



Virtual Organisations and the Customer: How 'virtual organisations' deal with 'real' customers

Professor John Hughes, Dave Randall, Jon O'Brien,
Mark Rouncefield, Peter Tolmie

Cooperative Systems Engineering Group

Technical Report Ref: CSEG/10/98

http://www.comp.lancs.ac.uk/computing/research/cseg/98_rep.html

ABSTRACT

This paper reflects on the results of a long-standing ethnography of customer-facing work within a large retail Bank. Features of the contingent and skilful nature of that work, in an institution undergoing large scale organisational change, are documented and used to comment on aspects of working with 'virtual customers' within an organisation that might be seen as moving towards the model of the 'virtual organisation'.

Virtual Organisations and the Customer: How 'virtual organisations' deal with 'real' customers

Professor John Hughes, B.Soc.Sci.,
Ph.D
Sociology Department
Lancaster University
Lancaster LA1 4YR.
U.K.
E-mail: j.hughes@lancaster.ac.uk

Dave Randall
Department of Sociology
Manchester Metropolitan University
Cavendish Street
Manchester M15 6BG
UK
Tel : +44 161 247 3037
Fax : +44 161 247 6308
Email : D.Randall@mmu.ac.uk

Jon O'Brien
Research Scientist
Xerox Research Centre Europe
Cambridge Laboratory
61 Regent Street
Cambridge
CB2 1AB
(01223) 341502

Mark Rouncefield
Department of Computing
University of Lancaster
Lancaster LA1 4YL
UK
Tel : +44 1524 65201 x91447
Fax : +44 1524 59 4256
Email : m.rouncefield@lancaster.ac.uk

Peter Tolmie, BA
Sociology Department
Lancaster University
Lancaster LA1 4YR
U.K.
E-mail: p.d.tolmie@lancaster.ac.uk
Phone: (+44) 524 65201 x 94683
Fax: (+44) 524 594256

Main Topic: Virtual Organisations
Subsidiary Topics: Emerging Forms of Organisations and IT; Electronic
Commerce/Business; Datawarehousing, Datamining;
Knowledge Management; Knowledge Based Systems

Virtual Organisations and the Customer: How 'virtual organisations' deal with 'real' customers

Abstract

Introduction: 'virtual organisations' and the customer

This paper is concerned with detailing a range of fieldwork observations undertaken in various organisational units of a large retail bank. These descriptions are intended to provide some analytic purchase on aspects of responsiveness to the customer and 'customer-facing' work in highly distributed, or what some have termed 'virtual' organisations.

Whilst we entertain some doubts about the explanatory value of the notion of the 'virtual organisation' the concept is intended to denote an organisational form that addresses major transformations in the social, economic and technological environment in which organisations now operate. These 'virtual' organisational arrangements (sometimes referred to as virtual teams) consist of networks of workers and organisational units, linked by information and communication technologies (ICT),

which will flexibly co-ordinate their activities, combine their skills and resources in order to achieve common goals. One of these common goals concerns an increasing focus upon customers. These so-called 'post-Fordist' relations are instantiated in Burton's (1994) perceived shift in financial services from a 'telling' to a 'selling' culture:

"There has evidently been a shift from organisational cultures which were conservative, reactive and cautious, and where the main element of the job was administration. Contemporary financial service personnel are required to be proactive, entrepreneurial and possess a high level of interpersonal skills and marketing expertise." (Burton 1994:5)

Our interest is with describing such relational issues and considering how they can be handled in the 'virtual organisation'

Method: 'data driven Sociology' - ethnomethodologically informed ethnography

The method employed in this study, ethnomethodologically informed ethnography places methodological emphasis on the rigorous description of the situated practices through which a settings' activities are produced and accomplished. Its aim is to observe and describe the phenomena of 'everyday life' independently of the preconceptions of received sociological theories and methods. Thus, attention is focused upon the study of *doing the work*. Our aim is to describe in detail how customer-facing work in financial services has been, and is, being done. To do this we draw on examples taken from some eight years research within financial services and then try and understand what features of these interactions may prove consequential for customer-facing work in virtual organisations.

Customer-Facing Work

Customer Unpredictability and Customer Confidence

It is a commonly observed feature of branch work in the bank that cashiers have to deal with each customer without knowing in advance what their requirement will be, not only in terms of the *nature* of a request, but also in the way in which requests are *structured*. Customers structure their requirements in a variety of ways, including making a series of requests at the beginning of their encounter with the cashier, inserting 'oh, by the way' questions into the course of their interaction, or alternatively waiting for the completion of the processes associated with an initial request before making a second. Customers simply cannot be relied on to produce their questions in a fashion that is predictable or consistent with the institution's order of things, nor can they be relied on to furnish all relevant information. Interactions with customers can, then, be hugely unpredictable. This simple fact has a relevance not only to face-to-face interaction but also to telephone enquiry and by extension to other forms of computer mediated communication, whereby trying to keep the customer satisfied is a matter of juggling a quite complex and potentially conflicting series of demands.

Demeanour Work

Customer confidence comes from the seamless and apparently unproblematic way in which bank staff are *manifestly*, demonstrably, able to do the work necessitated by customer demands and thereby to produce an orderly flow of transactions. For cashiers to be seen as competent requires them to engage in a significant amount of demeanour work - routinely explaining as they go along the steps they are taking, what enquiries they are making of the screen, to whom they are telephoning, and so on. Competence is

evident in this sense in the way the flow of interaction is maintained, without palpable gaps, in routine and minute by minute interactions.

Competence also needs to be displayed when maintaining interaction with customers whilst at the same time using information screens. In using technology, the cashiers' interaction with the technology and their interaction with their customers must ideally render the technology 'invisible'. However, navigating through the screens and reading the information they contain is time consuming and leads to considerable difficulty in conducting smoothly flowing conversations with clients. Difficulties in interrogating the database and deciphering information can be a major factor in the erosion of customer confidence. Closely related to this, the fundamental problem of information screens is that the information they convey is typically structured according to the flow of transactions, not to the flow of enquiries. The orientation brought to a given enquiry by the customer, however, will be driven by a particular context. It is the absence of context sensitivity that creates the difficulties in interrogation which in turn disrupt the flow of visibly competent work. Whilst customer satisfaction remains an issue, operatives, whether on the telephone, or using video conferencing systems, will still have to contend with various sources of unpredictability. Hence efficient use of the technology and interaction with customers has to be successfully managed simultaneously. In the act of processing transactions, the competent operative must routinely 'weave' use of the technology into the flow of interaction with customers such that the relevant expertise and skill is made visible.

An example of this issue comes from a consideration of the teleconferencing kit - a commercial, ISDN-based, desktop video conference system, with dedicated database and communication software - which had been installed in the 'Telehelp' section of the Insurance division of the Bank. The role of the Telehelp team was to give insurance advice to customers. One highly visible, feature of the work with the videolink was the extent to which the staff were required to 'talk through the technology' - both to alert the customer to what was going to happen next; that 'the screen will go fuzzy'; that 'it will take a couple of seconds for this information to be transferred to you' and so on; and to explain the everyday meaning of technical insurance terms. This process is illustrated in the following abbreviated fieldwork extract of the videolink in use:

Next.

1. Preparing PC1 for use. - in response to call from branch
2. Call through on link - talking about problems of call (?) - 'what can I do for you?'
3. Branch intros customer
4. Takes customer details - using screen - filling in form on screen - surname, initials, postcode, house number
5. Transferring info - explains about picture 'going fuzzy'
6. Buildings insurance - asking questions - rebuilding costs etc
7. Transferring info - explains about screen 'going fuzzy' again - talks about 'features and benefits' - additional insurance. freezer food; 2 million owner liability etc - makes postman and slate 'joke'.

Apart from preparing the customer for the screen 'going fuzzy' the operator also deploys one of the standard 'jokes' for explaining the importance of a £2 million owner liability feature in the policy in order to mediate between the technical insurance and legal language of 'owner liability' and the everyday world. This is done through the device of "*what would happen if one of your slates fell on the postman's head when he was delivering?*". Of course this issue of 'translation' and of coping simultaneously with both the technology and the customer happens with other technologies and in other contexts but the difficulties that ensue should not be underestimated. Observations document the sheer *frequency* and *regularity* of this kind of 'demeanour' work. Accomplished use of the technology requires that much of an operator's time is actually occupied with reassuring the customer and navigating them through the work.

Knowledge of the Customer

The unpredictabilities of customer facing work are demonstrably manageable, and are handled in ways which indicate the sometimes hidden skills of ordinary operatives. One such way is through the use of 'local knowledge' - that is, a particular knowledge of the circumstances of the customer, their business and their account that often represents a short-cut to processing. The following fieldwork extract indicates how some of this 'local knowledge' is deployed in a lending interview. In this particular case the Lending Officer is considering an approach to borrow money to purchase a hairdressers:

Simplified extract

LO: "What can I do for you?"

C: "... been hairdressing for 10 years... we've seen premises .. we were enquiring about money.."

LO: "Where is it?"

C: "Its on ..."

LO: "What figures are we talking?"

C: "... 68K .. the Building Society say its worth 65... we think it'll come down.."

LO: "...first question - what have you got to put into it?"

C: "...my own home.. that's all .. we haven't really got any ideas.."

LO: "For a commercial proposition to get off the ground we're looking at a third.. the Banks have had their fingers burnt in the past.. (explains) ... its 20K .. or something like that.."

...

C2: " do you think if we got a more realistic figure .. we would stand a chance?"

LO: " There's nothing wrong with purchasing property.. (but) I'd be thinking more on the lines of 30.. The first question on my pad is the contribution .. if it was 30 and you were putting in 10 then I'd think of it..."

...

After the interview.

LO: " You've got to be cruel to be kind.. there's no way I'm going to lend the 68K with no contribution from them .. the risk is all with the Bank.. (after looking at the) initial contribution I didn't delve any further .. if they're not putting anything in its not worth going into any other questions. The problem is ... I know her account is crap.. there's an enforcement order on... its a waste of time I spend an hour going through them.. (the proposition) wasn't really thought through.. (its) back of a fag packet stuff.."

The 'skill' that Lending Officers routinely deploy in their customer interviews, as well as the detailed 'local knowledge' of their customers and the running of their accounts goes some way to developing an understanding that decision-making in the Bank, despite an emphasis on procedure and the range of sophisticated computer support, often comes down to 'gut feeling'. As one CSB Lending Officer put it "*a lot of it is just gut feeling.. the only other thing you've got is how the account has run historically and income and expenditure breakdowns ..and they cant tell you anything..*". Lending on 'gut feeling' clearly benefits from the kind of detailed local knowledge of the customer commonly found in the branches and is a persistent feature of the fieldnotes; the point we are interested in is the extent to which such local knowledge, developed in a branch with a few thousand customers, is likely to be a useful resource in everyday work in a highly centralised and distributed organisation - a 'virtual organisation' - where the customer base is nearer one million.

Customer Work and the "Virtual Organisation"

Co-operating with the 'customer in the machine'.

This section uses our current fieldwork to examine ‘customer-facing’ work in situations which do not involve actual face-to-face communication. Here we attempt to address some of the intriguing issues of co-operating with ‘absent’ customers - co-operating with the ‘customer in the machine’ - that are consequent on both the massive organisational changes and the changes in consumer behaviour that Burton (1994) suggests have occurred in financial services in recent years.

Like many other financial institutions in the UK, and elsewhere, the Bank from which the fieldwork observations are drawn has embarked on a transformation of its ‘traditional’ organisation to enable it to meet the increasing competition in the financial markets. This strategic plan has been implemented in various ways; most obviously through a general and comprehensive restructuring that has involved the centralisation and standardisation of processes and the creation of specialist centres, such as Lending Centres, Service Centres, and Securities Centres, all servicing an increasing number of ‘high street’ Customer Service Branches.

The ‘Virtual Customer’: the customer ‘in the machine.’

The overall aim of the Bank’s strategic plan was to transform the organisational culture from a predominantly ‘administrative’ one to a ‘selling and service’ culture. While the rationale of these changes is ‘organisational’ it is also dependent on the extensive use of IT to ‘reconfigure the organisation’ through its application in data analysis and processing, communication and decision support. The centralisation process itself requires much greater co-ordination, and IT support, network systems of accounting, relational databases and ‘expert’ systems are seen as essential. Financial institutions have long been in the forefront of the use of distributed computer systems and recently have begun to explore, in conjunction with major organisational changes, the increased use of IT to support decision-making, quality control and customer services. The notion of the ‘virtual customer’ is one promoted and enabled by this developing use of IT.

‘Virtual customers’ are representations ‘on file’ and increasingly ‘in the machine’ of ‘types’ of customer endowed with utilisations of bank products, spending and income patterns along with protocols representing the ‘rationalities’ governing customer behaviour. Information contained in customer files, and increasingly through perusal of computer records such as the ‘836’ which gave a breakdown of the working of the customer’s account over the year and the ‘Customer Notes’ which contained a record of every contact between the bank and the customer, were used to construct a ‘picture’ of the customer which then played a part in the complex interaction between the customer and the various bank managers. This, increasingly computerised, record was valuable not simply or merely for the attribution of blame but through its procedural implicativeness in informing and guiding the actions of others, constituting an important component in the individual worker’s ‘sense of organisation’ - enabling them to quickly obtain a grasp not only of ‘what had happened’ but also ‘what to do next’.

A dramatic illustration of this is contained in the example that follows when one business manager has had to cover for another’s illness and had suddenly received a phone call asking for an increased loan to pay off the Inland Revenue. As he looked through the customer record the Business Manager had to come to a rapid understanding of ‘what’s going on’, make a quick decision and to offer a reasonable justification, a rationalisation for his actions:

Next.

1. Looking at file (Business Manager..- off sick) - emergency (phone call from customer) - doesn’t know the file. Customer is heavily borrowed and not generating the income.

Discussion of case (tape) - .. Well, its a bit of a problem really because I don’t know the file , you know, and its a pretty meaty file I don’t know it..so I

have to very quickly look and try and sort of acquaint myself with what's going on and what's been arranged in a short space of time because ~. But basically, he's heavily borrowed..(shows figures/folder) forget the money on clients accounts because that's not his money ..but he's got a private loan acc of 38 a business loan acc of 20 and bus OD ..umm..of 29 there's a lot of borrowed money there ..on a business and clearly he's having difficulty in servicing it all ..now I don't know what they were all for.. I really..I mean I would if it were my own file I would know it having done it and researched it ..I could find out by reading it..but doesn't really have too much time to do that.....

.....but you know, isn't it ridiculous ..saddling..saddling themselves with all that level borrowing.....its 90000..and they cant deal with the thing..

Reconfiguring the customer

As the bank began its reorganisation there was a recognition of some of the tensions that would develop between a policy of centralisation and a desire to continue to appear as a local 'high street' bank. This tension manifested itself in a number of ways, most notably in the conflict between 'relationship management' (in the sense of managing accounts according to what was 'known' about the customer as the product of a long-standing relationship) and management according to expert risk grading and assessment packages; and in the tension between responding to the customer and what might be seen as 're-configuring the customer'. This was partly resolved at the level of the account with accounts deemed 'core' or 'mass market' being largely managed 'by the machine'. However, even important business accounts were subjected both to various expert risk grading packages - such as GAPP - and to a formal process of report; and similarly even customers in the mass market were liable to make complaints that demanded a personalised, managerial response.

The centralisation process has been driven by a variety of factors, one of which is the attempt to ensure standardisation and consistency in decision-making and procedure not only through increasing reliance on the technology but through an attempt to re-configure customers and staff. As one Lending manager put it, "*...whether you go into a branch. or apply for a loan . in Manchester or in Southampton .. you should be treated the same way..*". This involved developing a set of expectations as to how accounts should be handled; a set of expectations that emphasised the application of standard procedure as opposed to the more personalised approaches of the past. So, for example, a standard set of templated letters were developed to send to accounts that were 'out of order', accompanied by a 'script' to be used whenever customers complained.

Of course this did not guarantee that customers would respond to what were effectively computer generated letters informing customers of the state of their account in the same impersonal way, for example, one customer responded to a computer generated letter in the following manner:

"Might I enquire as to what particular charm school gave you your wonderful way with sarcasm and barefaced cheek! You were bloody rude... I demand, by return an apology".

As one manager pointed out the attempt to ensure consistency and, importantly, the attempt to write in 'plain English' has not always been appreciated by customers, especially long-standing ones.

These examples suggest some initial tension in the 'customer care' process in the large, centralised units, but it should not be thought that 'skilful' demeanour work was totally absent. Demeanour work was observed to be equally prevalent in mediated communications such as telephone work - indeed operatives often refer to this as 'smiling down the telephone' - however, given the much greater customer base of these

units such as demeanour work was unlikely to be facilitated by 'local knowledge' of the customer. However, what becomes important in such customer facing work is orientation to the customer record - in effect attentiveness to the 'virtual customer' represented in organisational records of various kinds - and attentiveness to unravelling the history of the customer's account and complaint using the available technology. In these circumstances issues of representation and standardisation of the customer record become especially important for organisational actions.

Getting to know the 'customer in the machine': categorisation and standardisation

In the context of the bank, it is very often the managers who have effectively become the locus of change, balancing and resolving at a practical level the tensions involved in reconciling the centralisation of processes and administration with the decentralisation of customer services and 'selling'. Managers are consequently obliged to reconcile organisational realignments with changes in consumer behaviour the most notable of which is the relative disappearance of the customer from the banking hall with the increase, for example, in telephone banking and the use of ATMs. As one manager commented; "*.. whereas in the past the branch manager could stand in the banking hall and recognise ten of his customers .. now he might not know any of them..*". For the branch manager this creates an interesting problem:

"If you take out the non-customers and you take out the business customers, and you take out the runners... if you take out that lot, then you take out the customers of other branches, I'm actually seeing very, very few of my own... customers. So then we got to say 'where are the rest of them?' because I can produce a printout that says I've got fourteen thousand customers. And that was the answer to it: 'How well do you know your customers?' 'Not very well'. Some of them have credit balances of twenty, thirty thousand pounds. And we never see them. We've never even heard of them..."

This branch manager can see - 'in the machine' - that he has 14,000 customers on a computer printout, but most of them he never sees. Yet the computer tells him that they are his customers so they must be there. The problem then becomes how do you sell your products to someone you never see?.

For the bank one answer to this problem has been a strategy entitled 'Managing Local Markets' (MLM), a sales approach focused within the bank's CSBs and Business Centres where face-to-face customer contact has been retained. Initially all staff underwent an exercise to develop some understanding of what they needed to know about customers involving going out and finding what lay 'beyond the walls' of the bank. Employees went out in the streets on walkabouts and drivearounds, collected newspaper cuttings, advertisements of house sales etc, trying to assess the character of their particular area and gain some measure of the competition. At the point of application MLM is computer driven with customers being categorised into 5 basic categories - A+, A, B, C and D - with the A+'s being the "super accounts" and the Ds being the ones that "cost money to run". These categories are based upon a thorough knowledge of the customer's dealings with the bank, the nature of their credit balances, the running of their account, credit cards, investments, mortgages, insurance etc. In practice it was found that there were large numbers in the B and C categories, so further classifications are now being applied. Customers are variously listed as being: 'Retireds'; FIYAs (Financially Independent Young Adults); YSs (Young Singles); and Mid-Markets, BOFs (Better Off Financially) and WOE's (Well Off Established) who are all aged 31 to 50 with the classification being based on the amount of money that passes through their accounts. This process of categorization can be refined even further as the following fieldwork extract, where a manager is talking about MLM details:

.... and then what we intend to do is to literally look at these very narrow groups so we may actually go to the computer ... where we may actually be able to say 'Right what we want to have a look at, we want to have a look at those customers which are classified as Mid-Market, that are aged between thirty one and thirty three, that's this little group, that have a risk grade of one to five on their account so that we know they're good accounts, and that perhaps live in a particular area ... And that should produce a target group of something in the region of say fifty accounts

The target products in MLM - insurance, pensions or whatever - tend to be ones that are currently in focus throughout the bank, and a complimentary sales drive operates under the banner of 'Business as Usual' where they attempt to sell the same products to the people they do see regularly. To establish the ones they don't see they use the customer database to discover their normal mode of contact with the bank. Beyond this they will engage in other considerations such as what products customers already hold in order to better target their potential customers.

MLM has a number of important implications. Computer derived models of market segments are being used to devise a whole set of organisational and marketing rationales and these underlie an increasing number of management activities and decisions and the way these are achieved. Additionally there are efforts underway to arrive at ever better depictions of customers within the machine. There are at least two issues worthy of consideration here. One of these is the representational nature of such virtual customers and how they are arrived at and engaged with from day to day. The other is the question of how managers (and others) negotiate some sort of 'fit' between 'virtual customers' and the 'real' customers they see over the counter or talk to on the phone.

Conclusion

The intention of this paper in describing the various activities associated with customer-facing work within the bank is to highlight the accomplished and skilful nature of such work. Furthermore, our observational studies suggest that 'real world' activity in customer services, whether or not it is computer-mediated, requires appreciable 'sense-making' work on the part of operatives. As organisations seemingly move towards increasingly distributed and 'virtual' forms of working - whether it involves 'virtual teamwork' or orientation to the 'virtual customer' - the recognition of the varied skills involved in customer-facing work seems likely to place particular and increasing burdens not only on the technology of the organisation but also on its training regime.

We can see in the above observations that, regardless of the presence of electronically-mediated artefacts in such work, a great deal of its actual achievement boils down to the skilful adaptation of pre-existing interactional competencies such as those embodied in things like demeanour work, handling the unpredictable, and the relevant use of local knowledge. Whilst staff will regularly turn to 'virtual' representations of customers in the context of their day-to-day work, these amount to no more or less than sophisticated bodies of information. The real skill, or artfulness, in customer-facing work comes in embedding those bodies of information in experience in such a way as to make them specifically relevant to necessarily situated and contingent circumstances, a contingency recognised in notions such as lending on 'gut feeling'. So, whilst it is possible to wax lyrical about ever more virtual, transient and flexible patterns of co-ordination it is important to recognise that at some point these ideals will need to make contact with situated, manifestly 'real' work where what matters is the interactional competences through which distributed resources can be brought to bear. Ultimately, then, 'virtual' organisations need to give close attention to providing appropriate technology, and training, for the contingent character of such interactionally-focused work.

Bibliography

- Anderson, R., Sharrock, W.W., and Hughes, J. (1989), *Working for Profit: The Social Organisation of Calculation in an Entrepreneurial Firm*, Avebury, Aldershot.
- Bentley, R., Hughes, J., Randall, D., Rodden, T., Sawyer, P., Shapiro, D., and Sommerville, I., "Ethnographically Informed Systems Design for Air Traffic Control", in *'Sharing Perspectives', proceedings of CSCW '92*, Toronto, Nov 1992, ed. Turner, J. and Kraut, R., ACM Press
- Benyon, D., "The Role of Task Analysis in Systems Design", (1992), in *Interacting with Computers, Vol 4 No 1, April 1992*.
- Bloomfield, B.P., Coombs, R., Knights, D., and Littler, D., 1997, *Information Technology and Organizations: Strategies, Networks, and Integration*, Oxford University press
- Burton, D., 1994, *Financial Services and the Consumer*, London, Routledge
- Button, G., and King, V., "Hanging around is not the point: Calling Ethnography to Account", paper to the *Workshop on Ethnography and CSCW System Design*, Toronto, Nov, 1992.
- Gaver, W., (1992) "The Affordances of Media Spaces for Collaboration", in *'Sharing Perspectives', Proceedings of CSCW '92*, Toronto, Nov 1992, ed. Turner, J. and Kraut, R., ACM Press
- Heath, C., and Luff, P., (1991) "Collaborative Activity and Technological Design: Task Coordination in London Underground Control Rooms", in *'ECSCW '91', proceedings from the 2nd European CSCW Conference*, Sept 1991, Amsterdam, ed. Bannon, L., Robinson, M., and Schmidt, K., Kluwer Academic Press
- Hughes, J., Randall, D., and Shapiro, D., (1993), "From Ethnographic Record to System Design", to be published in *Computer Supported Cooperative Work: An International Journal*
- Hughes, Randall, and Shapiro, D. "CSCW: Discipline or Paradigm ? A Sociological Perspective", in *'ECSCW '91', proceedings from the 2nd European CSCW Conference*, Sept 1991, Amsterdam, ed. Bannon, L., Robinson, M., and Schmidt, K., Kluwer Academic Press
- Knights, D., 1997, 'Governmentality and Financial Services: Welfare Crises and the Financially Self-Disciplined Subject', in G. Morgan and D. Knights, *Regulation and Deregulation in European Financial Services*, Basingstoke, Macmillan
- Luff, P., Heath, C., and Greatbatch, D., (1992) "Tasks-in-interaction: paper and screen based documentation in collaborative activity", in *'Sharing Perspectives', proceedings of CSCW '92*, Toronto, Nov 1992, ed. Turner, J. and Kraut, R., ACM Press
- O'Reilly, J., 1994, *Banking on Flexibility*, Aldershot, Avebury
- Ouchi, W.G., 'Markets, Bureaucracies, and Clans', *Administrative Science Quarterly*, Vol 25, March 1980
- Randall, D. and Hughes, J. A. (1994) "Sociology, CSCW and Working with Customers", in Thomas, P (ed) *Social and Interaction Dimensions of System Design*. Cambridge University Press Cambridge.
- Randall, D., Hughes, J., and Shapiro, D. (1993), "CSCW: The Fourth Dimension: Perspectives on the Social Organisation of Work", to appear in *"Social Dimensions of Systems Engineering"*, ed. P. Quintas, Ellis Horwood
- Schmidt, K., "Analysis of Cooperative Work: A Conceptual Framework", June 1990, Riso National Laboratory, Roskilde, Denmark.
- Schmidt, K., (1991) "Riding a Tiger, or Computer Supported Cooperative Work", in *'ECSCW '91', proceedings from the 2nd European CSCW Conference*, Sept 1991, Amsterdam, ed. Bannon, L., Robinson, M., and Schmidt, K., Kluwer Academic Publishers
- Shapiro, D.Z., Hughes, J.A., Randall, D. and Harper, R.R. (1991), "Visual Re-representation of Database Information: The Flight Strip in Air Traffic Control", to be published in the proceedings, *10th Interdisciplinary Workshop on Informatics and Psychology: Cognitive Aspects of Visual Language and Visual Interfaces*, Scharding, Austria.
- Suchman, L. (1987), *"Plans and Situated Actions: The problem of human - machine communication"*, Cambridge: Cambridge University Press.

