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THE EMERGENCE OF ELECTRONIC TRADING IN GLOBAL FINANCIAL MARKETS: ENVISIONING THE ROLE OF FUTURES EXCHANGES IN THE NEXT MILLENNIUM

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Abstract: This paper presents a preliminary analysis of case study based research exploring the shift from traditional 'open-outcry' to electronic trading in the major futures Markets in London and Chicago. We outline the emergence of electronic trading in these Markets, with the aim of examining the influences that will shape the operation and interaction between major global futures exchanges in the electronic markets of the new millennium. Our empirical work has sensitised us to the usefulness of conceptual ideas on the local/global dialectic in the process of globalization, and the shifting nature of risk in analysing the emergence of electronic trading in major global futures markets. In our discussion of the current status of the project we seek to connect the local issues concerning electronic trading to their broader social, economic and political context. We conclude by suggesting how our findings can be expected to contribute to IS theory and practice.

Keywords: Interpretivist perspective, computers and society, globalization of IS, financial sector, organizational change

I. INTRODUCTION

The widespread adoption of information and communication technologies has been recognised as critical to the development of new international financial systems [1,2]. Across a number of sectors, such as international insurance markets [3] and stock exchanges [4], electronic trading infrastructures facilitate functional integration and interdependence across markets in a

global economy. This has affected market structures and enabled the creation of new electronic markets [5,6].

Our research focuses on the adoption of electronic trading by major international futures exchanges. Futures exchanges are self-governing membership associations, which serve as an umbrella for member firms and provide opportunities for risk management and the establishment of efficient market prices. Recent work on electronic trading in futures markets has been narrowly focused on technical and financial concerns of efficiency and liquidity [7,8]. Other related work examines the economic effects of commodity trading in electronic markets, focusing on characteristics such as buyer search costs, network externalities, and switching costs [9,10]. While such work aims to understand the specific mechanisms and functional consequences of electronic trading on futures markets, our approach is broader and considers the activities within markets as dynamically linked with their social, economic and political contexts. This paper presents a preliminary analysis of our case study based research.

The broad objective of our study is to examine how the major international financial futures exchanges will operate and interact with one another in the new millennium, and what role electronic trading is playing in these relationships. As such, our inter-related research questions address key issues at multiple levels: firstly, what is fuelling the emergence of electronic

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trading strategies amongst major futures exchanges? Secondly, what are the potential consequences of these strategies for key stakeholders linked with these exchanges? The next section describes the methodology used, this is followed by a brief overview of the empirical data gathered so far.

II. METHODOLOGY

The findings in this paper are based upon 'research in progress' conducted using an interpretive, process-based approach [11,12,13]. It is organised around a longitudinal case study, the first phase of which took place in London and Chicago during 1998. The study was motivated by media reports indicating that radical changes, primarily linked to the introduction of electronic trading, were about to take place at the London International Financial Futures and Options Exchange (LIFFE). We became interested in the implications of this for major global exchanges and their traders.

In our fieldwork design the primary method for gathering data was extensive in-depth interviews with project stakeholders and key figures in the industry. A set of basic interview questions was developed which covered a variety of issues. These were tailored for different stakeholders in London and Chicago, but an emphasis on perceived benefits and drawbacks relating to the shift to electronic trading remained the same for each interview. So far, the fieldwork has involved a total of 15 formal semi-structured interviews conducted on-site at the interviewee's premises (see appendix).

In addition to this, we attended the Futures Industry Association [14] three-day conference in Chicago, which had chosen to adopt electronic trading as its focus. Key industry figures formed panels to discuss the implications of electronic trading. Furthermore, organizational documentation from exchanges, traders, banks and clearing houses was studied, and a week was spent observing the trading floors in Chicago.

We are in the process of analysing the empirical material, attempting to cluster the data around interpretive themes that have emerged in the course of the research. We then aim to communicate them within the coherent analytical context offered by social theory.

III. EMPIRICAL STUDY

In this section of the paper, we will draw upon empirical material gathered in the early phases of the research project and historical reconstruction to present a brief, but critical outline of the emergence of electronic trading. Trading on the major futures markets is conducted through a system of open outcry backed up by hand signals. Electronic initiatives have been regarded as a supplementary, after-hours mechanism by the major exchanges. One of the most significant early attempts to introduce electronic trading to the Chicago markets was initiated by the Chicago Mercantile Exchange in 1987.

Globex is most closely associated with the then CEO of the CME, who sought to both protect his exchange's position as a leading world market against competition by foreign exchanges and pursue his vision of a single global marketplace.

'We told them that globalization were upon us, that our markets moved with the sun...The problem I encountered at the Merc was clearly being encountered by every other exchange in the world. ... Every exchange had its own products that were peculiar to their country and nationality but weren't patentable and could then be cannibalized by another time zone. ... How do we protect ourselves? Well, Globex intended to do that...I wanted everybody on it. I wanted it to be a world system. In my view, a sort of unified theory of trade.'
(Former CEO of CME 1998).

However, the goals of Globex have been the object of controversy amongst exchanges. A complex combination of negative influences, typical of the obstacles encountered by electronic trading initiatives at the major exchanges, contributed to the collapse of Globex in 1992.

Electronic trading remained the 'political impossible' (Former CEO of CME 1998) because, as one interviewee put it, 'Turkeys don't vote for Christmas' (MD, Strategic development, LCH 1998). It threatened to effectively sweep away the work and work life of local traders, the 'market makers', so vital to the liquidity of futures markets. It would demand a shift away from the lay skills of quick-witted 'barrow boys' in the pit, toward the rarefied rational-scientific expertise of graduates. Players around the physical pits would no longer be at the epicenter of market intelligence. The very understanding of what constitutes expertise within futures markets will have to be redefined, relocated and embodied by 'a new breed of broker' (Joint Head of Capital Markets 1998). Indeed, in theory at least, electronic trading could 'disintermediate' the futures exchanges altogether.

Such thoughts had been regarded as wild imaginings, until LIFFE lost one of its benchmark products (the German bund contract) to a rival exchange, the Deutsche Terminbörse (DTB). The DTB offered traders a more competitively priced trade execution via its electronic trading systems. In July 1998, LIFFE announced its strategic response, to implement a state-of-the-art computer-based information system over the next 18 months, to enable its members to trade key financial products electronically. LIFFECONNECT was designed to 'overcome most, if not all of the operational issues that exist within the current trading environment' [15]. Although the LIFFE board were not prepared to say that open outcry had no future, the compulsory redundancy

of 60% of the LIFFE staff in 1998 did little to reassure. Around the world, exchanges were positioning themselves for the adoption of electronic trading, and traders were described as moving into a 'comfort zone' with electronic trading practices (Project Manager, CBOT Project A).

Although the leaders of the Chicago exchanges recognized a global trend towards electronic trading, there were too many stakeholders dominating their governance structures for whom it represented upheaval or redundancy. However, they were ignoring fundamental pressures building up in the trading community. Firstly, as demand for futures trading grew the physical limits on pit size was becoming apparent. Secondly, both traders and regulators were slowly learning to appreciate the transparency provided by electronic trading where both the bid and the size of the trade can be seen. Thirdly, information technologies enable the trader to construct automated strategies and adopt complex trading positions, which could then be executed far quicker than even the best pit trader. Finally, electronic trading cuts the cost of execution because there is less need for support staff in the exchange.

Ironically, rather than proactively moving toward electronic trading the major Chicago exchanges publicly restated their belief in open outcry. However, as a partner at a major consultancy firm in Chicago said:

'To make a successful transition, exchanges must set a course that ensures they are adding value as the markets go electronic and global. Those who stand pat risk having others define their role or being cut out of the process altogether.'
[16]

In 1998 a New York based brokerage company launched an electronic trading system designed to compete directly with the trading facilities offered at the CBOT. The CBOT responded to this rude wake-up call, proclaiming that they must be 'competitive and visionary to remain the industry leader...[and will] make a pre-emptive strike on any entity that might emerge as a competitor' [17]. The CBOT membership voted overwhelmingly to prioritize the development of electronic trading, and provide 24hr side-by-side access to their electronic trading system, Project A. In an interesting political move, however, they ensured that their computerized trading system had the capacity to both execute electronically *and* route orders to open outcry in the pits via a hand held device given to brokers.

Since then, key players in the major exchanges have been pursuing strategic alliances with renewed vigour, culminating in the formation of three competing 'dynasties' (MD, Strategic development LCH 1998). Firstly, the CBOT agreed to form an alliance with

EUREX, a coalition consisting of the DTB and the Swiss futures exchange SOFFEX, to share the development costs of a state-of-the-art electronic trading system and establish a 'non-compete' arrangement on their respective benchmark products. Secondly, the CME have launched 'Globex 2' with the Paris exchange, based around MATIF's electronic trading system NSC. Finally London, in a characteristically aloof and independent manner, is launching its own state-of-the-art electronic trading system LIFFECONNECT, due to go live in July 1999. One interviewee described the current situation as follows:

'It's a bit like World War III, but without the ammunition. You are fighting with capital, rather than with guns. We are really talking about geopolitical forces.'
(MD, Strategic development LCH 1998)

It is now widely believed that the 'politically impossible' notion of electronic trading is becoming a 'political reality' that has to be faced in order to avert further crises (Former CEO of the CME 1998).

IV PRELIMINARY ANALYSIS

This section considers key themes emerging from the empirical data in the first and second phases of this longitudinal case study. In order to present our analysis in a coherent theoretical context, we decided to draw upon recent social theories concerning emerging processes of globalization [18,19,20], and the changing nature of risk in recent times [21,22].

Our fieldwork sensitized us to the globalizing times that we are living in and the strategic responses of key stakeholders in the futures industry. An analysis of the interview narratives reveals an intensifying global consciousness or 'globality' [20]. Stakeholders discussed the challenges felt both within and across the major futures exchanges in responding to processes of globalization and the '24-hour trading day' in an increasingly uncertain world. It is suggested that this sense of globality is dynamically combined and mutually implicated in the current local issues surrounding the futures exchanges.

However, we wish to assert a key difference between our interpretation of this notion and strong integrationist stances that promote the notion of 'globalism' [20]. Globalism is the view that the world market eliminates or supplants political agency [20]. In this vision the world market proceeds monocausally and economically, reducing the multi-dimensionality of globalization to a single, economic dimension that is itself conceived in a linear fashion [20]. Our research project generates potent data with which to challenge this position. The futures industry illuminates and confirms the importance of situated local politics and human agency in shaping globalization. We propose a subtle shift away from the assumption that we are moving toward a 'borderless world' [23,24], and toward

the rather more jagged proposition that ‘no country can shut itself off from others’ [20] in contemporary society. The emergence of electronic trading provides an interesting focus from which to consider the role, both in theory and in practice, of information and communication technologies in these broader social processes.

Although there is widespread agreement that information and communication technologies are deeply implicated in processes of globalization [1,15], there are many debates concerning their role in such processes [25]. Uni-directional and technologically deterministic views of globalization [23] have been challenged by literature that views globalization as a complex process constituted by a local/global dialectic [26].

It is suggested that globalization involves greater interconnectedness, involving the ‘intensification of world-wide social relations which link distant localities in such a way that local happenings are shaped by events occurring many miles away and vice versa’ [26,19]. Even though there is a penetration of locales by distant others, locales are not necessarily destroyed by globalization, rather: ‘new forms of local resistance and local expression emerge, reinforcing the interconnectedness of the local and the global, and the multiplicity and hybridization of social life’ [27].

Whilst the local/global dialectic is emphasised in this stream of literature, the importance of actors’ interpretations and actions in mediating this dialectic is not adequately recognized [28]. We believe that is possible to investigate the global locally, because globalization is not an ‘out there’ phenomenon, it is a ‘here, now’ experience [29,20]. Therefore, drawing upon Giddens [30], we intend to suggest that the daily local appropriation and interpretation of new technologies is an important influence in shaping emerging global processes and structures. This notion stretches to embrace, as Montiero and Hanseth [31] suggest, both situated choices of information and communication standards used to develop the electronic infrastructure (for example the algorithms at the heart of the trading platforms), and local networks of individual and group interests shaping the implementation processes. For us, this process continues through to the taming and ‘domestication’ [32] of information and communication technologies through routinised, everyday use (for example in the newly formed trader arcades).

Our analysis of the data suggests that some of the most powerful influences shaping these processes are the perceptions of personal and professional risk at multiple levels. We believe that this is both dramatically enabling and constraining visions of electronic trading in global futures markets.

IVi. THE SHIFTING NATURE OF RISK

Although the research project focused upon computer-mediation of futures trading involving a *financial* model of risk, it was found that shifting to a more abstract concept of risk highlighted important political, social and economic issues informed our analysis. The concept of risk has been considered at an abstract level by certain social theorists who have developed a thesis relating to the social construction of risk and identity in society [26,21,33,22,34,35].

Beck [22] defines risk as ‘a systematic way of dealing with hazards and insecurities induced and introduced by modernization itself’. In a world increasingly characterized by change and uncertainty, actors are demanding new ways of systematically managing risk in their ecology: whether that be farmers caught up in potentially devastating consequences of global climate changes using futures products at the exchanges; or business people attempting to establish an achievable strategic ‘risk position’ in their modernizing industry.

Faced with contemporary business risks, stakeholders appear to have lost faith in their old trust mechanisms, and in particular the governance structure of the traditional futures exchanges. The decision-making structures and strategy formulation process of mutual status are deemed too cumbersome and blunt compared to the agility of the ‘for profit’ corporations that are increasingly competing against the traditional exchanges, and they are gradually changing status. The capacity of traditional trust mechanisms like national regulatory bodies and legislation to cope with both global trading and manage the emerging grey areas in electronic trading is also being challenged. Another part of the new trust infrastructure are information technology-based strategic alliances; those who fear they will be out-paced (or disintermediated) are joining forces in order to manage risks and play for time.

‘Maybe an alliance is the necessary political tool, but it is a blunt instrument. I mean that’s the trouble, the whole thing is riddled with politics...so you are not sure truly what you are trying to do and achieve...Now maybe if they’re really smart maybe they’re developing their own system at the same time, that is, given all this talk.’

(VP derivatives, major financial institution 1999)

Traders deal in time-based products that are used to manage exposure to prices in the future. These are individuals cognisant of the sovereignty of time upon action. The data gathered suggests that when they came to construct their strategic responses they relied heavily upon this situated, local expertise from their pasts. They seemed to be using their local expertise in risk management to ‘hedge their bets’, and appropriate time while their alliances were crafted and events unfolded, this involves simultaneously investing in the information

and communication technology companies that are invading their commercial territory as a further risk manoeuvre.

'People are even less sure about the future than they were five years ago. The chinks that have occurred in the last two years are absolutely phenomenal... So in that case, we'd better have a bit of each of them...we better have a bit of Trade Point, we better have a bit of Brokertech and then maybe some of these are going to be winners and we own 20% so that's cool.'
(VP derivatives, major financial institution 1999)

It could be argued that just as derivatives looked likely to become routinised as standard ways of managing risk, the pressures of globalization may have fractured traditional futures exchanges. Information and communication technologies have enabled much more than keen pricing competition for the execution of trades. The shift to electronic trading will bring global access to markets, the potential for increased internationalisation/diversification of portfolios, shifts in industry boundaries and creation of rival electronic marketplaces (for example the Cantor Fitzgerald, Brokernet or Blackbird initiatives), and perhaps even changes in the economic dynamics of the futures markets. These will be a manifestation of local/global agency of stakeholders who appropriate and interpret electronic trading across the markets. As our analysis suggests, such agency is shaped by their risk profiles and structures from their trading past which continue to the present, and can be expected to extend into the future.

V. CONCLUSION

Developments in information and communication technologies, and reduction in their cost, presented stakeholders in the financial futures industry with potential strategic opportunities. The rise of electronic trading has been fuelled on one level by a drive to reduce transaction costs, and create a more competitive business environment. However, to understand this phenomenon solely in functional, economic terms is to overlook the influences shaping these events and their consequences.

We have suggested that a more dynamic notion of globalization helps to understand the speed, scope and profundity of these IT-enabled inter-organizational changes. Our approach emphasises the way that local politics are dynamically combined and mutually implicated in global trends in this industry. Underlying this local agency are increased perceptions of personal and professional risk, and it has been suggested that the social construction of risk is crucial to understanding the response of actors' to the challenge of electronic trading.

The crisis surrounding a potential landslide towards widespread adoption of electronic trading in the futures industry has intensified the tension between local

interests and increasing demands from global competition. Electronic trading has been seized upon as part of a period of innovation, leveraged by globalising interest groups, to break the complacent hegemony of the traditional futures exchanges. It is not just the supremacy of the major futures exchanges that is being questioned, but their very survival. As a consequence individuals and interest groups are using their situated skill sets in an attempt to colonise the future and secure a strategic risk position in the industry.

Electronic trading offers opportunities for access to markets by new entrants, as well as commercial entities beyond the traditional futures exchanges. It is facilitating the shifting of industry boundaries and the redefinition of expertise in the industry. The major financial institutions have backed the move to electronic trading, leaving the local interests scrambling to position themselves. Yet it is by no means sure that in doing this these powerful institutions have secured for themselves a more efficient *and* effective market, since local interests provided valuable liquidity, market intelligence and self-regulation. The consequences of the shift to electronic trading for the industry as a whole are not yet clear. The next phase of the electronic trading strategies at the major exchanges will be implemented in 1999, and we hope to be able to update and elucidate our analysis at the conference.

REFERENCES

- [1] M. Castells, *The Rise of the Network Society*, Blackwell, Cambridge MA, 1996.
- [2] A. Leyshon, and N. Thrift, *MoneySpace*. London: Routledge Press, 1997.
- [3] M. Barrett, "Challenges of EDI adoption for electronic trading in the London Insurance Market," *European Journal of Information Systems*, vol. 8, pp. 1-15, 1999.
- [4] E.K. Clemons, and B.W. Weber, "London's Big Bang: A case study of information technology, competitive impact, and organizational change," *Journal of Management Information Systems*, vol. 6, number 4, pp. 41-60, 1990.
- [5] T.W. Malone, J. Yates, and R.I. Benjamin, "The Logic of Electronic Markets," *Harvard Business Review*, vol. 67, number 3, pp. 166-170, May-June 1989.
- [6] E. VAN Heck, and P.M.A. Ribbers, "Positive and Negative Effects of Electronic Markets: Four Case Studies in the Dutch Flower and Transport Industries," *Proceedings of the 4th European Conference on Information Systems*, Lisbon, Portugal, July 2-4, 1996.
- [7] C. Pirrong, "Market Liquidity and Depth on Computerized and Open Outcry Trading Systems: A Comparison of DTB and LIFFE Bund Contracts," *The Journal of Futures* vol. 16, number 5, pp. 518-543, August 1996.
- [8] E.H. Chow, J. Lee, and G. Shyy, "Trading Mechanisms and Trading Preferences on a 24-hour Futures Market: A case study of the Floor/Globex

- switch on MATIF," *Journal of Banking & Finance*, vol. 20, pp. 1695-1713, 1996.
- [9] J.Y. Bakos, "A Strategic Analysis of Electronic Marketplaces," *MIS Quarterly*, pp. 295-310. September 1991.
- [10] J.Y. Bakos, "Reducing Buyer Search Costs: Implications for Electronic Marketplaces," *Management Science* vol. 43:12), , pp. 1676-1692. December 1997.
- [11] A.M. Pettigrew, *The Awakening Giant: Continuity and change in ICI*. Oxford, Basil Blackwell, 1985.
- [12] A.M. Pettigrew, "Longitudinal field research on change: Theory and practice". *Organization Science* vol. 1, number 3, pp. 267-292, 1990.
- [13] G. Walsham, *Interpreting Information Systems in Organisations*. Chichester, John Wiley, 1993.
- [14] *Futures Industry: The Magazine of the Futures Industry Association*. Special edition on electronic trading called "Brave New World". Including the official program for the Futures and Options Expo 1998, Oct/Nov. New York, USA, 1998.
- [15] London International Financial Futures and Options Exchange "LIFFE Connect – an introductory overview", *LIFFE publication*, London, UK, 1998.
- [16] B.W. Winne, "When the Platform becomes the Product," in *Futures Industry*, The Magazine of the Futures Industry Association, New York, USA, pp. 25-29, 1998.
- [17] Chicago Board of Trade. "Open Outcry and Electronic Trading: Side-by-side trading," *CBOT publication*, Chicago, USA, 1998.
- [18] M. Albrow, *The Global Age: State and Society Beyond Modernity*, Cambridge: Polity Press, 1996.
- [19] J. Gray, *False Dawn: The Delusions of Global Capitalism*. London: Granta Books, 1999.
- [20] U. Beck, *What is Globalization*, Sage, London, 2000.
- [21] A. Giddens, *Modernity and Self-Identity: Self and society in the late modern age*. Polity Press, Cambridge, England, 1991.
- [22] U. Beck, *The Risk Society: Towards a New Modernity*, Sage, London, 1992.
- [23] Ohmae, K. *The Borderless World: Power and strategy in the interlinked economy*. London: HarperCollins, 1990.
- [24] Peppard, J. "Information management in the global enterprise: An organising framework." *European Journal of Information Systems* (8), 1999, 77-94.
- [25] M. Barrett, D. Cooper, C.R. Hinings, K. Hughes, H. Krahn, G. Lowe. "Understanding Information Technology, Globalization and Changes in the Nature of Work". *Workshop Proceedings*, University of Alberta, Edmonton, 1997.
- [26] A. Giddens, *The Consequences of Modernity*. Polity Press, Cambridge, England, 1990.
- [27] H.W. Yeung, "Capital, State and Space: Contesting the borderless world". *Transactions of the Institute of British Geographers*, vol. 23, 1998, pp. 291-309.
- [28] M. Barrett, and L. Heracleous "Globalization as a Structural Process in the Context of the London Insurance Market," *Forthcoming in the Academy of Management Conference Proceedings*, Chicago, August 6-9, 1999.
- [29] Giddens, A. *Runaway World: How globalisation is reshaping our lives*, Polity Press, Cambridge, England, 1999.
- [30] A. Giddens, *The Constitution of Society*. Polity Press, Cambridge, England, 1984.
- [31] E. Monteiro, and O. Hanseth. "Social shaping of information infrastructure: On being specific about the technology". *Information Technology and Changes in Organizational Work*. W. Orlikowski, G. Walsham, M. Jones and J. DeGross. London, Chapman & Hall, (1996) pp.325-343.
- [32] R. Silverstone and L. Haddon "Design and the domestication of information and communication technologies: Technical change and everyday life". *Communication by Design: The politics of information and communication technologies*. Oxford University Press, Oxford, 1996.
- [33] A. Giddens, "Risk, Trust, Reflexivity," in U.Beck, A.Giddens, and S. Lash (eds.), *Reflexive Modernization: Politics, Tradition and Aesthetics in the Modern Social Order*, Polity, Cambridge, England, 1994.
- [34] U. Beck, A. Giddens, and S. Lash (eds.), *Reflexive Modernization: Politics, Tradition and Aesthetics in the Modern Social Order*, Polity, Cambridge, England, 1994.
- [35] J. Franklin, *The Politics of Risk Society*, Polity Press, Cambridge, 1998.