying us a further important reference point. Indeed, the revision of knowledge becomes a constitutive element in the organization and transformation of modern institutions.

The dismantling of traditional sources of security engenders a heightened sense of personal and professional riskiness (Beck 1992; Giddens 1991). In response, we develop new trust systems (Giddens 1991; Wynne 1996) as a way of managing the risk in our ecology and continuing to act in the world. The sum is that we are witnessing major transformations in working life, in the character of organizations, and the structuring of globalizing systems, and information and communication technologies are deeply implicated in the changes that are taking place (Barrett, Sahay and Walsham 1996).

The inspiration driving the research efforts of Beck, Giddens, and Wynne is their shared conviction that traditional research categories have stagnated and do not focus on the dynamic shifts in society that are taking place, particularly in boundaries of agency, identity, and dependency. We identify shifting boundaries in UK Banking, with particular emphasis on those which were uniquely enabled by the new Lending Advisor technology, and consider them against the analytical "backcloth" of reflexive modernization. The main themes in this discussion are summarized in Table 1.

4.2 Shifting Boundaries and New Technologies in the UK Retail Banking Sector

Reflexive modernization involves not just structural change, but a changing relationship between social structures and social agents (Wynne and Lash 1992). UK retail banking has recently highlighted this process both from an industry perspective and, at a further dimension of this complex process, in the lives of the loans managers. We will begin by considering the way in which new technologies have enabled the displacement, dismantling and redefinition of boundaries in the ecology of deregulated UK retail banking.

The traditional boundaries of the retail banking market have fallen. Since deregulation in 1986, new entrants into retail banking (e.g., supermarkets and retail stores) have entered the market at a considerable rate building upon the electronic infrastructure laid down by the Big Four (Cates 1996; Chetham 1995; Orton 1994). New technologies have enabled them to cut costs and focus on product differentiation. New entrants have shifted the terms of interaction between the financial service provider and their customer (Egan and Shipley 1995), using information and communication technologies to make themselves accessible and flexible in ways that broke with traditional banking norms.

The program of radical organization change that followed in the wake of the LA implementation effectively dismantled the traditional middle management structure in UK Bank, reducing it from 16 layers to three. Beck's notion of the destandardization of labor helps us to make sense of these events and relate them to broader processes of social transformation. He suggests that information technologies and new forms of organizational rationalization are dissolving the standard industrial society concepts of "firm," "job," "career," and "wage labor" in a process that he refers to as *second rationalization*.

For Beck, an expression of the "first" rationalization was Frederick Taylor's philosophy of scientific management. The second rationalization is different in that it is a reflexive rationalization, in which seemingly stable organizational boundaries within and between division, sectors, and so on, become malleable. As a consequence, we are presented with choices about the kind of future that we want to shape, for example opportunities to change company policy regarding the governance of the workplace and its dynamic with the community in which it is situated.

4.3 Shifting Local /Global Boundaries

Beck, Giddens, and Wynne all maintain that boundaries between the local and global are being transformed by an emerging process of globalization (Albrow 1996). This is being fueled by new computer-based network technologies and global communications media (Borja and Castells 1997). It has been suggested that "IT-enabled transformations facilitate the reorganization of social relations and structures across time and space at…multiple interconnected levels" (Barrett, Sahay and Walsham 1996).

Lending Advisor frees UK Bank from the constraints associated with traditional risk management where data was held in local, paper-based "data morgues." The global transparency and central database established by LA means that the results of the decisions made by loans managers are no longer bounded by time and space. Local decisions now influence the lending behavior of managers nationally and inform bank lending policy.

While this may play an important role in protecting UK Bank shareholders from major losses in the future and provide the loans managers with a further means of risk assessment, there may also be less desirable implications. The increased capacity to monitor and control lending policies enabled by the use of new technologies like LA could systematically bias the pattern of investment in the UK. For example, UK Bank has taken the opportunity provided by the LA-enabled portfolio grading to shift their attention from small businesses to markets that they perceive to be less risk laden (Kolari, Berney and Ou 1997). This puts an end to UK Bank's traditional pursuit for a reputation as the "small business bank." It is proposed that this reflects broader transformation in the financial services industry with regard to corporate governance, which has been criticized for being short-termist. The implicit responsibility that was traditionally assumed with regard to role of retail banks in the UK economy appears to have dissipated.

The implementation of LA has, as Beck suggested, enabled a transformation in spatial and temporal assumptions about work in which many work processes become independent of geography and contractual relations are more flexible. Loans managers have recently been issued laptops and, instead of being based at a local branch, they cover a wide geographical area moving between different "business centers." Their title has been changed from "local branch manager" to "corporate manager," symbolizing the way in which the traditional role of the bank in local communities has been transformed.

4.4 Shifting Boundaries in the Status of Expertise: Personal and Professional Risk

In this subsection, we propose that UK Bank may be sacrificing the links with local community discussed above too hastily. We argue that improvisation is a situated performance (Ciborra 1996) and essential to successfully operating in any financial market (Hayek 1945). Therefore, local knowledge is crucial.

The introduction of Lending Advisor into the working lives of loans managers created an epistemological tension between the status of the (globally available) scientific-rational expertise embedded into its design, and local lay (albeit specialist) knowledge as embodied by the loans managers. By the end of the LA study, many loans managers felt that lending was becoming more meter-oriented and that their expertise and experience counted for less and less.

The LA case highlights the tension that can be generated when the introduction of new technologies enables the redefinition of boundaries between autonomy and control (Walsham 1993; Zuboff 1988). The root of the tension lies in the way that middle managers tend to be conceptualized as decision-making "black box" automata rather than artistic entrepreneurs. The expertise of loans managers rests upon their ability to recognize interdependencies in human communities, scan the local environment, interpret novel situations, and generate spontaneous responses.

Wynne's major criticism of Beck and Giddens centers on the way in which the latter authors conceptualize lay public expertise. Beck and Giddens suggest that when expertise is contested, the lay public make a rational-calculative choice regarding the investment of their trust. From this perspective, the introduction of LA should have resulted in either open outcry from the loans

managers regarding the down-grading of their expertise, or silence as they chose to recognize the scientific-rational logic that it represented.

Although LA's implementation was met with a degree of resistance, this was largely dealt with through early retirements and redundancies. By the end of the study, the managers seemed resigned to the presence of LA in their work practice. Following Wynne, we suggest that the response of the loans managers reflected acknowledgment of their dependency, rather than making a rational-calculative choice in whom to invest trust. The introduction of Lending Advisor was accompanied by changes in the terms of managers' contracts which made them increasingly dependent on performance-related criteria. This means that a significant proportion of the entrepreneurial risk involved in making a loan that does not conform to Lending Advisor's parameters has been shifted from the corporation onto the loans manager.

Many loans managers now perceive themselves to be working in a "climate of attrition." The reordering of forms of expert knowledge within UK Bank may have profound implications for the quality of decision-making. Hallier and James (1997) suggest that the willingness and ability of middle management to subvert organizational strategy and day-to-day policies increases if they perceive themselves to be in a climate of personal and/or professional insecurity and sense their own future at risk. This adds emphasis to the concern that the LA loans managers may make compromises with regard to their portfolio, rather than assume risks that might jeopardize their performance criteria and the remuneration associated with it.

Increasingly, occupation, like the institution of family, has lost many of its former assurances and protective functions (Beck 1992). We suggest that a different kind of "active trust" has to be established in organizations in recognition of the loss of the traditional loyalty associated with a "job for life." This system of trust has to be energetically treated and sustained, but may form the basis of new forms of social relations for the post-traditional society (Giddens 1994) that we have described in this paper.

5. CONCLUSION

In this paper, we explored shifting boundaries in our modernizing society in the particular context of UK financial services. We conclude with some implications for the use of IT in the banking sector and for information systems research.

5.1 Implications of New Technologies in UK Banking

It is critical for executive management within retail banks to develop an informed and strategic market focus that responds to the new sectoral composition. Technologies like LA enable an "industrial harvest" within the parameters of the lending policy mediated by the computer-based system, but will leave behind opportunities for competitors to identify niche markets and offer alternative approaches to relationship management.

Issues emerging from organizational de-layering also need active management, in particular the appropriate boundaries and interaction between local and global expertise. Recent redundancies, combined with a turgid labor market, mean that users of technologies like Lending Advisor frequently find themselves in a position of dependency. Their "acceptance" of new technologies may reflect this condition, rather more than their view that the technologies are appropriate. This ambivalence may lead to informal practices of manipulating the Lending Advisor system that could undermine formal policy.

5.2 Implications for IS Research

The use of social theory in this paper supported our analysis of shifting boundaries and connected the role of information systems in organizations to wider social debates. In reflexive modernization, Beck, Giddens, and Wynne present us with a coherent theory about the transformation of society. However, although they identify computer-based information and communication technologies as one of the influences that will shape this future, they neither ground this hypothesis in empirical work nor

elaborate on the role that IS will play in this transformation. We, therefore, had the opportunity to extend and develop their work by contributing an informed analysis of IS based upon an extensive case study.

Reflexive modernization is a current area of debate stimulated by the sense among social theorists that traditional categories of research have stagnated. Reflexive modernization is one theory among many other possible theories that support us in our efforts to distinguish the characteristics of research in the emerging global society. We suggest that this is a fruitful area for research that could enable academics to both link IS issues to other sectors and contribute further understanding of the role of IS in social transformation.

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APPENDIX
FIELDWORK DESIGN

A fieldwork design was constructed early in the research process. It was decided to interview as widely as possible among the different stakeholders on the Lending Advisor project. Table 2 summarizes details of the research interviews and gives an indication of the status of those interviewed; the years in which the interviews took place; and the number of formal interviews conducted in each category of participant. The table does not take account of informal, written, or e-mail contact with the participants that occurred during the course of the case study.

Although the research questions continued to evolve over time, they remained broadly focused on the intentions and expectations of the project stakeholders and the effect of introducing computer-based decision support into middle management's everyday work practices. Particular attention was paid to contradictions or unintended consequences that emerged during the Lending Advisor project and the effect of time on all of the issues.

Some standard research questions helped organize the data during the three years of fieldwork, develop the focus of the thesis, and inform the emerging analytical themes. They were as follow:

1. How are the managers responding to the introduction of Lending Advisor into their everyday work practices?
2. What is the impact of Lending Advisor on everyday work practices?
3. How does Lending Advisor affect decision-making processes?
4. What will UK Bank look like after these dramatic changes?

Table 2. Summary of Interviews Conducted

Respondent	Number	Period
Lending Advisor Team	47	1991-1996
LA Users/Managers	50	1994-1997
Other UK Risk Management	20	1994-1997
LA Vendor	7	1995
Other	16	1993-1998