

CSCW Requirements Development

Abstract

This deliverable considers the work of the COMIC project on involving ethnographic studies of work into the development of CSCW systems. The particular focus of our work has been to incorporate ethnographic studies of work into the general set of resources drawn upon by the designers of cooperative systems. This deliverable presents the framework for the analysis and presentation of ethnographic material across a series of fieldstudies. The work on the framework is complemented by an ethnographic handbook that considers best practice in CSCW systems design.

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Table of Contents

CSCW Requirements	1
Our New Challenges.	3
Ethnographic Studies in Design	3
Designers and Fieldworkers	5
Communicating with Designers	6
The Presentation Framework.....	7
Distributed coordination	9
Plans and Procedures	9
Awareness of work	10
Applying the Framework	11
The Ethnography Handbook.....	13
The structure of the deliverable.....	15

PART I An Analytical Framework

Chapter One	
Specialised Services Banking	21
Introduction: the Business Centre.	21
Method: Ethnography - “dark and difficult work, but someone has to do it”	21
The Setting: the Business Centre.....	24
The Admin Manager and Transmission Officer:	24
The PAM (Personal Account Manager) and PAE (Personal Account Executive) Teams	27
The Personal Account Executive (PAE).	28
The PAM Team.	29
The Business Account Managers - lending on ‘campari and ice’?	34
Discussion: A Framework for Analysing the Social Organisation of Work	39
Distributed Coordination	42
Coordination through artefacts	43
Identifying coordination features - Paperwork	43
Paperwork - temporal and organisational implicativeness.	46

Paperwork & the audit trail.....	47
Plans and procedures.....	49
Plans, Procedures and ‘Local Knowledge’	53
Plans in the machine - using computers to support decision making - ‘mind the GAPP’.	55
Plans, Procedures and ‘Organisational Memory’.....	57
Awareness of Work.....	61
Representations as modal transformations	63
Awareness of work and the sense of organisation.	64
Issues for further consideration	65
‘Egological Organisation’ of work.	65
Routine, Contingencies and Teamwork.....	66
Local Knowledge	67
Skill	68
Communications, computer work and paperwork.....	68
Bibliography	68

Chapter Two

Documents and the technology centre	69
Introduction	71
Documents in Socially Organised Work Activities	72
Documents as descriptions	73
Documents as reports of the organisation’s activities	73
Documents as produced for the organisation’s personnel	73
Documents as having official status	74
Documents as the basis for future actions.....	74
Documents as integral features of the orderliness of activities	75
Documents and the ‘egological division of labour’	75
Informal interaction surrounding document use	77
Concluding remarks.....	78

Chapter Three

MASSIVE: An Ethnographic Evaluation	79
The VR System	80
The Method	84
Evaluating MASSIVE	85
Distributed co-ordination	86
Plans and Procedures	86
Meeting set up	87
Awareness of work.....	89
Degrees of presence	89

Unexpected benefits	90
Use of audio channel	91
Use of embodiments and space in the virtual environment	93
Some concluding thoughts	94
A brief reflection on the application of the analytic framework	95

Chapter Four

The politics of meetings and their technology 97

Introduction	97
---------------------------	-----------

Placing video in its organisational context - the 'politics' of video.	98
--	-----------

Instantaneous access to expertise	99
--	-----------

Policies & politics	99
---------------------------	----

The use of the Video Link & Workflow system	100
---	-----

Organisation of work	101
----------------------------	-----

The work that makes technology work	102
---	-----

Diffusion of expertise in a Manufacturing Industry	105
---	------------

Discussion	110
-------------------------	------------

References	111
-------------------------	------------

PART II

An Ethnography Handbook

An Ethnography Handbook	115
Introduction	115
Chapter 1	
What is ethnography?	117
Background to ethnography in social research	117
The Chicago School	119
Community studies	120
Ethnography and the professionalisation of social research	121
The critique of variable analysis	122
Some salient methodological issues	123
Chapter 2	
The View from System Design	127
The Motivation for Ethnography in CSCW	127
The need for a sociological perspective	127
The inadequacy of orthodox methods	128
What is it intended to find out?	128
Chapter 3	
The Social Organisation of Work	133
The visibility of social organisation	133
The world known in common	133
The intractable practicality of action	134
Attending to the work	135
The account-able character of work	136
Conclusion	137
Chapter 4	
The Practicalities of Ethnography	139
The nature of the design process	139
Design choices	141
Organising the design team	142
Making clear the objectives of the fieldwork	142
Gaining Access	143

War Story 1: Getting permission for the air traffic control study	144
Some lessons	144
War Story 2: Getting Access to a Technology Centre	146
Some lessons	146
What Happens If Access is Denied?	147
Beginning fieldwork	147
War Story 3 - Things overheard in the Bank	148
Describing ethnography to clients	149

Chapter 5

Reporting Ethnographic Findings	153
Reporting findings to clients	154
War Story No.4 - Reporting findings to the Technology Centre project team	154
War Story 5 - Ethnography and The Technology Centre Project Team	155
Conclusion	156
Bibliography	157

Appendix I

Different Kinds of Ethnography:	159
Description and Redescription	165
Conclusion:	176
Bibliography	177

CSCW Requirements

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This deliverable considers the work of the COMIC project on involving ethnographic studies of work into the development of CSCW systems. The particular focus of our work has been to incorporate ethnographic studies of work into the general set of resources drawn upon by the designers of cooperative systems. During the project we have made considerable progress in involving studies of the work in the development process. As a result this work has advanced much more rapidly than we had anticipated at the outset of the project, and consequently we have deliberately extended our remit from that originally envisaged in the technical annexe.

At the time of writing the technical annexe our view of this deliverable was that we would apply a set of techniques and supporting tools developed during the project. We originally described this deliverable in the technical annexe as:

“D2.4 - Requirements Capture Study.

This deliverable will report on the use of the tools and techniques developed in 2.1 and 2.2 within a trial field study. The field study will focus on eliciting requirements for a pilot application selected from a number of sites which the project has access. “

The work of the project has made sufficient progress that many of these areas of work were actually carried out during the second year of the project and are reported in deliverable D2.2. The work described in this deliverable advances beyond the technical annexe by considering the realisation of a general framework for presenting material from fieldstudies. This work represents the development of a more systematic consideration of fieldwork in CSCW systems development. The framework aims to promote communication in the cooperative systems development process. The main components of this deliverable are:

- The use of a framework for analysing the social organisation of work in the context of CSCW systems development;
- The assessment of the developed framework across a disparate range of settings. The different settings were chosen to be illustrative examples of CSCW systems;
- The development of a general handbook introducing ethnography into the CSCW systems development process.

These different facets of this deliverable are closely related. For example, the handbook reflects more broadly on many of the themes instantiated in the framework. The developed framework and the various examples of the use of the framework build upon a significant corpus of research results within the COMIC project. A number of particular results from previous research in this strand are worth stressing in the context of this deliverable:

- 1) A reflection of the nature of systems design and the relation of studies of work to the design process.(reported in D2.1)
- 2) An extensive survey of requirements techniques and an analysis of how these relate to ethnographic studies of work.(reported in D2.1)
- 3) The amendment and application of a design support tool to allow the structuring and presentation of ethnographic material (reported in D2.2)
- 4) The development of a set of presentation techniques that exploit the notion of viewpoints to present different aspects of fieldwork material (reported in D2.2)
- 5) The construction of a framework to structure the presentation of ethnographic material in the context of cooperative systems development (reported in D2.2)

In addition to these different areas of work from within this strand the work presented here also draws directly on work from other areas of the COMIC project. In particular the following links have emerged over the last three years of the project.

Strand 1: Organisational Context

The work of this strand has highlighted the diverse nature of organisations and the various equally valid perspectives that can exist. This emphasise on pluralism and the need to represent alternative perspectives is reflected both in the framework and the use of viewpoints reflected in the s

Strand 3: Mechanisms of Interaction

The focus on mechanisms as a means of coordinating work and focusing cooperation is reflected in the role we envisage for the tool support in the development process. We have build upon the core notions uncovered in mechanisms of interaction in the development of tool support. We have also exploited the fieldstudies undertaken to inform these mechanisms in the development of our own framework. This framework reflects many of the concepts central to MoI particularly in its consideration of distributed coordination and the role of plans and procedures in coordinating work.

Strand 4: Shared Interaction

This strand has provided both conceptual and practical input to the work of this strand. Many of the notions of awareness highlighted in this strand have been incorporated in the framework articulated in this deliverable. In addition, the concept demonstrators outlined in the strand have also provided a basis for study as we assess the utility both of the framework and the supporting framework.

Our New Challenges.

Our extensions to the original remit of the project is in direct response to a number of challenges that CSCW systems development must answer. These challenges have provided considerable motivation for the work reported in this deliverable. The themes they represent have dominated our original approach to the project and the extensions to the work of Strand 2 reported here. These challenges include

- The increasingly industrial context within which studies of work take place and the commercial context of ethnographic work.
- The growth in systems development teams drawing upon studies of work and the need to provide increased access to fieldstudies.
- The increased awareness of ethnography as a means of understanding work and the need to communicate the nature of ethnography and issues of best practice.
- The need to provide a more structured means of communicating the results of studies of work to developers and the establishment of a framework for presenting and understanding this material.

Some of these challenges have been addressed in the development of tools, as reported in D2.3 where particular importance will be attached to the use of the DNP and the World Wide Web. In this Deliverable we wish to focus upon significant methodological issues, and will more specifically focus upon the development of best practice in ethnography for. Much of this is based upon the application of the framework outlined in D2.2 and is driven by the demands of across the whole COMIC project. Before considering the work of the last year in any detail it is worth briefly restating the position that has emerged within the COMIC project on ethnographic studies in design and the nature of the framework.

Ethnographic Studies in Design

The value of ethnography in design is a matter of controversy (cf. Anderson, 1994, 1995, Rogers, 1995) and we have consistently argued, as in D2.1 that there are no panaceas for the problems of, even, requirements capture in CSCW design. Given this background we can only expect ethnography (or the sociology that may be associated with it) to have a modest utility to design. The role of ethnography as we have envisaged it is primarily as an *informational input* into design, and, as such, only one source of such information. The input can be of *critical* value insofar as it can advise the designer of actual practices of work and may clarify the role that actual practices play in the management of work, matters which may not normally be captured by other methods of requirement capture. In as much as a COMIC position on the role of ethnography in CSCW

design has emerged in can be stated in its ability to make visible the everyday nature of work. This can be more clearly stated as :

For COMIC, the principle virtue of ethnography is its ability to make visible the ‘real world’ aspects of a social setting, seeking to present a portrait of that setting as seen and understood by those who live and work within the domains concerned. The intention is to see activities as social actions embedded within a socially organised domain and accomplished in and through the day-to-day activities of its users and to convey this information to designers.

This is, in fact, a *sociologically partisan* conception of ethnography, and is by no means universally shared, but it does have the advantage of focusing upon the specific and detailed organisation of activities which are carrying out and, thereby, upon the very activities which designers are concerned to understand, analyse and reconstruct. It is the ability of ethnography to describe a social setting as it is perceived by those involved in the setting (the archetypal ‘users’) that underpins its appeal to designers. In particular, it offers the opportunity to reveal ‘needs’ or ‘practices’ of users which they may not be aware of - because they take them so much for granted that they do not think about them - or which they cannot articulate - because of the bureaucratic or power relationships within which they are placed. As part of the initial process of requirements capture, ethnography is valuable in identifying the exceptions, contradictions and contingencies of work activities which are real conditions of the work’s conduct but which will not (usually) figure in official or formal representations of that work.

The COMIC assumption is that it is for *designers* to draw design conclusions from the results of ethnography. There can be a case made for ethnography (or sociology) having a more far reaching impact upon design, insofar as it provides a means to rethink the nature of the social world that is being designed for, or to rethink the designer’s role within that world (cf. Hirschheim and Klein, 1988, for example and, again, Anderson, 1995) but our concern has not been with anything so immensely far reaching as rethinking the world of design, but has been with the contribution that ethnographic studies can make to the formulation of specific designs. The kinds of changes to design which will result from our approach are intended to have an *incremental* rather than a *comprehensively transformative* effect.

It could also be argued that ethnography (or sociology more generally) ought to carry implications for design, and that the roles of ‘fieldworker’ and ‘designer’ ought to be combined (cf. Shapiro, 1993) but this is perhaps both unrealistic and unnecessary. There is, of course, no *objection* to someone who is a sociologist becoming a designer, nor to those with designer’s training taking up fieldwork, but there is equally no reason to suppose that such a combination is a requisite. It is perhaps unrealistic in the sense that it assumes that the skills which are involved in, on the one hand, system design and, on the other, those of

sociological inquiry are not so disparate that it is likely that those who can master the one will be less competent with the others - unless, of course, one imagines that the mastery of the skills in one or other department is of a very rudimentary kind, such as can be obtained through a superficial education in them, but it is then hard to see what utility such basic skills would be. It is unnecessary, insofar as the production and integration of ethnographic materials into design can be adequately done through the *collaboration* of specialists, It is on this collaborative basis that COMIC has modelled its approach.

There is no *intrinsic* design significance to the results of an ethnographic study, for such significance must be *relative* to the nature of the design exercise itself, to the purposes, conceptions, methods and plans of those making the design.

Designers and Fieldworkers

The nature of the exercises of design and fieldwork are very different. Design is a decision making exercise, concerned with solving practical problems, whilst the fieldworker's role does not involve decision making but consists, rather, in the concern adequately and accurately to capture and portray the ways of social settings, and the activities which occur within them. It is precisely the importance of such work that it should be done independently of *design* preconceptions, that it should distance itself from the preoccupations, enthusiasms and orientations of the designer, should precisely refrain from looking at the setting and its affairs 'through designer's eyes'. Its mandate is, rather, to look at the setting through they eyes of those who inhabit it, with as much sensitivity to that as possible. Part of the point of undertaking ethnography is to ascertain whether the realities of a given setting conform to the conceptions that the designer has (perhaps *apriori*, derived from design conceptions, or perhaps derived from other informational sources) and, to that extent, it is wholly desirable that the investigation of those realities should not seek to construe it in terms of the designer's relevances. There is, thus, a basic tension between the designer's and the fieldworker's roles, but this is a *positive* feature, something which is important to and essential for good design, to highlight the difference between good *abstract* design solutions and good *practical* design solutions.

We hasten to add that we are not trying to make out the ethnographer as the omniscient and virtuous party in this relationship, restraining the inflexibly minded designer from imposing misconceptions on those who will be impacted by the design. In many respects, the fieldworker will be an *agent* of the designer - we are merely highlighting the fact that the fieldworker's role is to generate a kind of data which the designer would have neither the time nor the proclivity to collect, and which is best carried out if it is done as an *independent* operation within the design process.

Consequently, our recommendation is that the building a relationship based on effective communication between designer and ethnographer is at the heart of the

matter. However, it is not enough to maintain that ethnography has a (modest) utility for designers without also confronting the fact that there are problems in enabling designers to *utilise* ethnography. The need to increase the utility of ethnography and to foster communication has directly motivated the development for organising and presenting ethnographic material.

Communicating with Designers

There is a difference in the needs and vocabulary of designers and fieldworkers. Design is about abstraction and complexity, and the designer is characteristically in search of ways of *simplifying* the complexity of the design situation, often by means of abstractions which will delineate critical features of that situation and of the design problem. The designer wishes to find mechanisms which will quickly and succinctly convey the aspects of a design that are key to meeting the problem at hand. Notations and diagrams abound, and these have specialised meanings and are used to provide design teams with a common vocabulary .

Ethnography, on the other hand, is directed toward detail, toward the production of a ‘rich’ and ‘concrete’ portrayal of the situation, rather than an ‘abstract’ and ‘sparse’ one. Abstraction and simplification are characteristically resisted, for it is the disposition of ethnography to insist upon citing items, incidents, activities or practices within their context, to emphasise that their meaning, or sense, is only properly comprehended within the appropriate socio-cultural situation. To see things right is to see them in their context, and to portray them in the above mentioned abstract/sparse way is to divest them of their sense, to distort the understanding of their role. There is, and rightly so, a resistance to simplification. Thus, the product of such studies involves the extensive use of discursive text and which explicate and elaborate upon examples drawn from the field.

The problem then is how to bridge the gap between the two kinds of representation, between the expansive textual expositions and the abstract, spare graphical depictions which seek to focus upon ‘key elements’ and ‘core concepts’ We have sought to do this through the use of an electronic support where the studies of work are reflected in a medium shared by the designers, where the materials from the study can be available to designers in an accessible fashion, and where they can be decomposed, through the use of a ‘viewpoints’ presentation - into elements which can be selected in terms of their relevance to the designer’s purpose. The problem for this stand of COMIC then becomes two fold:-

- Developing an effective relationship between text and graphics in the tool support. The use of this tool has been described in D2.2 and is presented in more detail in D2.3.
- Constructing a framework that allows the results of ethnographic studies to be structured for presentation in a manner which makes the emerging results more digestible by designers.

The Presentation Framework

We have argued that determining the implications of an ethnographic study is a *design* question, that the ethnographic study, as a *descriptive* report is an input into the designer's decision making process, and that its implications must be assessed relative to other decisions the designer must make. These other decisions may include those which pertain to

- The level of automation intended in the redesign and the various cost benefit arguments associated with automation.
- How to evolve the work setting i.e. in what ways the development of the system is a matter of redesigning, also, the organisational context within which the system is to be situated
- How important safety and reliability is in the developed system.
- How to prioritise the various requirements which the design will have to meet
- What the potential effects of the design may on users and the organisation
- What the constraints are on the design process and any particular decision within it.

A host of other equally valid issues are important to the design process and at any given time may directly or indirectly effect design decisions. The ethnographic study may inform any or all of these judgements, but plainly those judgements are also informed by considerations and by information which do not originate in the ethnography.

Given the descriptive nature and informing role of ethnographic studies, then the level and detail of coverage need only to be set to meet the demands of a particular design activity, depending upon the scale of the setting to be redesigned, and the nature of the interdependence amongst the activities within the scope of the system.

For example, a comprehensive redesign of a control room would involve the development of a new physical setting, and of new software, and would need to be highly reliable, in which case a long and wide ranging study would be called for. In a contrasting case, the installation of a small number of PC's in a hotel branch office would involve the investigation of much more localised activities within a more restricted, and therefore easily observed, setting and sufficient detail for such a case could be acquired through a shorter study.

The capacity to gather information through ethnography dedicated to the purposes of informing design must itself be constrained, as is every other aspect of the design process, by the conditions of the project itself, the level of resources, the pressures of time and the nature of the design task. One way of understanding and structuring this process is to consider the development of a framework that focuses on presenting the issues key to the design process. The framework outlined in detail in D2.2 was developed to highlight issues significant to development it is a means of presentation not analysis. It is an essentially

practical device for both organising and understanding the vast array of fieldwork observations of how the work in any complex setting 'gets done'. Furthermore, in deploying this provisional framework we are attempting to steer a difficult course, common to ethnographic observation and analysis; between the accusation that it is simply 'hanging around' with the consequent suggestion that its findings are entirely idiosyncratic, fortuitous and inconsequential; and the over-systematisation of a 'cookbook' approach to fieldwork and analysis, effectively defeating the entire purpose of the ethnographic approach.

The framework organises studies around three main dimensions of analysis. These are:

- Distributed coordination
- Plans and procedures
- Awareness of work

Obviously, these dimensions do not exhaust the relevant aspects of the organisation of work. However, these three topics are of prominent interest to and they can, of course, be examined in conjunction with other 'cross cutting' aspects of work, as is done in the Specialised Services Banking study below where, the attempt is made to examine the ways in which (i) the relation on paperwork and computer work (ii) skill (iii) space and time and (iv) organisational memory relate to distributed coordination, plans and procedures and awareness of work. This is represented diagrammatically in figure 1:

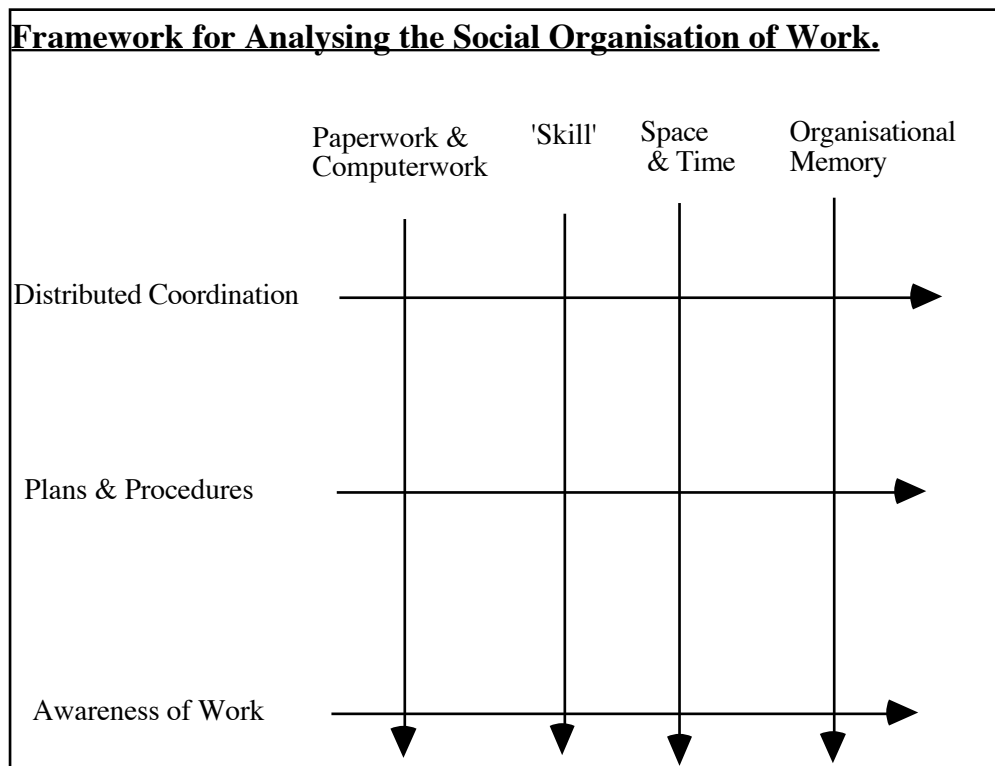


Figure 1: The application of the framework

In the remainder of this section we would like to briefly review the different dimensions of the framework outlined to date.

Distributed coordination

This portion of the framework arises from the fact that the work tasks performed in complex settings are performed as part of part of patterns of activity, as operations within the context of a division of labour, as ‘steps’ in protracted operations, as contributions of continuing ‘processes’ of activity. This is an intrinsic and essential feature of work and many task prepares the way for others to do their work or is some step in a sequence where the remainder of the sequence will be picked up and continued by someone. For example, the writing of code in some circumstances is done by different software engineers as contributions to a unified and structured whole, and where the code writers have to orient to the fact that they are writing code that has to go together with other code. In the case studied(cf. Button and Sharrock, 1994) they had to write their code in such way that its meanings be intelligible to other code writers, so that they could usefully consult each other’s code. Writing code with mutually intelligible meaning could not be achieved by following the conventions of the coding language alone, and these conventions had to be supplemented by a locally developed set of conventions, specific to the software group, which provided specific and stabilised meanings for the code. However, the writing of the code had to be done in ways that would relate it specifically to code that others were writing, would relate it in its details to that code, but the code to which it had to relate was frequently being worked out at the same time, such that the engineers had to engage in constant mutual consultation as to their thinking about and the specifics of their working out of the code-in-hand.

Plans and Procedures

Plans and Procedures provide a prominent means by which distributed coordination is to attempted to be achieved. Such wide ranging phenomena as project plans and schedules, manuals of instruction and procedures, job descriptions, formal organisational charts, workflow diagrams are all ways of attempting to enable people to discern the orderliness to work. These structures allow people to insert their own activities into that orderliness enabling them to see what it is their place to do. They also allow them to determine how their work is part of a pattern which transcends the immediate present time and which extends beyond the possibilities of their direct experience. Particularly important to the treatment of ‘plans and procedures’ has been the need to clarify the understanding of *how* these function in the organisation of activities, particularly work, and to correct the misconception that the ‘critique of the cognitive model of planning’ does not demonstrate that plans are irrelevant to the organisation of work (much of this discussion is taken up in the work of Mechanisms of Interaction reported in D3.1 and D3.3). In order clarify their role we suggest that a consideration of plans within cooperative work should:

- identify the different actors and their potential relationships to plans and procedures

- understand and accept the existence of diverse viewpoints on plans and procedures
- record and be sensitive to different notions of ‘following a plan’

Awareness of work

This is an expression of the notion of the way in which the organisation of work activities involves making the nature of those activities ‘visible’ or ‘intelligible’ to others doing the work. Just as distributed coordination and the application of plans and procedures are pervasive features of work sites, so to are practices for enabling others to have an awareness of the nature of the work that is being done. Two important ways in which such visibility/intelligibility is achieved is through the notion of ecologies of awareness and the use of representations of the work from within.

Ecologies of awareness

Work sites are laid out in ways which affect - facilitate or hinder - the capacity of those doing the work to make reciprocal sense of each other’s activities, to see what the other is doing now and how this fits into the pattern of work which they are concertedly producing. Thus, the way in which radar coverage can be varied on the screen, enabling an operator to expand the area of coverage beyond the bounds of the ‘sector’ for which he is responsible is one of the ways in which air traffic controllers can be aware of each other’s work, can monitor how traffic is developing in adjoining sectors to their own, and can thus ‘look out for’ and provide assistance to each other. The multifarious ways in which a setting is organised with respect to effecting (or inhibiting) such visibility/intelligibility provides the *ecology of awareness*.

Representation of the work from within the work

‘Representations’ are not only things which can be constructed extrinsically to an activity in an attempt to describe that activity, they are also things which can be constructed as part of the carrying out of that activity. Thus, people contrive ways of keeping track of activities they are themselves doing, of being able to know whereabouts they are in the course of that activity. For example, the paper strips used by air traffic controller’s(D2.2) are both ways of planning work and of recording it, and of doing the two together - the controller can annotate the printed flight strips in various ways, in order to assist herself in working out provisional plans for the traffic, but also to provide her with a record of the steps that she has already taken in the implementation of some plan, to enable her to ‘keep in mind’ her current place within the development of the plan. The requirements on such representations is that they have a recognisable-to-the-controller character, that they be such that he can, at-a-glance, in the course of intense activity pick out the things he needs to see, can ascertain what he has already done and what remains for her to do.

Representations are also designed to render activities available for review. For example, the Fault Report Forms which are engendered by the operators in the test facility of the photocopier designers(D2.2). The operators generate detailed records of the machines' failures, in order that these may then be reviewed by the next day's meeting of a committee of senior engineers. These engineers will read the forms as a basis for understanding how well their designs are performing and what kinds of redesign might be needed.

The 'adequacy' of such representations is not to be judged in the abstract, but relative to the purposes and practices within which they are generated and employed, for it is part of the use of, for example the Fault Report Forms to determine whether they contain 'enough' information to enable diagnosis of a fault, whether they have been 'properly' or 'fully' completed, whether they are ambiguous or unequivocal in their reading. Many of these devices are formatted ones, as is the Fault Report form, which is a printed document with a set of standardised categories for the operator to complete and which assembles the 'standard' information essential to determining the character of a fault from a reading of the form. These, and uncountable many other devices, comprise representations of the work from within the work.

The intent in this deliverable is to examine the coverage and utility of the framework across a selection of different domains of work. To this end we have selected three different work settings each illustrative of key features of work. The first of these is a bank which is dominated by highly proceduralised and managed work processes. The second is a technology centre where an open plan office allows work and routines to be managed in a much more flexible manner. Our final application of the framework attempts to integrate the work of comic by applying emerging techniques across the project. By choosing to assess and evaluate a VR meeting we are seeking to extend the framework to consider work which is manifest only within an electronic world.

Applying the Framework

The framework has been applied in line with the use and development of the electronic support outlined in D2.3. The different aspects of the framework are manifest within the designers notepad as a set of presentation viewpoints which allow ethnographic material to be presented to designers in a manner best fitting the purpose of a particular design while ensure the variability and flexibility of actual work settings is also conveyed.

The studies reported here cover a range of prototyping activities where different systems were either developed or amended as a result of the ethnographic studies of work. A number of different relationships existed between the studies and the designers. This variability reflects the considerations outlined in D2.2 and developed later in this document with the ethnography

handbook (Chapter NN). Each of these different studies and the associated prototypes can be summarised as:

The Bank

This prototype took place within a large UK financial institution which is undertaking a policy of significant expenditure on technological improvement in the bank. The Bank is heavily committed to highly structured work process and the notion of workflow. It also recognises that the introduction of technology often requires significant changes to the organisation and consequently adopts a broad interpretation of prototyping.

The Technology Centre

This prototype seeks to augment the services currently provided by a technology centre within a large manufacturing organisation. The centre acts a source of advice and expertise for the organisation. The prototype to be developed seeks to allow users to remotely access technical documentation by placing it on-line within an electronic archive. This form of prototyping seeks to develop a software system to replace an existing manual facility.

The introduction of video-conferencing

The bank and the technology centre are both introducing video-conferencing systems and the study compares their initial experiences. It suggests that although corporate philosophy and politics can create a drive towards exploring a set of technologies, they can at the same time encourage a way of organising and managing work that appears to be in conflict with that particular implementation and that users can be 'caught in the middle'

The Massive Evaluation

This represents a radical new technology for supporting meetings that has emerged during the lifetime of the COMIC project. Virtual environments represent the extreme end of a general trend toward increasingly electronic manifestations of work. Where previously work was made visible through physical artefacts these are being replaced by electronic representations. In the case of Massive work within the systems is only represented electronically and prototyping in this involves designing and realising worlds with allow work to be made visible across a community of users.

The context in which these studies have been used is one in which a set of sensitising principles are needed, as a basis for organising ethnographic materials in a way which can usefully inform designers (as discussed above). The set of principles which we have built into the framework for studies are arise not only from their connection to issues under discussion more generally, but also as a response to the themes of the COMIC project. The framework represents an integration of the core concerns of COMIC and are motivated from across the project. Thus, the concern with Rules and Procedures and Distributed Coordination are both salient to Strands 1 and 3, as well as 2, whilst Awareness is a major concern for both Stands 1 and 4.

Thus, the strand has sought to integrate the demands of designers in terms of how information from field studies may be structured for presentation. These issues are complemented by a broader methodological consideration of the role of ethnography in design.

The Ethnography Handbook

In addition to the development of the framework we have outlined a recipe/handbook for designers to use ethnography. This complements the development of the framework by establishing the surrounding methodological issues and practices of importance to the application of ethnography in systems design. As part of this handbook we consider those problems which arise from and within organisation of the design team and the relations of the ethnographer with those in the team. Design teams are typically part of the structure of organisations, and the relationship of the team to, for example, organisational management can have an effect upon the way in which the ethnographer/designer relationship works out. We have experimented with a number of forms of co-operation in the design, and have employed the following arrangements:

- Ethnographer and designers in close collaboration
- Ethnographer as consultant
- Designer involved in studies
- Previous studies summarised and drawn upon

Our experiences of these arrangement have been previously reported in D2.2. In the development of the ethnographic handbook we focus more closely on the issues which arise in practice in the application of ethnography within these arrangements. Our particular focus has been upon the problems of communication between and designer in terms of rendering the ethnographic materials accessible and intelligible to the designer.

Collaborations between ethnographers and design teams are, at this stage, very much exploratory relationships, and we report on the difficulties involved in those relations. The issues of note include:

False Expectations

A number of significant pressures on the fieldworker which can arise from false expectations of what can be delivered, false expectations which can themselves be difficult to dispel. The problems of expectation include:

- *'Is that all then'*. There can be over-expectations as to how much ethnography can find out in the time available. Ethnography can be a time consuming process, especially if its mission (relative to design) is a diffuse one, of finding out about the work practices of a particular setting. The 'quick and dirty' approach (discussed in D2.2) seeks to take account of this difficulty and speed up the delivery of ethnographic results, but this is only

possible if there is a clear and restricted focus for fieldwork observation. The pace at which ethnography can be done is incongruous with that at which industrial design is done, and there are, therefore, demands for quick (or quicker) results from the fieldworker, and disappointments that more has not been achieved in the time.

- *'Well, we knew that'*. There can be false expectations as to the kind of information that fieldwork can reveal, and complaints that it does not provide blinding insights into the organisation of work. The response of *'Well, we knew that already- so what value does it add?'* can occur. There is, however, no reason why fieldwork - any more than any other data collection method which contributes to requirements capture should reveal information which is surprising to designers. Like other methods of requirements capture, it is recording phenomena which are familiar and commonplace to those involved with them, as in-house design teams might be. The purpose, as with other requirements capture method, is to ensure that these phenomena are provided with explicit representation within the design process. As familiar, commonplace phenomena, they may risk neglect, as things which are taken for granted and therefore overlooked in the design process.
- *'Tell me what to build'*. There can be the false expectation that fieldwork can provide direct answers to design problems, which puts pressure on the fieldworker to offer solutions,, which can be very difficult to decline. After only a few days in a complex organisation, one fieldworker was approached by the manager who had obtained his fieldwork access with a request for input of recommendations into a Quality Improvement Team. The fieldworker's protestations that he had only been at work a few days and that it was not within his remit to propose solutions - not least because he knew, at that stage, next to nothing about the processes involved - were pleasantly but firmly declined. Rather than risk his otherwise good relationship with the manager, the fieldworker acceded to the demand, and produced some rather feeble recommendations which were gratefully and gracefully received.

The conflicts of 'contractual' relationships

The designer is being paid to deliver a service to a client who is also required to provide suitable access to the ethnographer, which may result in each party pressuring the other, with the tensions and resentments which arise when parties feel they are being unreasonably harassed. Thus, the client is pressuring the designers for results, for results which are either earlier or more substantial than contracted for, whilst the designers are trying to get the client to deliver on the commitments for access.

The conflicts of the host organisation

The need to enter into the debate and internal politics of the organisation often becomes manifest as a study is undertaken. In one instance, a manager from a client organisation asserted that 'The problem here is that these people think they are doing their job, but the company is not getting enough value from them'. On the basis of the design team's field study, the designers were convinced that 'these people' were right, and that they were doing their job, and that the direction in which the manager wanted to drive the design was to be resisted, no matter how difficult that might make their subsequent relations with him.

Validity and verification of studies.

What do the results of the ethnography mean for design? How generalisable is what they find, and how much resource should be invested in solving the problems they identify? If something is only an issue in a small percentage of cases, then will it be worth spending the money to deal with it? This is a classic trade off, which needs to be evaluated by looking at the results of the study in relation to other studies and to general features of co-operative work. To this extent, we have built up an electronic corpus of materials

The problems of pressure and conflict can arise, no matter how carefully attempts are made to explain the nature and role of the fieldworker and the fieldstudy. It is to be borne in mind that people do not necessarily attend to qualifying statements, nor do they necessarily believe them. The intent of the handbook is to outline these issues and suggest ways in which they can be attended to by both developer and fieldworker.

The structure of the deliverable

Section One of this Deliverable consists of a number of papers produced during the course of year where the analytical framework was applied across various fieldstudies informing the design of cooperative systems. These papers are, for the most part presented as separate and distinct pieces of work, in order to make clear the breadth and diversity of the ethnographic work where the framework has been applied. It is important to note, however, that these different studies can be unified by their contribution to an extended examination of the role of workplace studies within the CSCW system development process. In addition, Section Two is made up of a practical handbook for ethnographic study of the workplace which reflects on and contextualises many of the studies discussed throughout the COMIC project.

Much of the work reported here is based upon discussion of two pieces of fieldwork, both introduced in D2.2, taking place in sections of a national bank, and a Technology centre respectively. There are also discussions of more recent

fieldwork taking place as part of an evaluative assessment of the use of the MASSIVE VR system.

In the first paper Rouncefield, Rodden and Hughes describe the fieldwork which has taken place in a UK national bank and use this discussion to present a general framework for the analysis of the social organisation of work. This draws out the three broad themes of 'Distributed Coordination', 'Plans and Procedures' and 'Awareness of Work' and discusses the contribution of 'Paperwork and Computerwork', 'Skill', 'Space and Time' and 'Organisational Memory' to these themes. It is stressed that this is not a rigid, prescriptive model for the analysis of work, but rather an attempt to draw attention to some of the more fundamental elements of the social organisation of work, and to offer them as a set of sensitising concerns to those involved in the design process.

In the second paper, Hughes and O'Brien examine in some detail the role of paper documentation as integral features of the orderliness of activities within a Technology Centre in a UK company. This description relates to themes of 'ecological division of labour' and 'procedural implicativeness' and thus relates to Rouncefield, Rodden and Hughes' treatment of paperwork.

In the third paper, O'Brien, Rodden, Rouncefield and Bullock apply the framework for the analysis of work, to offer an evaluative account of a series of VR meetings run using the MASSIVE system. This paper focuses on cooperative work as it takes place in both the real and virtual worlds, and highlights the difficulties and unexpected benefits which arise from using the system to hold 'virtual meetings'. Consistent with the intentions stressed in the first paper included in the Deliverable, this ethnographic evaluation of the lab-based technology is offered as introducing a set of sensitising concerns to the designers of the MASSIVE system.

In the fourth paper, Hughes, Kristoffersen, O'Brien and Rouncefield discuss the introduction of technology in two commercial organisations, and highlight the fact that the evaluation of technology in the workplace requires attention to a broad range of organisational, or 'political' concerns and their contribution to the social organisation of work. In particular it suggests that an organisation's 'interest' in the introduction of technology in the work place is often the result of sets of concerns related to 'changing' the organisation. These changes, which the technology is designed to support, offer require of staff, different working practices in order that the successful functioning of the organisation might be achieved. These practices can run contrary to those supported by that technology, and the examples used in this paper situate the evaluation of the technology in this context.

Thus these papers are offered as a series of accounts of ethnographic studies of work which contribute to a range of issues within the design and development of CSCW systems. Importantly they reflect upon the contribution of fieldstudies to industrial/commercial as well as lab-based working environments, and highlight the different requirements of ethnographic study in these distinct environments.

In Section Two of the Deliverable Hughes, O'Brien Rouncefield and Sharrock offer a handbook designed to assist those of a non-sociological persuasion in the practical business of undertaking ethnographic study.

In doing this it offers a brief historical background to the method, reflects upon the lessons learnt from previous and continuing studies and offers practical advice on starting, completing and reporting studies of the work place: it aims to cut through a number of the myths and mystifications surrounding the method.

It is worth remembering, finally, that this handbook is, to a certain extent, designed to contextualise the accounts offered in Section One of the deliverable and should not be thought of as an ethnographic 'gospel' to be adhered to reverentially at all times.

PART I
An Analytical Framework

Chapter One

Specialised Services Banking

John Hughes, Tom Rodden and Mark Rouncefield
Lancaster University

Introduction: the Business Centre.

This report presents an account of some features of the work of one of the 'specialised centres' created by the Bank - a Business Centre - based on some four weeks ethnographic research. It therefore represents a continuation and conclusion of earlier ethnographic work on the Bank's 'delivery strategy' carried out in the branches and the various specialised processing centres; as well as contributing to the beginning of the next phase of work, an examination of a single work process, that of lending. No claim is made (or could be made) for the 'completeness' of the study but a number of interesting themes and issues emerge. These are general themes, common to a number of studies of computer supported cooperative work (CSCW), in particular those of distributed coordination; plans and procedures and the awareness of work; as well as addressing more specific issues, of 'skill', 'local knowledge' and so on, relevant to an appreciation of what 'doing work' in the bank entails.

Method: Ethnography - "dark and difficult work, but someone has to do it"

"When you marry, marry a lady anthropologist. She will have been trained for years never to interrupt you and to say only just enough to keep you talking." (quoted in Barley 1989)

The research method adopted in this study is that of ethnography although, as suggested in the earlier reports, ethnography is neither a single nor simple method, (see Hughes et al, 1994; Button and King, 1992; Anderson, 1994; Pycock et al, 1994), but is a gloss on various (and sometimes different) research approaches and analytic frameworks. The framework employed here is broadly that of 'ethnomethodological ethnography'. The distinguishing characteristic of the ethnographic approach is the researcher's relatively anonymous immersion in the milieu of study (which accounts for Barley's politically incorrect comment above), and the provision of 'thick descriptions' of the circumstances, practices, conversations and activity that comprise the 'real world' character of everyday work settings. Consequently the general advantage claimed for ethnographic approaches lie in the 'sensitising' it promotes to this real world character and context of work. To bastardise a comment of Goffman's;

“any group of persons - prisoners, primitives, pilots or patients (*or bankers*) - develop a life of their own that becomes meaningful, reasonable and normal once you get close to it, and.. a good way to learn about any of these worlds is to submit oneself in the company of the members to the daily round of petty contingencies to which they are subject.” (Goffman, 1961: ix-x)(italics added)

Ethnographic research begins by seeing the social world, in this case the everyday world of work of those in the Business Centre, from the point of view of the participants; and by examining member's methods for the practical accomplishment of work - how the work ‘gets done’. This emphasis provides an important analytic tool for the examination of work as lived experience, and important clues as to both the ‘how’ and ‘why’ of everyday working practices. Part of the analytic purchase that ethnography brings to bear on the everyday world of work is the recognition that although individual workers have their own particular tasks to perform, they also part of a ‘working division of labour’(Anderson, et al, 1989). Individuals orient to their work according to ‘egological’ principles and their own ‘horizons of relevance’ but have to be attentive to the work of others in order to organise the flow of work in a coherent way.

Another central feature of the ethnographic approach is the recognition of the situated character of work; that even in the most apparently routine activities workers need to use their judgement and discretion in response to the various contingencies that arise in the course of the working day; and that ‘typically’ the accomplishment of these work tasks involves a range of tacit skills and local knowledge often going unrecognised, ‘taken for granted’ by the workers themselves; skills which may become visible only in circumstances of failure and customer complaint. Consequently, ethnographic methods seek to uncover what might seem routine or commonplace features of the sociality of work and its organisation; how the work ‘gets done’. This approach to work as socially organised is designed to illuminate the rationale brought by people at work to the various tasks, their 'problems', and the 'things to do' that they are confronted with in the course of their daily working lives. Furthermore, although the use of the technology is one particular aspect of the study, ethnographic approaches highlight the ways in which computers are, both perceptibly and imperceptibly, enmeshed into the everyday flow of work as ‘instruments’ - being incorporated in highly particular ways, some routine, some unusual, some bizarre; and one advantage of ethnography lies in revealing these usages, and situating them in the context of ‘real world’ work settings.

Ethnography is not, however, a method without problems; it is not, and does not claim to be, a methodological panacea, and throughout this study of the Bank two particular and related issues, of scale and time, have emerged. Historically ethnography has generally been limited to small scale, well defined and usually quite confined contexts, well suited to the observational techniques employed. The Bank, however, is a large, highly distributed organisation, both geographically and in terms of a complex and extensive division of labour. In the

case of the Business Centre, although 'teams' of workers are readily identifiable in discrete locations their work frequently involves liaison and cooperation both with other colleagues at other locations inside the Business centre, the Transmissions Officer for example, and with other sections of the bank such as the Securities Centre, Regional Office and the Branches. Above all, much of the work of the Business Centre involves customer contact in the form of interviews and reviews, taking place at the customer's premises or in interview rooms at the Business Centre; none of which was observed. All these activities were dependent on, as 'mechanisms of coordination', both extensive paperwork, creating a paperwork trail of audit and explanation that was difficult and time consuming to follow; and 'telephonerwork' of which, at most, only half the conversation was available to the researcher. This, of course, presents difficulties in trying to obtain some overall sense of the work; in making small scale and selective activities intelligible both in terms of the general 'work' of the Bank and the specific 'work' of particular individuals.

A related problem emerges over 'time' and the temporal distribution of activity that amounts to rather more than the fieldworker's regular lament of 'being in the wrong place at the wrong time'. Historically ethnography has been a prolonged activity and although different, and less time consuming approaches have emerged (see Hughes et al 1994) these tend to magnify time as a problematic element, particularly when issues of typicality or representativeness are raised. As noted in an earlier report, a complex division of labour frequently involves an equally complex time schedule or temporal order of time spans within which particular phases of work will be accomplished. For example, work in Business Centre operates according to various 'time scales' - depending on the particular activity. Supervision of small business customers, again for example, would routinely and typically occur over the year - from one annual review/interview to the next - although this would change according to circumstance - such as requests for new loans; the taking of security and so on, and obviously in the course of four to five weeks fieldwork this emerging and changing relationship is impossible to observe and, perhaps, difficult to appreciate. Consequently, although this report may well correspond to what van Maanen (1988) calls a 'realist tale', it obviously does not make the associated and problematic claims of 'immaculate perception' instead acknowledging the limitations of what was a small scale, short term observational study. A final, associated, point is that in a study of this kind, of an organisation in the process of change, it would be foolish to make any claims for omniscience; - obviously we can only describe what we see. Nevertheless, in any organisation undergoing change, just as it appears important to have some notion of future direction, it is equally important to recognise the shape of the past, where the organisation has been - if only to make sure that you don't go there again, that the organisation does not, as it were, go 'back to the future'; or, at the very least, should recognise it if it happens.

Summary:

- * Ethnography involves detailed observation of everyday work settings.
- * Ethnography attempts to reveal the socially organised, situated and contingent character of computer supported cooperative work.
- * Ethnography faces problems of 'scale' and 'time' when studying work that is highly distributed and in the process of rapid organisational change.

The Setting: the Business Centre.

The Business Centre is a relatively recent creation and is situated on the first and second floors of a remodelled local branch. The first floor contains a reception area, interview rooms, and workspaces comprising the Manager's Office, secretarial support, the Administration Manager, and the Senior Business Manager and his Assistant. The second floor contains the work areas of the other Business Managers and their Assistants and those of the PAM (Personal Account Manager) and PAE (Personal Account Executive) teams. The general impression is one of calm and serious work, conforming to a far greater extent to stereotypical images of 'the banker', involved in the careful consideration of calculations featuring large sums of money. The work of the Business Centre is, therefore, somewhat dissimilar to the intense and often frenetic activity that prevailed, for example, at the branches and some of the other specialised centres dealing with the greater volumes, and smaller sums, associated with the mass market.

This, admittedly limited, report concentrates the varied activities of the Business Centre into three groupings of coordinated activities and their associated workers - the Admin Manager and Transmission Officer and their role of coordinating work activities; the PAM and PAE Teams and their work in 'relationship building'; and finally the work of the Business Managers and their Assistants in the initiation and control of 'lending'; - simultaneously acknowledging that this is simply one possible, very limited, approach to understanding and depicting these activities. Additionally, there is a need to recognise the linkages between these various groupings in terms of distributed coordination, plans and procedures and the practical achievement of mutual awareness of work.

The Admin Manager and Transmission Officer:

Both the Transmission Officer and the Administration Manager/Assistant Manager are involved in a range of tasks administering, cooperating with and coordinating the work of others in the Business Centre; thereby illustrating, through the 'teamworking' activities in which they are involved and which they are responsible for coordinating, one of the central features of CSCW that of 'distributed coordination'. This 'teamwork' is seen, for example, in the work of

the Transmission Officer who is responsible, inter alia, for monitoring 'activity through the account', the turnover in the year and the facilities used; thereby shaping the negotiations over pricing policy and attempting to ensure, in a delicate balancing process, both that the Bank does not make a loss and that the customer is not overcharged for the use of the Bank's facilities. This process, that precedes, for example, the annual interview for small business customers, involves the perusal and careful consideration of a range of printouts and forms and is documented in the following extract;

Next.

1. Looking at WE038 - transmission activity on an account (gives an account of the activity through the account - cheques issued. paid in. autopay etc - - appears week/10 days after charges have been made on the account - used to calculate charges to ensure that the accounts are not run at a loss nor that charges are too high.
2. Applies formula - by hand - to calculate costs
3. Gets WE675 every 12 months or every quarter ??? - review of charges on the account. Charges - monthly and quarterly - mainly quarterly - business customers WE450.
4. Sends statement to company.
5. Outline of charges - 'we're now telling them more information all the time..'
Talk about problems with WE450 and WE038 - incompatible - cant 'talk' to each other if there are changes - he has to change on both even though both are in the computer.¹
6. Data amendment to BAF - has to go through Branch (are'nt able to key in changes from Business Centre) - problem of keying in the sort code - (problem of the BIE)²
7. Interr - answering phone..

Next.

1. Gives Bus Man - 'Transmissions on Autopay Form Review' - comments of cost saving via autopay - pre-sealed notes? - shortfall and overcharge?
2. Told by Business Manager - We038 put in file - used for examining trends over time. (WE038 - go to Branches - have to send them to Bus Centre - but with the new Processing Centre will come direct by courier.

Next.

1. Using screen - cleared balances
2. Looking at '838' and '841' - use in conjunction with WE038.

838 - measures/records turnover in past year; highest and lowest balance;
841 - activity through the account.

This monitoring activity also includes the perusal of a variety of printouts and forms that attest to the Business Centre's position in a network of interlocking relationships - with the Branches, with regional Office, with other specialised centres - as part of a system of distributed coordination that effectively constitutes the work of the Bank;

Looking at printouts on work measurement v actual.

FIMIS - fee income management information system - loads of reasons why the figure dont match

Computer based performance indicators - error performance rate - from Region - copied and forwarded to the Branches.

¹ This feature, that the two major computer systems BAF and ISS were unable to 'communicate' with each other, to draw information and insert it into the workflow has the consequence of massively increasing the amount of time staff spend on manually filling in forms, on paper or keying into the screen. This issue has been addressed in some of the newer packages - especially where they are drawing only on information held on ISS. This is not, however, simply a technological issue since it presumably has potential security and legal implications.

² This has changed since the fieldwork was completed.

EHU performance indicators - random remittance reject rate; out debit error rate; redit clearing reject rate; WE024 reject rate; WE026 reject rate.

Counter - (1000+ a month) - cash differences (amount) - non-balanced till - forwarded onto Branch Mnager.

UMID (UK BB Management Information Database) printout - every 6 months - accounts the computer has thrown out because something is wrong - keyed incorrectly.

Series of printouts - includes where difference between calculated and posted charges (what was estimated and what was levied) is over £200.

This monitoring and coordinating work also includes supervision of some aspects of the sales process;

Next.

1. Looking at sales figures from Wirral BMA (sales figures have come from Region) - each manager has sales targets. Business Centre gets them all because they monitor them.
2. Separates docs - highlights all branches in the BMA.
3. Looking at figures on sales performance - columns on 'plan' 'allocated' 'potential'
4. Gets blank form (template on secretary's machine downstairs - Word for Windows) - writes in what has been achieved
5. (Tape) - does calculation on commercial savings - uses calculator to check figures - entered manually on sheet/form.
6. Has achieved 'Q' (half target) in most areas - has to write in when 'Q' will be achieved.
7. Phones -X - comes up to explain how to calculate on the form - forms given to Manager to monitor them.
8. Continues completing form - getting figures from past Sales Performance Form and new figures from Region.

and later, doing sales figures and priorities;

Next.

1. Looking at graphical representation of targets and achieved.
2. Will go and get typed up to give to Boss.
3. Highlights 'interesting' bits.
4. Looking at figures - to analyse - those interesting for the Boss to look at - looks at what XXX has done in the past - decides to just highlight rather than analyse.
5. Finds mistake in figures - between sales performance data and that on sales.
6. Checks another set of figures - "I'll phone Regional Office and find out if there's a reason why"

The daily administrative routine of coordinating activity is shown in the following extract as the Administrative Manager goes through the post. It is also illustrative of some more general themes, relevant to working in an organisation with a highly fragmented and distributed division of labour, of 'distributed coordination', 'awareness of work' and 'plans and procedures'. That is; as the Admin Manager sorts through the various items of post, he is aware of the 'procedural implicativeness' of the different letters, forms, reports and other paperwork; the role that particular items have in the planning and accomplishment of work, and how these articulate with and are consequential for the varied activities of the different sections of the Business Centre and other sections of the Bank such as the Lending Centre, Regional Office and so on.

Next.

1. Working on post
 - circulars; liquidation list - each relationship manager has to initial to say they've seen it (to look for accs going into liquidation)

- coverage period? - every 2 months - comes from National Sales.
- 2. Sorting post - by Lending Manager No - BAF - and Relationship Manager No - ISS - makes decisions on who the post is for.
- 3. Securities envelope - sorts out who mail is for - by ref no or by initials;
“a lot of my job is delegating paper to fill”
- 4. regional Reports - reports to regional office - outside DP - discretionary power.
- 5. Puts post in separate piles.
- PAM and PAE like to open their own mail.
- 6. Amendments to action sheets.
- 7. printouts - daily lending control WE232 - splits up according to Lending Manager; WE834 - violations printout - people not logged out; tried to do something which proficiencies dont allow WE833 - verification printout.

To explore this example a little more; in the extract above the Admin Manager has to circulate a ‘liquidation list’ that comes from Head Office to every Business Manager so that they can ‘check’ if any of their accounts appear on the list. Despite appearing a somewhat haphazard process, it is, nevertheless, essential since appearance on the list may be the first indication the Bank has that the business/account is in trouble, and initiates a number of other (and immediate) actions to protect the Bank from potential loss. Similarly, the ‘Securities envelope’ contains post from the Securities Centre detailing the progress on the taking of security for the provision of various loans; stating whether security is ‘complete’ and can be ‘relied on’; whether further work in the form of documented interviews or statements is necessary and so on. Finally, the WE834 - violations printout - while it may simply register people who, for example, have forgotten to ‘log out’ may also indicate training needs (or even potential fraud). In each of these examples then, apparently mundane, trivial and ‘everyday’ activity - that of sorting paperwork - involves an awareness of the ‘procedures’ and procedural relevance and ‘implicativeness’ that goes well beyond the mundane and the ‘everyday’.

The PAM (Personal Account Manager) and PAE (Personal Account Executive) Teams; - ‘building relationships’.

The PAM (Personal Account Manager) and PAE (Personal Account Executive) Teams deal with customers who are 'worthy of a relationship'(in practice - earning over 25k) and high net worth customers' (those with considerable savings and investments) and consequently their role extends well beyond the simple lending and lending control found in the Branches or the Lending Centre³. In any case their customer base - some 500 (PAE) - 1000+(PAM) customers is much smaller than the 10,000+ found in the mass market lending teams. Instead they

³ The PAM and PAE teams had only recently been moved into the same room - the logic behind this being that they could ‘learn from each other’ in the sense of developing, through proximity, overhearing and contributing to the discussion of cases, a range of relationship building and management skills. There was also an in-built assumption that eventually many PAM customers, who tended to have a younger age profile and were in the early stages of their careers, would ‘progress’ to become PAE customers and, presumably, there would be benefits from the transmission of ‘local knowledge’ and so on.

offer what one PAM assistant, talking to a customer, quite tellingly, called, “*an old fashioned, personal service like you used to get from your Bank*” - a service which is provided in addition to that offered by the customer's branch. The emphasis is on ‘building a relationship’ with the customer in order to provide the customer with a more personalised, and by implication ‘quality’ service and to sell the Bank’s products - savings and investments as well as loans. This is based, at least in part, on the belief that if a customer is provided with the kind of personal contact the teams were endeavouring to foster they would be more likely to take-up Bank products. That is, in dealing with ‘quality’ accounts, relationship building is regarded as an essential aspect of both the administrative and ‘selling’ activities of the bank.

At the time of the fieldwork the PAM and PAE teams had only recently been sited in the same room and were expected to benefit in a number of ways from this proximity. In general PAM accounts presented a different customer profile, tending to be primarily dependent on salaries and less asset rich and usually a lot younger. PAE accounts tended to be older and to be ‘asset rich’. Consequently the activities of the PAM and PAE, with the PAM more desk and telephone based, were directed by the differences in their client base.

The Personal Account Executive (PAE).

The PAE was established in 1992 and has built up a portfolio over the last three years of some 450 ‘relationships’ and will, eventually, have some 6-700 accounts. These accounts, that are deemed ‘worthy’, have either a minimum salary £35k or are ‘asset rich’ with a minimum £89k in shares and savings. For the PAE and his Assistant a ‘normal’ day is primarily dependent on state of interviews for that day. Although there is the ‘normal routine’ of ‘dealing with’ the post and the ‘WE008’ - out of order accounts - the WE008 tends to be utilised more as a marketing tool rather than a control tool. Because of the nature of the accounts being handled there are few troublesome accounts and the BAF is more likely to be used to identify accounts where large amounts have been recently paid in, thus presenting some kind of investment opportunity⁴. The bulk of the day for the PAE team is less obviously ‘routine’, consisting of conducting various interviews - to do with accounts, mortgages, investments and so on - and dealing with a range of contingencies. These interviews may be at the Business Centre of the clients premises and tend to take a ‘proactive’ rather than merely ‘reactive’ form, enabling the PAE to ‘develop opportunities’ himself. While the interviews may vary; “*no interview is the same; different responses; different timetables*” the general approach is to try to get as much information as possible; mortgages details; family details; company; possibilities of insurance and more. This emphasis on information is related to perceived role of the PAE who is concerned

⁴ This scrutiny of accounts was also used to spot potential fraud and money laundering. Contrary to the impression given by recent television programmes Bank staff were routinely suspicious of any unexpectedly large sums, particularly cash, paid into accounts.

not merely with the administration of particular accounts but also with advising and introduction to bank products - that is, 'selling'. The varied nature of the PAE's work, and the emphasis on information gathering, is illustrated in the following extract from the fieldnotes;

Next.
 1. Catching up on bits and pieces left over from last week - basically paperwork
 - mortgage query
 - tax status query - consulting tax people in Manchester - some technical questions
 Chat about importance of management service/reln
 -fixed rate mortgage - mortgage application form - not able to complete
 Wants to visit all branches to visit new customers - may be missed at first
 Gets info on people who have had large credits in - have profiles - originally just one sheet - still tend to use - still got basic info - used as support form of contact. Use personal profiles as part of interview - gradual build up of picture through interview
 PCAP - Premium Customer Action Program - comes out every quarter - meeting at Regional Office - identifies areas to concentrate on - run by Regional Sales Manager

Here the PAE as well as dealing with a series of queries concerning mortgages and taxation from his customers is also busy perusing reports on customers who have had large credits paid into their accounts since it may well provide him with an opportunity to sell Bank products. Since it also increases his knowledge of particular customers it also furthers the 'relationship' approach the PAE seeks to develop.

The PAM Team.

The practice of 'relationship building' is perhaps most obvious in the 'selling' activities of the PAM Team - taking place in the evenings through phoning customers who have been sent and returned financial plans and priorities forms, which are then used as the basis of the phonecall. Before phoning the customer, the Personal Accounts Manager, or his Assistant, will get the customer's record file; a card index with a record of any previous contacts; will have their PIF file open so that they have immediate access to the current interest rates; and uses the screen (BAF) to check the account balance and to 'do an 836⁵' and look at how their account has been running over time (for example if the 836 shows a consistent credit surplus on the current account the customer might be alerted to the benefits of the various 'deposit' accounts; or the value of an interview with the Personal Financial Adviser - illustrating another aspect of the articulation and coordination work that is integral to working in the Business Centre). An example of this process is illustrated below in the work of the PAM Assistant, making a first contact with a customer, phoning late on a Tuesday night;

⁵ The '836' of WE836 is a computer printout and screen enquiry facility which facilitates the examination of how the account been run. It contains details of any lending facilities agreed on the account, maximum credit/minimum debit and maximum debit/minimum credit each month over the past year as well as number of days in 'excess' of agreed borrowing limits. These figures are important, for example, in spotting 'hardcore' debt, by looking at the minimum debit column.

Next.

1. Ass. - Phoning - using machine; looking at contact sheet - makes note on pad
2. Ass. - explaining role of PAM team - "bringing back traditional banking.." - "a good account that deserves a service.."
3. Establishing relationship by giving apparently/obviously? impartial advice - outlines various options - conversation develops into talk about property market and selling houses.
4. Establishes next contact.

A rather more detailed example of 'working at a relationship' is presented below. The background to this particular example was that the Personal Account Manager knew from a previous phonecall that the customer was about to receive a redundancy package; was considering becoming a driving instructor and might be interested in using the services of one of the Bank's PFAs (Personal Financial Adviser).

Next.

1. Phoning - card, screen file

Chat about one of the customers who he is trying to contact..X is being made redundant/retiring early and using redundancy to become a driving instructor

General chat

Talk shifts to early retirement - to phone in a couple of months (Tape 1 Transcript..selling a relationship.)

1. 'Hello WWW?..Hiya its XX at the Bank. Are you alright? You're not due to have your tea are ya? Ah..alright. I didn't think you ate that quick....you ate that quick...

2.'Yeah right. All I'm ringing for really is to see how you got on with your BSM course.'

(20 secs)

3. (laugh)..Oh are ya?'

(7 secs)

4. 'That's what happens in the end.'

(25 secs)

5. What was that XX?

(12 secs)

6. 'Right'

(10 secs)

7. 'Ummm'

(4 secs)

8. (laugh)

(21 secs)

9. 'Ummm'

(6 secs)

10. 'You didn't fancy that one too much anyway really did you?'

(11 secs)

11. 'Hmmm'

(3 secs)

12. Could be..that's one of the one's that could get in..that right yeah'

(5 secs)

13. Cos I mean its more important about something you're gonna enjoy is'nt it? (2 secs)...that you've got to do like..yeah'

(1 sec)

14. (laugh)

(6 secs)

15. Umm
(1 sec)

16. You dont mean...ya..I mean as I understand it you're looking to go in like some time in December is that right?
(3 secs)

17. To get yourself sorted out
(6 secs)

18. (laugh) I know cos I saw you in..ahh (1 sec)..ohh (1 sec)..(inaudible)..yeah it was like the beginning of July thats..thats over two months ago now...yeah actually it was in June when I first spoke to you..cos time's flown over has'nt it?
(4 secs)

19. Well I'm glad to see you're getting on alright and ahh..
(5 secs)

20. Ah..(laugh) alright (4 secs) alright, but I might..I'll give you a ring in a couple of months then. Alright? Cheers WWW'
Ends.

In this particular instance it transpired that someone from another financial organisation had already been on a lengthy visit to the customer's house and so he was not inclined, at this stage, to listen to any more advice. Nevertheless, despite its apparent 'failure', (and it is significant that another contact time was arranged) what this extract reveals is the considerable amounts of computer support, articulation and demeanour work (and 'emotion' work) involved in developing a relationship - in developing the kind of 'personal banking we used to have'. It involves, for example, considerable CSCW (in the form of 'customer notes' on ISS and customer account information on BAF) - to provide back-up for sustaining the avuncular/friendly telephone style. In practice a 'relationship' is effectively presumed by knowledge already given/surrendered by the customer in the form of name/phone, salary, financial plans, expectancies with regard to house purchase, lifestyle etc, divulged on their financial plans and priorities form. It also, and obviously, involves the deployment of considerable 'demeanour work' (already observed in banking); the "ums", and "rights" and laughs that help sustain the conversation. It also provides an example of how the technology, in this case the information provided from BAF and ISS in front of the PAM as he talks to the customer, can assist such 'demeanour work' by providing requisite information to establish a necessary 'professional but friendly' relationship. That is, because the PAM 'knows' various things about the customer from previous phonecalls and 'plans and priorities' forms, the conversation can proceed with this information known in common.⁶ One consequence of this 'relationship building' is that lending, and specifically lending control takes on a rather different character than that observed in the mass market - as instanced in the

⁶ This is not to suggest that some Machiavellian manipulation is going on here - far from it - observation indicated that the PAM team evinced a genuine interest in and appreciation of their customer's circumstances. Nevertheless, while the conversation was 'friendly' it was also 'professional' - the conversation of a banker, since our friends usually do not know, for example, the true state of our bank account.

following extract from the fieldnotes where the Personal Account Manager is attempting to 'save' his customer from incurring overdraft charges;

Next.

1. Dictating letter - re: transfer of funds to current acc to avoid O/D charges
2. Fills in Contact Sheet/Record Card.
3. Puts in folder and puts in tray.

Next.

1. using machine - types in acc No
2. Goes into Inquiries.
3. Uses phone; 'is it a convenient time to call?'

...'a courtesy call for completing personal details.'

..'one thing that struck me is that the acc went in excess of the credit facility - that's not a problem as far as the Bank's concerned..I can put it up to a higher limit..to avoid unnecessary excess fees'

...'anything at all as far as your banking is concerned..'

4. Explains call 'what that was..we ask customers to complete a personal financial profile and plans and priorities...instead of writing (to customers) customers tell us what they are interested in..there's nothing on there but I picked something up from his account and I might phone him.'
5. Using ISS - writing up customer notes from last call.
6. Dictating letter - re: increase in O/D facility - puts tape and card in folder - tray for typing

Next.

1. Phoning - looking at folder - 'returning call...to increase O/D again.
2. Using machine - customer interview notes - keys facility - then writes on card - keys onto CMS with diary note - dictates letter.

In this next extract the Personal Account Manager is dealing with a loan request. What again seems notable in this process, in terms of understanding lending as an everyday practical activity, is the extensive interweaving of the paper record(the customer file and contact card) and the computer records (BAF, ISS and Fileserver) to obtain a full customer profile and the way in which these records involve the continuation or extension of the 'relationship' approach into the lending process.

Next.

1. Personal Loan App - faxed app lication - looks at contact card to see what contact has taken place; asks Ass..'did he phone direct...' (Imp for 'point score' and assessment of unit)⁷
2. Does BAF enquiry to check acc; - how it operates - runs to balance; regular salary; - looks at RG (risk grade); looks at turnover, debt and credit Does a BL (balance enquiry on BAF) to see if anything else outstanding - will show all accs that are linked eg. joint accs.
3. Asks Ass to do credit scoring on Fileserver.

Waiting for credit score.

4. Has got credit rating.
5. Using screen - filling in details of loan repayment - using calculator to work out fees.
6. Looks at computer printout
7. Has worked out different loan rates - Personal Loan Rate and Business Rate (lower)

⁷ The 'points score' was important for the assessment of both the unit and the Business Centre in meeting various targets and was 'publicly available' in the form of various charts displayed on the walls in different locations - such as the staffroom. As we noted in previous reports the point system, since it is linked to performance and performance related pay can create distortions in the work.

- 8.. Phoning - 'Is Mr X at home?' (no, he's at work)
9. Finds work no and phones - not in - will have to catch tonight's post (wants loan by Wednesday)
10. Tries phoning again - leaves message - gives number.
11. Gets phoned back - explains - no problem with the loan - outlines number of options - personal loan; managed rate loan.

The next extract from the fieldnotes further illustrates some of the 'demeanour work' involved in 'selling/developing' a relationship and the way such work is occasionally necessitated by a breakdown in the kinds of articulation work required of distributed coordination. In this particular case, the customer had already had some dealings with the bank of which the PAM team should have, but had not, been made aware.

3. XX- Phoning - introduces self...: 'is it a convenient time to call?...you're not in the middle of you're tea are you?
4. Introduces service/product
5. Money - on account not getting any interest.
6. Using screen to access account
7. Chat...(tape`/??)
8. "Can I just clarify what we're going to do now" - (closing statement - getting agreement)
9. Arranging changes in accs - to transfer monies into interest bearing accs
10. To confirm in writing - making notes on pad
(Deameanour work - in course of conversation account holder reveals details of previous dealings involving money/shares arranged via Chester branch - not on notes - XX has to pretend that he is aware of situation - or at least not reveal ignorance - linked to problems with PFAs -)
11. Making notes on pad
12. Discussion with Ass. - re: appointments in diary -articulation - meshing of work via paperwork and discussion)

Finally a further example of the kind of demeanour and 'repair' work required when organisational communications break down which also illustrates two other aspects of the social organisation of work.

Firstly, that of the 'awareness of work' - that when work is effectively 'handed on' in a distributed system it should be in a form that enables the next person to 'do their work' and consequently requires some kind of awareness, an appreciation, of 'what they do'.

Secondly, the importance of accurate paperwork in the process of articulation - in the 'meshing' of work performed in an organisation with an extensive division of labour.

The importance of passing on work in state fit to be worked on - in a state where other people are able to do their work - is illustrated in this instance by a story of the breakdown of communication, associated with a Personal Financial Adviser who, it was gently suggested "couldn't handle the pressure", and was prone to providing misleading information - put simply he said he had seen people when he hadn't. In this particular instance the paper record says of the customer, "*he will now be ready to sign..regular savings plan..*" but

unfortunately that is not what the customer says and in the course of the phone call with the PAM team it soon emerges that customer is not sure whether he spoke to a financial adviser or not. The Personal Account Manager consequently has to phone the customer to check, without conveying any impression of checking, for information which he should already have - a very delicate situation, since it raises issues of professionalism and so on.

4. Phoning - explains that PFA is “unfortunately ill....not quite sure how he left it....” (emerges that name and details of customer were wrong.)

Thus both the PAE and PAM teams in their ‘everyday’ work are particularly concerned with the development and fostering of customer links; with ‘relationship building’, both to facilitate the more detailed administration of accounts that is offered to customers who are ‘relationship worthy’ and in order to provide an informed basis for the promotion, the ‘selling’, of the bank’s products. Such work entails the articulation and skilful interpretation of information from a variety of paper and computer sources as well as the ‘skilful’ management of customer contact - ‘skilful’ not merely in the sense of ‘competence’ or ‘demeanour work’ but also in terms of ‘awareness’, of ensuring that other members of the team and the organisation understand the nature of the ‘work’ that has been, or remains to be, done.

The Business Account Managers - lending on ‘campari and ice’?

Business Lending, Control and Relationship Management.

“You usually find that the decision you make from your gut is the one you go with.”

The Business Account Managers and their Assistants manage a portfolio of business customers with discretionary lending powers (from £50 - £80K) varying according to their seniority and experience. Business Account Managers have both technical lending skills and an understanding of balance sheets and a range of other, perhaps tacit, skills;

“people with 2 sets of qualities...character - ambition; interest; enthusiasm..coupled with an analytical mind and interpersonal skills - ability to generate a dialogue with people - say 'no' without offending people - that's the hardest part in anyone's job.' (Manager)

Their job centres on developing new business proposals and revising existing facilities. A number of features of this lending process appeared especially interesting, not least because of the way in which they mesh with findings from the other observations of bank work; in particular, the extensive reliance on ‘paperwork’ and the affordances of paper (particularly in the ‘egological’ organisation of work); the use of computers to support relationship building, local knowledge and decision making; the prominence of local knowledge and local ‘logics’ in guiding and supporting notions of ‘rationality’ and rational decision-making - most notably in the lending acronym ‘campari and ice’. ‘Campari and Ice’ (character; ability; means; purpose; amount; repayment; insurance; interest; commission; extras) is an informal/formal mechanism for assessing lending

proposals. Formal because it appears in the PIF manual; informal in the sense that attention to all its details, as opposed to its general spirit, is relatively rare.⁸ In the following extracts Business Managers are making lending judgements supported by the kind of local and informed knowledge of their customer that might be regarded as being 'in the spirit' of 'campari and ice'. In the first instance the Business Manager is considering a very small increase in lending to a doctors' practice which is 'in trouble' and under Regional sanction and exercising 'managerial discretion' to make a judgement in favour of granting the loan.

Next. (tape)

1. Been to see some Drs who have business account with the Bank. Asked for an additional £XXXX for computer ...asked to sanction purchase. Outside DP (discretionary power) (since under Regional Sanction - Agreed - because business is entirely satisfactory - GPs with turnover £XXXXk - profit £XXXXK - not reasonable to tell them to wait for such a paltry sum; "I've worked in Regional Lending for 6 years and I know how it works....you've got to put into context my background, the amount of the loan..." (Local knowledge - egological organisation???)
2. Looking at report to Region - checking for spellings etc - report phrased to support decisions
3. Sales - product - appropriate to needs.
4. 'Face sheet' - NWB 1258 face sheet - WP template
Application form (Advances) - trying to give customer service (tape)
- dealing with advances is time consuming - it needs to be screen based
- paperwork goes to Ass - to do all the connected acc forms.
5. Form for security - for loan - writing to Drs to get informal deposit of security for loans (for surgery)??
6. Going through forms in file - looking at letters re: insurance; life policies - (this is a part of a process whereby the request for a loan - for the computer seems to lead to an appraisal of the entire account)
7. Dictating - looking at letter - master and copy of Insurance doc; and other docs in file.tells secretary - copy of early letter - tells her which paras to include.
8. Goes to get front sheets for typing - to put on typing of letters and sent downstairs to secretaries.
Other letters - have to be tailored slightly because different.
9. Dictating - another letter re: securities and loan
10. Interr - phone - takes message
11. Back to dictating - adds names to correspondence form - to be sent with tape to secretaries for typing
12. Going to put note on ISS - (gets card of acc No) - using screen - puts in password.
- Interview Notes - enters details of letters - deposit of policies as security (personal pension plans)

In this next instance the Business Manager is considering a request for a £100K loan to a college for more building work - it is a loan that he is quite keen to make because of the Bank's perceived commitment to community and

⁸ In fact when the fieldworker was first made aware of it his informant, though an experienced manager, had 'forgotten' precisely what some of the letters in the acronym stood for; as the informant said - "*if you start to think like Campari & Ice..you're just going to get bogged down in thousands of things...its just common sense really*". Of course this does not mean that they had 'actually' forgotten, its very familiarity may have made the details of the mnemonic difficult to accurately recall. It is also indicative of the fact that 'campari & ice' was but one factor that had to be taken into account when making lending decisions.

educational projects but there are a few problems with the accounts and the precise legal position of the college (whether it 'owns' the buildings - affecting its ability to offer security for the loan). Again, what seems significant here, and it is a theme we will return to later, is the 'skilfull' way in which through 'teamwork', between the Business Manager, his Assistant and various other Bank personnel, paperwork and computerwork are interleaved and plans and procedures are interpreted in the light of 'local knowledge' and 'local logics' to accomplish the work in a fashion acceptable to both the Bank and its customer;

Next.

1. (Tape) Considering £100K loan to X college - for more building
2. Looking at draft accounts - has been looking at accounts and liaising with college for some time - some problem over ownership of land.
3. Developing some questions for answers from college - agreement in principle to loan with some conditions - fixed price contract; staged payments; site visits.
4. Discussion of criteria for borrowing
5. Eileen - GAPPING accounts
6. Interr - instructions for GAPPING - talk about problems.
7. Phoning college - arranging papers - Principal not available
- another problem over the constitution of the College - whether they are legally allowed to borrow money etc - lending - problem of powers of college to borrow money. 3 main worries - land; powers; ability to repay - re: £40K deficit.
8. Calculating depreciation.
9. Using computer - BAF - to work out possible repayments - problems with password.
10. Inquiries menu - repayment info menu - various options = O/D; loan - fixed term; loan - fixed repayment; actuarial structured loan (BDL) - types in figures - £23K per annum.

Meanwhile the Business Account Manager's Assistant (who sits at the desk next to him) is also working on this account preparing the essential paperwork, in this case assembling the data so that the accounts can be 'GAPPED' - run through the 'Grading and Pricing Policy' software program which will give an indication of the likely level of risk and the appropriate levels of remuneration to negotiate;

Business Manager's Assistant - GAPPING

Next.

1. Balance sheet carding - taking college accounts and putting onto balance sheet card - 'Balance Sheet Carding for individuals and Firms' - when finished will put on screen and then GAPP them
2. Problem with GAPPING - advice from Region applies to Polys and Unis not Colleges
3. Still working on Balance sheet (*modal transformation)
4. Using screen - 'update financial accounts' - enters figures from balance sheet onto screen
5. Interr - message f
6. Still entering data onto screen - looks at figures produced.
7. Looking at guidelines from UKBB on Colleges
8. Interr - Bus Man- has found diff set of accs - show a surplus - management figures - "Which shall I enter?" "I dont know"
9. Back looking at instructions/guidelines
10. GAPPED - Risk Grade 6 - "I just followed the instructions - I'll send it to Region now and they can play around with it"

Next.

1. Still working on college report/interview preparation.

2. Discusses with Bus Man - rates for loan; had phone conversation with principal re: land; talk about alternative uses etc (alternative uses of buildings and land etc - effects valuation for security) (tape)
3. Filling out 2 loan forms - 50K OD; 150K 10 yr BDL.
4. Calculating rates for loans
5. Bus Man dictating letter to college - Assistant still filling out forms.
6. Interr - phone
7. Back filling in form
8. Asks Bus Man to sign and then she'll key it in. Gives him to sign - looking at form "its a matter of interpretation isn't it?" - filling in managerial details.

As the above account suggests, an important part of the work of the Business Account Managers lies not just in administering accounts or in following bank procedure but in 'relationship building', in developing links with their customers to better understand their business and thereby make more informed, and presumably better, judgements. The importance of this is stressed in the next extract, where a Business Manager is taking over an account and so accompanies the present Manager on the annual review;

'..... (explaining circumstances) and I went down to to interview a company and that was a relationship that XX had.. he said he would pass this relationship onto me, now from the customers point of view he (XX) did'nt want to say I'm not dealing with you now..he wanted to take me down to introduce me..in fairness to the customer (so) he doesnt feel he's lost,..for me to take over the file.(Why are they banking here?) 'Loyalty.... (explains circumstances)...loyalty and thats another reason for wanting to keep the relationship sweet, apart from customer service and courtesy, it could be vulnerable.. this guys banked with NatWest since 1952 in one shape or another.. but it could be he could say I'm going to have a change of Banks....

The central point of these rather detailed accounts of certain aspects of the work of various staff of the Business Centre is to attempt to develop an appreciation of the 'skilful' nature of the work and the decisionmaking that is an integral part of it. Although the work can be outlined as the following through, in a step by step fashion, of particular procedures (and indeed is outlined in just such a fashion, for example, in the 'Action Sheets' or 'Lending Manual'); plans and procedures do not accomplish themselves but are enacted in a highly skilled manner in response to, and despite, the various contingencies that arise. These detailed accounts are not, therefore, presented as an argument against the notion of plans and procedures or their instantiation, for example, in 'workflow' packages, or their evaluation through various 'work measurement' programs; rather they are intended to develop an appreciation of the 'work to make the plan work', of the way in which organisational priorities emerge and are accommodated with the various implications this has for system design and re-design. In that sense these accounts contribute to what Bowers (Bowers 1991) designates the 'design in action face';

"it will see complex patterns of interaction which fit no organisational chart. It will see a dusty manual of office procedures being used to keep an otherwise rocky table level but never being referred to. It will rarely hear people talk about rules, only when things go wrong. And as for

roles, the participants seem to be writing the play as they go along rather than reading off their script...” (Bowers 1991: 335-336)

and the recognition that such design is not impossible, just difficult. In presenting a detailed account of everyday work activity and the complexities of decisionmaking as a ‘satisficing’ activity this report attempts to contribute to an understanding of the circumstances, the ‘context’ in which decisions are made and implemented; that is, to echo a sentiment that appears to have become something of an ‘old chestnut’ in CSCW, in seeking to understand organisational life and in informing systems design, “the hard part is understanding how the alternatives relevant to a given context come into being. The critical part of problem solving lies in formulating the problem.”

Summary:

* The research focusses on three groups of workers;

1. the Admin Manager and Transmission Officer and their tasks of coordination;
2. the PAM and PAE teams and their work in 'relationship building';
3. the Business Account Managers and their Assistants and their activities in lending and lending control.

* The research illustrates the skilful nature of the work involved in the implementation of organisational plans and procedures.

Discussion: A Framework for Analysing the Social Organisation of Work

The purpose of this section is to attempt to develop some understanding of the Business Centre, using as a template the framework of the social organisation of work developed in the COMIC project (COMIC 1994). The framework is utilised as an essentially practical device for both organising and understanding the vast array of fieldwork observations of how the work in the Business Centre 'gets done'. Furthermore, in deploying this provisional framework we are attempting to steer a difficult course, common to ethnographic observation and analysis; between the accusation that it is simply 'hanging around' with the consequent suggestion that its findings are entirely idiosyncratic, fortuitous and inconsequential; and the over-systematisation of a 'cookbook' approach to fieldwork and analysis, effectively defeating the entire purpose of the ethnographic approach.

The framework is also useful for two other purposes. Firstly, in analysing and describing the complex social world of a working organisation in terms of a number of important orientations such as distributed coordination and so on, it also provides a framework, or a set of 'sensitising concerns', for design decisions; a range of issues that designers can draw on to inform system design. Secondly, the framework also addresses one of the central concerns of such projects, that of integrating or coordinating different methodological techniques for the understanding of cooperative work. Again the suggestion is that the issues of distributed coordination, awareness of work and so on can be used to provide a common initial focus for the very different methods of ethnography, managerial cybernetics and process workchains - without, however, suggesting that any resulting analysis can be approached in a simple, additive fashion to obtain anything resembling a 'comprehensive picture' of the system.

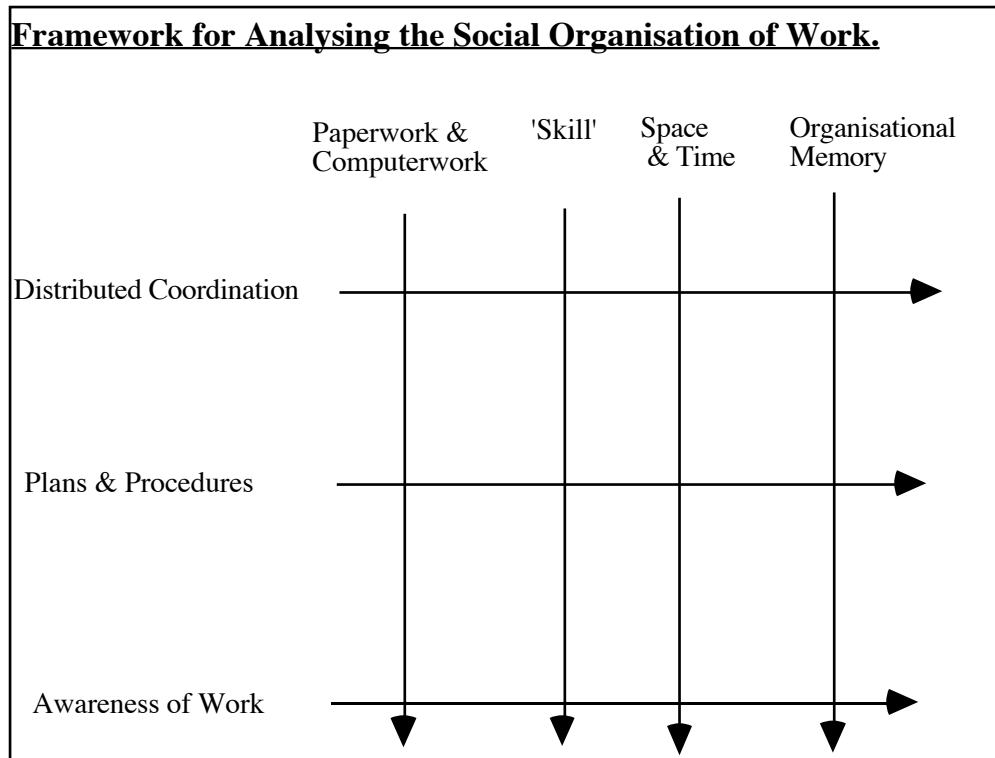


Figure 2: The framework

The framework we employ, illustrated in the diagram above, emphasises three general, important, linked aspects of CSCW - distributed coordination; plans and procedures; and the awareness of work. In this analysis we also want to incorporate some other, cross-cutting themes; themes that seem important in each of the three general categories of the framework. Although not an exhaustive list it would include for example;

1. Paperwork & computerwork - as major enablers of distributed coordination and mechanisms of articulation for distributed coordination, they are also a major embodiment, an instantiation, of organisational plans and procedures and a mechanism for developing and sharing the awareness of work.
2. Space & time - since the spatial and temporal organisation of work, can create both problems and possibilities for distributed coordination and the awareness of work and makes essential the development of, and situated response to, organisational plans and procedures.
3. 'Skill'. The suggestion here, based on the empirical observations of the earlier Bank studies, is that far from office work being simply 'deskilled', reduced to "rules, laws and formulae" with every work task planned in minute detail, considerable skill is required of the worker in deciding, for example, when to follow the rule and when to shortcut or circumvent it, when to follow the spirit rather than the letter of the plan and so on. These issues are the product of occasioned determination in the course of the work

and are demonstrated in numerous instances of the deployment of 'local knowledge' and 'local logics'. For example, the 'skill' of how to pass on work so that someone else is enabled to do their job - an essential feature of distributed coordination and one of the central motivations for plans and procedures.

4. 'Sense of organisation', - another issue related to the general theme of awareness of work and already mentioned in previous reports; incorporating notions of 'egological organisation' ("what do I do next?") and mutual intelligibility.
5. 'Organisational memory' - the concern here is with the way in which plans and procedures are practically 'remembered' by organisational members as opposed to the formal process of remembering revealed in 'Action Sheets', 'Helplines' and so on.

Although presenting a very brief and limited range of observations, this report also points to a number of more specific issues that seem worth pursuing into the next phase of research.

Firstly, there is the concern to delineate the features of what is deemed to constitute 'rational decision-making' in loan sanctioning. To what extent are lending decisions a product of 'gut feeling' or a product of notions of precedent, 'fairness'; or formulas such as 'campari & ice'? How do these decisions come to be perceived as 'rational'? What 'work' (paperwork in the form of report writing or verbal explanations) needs to be accomplished in order for decisions to be accepted as 'rational'? Linked to this concern is the issue of computer support for decision-making. Here areas of interest might include not simply those programs like GAPP that seem to explicitly linked to the decision-making process (although whether they are used in that fashion is open to investigation) but also other forms of computer support, such as the databases of customer notes held on ISS, or the history and working of an account displayed on BAF; and the way in which these multiple sources, together with the paper record, are used to construct a story, an account of a business or a customer which facilitates or prevents particular kinds of executive action. Such 'accounts' are effectively moral statements and their 'negotiability', the extent to which they are the product of individual manager's interpretations and strategic judgements, or the extent to which they are 'objectively' constructed from computer records, might be worthy of investigation. A final, related, area of computer support might consider the links between the development of the various accounting type software packages and changing standards of 'rationality' both within 'accounting' itself but more particularly within the Bank with its 'folktales' of the 'bad lending' of the 1980s - what kind of moral account is now required to justify a loan?

Another specific area of interest, bearing in mind the focus on 'teamwork' and 'communication', developing some of the idea of Yates (1989) and Boden (1994), might be the very 'business of talk'. This refers to the way in which decisions are communicated to customers and colleagues; how 'training' in decisionmaking and

in the justification of decisions is apparently accomplished in a 'routinely haphazard' fashion through talk, (for example between the Business Account Manager and his Assistant, or within the PAM team). It also refers to the way in which particular artefacts, computer or paper, support the development of particular kinds of talk (that is, what gets to be talked about); impacting both on the individual's sense of organisation and on some of the boundaries of the egological organisation of work - where 'what do I do next?' becomes 'what do I say next? and who do I say it to and how?'.

Finally, the topic of paperwork and the affordances of paper, the interpretation of records and the writing of reports, the articulation of these records and the support they offer for the everyday practical accomplishment of work; the meshing of paperwork and computerwork and the extent to which software improvements impact on the 'affordances' of paper, continues to be an area worth further exploration and analysis.

Distributed Coordination

“I just followed the instructions - I'll send it to Region now and they can play around with it”

Distributed coordination refers to the various ways in which the coordination of people and tasks is accomplished as a routine feature of 'real world, real time' work.⁹ An important, if commonplace feature of all work settings is that tasks, activities and, persons are embedded within an organised ensemble of some kind. Both the activities and the people who perform them are interconnected, and in the case of the Bank in general, and the Business Centre in particular, they have to be treated not as isolated activities and persons but as part of some *organisation* of activities and persons. The point we want to emphasise here is that although we have provided some detail, for example, of the coordination work of the Admin Manager and the Transmission Officer in the Business Centre; coordination does not consist in any one feature of the work but is deeply, and inseparably, implicated in the procedural details of all work activities. Much of this coordination work consists of distributing relevant information - for example, through the different Manager's Assistants - to relevant parties and keeping this flow of information going as a routine state of affairs. Thus many aspects of work in the Bank, whether in the traditional branch or in the specialised centres such as the Business Centre, are explicitly concerned with coordinating interdependencies of various kinds in order to 'get the work done'.

⁹ Although, interestingly, one of the Bank's main problems of distributed coordination centres around the fact that its computer system does not operate in 'real time' - so, for example, money can be paid into an account on the same day as cheques are bounced. Similarly the cheque clearance system does not operate in 'real time' - so, for example, if a WE008 showed an excess on agreed facilities, lending control needed to be cognisant of the fact that funds that were in clearing and might, theoretically put an account back within its facility, might also be 'bounced'.

Coordination through artefacts

Coordination can also be a feature of specifically designed or evolved artefacts. As Yates (1989) describes, memos, files, standard forms, etc., evolved to solve problems of ‘distributed coordination’, as organisations became larger and the problems of management and control correspondingly increased.¹⁰ These ‘standard forms’ are readily apparent in the Bank. In the Bank in general the ‘WE008’ printout - the out of order accounts - acts as such an artefact, initiating and coordinating various actions between the branches and the different specialist centres. A specific example from the Business Centre would be the interview notepad and the various standard forms completed as part of the preparations for a customer’s annual review. Another example would be the GAPP (Grading and Pricing Program) software package, routinely used as part of the annual review. The ‘Customer Notes’ on ISS would be another example. Such artefacts facilitate the coordination of tasks by embedding descriptions of the task, along with other relevant information, within the format of a document as ‘instructions’, as ‘items required’, and so on, which makes available to those who know how to use the artefact, what the implications are for the actions of others. These artefacts serve as sets of instructions for a set of institutionally identified persons - the ‘Business Manager’s Assistant’, the ‘Records Clerk’ and so on - to perform particular tasks and, in addition, serve as a check on whether or not these tasks have been performed. So, for example, completing the ‘Interview Notepad’ prior to interviewing a customer a number of questions need to be answered concerning, again for example, ‘Non Financial Developments’; ‘Account Operation’; ‘Security’ and ‘Remuneration’ and requiring the perusal of computer and paper records and the completion of a number of other forms. The ‘Appraisal Form’ for considering new, renewed, or revised propositions has a similar list of questions and a number of ‘action points’ - such as ‘update ISS’ or ‘mark limits’ - to be completed along with the necessary ‘expert computer codes’ required.

Identifying coordination features - Paperwork

“its a pretty meaty file I dont know it..so I have to very quickly look and try and sort of acquaint myself with whats going on and whats been arranged “

Given the central role of coordination within cooperative work the identification of the features of work which promote coordination is clearly important. Notable coordination features include the ability to monitor the activities of others and access to shared and readily available information much of which is accomplished through paperwork. As has been observed throughout the Bank a prominent feature of ‘everyday’ work takes the form of the completion, processing and duplication of enormous amounts of paper, to the extent that in a number of significant respects the routine completion of paperwork constitutes ‘the work’. For the Business Centre, paperwork, in the form of customer record folders and

¹⁰ See, for example, Weber (1947) and the development of the office, filing systems, records, and so on.

customer reports (to Region) was an integral feature of the work. The 'completeness' of the paper record¹¹ acted as an audit trail; providing an outline, rationalisation and justification for administrative decisions. In the Business Centre however, this trail was valuable not simply or merely for the attribution of blame but through its procedural implicativeness in informing and guiding the actions of others - an activity assisted by the 'at-a-glance-visibility' of the paper record. The paper records in the form of files, printouts and standard forms constituted 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'. This is illustrated 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 looks through the customer record the Business Manager explains how the various forms and notes present a particular lending history (in this case one of overborrowing) and thereby shape his decision-making;

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 dont know the file, you know, and its a pretty meaty file I dont know it..so I have to very quickly look and try and sort of acquaint myself with whats going on and whats 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 dont 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 doesnt really have too much time to do that.....

....so..he was heavily borrowed, or he is heavily borrowed and clearly he's not generating the income to deal with that...umm, (the Business Manager)..has had a couple of discussions with him (looking at file) at least a couple, probably a few..and the latest, the last thing agreed was..he's under pressure with the Inland Revenue to the extent of £XXXX...umm, thats not been paid yet, he's under pressure anyway.. so it was agreed that we would increase our limit which was 27500.I think.it was 27500 and we would increase it by 4250 - 31750 which is Region's sanction to 31750 against..he was raising a loan from the WWW Insurance where he has a life policy which is charged to the Bank as security and we'd said OK we will release that item of security,,...on the basis that they will then take the policy, give him a loan on it because you can borrow on...the policy from the insurance company..give him a loan of 3630..and that 3630..(doing calculation on sheet).would come in...28000 which would reduce the limit back...so that was the basis of that agreement. There are also other negotiations going on..to deal with this huge amount of borrowing..of..which gets a bit complex umm, he's actually paying in 1000 today and he will finish up at 31435 and I said he can go to 32000 so he will have a few hundred pounds leeway..but you know, isnt it ridiculous..saddling..saddling themselves with all that level borrowing.....its 90000..and they cant deal with the thing..(Why loaned so much money?).....I think it goes back --..were things properly bottomed and

¹¹ Certainly in comparison to the computer record, although it was interesting the extent to which the 'paper' in a customer's file has come increasingly to consist of computer printouts - customers notes, balances, '836s' and so on. This is partly a reflection of the increasing reliance on IT; partly because some computer information cannot be reaccessed; and partly because of the various 'affordances' of paper.

properly dealt with at the outset?...why did we lend it..without properly looking at it?.maybe in this sort of environment instead of just nodding things through....I think you'd have to go back fight to the beginning to see what it was loaned for (looking through file) totally overborrowed....

With the assistance of the paper record and aided by the knowledge that the account is 'under report' the Business Manager is able both 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 - that is, that since it is 'under report' the account is not to be allowed to 'drift up' over its maximum borrowing allowance.

As a 'mechanism of interaction'¹² (Schmidt 1993) the various forms of paperwork act to facilitate the coordination of work but the actual process of 'doing the paperwork' itself requires various coordinating activities, involving the 'meshing' and 'modal transformation' (Anderson et al 1989) of other paper and computer information. One example of this is the 'Interview Notepad' which, designed to be used as part of the annual review and for lending interviews, involves the Business Manager's Assistant in the lengthy perusal of other records, the 'scorecard', records of past reviews, the computer 836 printout and so on; and then using a range of information to 'GAPP' the account. In this fashion procedures, implemented through paperwork, mesh with notions of distributed coordination and awareness of 'work' - in this case the coordination of distributed information. In this next and the following extracts the Assistant is talking about this process of accumulating information in preparation for the customer's annual review;

"... its the annual review on Thursday,...(getting things ready for the interview) 'I did it yesterday, but I just had to GAPP it, thats ready apart from up-to-date balances which I've put on there,.. (whats there?),.. there 's a standard...now..brief that we have to fill in, like an interview note pad, then you get the customer brief off the computer printout one, and then thats it basically, (pointing at printout) GAPP graded,...we only do GAPP grading if we've got more up-to-date financial information.. (where did the information come from?) got data from machine and from reading through the file "- (first time she's dealt with this account)

As the Assistant works through the different sections of the 'Interview Notepad' the processes of administration and control of the account, relationship building and the sales process are linked. One section of the 'Interview Notepad', for example, is devoted to 'Sales Opportunities' and the Assistant, by an examination of the account, its working and facilities, and by perusing the various printouts associated with that account, is supposed to identify opportunities for selling Bank products; as illustrated in the fielwork extract below;

¹² Whilst recognising that the concept of 'mechanism of interaction' is contested and in danger of acquiring 'dustbin' status, it is used here to suggest the central role of particular forms of paperwork in initiating and coordinating the work of the organisation. The arrival of any particular form, such as the Interview Notepad, or the Securities Requisition Form, at particular locations within the bank would initiate a range of actions relevant to that position and that form. As a 'mechanism of interaction' such paperwork also becomes a prime candidate for the design of and replacement by electronic versions as, for example, in the 'TecSec' software at the Securities Centre.

'Well, sales is just something that we've got to think about, whenever we're looking at an account to see if there are any services that are appropriate to them,.. (what made you decide on these?) Well, business insurance we're just offering to everybody because we are competitive in the marketplace. A lot of people dont think of coming to the Bank to ask for business insurance, so we're just saying to people, we can get a quote for you, there's just a card we fill in, it doesnt need much information from them, so even if its not due for another ten months we can still take the information down,..we just put in the basic information, and we send this off to insurance services and two months before the renewal date they'll contact the customer and give them a full quote. Its just that thats one of our targets - Business Insurance Needs. Bankline is another service which a lot of the big companies should have, because its very efficient for them, but from looking at the file I cant tell if its been offered to them before....and Pensions is, just picking that up from the last interview note which was a year ago, it was stated there that they were going to see one of our PFAs but there is no follow up note...so I dont know if they did see them.. so thats something to bring up at the interview. "

Paperwork - temporal and organisational implicativeness.

The Business Manager's Assistant as she compiles the materials for a Lending Interview or an Annual Review also needs to consider the temporal dimension of the records, in particular, to ensure that the Manager goes to the review with the latest balance of the account. As well as obtaining the latest figures for the balance of the account and other linked accounts and facilities the Assistant will also ensure that the paperwork in the customer's folder is sorted in date order. The Assistant also needs to be aware that the work that she does and the records she examines may have organisational consequences, for example that the level of the facilities on the customer's account and other 'linked' accounts may take it outside the Business Manager's 'discretionary power' thereby requiring a report and a recommendation to Regional Office before any facilities can be agreed. As she assembles the information she also considers how the information she is compiling may actually be used in the interview;

"There's nowhere on this interview notepad for putting down all the balances, so I tend to put the balances on a separate sheet, they come up on the customer brief (computer printout) but I tend to get the briefs out a couple of days before (the computer ones) so I try to get the balances out the following day (So that they are up to date).... if any of the partners or directors have got private accounts we need to get that information out as well, because again its..if its got any facilities in their own name it could take it outside.... discretionary powers.. this is within,...it depends what facilities their asking for but the facilities as they are at present...can extend for a further year without having to go on up to Region... something else to look out on the brief as well,.. we get the latest account, always bring it to the fore,.. these forms are relatively new this interview notepad, its only happened within the past month, so the balance sheet assessment form we have to do, cos they replace the old balance sheet carding, so we can see, got ratios to compare... always got to put at least two years on this, if we've got two years accounts, although we may have carded them on the old format we've still got to fill them in on that, and usually,..... (we'll ask... to look at the Transmission activity)... and then.XXXs... got that as well to speak to.. customers about. And sometimes all the points that I might raise... at a first meeting.. doesnt always cover everything, because it sometimes feels as though you're bombarding them with different things, so... might not offer them everything that I suggest, or might not talk about charges... just put it in writing,..."

The customer record is not, however, always particularly enlightening or informative, reflecting, perhaps, in their comments, the changing organisational culture of the Bank and an earlier historical emphasis on the administration and management of accounts.- *“he gave the impression of being a highly respectable and hardworking young man”; “appears to be highly respectable and capable of managing her own affairs”; “in 1989 he also said he would take his account elsewhere and therefore it appears he has a tendency for complaints”.*

Paperwork & the audit trail.

The use of the paper record as an audit trail may also mean that accounts are not always as full or as informative as they might, or, perhaps in the context of ‘teamworking’, should, be. This is illustrated in the next extract where a Business Manager is reading the paperwork attached to a longstanding account that he has recently taken over;

Next.

1. Looking at file.
2. Called to see them a week ago - dental practice - asked for increased facility - (concerned that former lending manager ‘faked figures???’ - to avoid contacting region)
3. Needs to update ISS - looks at past interview notes - on change in overdraft - in ‘notes’ - nothing; ‘synopsis’ - very brief -other notes ‘limit reduced £8K’ (no explanation) “highly respectable partners” (only comment on entire page)- (illustration of how notes used to be written and how lending used to be arranged - ‘gentleman’s agreement’) “see how the approach varies (pointing to notes) - it determines the usefulness of the system”
4. Typing in notes of introductory meeting
 - still typing in notes - enters - ‘note details’; ‘note synopsis’ and ‘action summary’ (also - cannot print info from screen - has to access another screen and then call it up in order to print it - no screen dump facility)
5. Gets printout.
6. Now has to put sufficient info on report form to send to Regional office - a lot has been done by the Ass. since she knew they wanted something (?? - local knowledge?? female intuition??obvious??)

Has ‘interview notepad - to bring uniformity in standard of reporting
 - chat about forms/info/reports - looking at WE055 - (cashflow forecast??) - no cashflow forecast - and yet it is one of the commonest types of info (required) - could then be put into machine (Decipher??) - machine would then identify trends. (Illustration of the way in which the use of the software available is dependent on the collection and availability of info collected in other forms - info that is not always needed for decision making??)

This extract also illustrates the importance of standardisation and consistency in paperwork for the ‘egological’ organisation of work - that egological organisation is dependent on notions of standardisation and consistency; of interdependence with other actors/workers. The answer to the question ‘what do I do next?’ is at least partly shaped or dependent on what other people have done and/or are doing and is largely a ‘satisficing’ and ‘situated’ matter; situated in the context of work accomplished in the past by others and achieved as a ‘practical’ matter - within a reasonable timespan.

The customer records in the Business Centre, containing a business profile; a summary of facilities; a balance sheet assessment; interview notes and correspondence and appraisal forms; are supplemented by customer reports. These reports have also been subject to recent change, especially with the attachment of computer printouts to the report since these generally need 'interpretation' - to justify the Business Manager's recommendations or actions - otherwise someone else (Regional Office) may interpret them in a different way. The report writing process, its reliance on various forms of paperwork and the process of providing an 'account' is illustrated in the next extract;

Next.

1. Bus Man....writing report - looking for last report from Region (finds it - has been put in Security Requisitions??)
- Region agreed with last report - Business Manager....has now agreed to changes.
2. Looking at non-financial information - "quite useful"
3. Has to get 'Action Sheets' - to tell him what forms to use - decides that it calls for 'Interim Appraisal Form' - (but wondering whether it should really be an "Excess Report"
4. Goes to get "Interim Appraisal Form".
5. Going through form - using screen to get information on position of facilities.
6. Filling in form - details of facilities from BAF - into boxes on form **modal transformation** - normally gets info from ISS - but down and so uses old report **local knowledge/egological organisation etc**
7. Reads previous report before fits in own account **issues of rationality and consistency??** - cant tell from report what's happening with security
8. Interr
9. Looking through file to find what security is held - machine still not working - "I'll try switching on and switching off again"
10. Writing report
- Has managed to get into ISS - but has'nt managed to do anything yet
- Machine goes down again and lots of problems - especially with the WE008 (tape)
11. Finishes

This last section has then attempted to document some aspects of the way in which coordinatrion is practically accomplished in a large and highly distributed organisation. The focus is on the massive, continued predominance of paperwork and thereby re-emphasises points made in earlier reports about the role of paperwork in the routine, daily organisation and coordination of the work's activities. To repeat the points made in these earlier reports, the issues are not simply to do with the 'affordances' of paper - its 'at handedness', its manipulability, its 'easiness' of use, and so on, but are also associated with the information that the paperwork contains much of which is not replicated or replicable electronically. Of course software packages - BAF and ISS - also play a crucial part in the daily coordination of activities. However, in terms of CSCW, of increasing computer support by, for example, attempting to reduce paperwork by simply substituting electronic forms of record keeping and coordination, a number of points remain relevant in particular the issue of the 'audit trail'¹³ and

¹³ This is a complex issue concerned with the interweaving of Bank policy, the law (data protection, rules of evidence etc), security and so on - it is, however, debateable whether this is an irresolvable problem. Of particular relevance for the Bank are the issues of duplication, where much of a workers

‘data protection’ and the consequent organisationally ‘necessary’ duplication of electronic and paper records.

Plans and procedures

“yes we like the set up, we like the products, we like the marketing, we like the management, we like the account, we want to help and we want to do it, we can see the reasons why he wants to do it, and we have confidence “

One of the more obvious and prominent ways in which distributed coordination is achieved is through institutionalised plans and procedures and their ‘situated interpretation’. This refers to a wide range of formal procedures which, in the Bank, would include, for example, ‘how to do an Annual Review’; ‘How to Sanction A Loan’; ‘How to Write A Report’ and so on - the step-by-step processes for the accomplishment of a procedure which would be contained in manuals such as the PIF, the Lending Manual and the Action Sheets and so on. What we are interested in is how they are used as coordinating mechanisms within socially organised ‘real world, real time’ work activities.¹⁴ Their explicit point is to co-ordinate the work of numbers of people in order that separate work activities and tasks come to have a coherence and, typically, through this meet other goals such as efficiency, meeting time constraints, and so on.

Plans and procedures are quintessentially about coordination. However, within this general characterisation there are some important issues as well as some misunderstandings which need consideration. Much of the critique of the planning model in CSCW, namely, that plans are ineffective, arises from misinterpretations of Suchman’s (1987) seminal work, in particular the idea that people do not follow plans because, in actuality, they are *post-hoc* rationalisations of courses of actions. Suchman’s critique is directed, however, at the notion that there are mental plans which operate as causal determinants of subsequent courses of action. The essence of Suchman’s critique is that the plan is an abstract construction which will, at the very least, require articulation with, and application to, the specifics of the circumstances in which it is to be followed. In this extract from the fieldnotes, for example, a Business Manager’s Assistant is assembling the necessary information, from the customer file and the computer

activity centres on simply copying information - name address, account number etc - from one form to another; an activity that could be reduced by the appropriate use of a relational database; and the issue of ‘modal transformation’ in which information recorded in one way is transformed into information relevant to another task which also involves transforming the mode of recording. A classic example of this would be where customer information provided on a paper form is transformed by inputting the information onto an electronic data base which can also be used for other purposes. Understanding such transformations in relationship to particular work activities may assist in thinking about the design of CSCW systems in respect of the regulation and management of types of information. This also resonates with the concern to reduce the overhead of coordination. If the cost of coordination is ‘too high’ it will either become an end in itself at the expense of the work (which may be what has occurred with the development of the points system), or become a such an ‘inconvenience’ that it has low priority

¹⁴ It is important to point out here that we are making no assumptions that all the items in the ‘variegated collection of phenomena’ are used in the same way - it may also be important to note that some of these items, for example, certain of the action sheets, are used to overcome some of the problems emanating from the fact that the Bank and the computer system do not operate in ‘real time’..

record, prior to an annual review by the Manager, but finding difficulties and having to make a decision about whether the case fits the parameters of the software package she is using;

.. “I did that this morning, it was one we had slight problems with because we only GAPP accounts with facilities in excess of 20, but I came to put it on the machine, and they’ve actually got a business card limit of 5000 and negotiations....(if they deal with foreign cheques.. have to agree limit..can be presented unpaid up to 6 weeks.. otherwise dont credit with monies until after cheques has cleared)..those two facilities cant actually key into the GAPP machine, so I have to check with Region to make sure I still have to GAPP it. Because the only facility I can put into the GAPP is 15000, the overdraft facility, but (arguably?) it is over 20 so it still needs a GAPP grade... ‘

Following the plan’ will always involve more than can be specified within it. The construction and use of plans in ‘real world, real time’ activities do not typically involve the supposition that literally everything must be spelled out in minute detail but that ‘practically’ and ‘characteristically’ plans are ‘recipient designed’, that is, spelled out to an extent to which those who are to follow them are, for example, familiar with the circumstances in which they are to follow them, sufficiently trained in the tasks involved, and a host of other possible considerations. Nor does the making of plans indicate any expectation that the course of actions which they specify will, of necessity, follow through. Indeed, the point of plans is often to direct courses of action to maximise the chances that these courses of action will ensue despite the contingencies which can arise. Here, for example, is a Business Account Manager talking about the Bank taking a debenture as part of the process of providing an increased overdraft facility to a company, thereby illustrating the way in which plans are practically accomplished in the course of the work and how, in this instance, paperwork acts as a mechanism of distributed coordination and for developing the awareness of work;

“..this..is a limited company account and it works very well,.... (looking at file/printouts) and computer information, yes, used to quite a degree,.... a limit of 50K,.. I did look at the 836 and the 838 printout again to see this utilisation of an account, see what its doing (looking at printout)...it works very well, no excess there is there at all, no excess days,..thats a very important part of information produced from the computer system,.. number of days in credit is important so its not in overdraft all the time,.. shows that credit balances are seen,.. we know that by those days but it does appear,..together with maximum facilities are fairly lightly used.. thats the company account, they have.(looking at folder)..an executive pension account..... (talks about writing report) these forms are good, but there’s a hell of a lot of information in there, a hell of a lot of information, cos its not only headings its all split up like that (shows form)..so in discussion we go down and we talk to them about how the company works,..the modus operandi of their trading businesses so that I could get a feel and get a handle on how it operates, get a feel of what the management is like,.. it all comes into the decision-making process....because seeing the operation, talking to them, trying to ask questions and get a feel as to how good they are, and they’re pretty switched on these guys... they both know, they talk about these deals,..they know what they’re doing and its difficult to get that picture over to an obscure lender who’s stuck up there in Regional office, thats why recommendation is so important...(pointing to form) ‘what do you feel about the management?’ (questions on form).. this isnt a business turning out widgets or pine tables or whatever, where you can actually see the production line and you might be able to do a cash-flow forecast etc etc...you cant do that in this case,..its a business of opportunism really, if he sees a good deal he’ll want to go and

buy it, that's what he's got his limit for of 50K and that's why it swings back into credit... they're switched on.. helps with the decision making, the accounts are good,... although they're a bit stale from last year (GAPPed accounts) I did GAPP them and it's good (did the GAPPING tell you anything you didn't already know?) 'No, it didn't, it confirmed what we thought (looking through file.. Looking at file at accounts)... 'accounts 1993,... surplus resources, one of the principal areas to look at, what are the surplus resources of the company?.. that must form an important part in decisionmaking and it is on the printout, and I would have looked at the computer information for that, I can look at the carding (card showing various ratios created from accounts and drawn up by Ass. prior to interview) or I can look at the Balance Sheet Assessment Form, surplus resources must be important if we're lending anyway and it so happened that they came up with another proposition whilst we were there, hence me saying get a handle on the management. They're making profits and profits are being retained in the business, they're making a gross profit of.. (looking at file).. high margins.. (talk about request for bigger credit zone) he (the customer) said "I'd like a 100(K) as standby and if something comes up "... well,.. that was over 'dp' (discretionary power)... we're in for a total exposure of 140K,.. overall,.. so we're then left with do we lend him 100 grand?... decision making process, what's the company's trading performance been like? quite good,.. what's its proven track record from audited figures? that's quite good, surplus resources in the company, retained profits in the company... that's quite good. What about the product that they're dealing with? do we consider that's the sort of thing that is. that can be moved on and sold.... (discussion of business)... it shifts.. So, the product, the siting, the company, proven record, management; what do we think of the management? pretty good, pretty switched on,.. everything about it looks OK, so we want to go ahead and do a recommendation, we've got to go up to Region because it's over those limits. Look at security, yeah, the Bank should have a debenture because we're principally lending, well we're lending on the company, we have got security we've got a guarantee and it's backed up by deeds... we've got security for about 50 grand, which covers that (pointing at file)... we've gone up to say that we'd like a debenture, we want to recommend this, we want to say that we will do it, we would have liked 1994 accounts, we haven't got them, but we still think we should go ahead with it (interruption - breaks off to tell Ass to prepare paperwork for debenture) we'll go for a debenture, we'll recommend this, we want to do it, (we've) made the decision as far as the recommendation goes, strengthen it up by the security side, of having the guarantee for 50 and we'll have the debenture as well which we'll value,.. have to take a % of assets,... but, we should have a debenture, if it all fails we want to put a receiver in and take that stock.... we'll put that (debenture) as a condition of sanction... and I think that's right,.. we should have a debenture now, we're lending 50,.. on any limited company account any lending over about 10 grand, or any lending over 5000 we want security anyway, and we really want a debenture as well, so we ought to have it at 50, i.. if we're then going to double it up perhaps now's the time that we go for it, that we take it,... so that was the nub of all that lot (points to notes) is to say yes we like the set up, we like the products, we like the marketing, we like the management, we like the account, we want to help and we want to do it, we can see the reasons why he wants to do it, and we have confidence... that it won't slip up to be hardcore, I mean that would be disaster wouldn't it? if he had £100,000 of stock on the bloody shelf that he couldn't sell... it's what you think of it isn't it? what you think of the management... we think we should do it (make the loan) but Bank policy says we should have a debenture.."

The extract also demonstrates how plans often include 'fail safe' devices to cope with situations where things are 'not going to plan' by specifying arrangements for adaptation of the plan to exceptions, unforeseen circumstances, even extensive revision, as well as mechanisms to oversee the implementation of

the plan and enforce its requirements - in this particular case that if the loan ‘goes bad’ because they hold a debenture they can “*put a receiver in and take the stock*”. Similarly in this next extract, a discussion of a ‘troublesome’ account, (where the customer has suddenly asked for a large increase in his borrowing to meet an urgent demand for money from the Inland Revenue) the range of possible responses to different situations is presented and discussed by the Business Account Manager, illustrating, furthermore, the way in which workers need to be able to respond, to adapt ‘the plan’ ‘on the fly’ in the face of changing and urgent demands;

“if the fellow wanted 5K..and he said what is your decision? I would have said I’ll let you know in a few days time, I’ll have to consider it..I would’nt say to the customer, ‘I’ve got to go to the Bank, because I’m the Bank.. it doesnt matter whether its me or someone else I’d say I’ll let you know, if he wants a decision urgently.. then I..try and do it by phone, we dont like doingthings like that because the Bank likes things in writing... if that was the case and it does happen from time to time, you take your fax down, say you’ll let him know, consider them, try and get your fax in a logical order and your recommendation becuase the Bank will always want a recommendation from the manager, always, you cant dip out of it, you’ve got to come down one side of the fence or the other, even if you dont make the decision you’ve got to come up with a recommendation so...if he said,, I want to issue this cheque for £6000 now..I would have taken the details down, I would have made my decision that I was not going to recommend that, I would’nt want to give him £6000 unless I had a clear exit route and assuming that nothing else had changed..(‘exit route = repayment route).. (pointing at file)..here’s the exit route for the excess which was granted in May, actually... and the repayment route.. and the repayment of that excess was going to come from this loan, well these things are finite..you’re going to come to the bottom of the barrel, he’s running out of things.. so if he wants another 6000 OK well where’s that going to come from, well, he’s got these house proceeds, well thats all in the future... I would have gone to Region...my recommendation is no we dont do that..

Another feature of plans and procedures is that they develop and are modified, they unfold, in real time. What the plan agreed, what interdependencies there are, only become clear as the courses of action specified in the plan unfold, creating additional workloads in terms of coordination and the awareness of work. So, for example, as the ‘relationship’ between the PAM team and its customers develops they respond to the changing contingencies, of the arrival of ‘plans and priorities’ forms; of reports from PFAs and so on, as well as changes in the circumstances of their customers, moving house, retirement, redundancy and more. In fact, a simple and daily example of the responsiveness of plans and procedures comes in the examination and actioning of the WE008, ‘out-of-order accounts’. The WE008 will give both the ledger and ‘true’ balance of the account (this takes into account the possibility that cheques paid in to the account will be bounced); a figure for ‘uncleareds’(both in the three day cycle and monies paid in that day); a balance; a credit zone and a ‘notional limit’ (usually an additional 10% on the credit zone) - all these factors need to be borne in mind as the WE008 is ‘actioned’ by the Business Manager’s or PAM Assistants as they respond, for example, to phone calls from customers saying that they are ‘paying in today’.

Plans, Procedures and 'Local Knowledge'

The successful accomplishment of a 'plan' is dependent on the practical understandings about what the plan specifies in *these* circumstances, using *these* resources, *these* people, and so on. Although plans may be presented as abstractions, as manuals, as statements of procedures, and so forth, - in the Bank taking the form of the 'PIF', the 'Lending Manual' and the 'Action Sheets' - the 'just what' it takes to realise them is a practical matter of 'making the plan work' through all the various and inevitable contingencies that can arise. It is such activities which maintain the plan by dealing with 'those things which arise', 'the things not planned for', the 'things which suddenly come up' so that even 'deviations' from the plan can be accommodated to sustain its 'spirit'. As the earlier studies of the Bank have shown, real time real world work often involves the utilisation of 'local knowledge' and 'local logics', commonly interpreted as 'cutting corners' or 'bending the rules', to support the overall objectives of the rules or the procedures. For example, the fieldwork extract cited earlier, of a Business Account Manager setting up a loan for a college is an illustration of the working out of a 'local logic' as the Manager searches for a way in which the loan can be justified and 'accounted' as a reasonable decision. Similarly, 'local knowledge', particularly of the expectations of Regional Office was a regularly observed feature of work in the Business Centre. As we noted in our earlier reports on the Bank, work 'routines' are not slavishly adhered to but involve the considerable exercise of judgement and the deployment of a variety of 'skills'. Such discretion 'typically' concerns the circumstances under which a routine is to be strictly followed and the circumstances under which modifications or 'short-cuts' may be employed (Bittner's (1965) 'gambits of compliance') through, for example, the utilisation of informal teamwork or 'local knowledge'. In the following example a Business Manager outlines the actions taken on an account that is 'under report';

"this account is under report to regional office..so strictly where its under report, as opposed to a grant limit..(explains difference) I have a discretionary limit to what I can lend.. anything over those figures I have to go to Regional office..where you might get an account that is within your discretionary lending limits..but it may be in trouble, it may be naff, it may be at risk..and if you feel that that is the case then you are duty bound to report that to region as a risk of loss or as an unsatisfactory account.... (Risk grade 9) if its risk grade 9 and you're lending then it might well be considered bad..but if the general trend and the general uncertainty of your exit route and your repayment and the viability of the whole thing..if you say..I'm concerned about this..its under my dp but I consider this to be at risk. this is totally unsatisfactory then you're duty bound to report that to region as unsatisfactory and when that happens they come back to say that they've taken it under report...(looking at notes)...I think they did at an earlier stage..then instead of being as a grant limit it comes back as report with a max...so we in jargon..talk about an account being under report with a max.. if its a max then it would be considered as at risk or unsatisfactory which is what that is.. If its under report.... I as a branch really have no discretion whatever.. I cant let that drift up over whatever that max is for anything, I've no discretion at all. having said that, that max was 31750.... and I've, in listening to him and talking to him, and I've put a little note on screen... I've said he could go to 32, so I have exceeded what I should do, but only by £250, but what I did do, to save paper

and generating a..paperchase. I just rang a fellow at Region and said. 'look, you know this is what the score is, I've agreed he can go from that to that (pointing at file) for the remainder of that term..and thats my max, I dont propose to come up with a written thing will you make a note of it in your own files up there and will you give me verbal sanction that I can increase that limit on the computer to 32000 for the remainder of that term, so he said yes.... now ordinarily under a under report account you would'nt do that but for £250 its not worth the managerial time doing it..... I went back to read what had been said, read the paperwork, read the Regional sanction, read what the terms are,..got a feel of what the Bank's feeling was on the account,.. looked at what the arrangement was for the payment of that excess and then considered what he was asking, was that another. I wasnt going to increase the Bank's exposure anymore whatever unless there was a guaranteed repayment source for that bit.. by increasing it by £250 thats marginal..."

By placing plans, procedures and decisionmaking within its social and organisational context, they come to be seen as elements which enable workers to make sense of their own work and that of others and to come to a decision about future courses of action. What this emphasises is the importance of seeing how and in what ways plans and procedures are interwoven into a highly variegated set of phenomena that make up the social organisation of work. How and in what ways, for example, plans and procedures are related to the sequentiality of work; how and in what ways they formulate the work's interdependencies; how and in what ways they identify 'troubles' of various kinds; how and in what ways they make work accountable, 'open to criticism', 'subject of failure', and so on.

Having presented a critique of the planning model for failing to acknowledge the myriad ways in which people 'work to make the plan work'; it is perhaps hardly surprising that we are equally sceptical about similarly stilted, rationalistic models of decisionmaking. As Feldman & March (1981) note models of strictly rational decisionmaking create expectations which are rarely met in practice;

'..For example, relevant information will be gathered and analysed prior to decisionmaking; information gathered for use in a decision will be used in making that decision; available information will be examined before more information is requested or gathered; needs for information will be determined prior to requesting information; information that is irrelevant to a decision will not be gathered. Studies of the use of information in organisations, however, reveal a somewhat different picture' (Feldman & March 1981: 172)

In fact studies of organisations, and the Bank is no exception to this, consistently suggest that information often appears to be gathered for its own sake without having any obvious decisional relevance and;

"Much of the information that is used to justify a decision is collected and interpreted after the decision has been made, or substantially made...Much of the information that is gathered in response to requests for information is not considered in the making of decisions for which it was requested" (Feldman & March 1981: 174)

To some extent observation suggests that this attenuation between the gathering of information and its utilisation in decisionmaking is minimally affected by the incorporation of plans and procedures into a computer system.

Plans in the machine - using computers to support decision making - 'mind the GAPP'.

One of the ways in which plans and procedures appear in work activities as aids to decisionmaking, is to formulate the work's activities as step-by-step stages. Computers often appear in this process and in this plan at various stages, as repositories of information to be collected, browsed and retrieved; as a focus for activity and for triggering other activities; and in providing a background for and indicating decision alternatives. In the Business Centre, for example, a number of software packages, notably 'GAPP' (Grading and Pricing Program') and the 'Risk Grading' on 'Fileserver' had been introduced and were intended both to support decision making and to improve the speed of processing thereby giving staff more time to be 'pro-active' - to develop customer relationships and sell Bank products.¹⁵ The following extract shows a Business Manager's Assistant carrying out a 'GAPPING' exercise prior to the Manager's visit to the company;

Next.

1. Gets screen - 'Customer New Record' - fills in details from GAPP data input form (obtained from company's accounts)
- Screen 'Customise' - (name) - fills in details - date acc obtained etc
3. Screen - "Business Definition" - "What does pharmacist go under?" - discussion with other BMAss - "try that one" - clicks on various titles - "whats other?" - other small screens appear. - eventually finds it.
4. Screen 'Audited Management Accounts' - "do you put a minus in here if its in brackets?" "Yes - it will print up then" - filling in details from form.
5. Screen - 'Management Details' - (series of questions - yes/no clicks) - management assessment; financial monitoring; trading environment; short term problems;
6. Screen - 'Facility Summary' - 'New Customer facility' - as each section of the screen is entered 'help/explanation' messages appear at the bottom of the screen
7. Prints out - 'Risk Analysis Summary' - gives risk grade and ratings on facilities (what should be charged)

Again - as with other software packages - the material to be entered - manually - into the program already existed elsewhere in the system - yet the inability of packages to 'talk' to each other resulted in wasteful duplication of effort - eg the 'Decipher' package.

It is important to recognise that GAPP was simply an addition to the existing risk assessment and pricing 'devices' - in some senses merely automating what had previously been done (and continued to be done) manually.¹⁶ The fact that GAPPING, although incorporated into the lending process appeared as a mere

¹⁵ A number of new software programs had been placed in the Business Centre notably 'GAPP' (grading and pricing policy) and 'Decipher' (a balance sheet information and analysis package) and eventually the 'Balanced Business Scorecard' (a performance measurement program). The GAPP machine was a recent addition to the Business Centre - the software on the machine had come from Region and was used to calculate Risk Grade of Businesses (1-9; 1= "substantially risk free, with minimal risk of failure"; 9= "loss likely") thereby influencing lending decisions; and the pricing policy that should be adopted (which was also influenced by the Risk Grade). The program gave a margin within which pricing could be negotiated. Because it was new the staff were not especially proficient in its use; although it was increasingly being utilised as a matter of routine as businesses came up for annual review and the Business Managers went out to conduct their interviews.

¹⁶ There were some additional features of the program which, because of its recent introduction and apparent novelty, appeared to be unused.

additional check in that process rather than integral to it, meant that GAPPING seemed less important as a decision-making device than as a 'security blanket' for decisions already made; and the starting point for negotiation (particularly over pricing) with the business concerned. As an Assistant Manager said;

"you cannot say straightaway...just because the computer program says 1% higher...you cant just impose a 1% rise...you've got to use it as a tool..."you've got to sum up how much the overdraft is and whatever.."

This position - of using the software to confirm rather than determine decisions - may have arisen as a consequence of the inclusion in the program of 'non-financial' information which could significantly influence the risk grade obtained and which was dependent on the Manager's store of local and anecdotal knowledge; eg "are there any signs of creative accountancy?"; "are there any anecdotal signs of problems?".¹⁷ It may also represent a reflection of managerial experience and scepticism about the information provided; an awareness of the variety of techniques that could be employed to disguise the 'true' nature of an account. It may also, as Feldman and March (1981) suggest, be a reflection of the fact that much of the information used in the Bank had been gathered primarily for 'control' rather than decisionmaking - that is, it is gathered in a 'surveillance' rather than a 'decisionmaking' mode¹⁸.

What is, perhaps, revealing in this account is the way in which computerwork meshes with the paperwork through the 'modal transformation' of information; and in particular how cumbersome and singularly unenlightening the whole process appears to be. The process of 'GAPPING' appears to be heavily dependent

¹⁷ Such 'anecdotal' evidence should not, however, be sneered since in at least one instance - a double glazing firm - no indication of trouble was revealed by any of the computer packages or printouts and only became evident when the firm appeared on the 'receivership and liquidation' perusal form and the Customs and Excise asked to be paid with a Building Society cheque...

¹⁸ Feldman and March suggest that, "When strategic misrepresentation is common, the value of information to a decision maker is compromised...Individuals develop rules for dealing with information under conditions of conflict. Decision makers discount much of the information that is generated." (Feldman & March 1981: 177) Within the Bank in general, and the Business Centre in particular, there was an awareness of how accounts could be managed to misrepresent a business's trading position; and similar scepticism about 'business forecasts' (especially when produced by the business itself and so on. It was not, however, the situation that Feldman & March (1981) describe, where, "Decision makers learn not to trust overly clever people, and smart people learn not to be overly clever" (Feldman & March 1981: 177) Above all, the main point to make about the decisionmaking process and the usage of information (whether on paper or computer) is concerned with appreciating the careful consideration of the information. That is, it is not a question, as Harper (1989) points out in his ethnography of accounting, of 'just any old numbers' but that interpretation of the information, and decisionmaking from the information is dependent on certain, 'nuanced' expectations. *"decision making process, what's the companies trading performance been like? quite good, ..whats its proven track record from audited figures? thats quite good, surplus resources in the company, retained profits in the company. .. thats quite good. What about the product that they're dealing with? do we consider thats the sort of thing that is. that can be moved on and sold....(discusion of business) ...it shifts .. So, the product, the siting, the company, proven record, management; what do we think of the management? pretty good, pretty switched on, .. everything about it looks OK, "* The other, important, point to make, and one which resonates with earlier comments about decisionmaking and 'gut-feeling'; is that despite the way in which the decisionmaking process illustrated here appears to conform to some 'rational' model of considering all the 'relevant' factors this is not actually what is happening since 'relevance' always comes from a pre-orientation within a background and it is this pre-orientation which thereby accounts for 'gut decisions'.

on various forms of paperwork and the utilisation of information already held on the computer. That the process appears so time consuming is a consequence of the problem that the major software packages used in the Bank, BAF and ISS, appear unable to transfer information between each other or the other software packages used in the Bank. Thus the organisational overload of providing information is increased. Nevertheless, computer systems are clearly an integral part of work and decisionmaking; for example the use of BAF (an '836') to obtain information on the working of a customer's account over time and the use of ISS database (Customer Notes) to reveal general customer account history. This usage is illustrated in the next extract by a Personal Account Manager in his consideration of a loan application;

Next.

1. Personal Loan App - faxed app - looks at contact card to see what contact has taken place; asks Ass..'did he phone direct...' (Imp for 'point score' and assessment of unit)
2. Does BAF enquiry to check acc; - how it operates - runs to balance; regular salary; - looks at RG (risk grade); looks at turnover, debt and credit Does a BL to see if anything else outstanding - will show all accs that are linked eg. joint accs.
3. Asks Ass to do credit scoring on Fileserver.

Chat - re: core process redesign. WE058 to replace the WE008
 Customer contact cards - to cover Data Protection Act
 All accs have a reln marker - coded for occupation.
 Waiting for credit score.

Next.

1. Has got credit rating.
2. Using screen - filling in details of loan repayment - using calculator to work out fees.
3. Looks at computer printout
4. Has worked out different loan rates - Personal Loan Rate and Business Rate (lower)
5. Phoning - 'Is Mr X at home?' (no, he's at work)
6. Finds work no and phones - not in - will have to catch tonight's post (wants loan by Wednesday)
7. Tries phoning again - leaves message - gives number.
8. Gets phoned back - explains - no problem with the loan - outlines number of options - personal loan; managed rate loan.

and in the more complex work of the Business Account Manager;
 "I did look at the 836 and the 838 printout again to see this utilisation of an account, see what its doing (looking at printout)...it works very well, no excess there is there at all, no excess days,..thats a very important part of information produced from the computer system,.. number of days in credit is important so its not in overdraft all the time,.. shows that credit balances are seen,.. we know that by those days but it does appear,..together with maximum facilities are fairly lightly used."

Plans, Procedures and 'Organisational Memory'¹⁹.

This section attempts to explore the linkages between 'plans and procedures', their practical accomplishment through the deployment of 'local knowledge' and

¹⁹ Much of this section is taken from work done for the 'CoTech' Working Group 4 on 'Organisational Memory'.

‘gambits of compliance’, and the currently fashionable concept of ‘organisational memory’. The point however is not with being ‘fashionable’ but to consider and illustrate from the fieldnotes on the Business Centre one important aspect of ‘organisational memory’, that is, how organisational actors ‘learn’ and ‘remember’ how to carry out organisational plans and procedures. What we are concerned with then are the ways in which ‘plans and procedures’ are practically carried out and accomplished. In particular the interest in this particular instance and with this particular organisation is with the implementation of plans and procedures in the specific context of organisational change - organisational ‘downsizing’, redundancy and redeployment. Here the issue becomes one of how any organisation that is highly distributed and operates a complex division of labour, can ensure that the plans and procedures essential for the coordination of work across and through the organisation can be remembered and implemented whilst simultaneously making redundant the very workers (the older and more experienced workers) who are likely to possess this information and deploy it to the benefit of the organisation. There are also further, important matters to consider, of systems design, training and the development of skills. So, for example, it might be suggested that the relationship between the Business Account Manager and his Assistant incorporates elements of ‘apprenticeship’ of learning the appropriate procedural skills as part of the process of developing a working ‘organisational memory’ and that this is qualitatively different from attempting to develop those same skills through, for example, reading the appropriate training manual. However, as we have indicated in previous reports, skill is a concept that requires considerable ‘unpacking’ and here we focus not just on the logical, organisationally sanctioned procedures for completing various actions but other, subtler nuanced skills to do with interpreting how in this particular circumstance this particular plan or procedure might best be accomplished and in communicating this to other organisational actors.

Within the Bank there are several procedural devices that might reasonably be characterised²⁰ as formal aspects of ‘organisational memory’. Thus, in the Bank as a whole the ‘PIF’ (products in focus) and the ‘Action File’ and ‘Action Directory’ might be regarded as the ‘Bible’ of Bank products and procedures; and in the Business centre the ‘Lending Manual’ occupied a similar, revered, position. In the Business Centre, because of the nature of the work, the PIF and the ‘Lending Manual’ were regularly consulted; a position dissimilar to that of the Branches where they were rarely used in the general course of work. Where the manuals were regularly and routinely utilised, for example when the PIF was deployed routinely in lending interviews, it was often used to respond to customer interview queries in situations where it was difficult to seek assistance or where the various ‘affordances’ of paper (that it is easy to point to, to show the customer, to move quickly from one product to another, to write amendments and

²⁰ See for example, Walsh & Ungson (19NN)

notes in margins, etc.) made the use of the PIF convenient and efficient.²¹ Nevertheless, as in the branches and other specialist centres, when assistance was required, the cry for help “how do you XYZ?” was a regular occurrence. In this instance, for example, when a GAPP score is being amended by someone unfamiliar with the program;

Next....

. Amending a GAPP - “whats the password?” “it should be switched on” (??)

“Whats the one you press at the end?” “Enter”

Indeed one of the (expected) benefits of putting the PAE and PAM teams in the same room was this assistance factor and ‘transference’ of skills as in this next extract where the PAE Assistant is working through a program to get a mortgage quote;

PAE Assistant
Next.

1. Working on mortgage quote from before - asks how to/what to put into it - PAM - trying to get quotes on fixed rate mortgage for customer.
2. PAM comes to advise on how to work through mortgage program
3. (tape) Working through program
4. Interr - asks PAM- ‘what do you do when you make a mistake?’ - PAM reaches over to show what to do.
5. Interr - asks PAM- ‘I’ve got a different screen this time’ - PAM comes over to show what to do.

Mortgage Quote Program - on Fileserver - seems very cumbersome - not very user friendly - when finished with ‘help’ screen have to quit application and go back in - including all passwords.

6. Still working on quote

PAE - phoning re: tax issue

7. Having more trouble with Mortgage Quote - ‘it wont let me off this page now’ - still keying in data to get different quotes - PAM helping with prog and input - standing behind and telling her how to use program
8. Goes to get quote from printer

Such a spatial arrangement may also mean that requests of this kind, which effectively ignore the officially prescribed institutionalised of consulting the ‘Action Sheets’ or the ‘Help’ menus on the computer, overcomes some of the questions of competence that may conventionally arise as part of the everyday ‘moral order’ of the office.

The lending mnemonic ‘CAMPARI & ICE’ might also be characterised as an institutionalised organisational memory device - used to guide lending decisions and highlighting the range of factors - ability to repay, purpose, etc. - that needed to be taken into account when making lending decisions. If the PIF or the Action File or the Lending Manual might be regarded as the ‘Bible’ of Bank products and procedures, it might be suggested that ‘CAMPARI & ICE’ constitute the ‘Ten Commandments; commandments, moreover, whose neglect in the past, in

²¹ Eventually the use of the PIF was also effectively ‘mandatory’ since it became included in a list of items regarded as ‘crucial’ in the ‘Mystery Shopper’ campaign.

the late 1980s, had, at least in Bank mythology, contributed to a massive increase in bad debts. However, what was notable in the practical application of 'CAMPARI & ICE' was its skilful application to assemble a 'case' for a lending decision, often being used retrospectively to justify a decision already made on 'gut feeling' or the apparently 'intuitive' deployment of lending 'lore' developed over the years. As one Lending Manager said,

"You usually find that the decision you make from your gut is the one you go with."

It was thus an informal/formal mechanism for assessing lending proposals; formal' because it appears in the lending manual; 'informal' in the sense that attention to its details, as opposed to its general spirit, is relatively rare. Much of the work of Report Writing is primarily concerned with developing a persuasive 'account' for a lending decision to Regional Office, focussing on those factors with which officials at Regional Office will be most concerned. In this sense the organisational memory device 'CAMPARI & ICE' is less about the process of making the decision than accounting for it; and in much the same way as Garfinkel (1967) portrays the process by which juries account for their decisions.²² As such it resembles an active process of 'remembering' of 'telling' and of 'telling' for a purpose, rather than the more static concept of 'memory'. This usage of organisational remembering also illustrates the way in which 'memory' is constructed 'in the telling'. It is also suggestive of some aspects of the 'moral' component of organisational remembering, illustrated perhaps in the following extract where a Business Manager is justifying a lending decision (for a customer who is being pursued by the Inland Revenue). What is important about this extract is that this is precisely the kind of conversation the Business Account Manager will have with his Assistant and with other Business Managers and consequently reflects aspects of organisational socialisation, of developing a sense of the organisation, what it does and why it does it, that lies behind the rather dry notion of 'plans and procedures';

"here's the exit route for the excess which was granted in May, actually... and the repayment route.. and the repayment of that excess was going to come from this loan, well these things are finite..you're going to come to the bottom of the barrel, he's running out of things.. so if he wants another 6000 OK well where's that going to come from, well, he's got these house proceeds, well thats all in the future.... "

.. yeah, but where do you draw the line? is it right to go throwing good money after bad? we've done that, been down that road, in the past.. throw out a bit more and you think..it just staves it off..why do we stand in the shoes of the Revenue? Is it right that you throw another £6000? What are you going to do about next year's tax?...thats probably where some of that (pointing at figures) has come from... tax or something,.. where somebody has gone out and thrown out a little bit more, thrown out a little bit more, and so on and so on,.. and probably other managers have just nodded it through, without actually saying, hang on, how are you, realistically going to deal with this? how are you going to service this borrowing? where is it coming from?... I dont see there is any benefit in just shelling out money all the time,.. there

²² Consequently the development of computer support for such 'organisational memory' is unlikely to offer any assistance to the actual process of decision-making, though it may support this process of 'accounting' for decisions and thereby support decision-making at some later stage.

must come to a point where you've got to say, 'I'm going to draw a line here,...and I think it should have been drawn a long time ago, myself,'"

It is as a consequence of just this kind of conversation that Business Managers do not need total recall of 'CAMPARI & ICE' to get a sense of when lending decisions are 'wrong'; thereby constituting a divergence between what might be characterised as an 'institutional logic' (Buttny 1993:166) - of highly specialised rules and procedures - and a 'folk logic'

"a logic for action, that is, what is right, moral or at least acceptable...what counts as 'right', 'smart' or at least 'passable' conduct..." (Buttny 1993:49)

in which lending decisions are a product of 'gut feeling'. As Buttny writes;

"..negotiating and coordinating diverging logics is more complex than simply applying a general rule to a particular situation."(Buttny 1993:167)

The 'logic' deployed in this instance includes the 'practice' of using a range of implicit and explicit rules and guidelines in appropriate contexts.

What this section of the framework on 'plans and procedures' has attempted to suggest is relatively simple but important nevertheless. It argues that 'following the plan' generally involves more than is specified in the plan; that plans are modified as they unfold and are subject to evaluation; and that plans are both chosen and made to work through the skilful use of various forms of 'local knowledge' of what the plan entails in this particular circumstance with this particular case, (which features the plan itself may then be made to accommodate). It further suggests that computers are enmeshed in the 'working out' of plans and procedures in a variety of (not always obvious or even useful) ways; that plans and procedures are generally 'remembered' and followed in a complex fashion and in a process linked to certain features of the organisation itself, (such as the presence and availability of older workers, the need to report to higher authorities and so on). At its simplest what we are trying to say is that plans and procedures cannot be understood (or effectively designed or implemented) divorced from the organisational context in which they are situated and in which they are enacted.

Awareness of Work

Another perspective on the social organisation of work, and one which is closely involved with the other themes of 'Distributed Coordination' and 'Plans and Procedures' is Awareness of Work. This refers to the way in which work tasks are made available to others and the important role that this plays in the 'real world real time' social organisation of work. Clearly this is a theme which involves various interactional subtleties and constitutes a major aspect of the means through which coordination of work tasks is achieved as a practical matter. The various ways in which 'awareness' is developed, in which work is made public and available to others, are essential ingredients in 'doing the work' as part of a socially distributed division of labour.

So, for example, the layout of the PAM and PAE Office, the organisation of the workspaces of the Business Account Manager and the Assistant permit the development of an ‘ecology of awareness’ which is consequential for the performance of the work activities. Many of these affordances arise simply because of the co-location of a collection of people doing ‘much the same things’ or who are performing interdependent activities. Being able to ask for advice just when it is needed, updating colleagues as one is passing, dealing with an emergency when ‘all hands are needed’, and more, are all informal, often intermittent, certainly unplanned occasional events which are facilitated by appropriate spatial layouts of work areas. Similarly, the state of desks, where someone is within the spatial setting, looking in a particular filing cabinet, working through a pile of paperwork, and more, furnishes information about what the person is doing, where that person is in the stream of work, how busy they are, and so on; information which, in subtle ways, is available so that others can update themselves on the state of the work, how it is going, whether ‘we are behind’, ‘on top of it’, etc. The point we want to make about such affordances is that they are not necessarily designed or planned, though they can be, but represent arrangements which can be used in the day-to-day ‘doing’ of work.²³

Other ways in which the awareness of others’ work is made available and visible, often ‘at a glance’ is through the various ‘mechanisms of interaction. In the Business Centre the various forms, the WE008; the Appraisal Forms, the Interview Notes, the Customer Folder, and different sections of the computer database such as Customer Notes are both the focus for work and a visible, a publicly available, record of work that has been done or remains to be done. In other words, what these representations do, among other things, is make the work ‘visible’ so that it can be ‘taken note of’, ‘reviewed’, ‘queried’, and so on, by others involved. They put the work on display so that others may be aware of it.

The overriding practical issue for representations is what to represent about the work, for whom, and how to represent it. What is it that people who are to use the representation need to know about the work and in what format is this to be conveyed? Clearly, there are principles of selection involved. In completing, for example, the Lending Appraisal Form, the Assistant knows that a number of issues need to be addressed; issues which are indicated in the various sections of the form - ‘adequacy of interest margin/fees in relation to risk/management time’; “viability of repayment, including source and timing” and so on. What seems to be at work here is a practically oriented principle of economy with respect to the information that is represented through the artefact. Not all the possible information that might be gathered or represented is so. The question of what is represented is not solved ‘once and for all’; what information the Assistant,

²³ In some respects the social use of space is a neglected area of sociological inquiry though, of course, it is the stuff of architectural design, town planning, ergonomics to mention but a few. The direction we have in mind here is with the ways in which spatial arrangements can be used to facilitate, or indeed hinder, collaboration and the coordination of work tasks. The importance of CSCW is the need to face up to the fact that computer mediated communication can abolish spatial affordances though it may need to emulate some of these.

perusing the various computer files and the Customer Folder ‘needs’ to include for the Business Account Manager is a constant preoccupation in and through the course of the work. Finally, understanding what the representation represents, so to speak, relies upon knowledge of the work itself and how the representation is embedded within the work as an instrument of the work.

Representations as modal transformations

One of the features we have noted before in connection with the coordination of activities is the way in which information goes through modal transformations in which it is re-represented in a different form. A good illustration of this is the way in which information is extracted from the computer records on ISS, or from using the GAPP program, taken from various computer printouts and from the customer record and inserted into the Appraisal/Interview Form. What the various transformations do in this case is facilitate coordination through appropriate representations of the ‘basic information’. Although this is a process which is deeply involved in coordination, it does so by making the work available to others in a form on which they work; that is, representing the work within the work so that others can do theirs. In these cases, they serve to routinise the work by using standard procedures and standard formats for representing the tasks done and the tasks to do. So, one of the properties of formatting is the way in which it can proceduralise representation and, through this, represent the work to others for particular purposes. The format - that is, how to complete the Appraisal Form, how to complete a GAPPING exercise; how to complete a Balance Sheet Assessment Form and so on, functions as a set of instructions in both its creation and its use. This is, at least one, reason for the importance of standardisation and was an issue encountered on a regular basis when using the Customer Notes on ISS since there appeared to be no standard practise, reflected in the earlier comments of a Business Account Manager when encountering an ISS Customer Record for the first time;

1. Looking at file.
3. Needs to update ISS - looks at past interview notes - on change in overdraft - in ‘notes’ - nothing; ‘synopsis’ - very brief -other notes ‘limit reduced £8K’ (no explanation) “highly respectable partners” (only comment on entire page)-
“see how the approach varies (pointing to notes) - it determines the usefulness of the system”

The various forms in use in the Business Centre are all designed to collect standard information, to make the information comparable and to control the information that is provided. In this respect they are solutions to the problem of the assembly of information in organisations identified by Garfinkel (1967); that is, what information is needed and its ‘value’; the worth of collecting the information with reference to the effort involved in its collection - an issue highlighted in the earlier section on decision making. The attempt to get people to comply with formats is often, with regard to those who must apply them, a disciplinary matter; that is, an attempt to ensure, by laying out a series of procedures to be followed, for example in the Action Sheets or the Landing

manual, that the persons who need to comply actually do so. Nevertheless despite the obvious benefits of standardised processes and formats - the format does not always, in itself, convey an adequate 'sense of the work' and it is in these circumstances that local knowledge and a range of interactional skills are deployed to help 'make sense of' the work. It is in this sense that 'awareness of work' becomes a 'skill'. As we have already suggested 'skill' is a concept whose tacit and often highly situated notions need considerable 'unpacking'. The sense of 'skill' that we are interested here is that of 'knowing how', or competency. In particular the competencies involve making sense of, and thereby being able to make available to others, what is 'going on'. These could be described as competencies required for 'mutual intelligibility' or 'mutual awareness' on the part of the members of a work team.

Finally, another, related, routine trouble is the extent to which priority is accorded to the reporting format such that complying with it displaces the actual requirements of the work itself; the extent to which the information included is entered as a natural and integrated part of the work, and the extent to which it is regarded as an unwelcome overhead. So, for example and partly as a consequence of the novelty of the software, GAPPING the accounts often seemed a rather burdensome process; particularly as several manual form completion exercises, which it was largely intended to replace (?) continued to be required. Similar points might be made about the duplication of information between the manual customer record and the customer notes held on ISS; a duplication created, in this instance, by concern over the Data Protection Act and the 'affordances' of the paper record and its more rapid use and responsiveness in the course of everyday work.

Awareness of work and the sense of organisation.

"I wouldn't say to the customer, 'I've got to go to the Bank, (to get a decision) because I'm the Bank."

What should come across strongly in the field study is the ways in which workers in the Business Centre orient to the 'ordinariness' and 'routine' character of the work and its setting. Settings are organised to provide for their recognition as the events-in-the-order that they are. So, for example, GAPPING an account, preparing an Interview Notepad for the annual review, or writing a report to Region, are organised to provide for the 'awareness of work', and done in ways which ensure their recognisability, their 'visibility' as the actions-that-they-are.

In a wider and more general sense workers within the various offices and centres of the Bank are aware of their work as part of some larger institution and that their work activities are the work of and represent 'the Bank'. The very characterisation of them as 'bank workers', their job titles of 'Transmissions Officer' or 'Business Account Manager' and so on, calls them into play as people who are organisationally positioned and people who have organisationally prescribed responsibilities and tasks. As one Business Account Manager put it..."*I*

am the Bank". The sense in which Business Managers, to develop this example a little more, are aware of the fact that they are working within a system that transcends their here-and-now, is also reflected in the physical organisation of the Business Centre; in their physical and hierarchical/organisational relationships to each other; in the paperwork and computerwork, in the 'dress code and so on. They are aware of the fact that the Business Centre is but a location within a system of banking which extends beyond the Wirral BMA (even beyond NatWest UK - hence the 'folk tales' of 'lending in the 80s'); aware of the fact that they work within a bureaucratic structure of work organisation, subject to a managerial supervision from Regional and National offices and situated within a complex division of labour. They are aware of the fact that their working is dependent upon various types of computer and administrative support and the activities of workers at other locations - such as particular branches, the Securities Centre, Regional Office and so on - within the wider Bank network. Those working in the Business Centre clearly saw themselves as integral, interlocking components in an extended division of labour within which they could locate their particular work or task

Issues for further consideration

This fieldwork report has presented an account of some of the work of the Business centre and then attempted a provisional analysis through the deployment of a general framework for analysing the social organisation of work focussing on the issues of distributed coordination, plans and procedures and awareness of work. In this final section we briefly review some of the implications of this phase of the fieldwork and consider some of the ideas that continue to be relevant to the focus of the research.

'Egological Organisation' of work.

The notion of the 'egological organisation' of work, that as an encountered phenomenon, the 'division of labour' is experienced as a fragmentation of activities, tasks and performances in which the central question becomes 'what do I do next?', is a valuable concept in linking the three themes of distributed coordination, plans and procedures and awareness of work. That is, immersion in a division of labour on a day-to-day basis, coordinating work, following through plans and procedures, is experienced as stream of differentiated and discrete tasks-to-be-done, of forms to be completed, of accounts to be 'GAPPED' of Interview Notepads to be prepared and so on. As Anderson et al (1989) write;

"From the point of view of an actor in a division of labour, working through the endless stream, getting things done, means doing-what-I-do and passing tasks on to others so they can do what they do." (Anderson et al 1989: 161)

Individual performance within a 'working division of labour' is consequently bounded by 'horizons of relevance' ('what do I do?', 'what do I know?') which

formulate concerns relevant to the tasks to be accomplished²⁴ - thus, for example, the Business Account Managers, or the Personal Account Manager 'know' who their customers are, they 'know' whether certain customers fall within their remit, they 'know' their files and are alert to the mention, in conversation, on the telephone or in letters or printouts, of particular names. 'Egological organisation' is a persistent feature of organisational life and is manifested in the fieldnotes in statements like;

"I went back to read what had been said, read the paperwork, read the Regional sanction, read what the terms are,..got a feel of what the Bank's feeling was on the account,.. looked at what the arrangement was for the payment of that excess and then considered what he was asking,.."

or, as in this account of a Business Account Manager writing a report, which involves him in finding the necessary paperwork, using account information from the screen, being interrupted, the machine 'going down' and so on;

1. looking for last report from Region (finds it - has been put in Security Requisitions??)
Region agreed with last report - Business Manager....has now agreed to changes.
2. Looking at non-financial information - "quite useful"
3. Has to get 'Action Sheets' - to tell him what forms to use - decides that it calls for 'Interim Appraisal Form' - (but wondering whether it should really be an "Excess Report"
4. Goes to get "Interim Appraisal Form".
5. Going through form - using screen to get information on position of facilities.
6. Filling in form - details of facilities from BAF - into boxes on form - normally gets info from ISS - but down and so uses old report
7. Reads previous report before fits in own account - cant tell from report what's happening with security
8. Interruption..
9. Looking through file to find what security is held - machine still not working - "I'll try switching on and switching off again"

What may be important from an organisational, as well as a 'design', viewpoint is the possible tension between 'egological organisation' and 'awareness of work' of the need to look beyond 'what do I do next' to consider some of the implications of 'what I do' for others in the division of labour. As a manager commented in one of the earlier reports workers need occasionally to look beyond their immediate context at the consequences of their actions for others;

"people are'nt instructed to think through the effect of that change - they're only interested in putting it right"

Consequently, 'standard procedure' may become little better than 'red tape' in which the routines become an end in themselves.

Routine, Contingencies and Teamwork

As in previous reports one of most salient findings to emerge from the fieldwork is that despite the apparently 'routine' nature of much of the work - the stepwise

²⁴ The centrality of structures of relevance for the organisation of social action is discussed at length by Schutz (1970) and Gurswitsch (1964).

completion of particular forms and so on - dealing with the inevitable contingencies that arise often requires departure from the routine in order to 'get the work done'. Furthermore, the closer one gets to the customer, in responding to particular circumstances and requests, the more frequent these contingencies occur to the extent that they often appear to overwhelm the necessarily routine character of the activity. The 'skill' however, lies in knowing when to apply the routine and when to move beyond it. As these two extracts repeated from the earlier fieldnotes show, this is a matter for 'occasional determination' in the course of the work. In this first case the Business Manager exercises 'discretion' to grant a loan that is over his 'discretionary power';

1. Been to see some Drs who have business account with the Bank. Asked for an additional £XXXX for computer -...asked to sanction purchase. Outside DP (discretionary power) (since under Regional Sanction - Agreed - because business is entirely satisfactory - GPs with turnover £XXXXk - profit £XXXX - not reasonable to tell them to wait for such a paltry sum;"I've worked in Regional Lending for 6 years and I know how it works....you've got to put into context my background, the amount of the loan..."

in this next instance the Business Manager, faced with a similar decision, explains the need to follow the routine;

if he said,, I want to issue this cheque for £6000 now..I would have taken the details down, I would have made my decision that I was not going to recommend that, I would'nt want to give him £6000 unless I had a clear exit route and assuming that nothing else had changed.

In the Business Centre then, responding to the particularities of customer circumstances has to work hand-in-hand with Bank procedure. One effect of this is to place greater reliance on the knowledge and competencies of others, and rather less on the computer technology which often gives the impression - particularly in the case of the 'specialised programs' such as GAPP - of 'something that has to be done' or 'something to be got around' rather than something that contributes to the work in any especially useful way. The role and value of computer technology and the place and timing of its involvement in decisionmaking is an issue that needs to be pursued into the next phase of the research.

Local Knowledge

'Local knowledge', that is, knowing within a worker's horizon of relevance additional matters not formally available, or as it might be more simply explained 'knowing the customer' remains important even in large organisations. In the case of the Business Centre, with its emphasis on 'relationship' development 'local knowledge', knowing, in detail, the particular circumstances of individual customers, becomes especially important. Often judgements were based on 'the person involved', 'their situation', and what else was known about the person. As we noted in an earlier report, there is still the notion of 'the customer' around, indeed bank training emphasises it, and not just as some abstracted characterisation. Work in the Business Centre also involves a 'local knowledge'

both of the applicability of particular procedures to particular circumstances and the 'nuanced' expectations of those to whom the workers in the Business centre feel that they are accountable - particularly Regional Office. Thus members of the Business Centre use their 'local knowledge' and experience of their customers and superiors to effect a 'smoother' application of the formal procedures.

Skill

The issue of 'skill' has arisen throughout this project because the development of the specialised centres appears to be directed at reconfiguring the skills required in a manner more commensurate with the technology required for much of modern banking processes - that is, making the skills fit the available technology. The path the Bank appears to have taken (along with most other financial institutions) is, for the 'mass market' at any rate, to separate 'personal' or 'face-to-face' skills from administrative and technical skills and divide the organisation and its personnel accordingly. In the Business Centre this divide is not so obvious, and if anything the emphasis appears to be on developing a range of personal, 'demeanour' skills in order to explain the range of largely rule driven decisions. Decisionmaking itself, despite the existence of 'rules' and guidelines, clearly remains an important 'skill' developed through experience rather than being especially enhanced, at least in any obvious way, by the creation of specialist software packages.

Communications, computer work and paperwork

One final theme that has emerged from the fieldwork has been the importance of communications between and within the various organisational divisions of the Bank. Central to this has been the creation and articulation of various forms of 'paperwork' and 'computerwork'. At the Business Centre at present it remains the case that 'paperwork' dominates, for a variety of reasons. However, as modern banking moves toward increased electronic techniques and methods (GAPP for example), this relationship becomes increasingly important to understand.

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Chapter Two

Documents and the technology centre

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Introduction

This document discusses issues arising from the continuing ethnographic study of a Technology Centre in the north west of England. This discussion is intended as a tentative exploration of the role of document use in contributing to the high degree of co-operation and co-ordination within an extremely complex, dynamic division of labour as seen in the Technology Centre.

In particular this document focuses upon the production, storage and use of documents within the Technology Centre, and argues that such documents must be seen as records within socially organised work activities. This perspective, we will argue, has important bearing upon the design and/or implementation of electronic storage and retrieval of documents within a database system.

The focus upon documents within the Technology Centre is appropriate for a number of reasons.

- a** - As with work in many other organisations, the production of documents constitutes a central role in the work of the Technology Centre, especially given their importance in the crucial work of satisfying the criteria laid down by ISO9000 accreditation. As a consequence many documents produced by staff at the technology centre are not only made available throughout the wider company, but are also frequently subject to 'audit' by institutions external to the company.
- b** - The introduction of the Document Management System in the Technology Centre has recently taken place, and its pilot use has been observed. The DMS consists of a database of OCR'd electronic versions of the Technology Centre's document archive²⁵, to which distributed access is facilitated via the 'Keyfile' system running on networked 486 PC's. Interestingly these technologies have become central to the Centre's paper reduction 'drive' and an examination of consequent issues can offer interesting insights into the organisational implications of the adoption/absorption of electronic technologies. Furthermore a consideration of these themes facilitates the discussion of the particular affordances of paper, as opposed to electronic, documents in a consideration of documents as socially organised phenomena.

²⁵ The title page including introductory abstract and keyword field are stored as full OCR'd text and the rest of the document as a TIFF image.

- c - As we will argue below, documents as records in socially organised work activities play a crucial role in co-operation as characterised by the co-ordination of tasks within a highly complex and dynamic division of labour. Consideration of this element of co-operative work is entirely appropriate if the CSCW maxim is to be followed in developing technology which supports such co-operation.

Documents in Socially Organised Work Activities

The main theme of this research is to emphasise the ‘real world’ character of document use within socially organised work activities. Documents, records, and the like, are often glosses of the work which goes into their production. It is in knowing what the record represents which provides for its situated use within the setting concerned. ‘Knowing what the record represents’ means knowing about the work that produced it, what it means within *this* activity, within *this* organisation and how it might be used. It is to know, for further example, what it means that X produced the document as opposed to Y, where X is a head of department and Y a junior manager. It is to know what actions should follow from, say, a report and how this may be related to other work activities. What documents mean, what they refer to, what they might indicate, what they constitute, what they are, has everything to do with their place within some organisational setting and its activities. Documents are organisational objects and, as such, represent and display organisational activities. This is what they record, namely, activities which are relevant to the organisation's business.

Later in this document ‘informal’ aspects of project work will be discussed. The emphasis of this discussion will be to point out that the practicalities of ‘project work’ depend on, and are supported by, informal interactions which are not, nor could be, formally specified in the project plans and proposals. Of course, and this is a familiar feature of the vast majority of work settings, these interactions are not the only ways in which those involved ‘keep track of things’. There is also, again as pointed out previously, an ‘official regime’ of accountability which is recorded in documents of various kinds. It is these which represent the ‘official structure and process’ of projects and the work that is done in the Centre.

In previous research we have identified the following social features of documents:²⁶

- documents are integral to socially organised patterns of work
- documents are representations of organisational objects and actions
- documents are sedimentations of an organisation’s activities
- documents are shared

²⁶ ‘If All the World’s a Stage Are Documents the Script?’, COMIC Working Paper, Department of Sociology, Lancaster University. The list here is a selection from that found in this working paper.

- document access is normatively regulated
- documents have a procedural implicativeness
- documents tend to be part of a collection
- the sense and import of documents relies upon local organisational knowledge
- documents are matters of inquiry

What these properties are intended to emphasise is that documents have their place within some organisational setting and its activities. They are organisational objects and, as such, represent and display organisational activities; they are relevant to an organisation's business. They represent what this business is in a publicly available way, though not necessarily available to 'just anyone'. Documents are 'shared objects' and for those who know how to use them can constitute a means of making the activities of the organisation accountable and available in various ways. We will argue that a number of these activities are crucial in the generation of the 'orderliness' of activities within the highly complex division of labour and information rich environment that are found within the Technology Centre.

Documents as descriptions

Technical reports are a key 'product' of the work of the Technology Centre, and follow a standard format in describing key technical processes and discoveries in a manner that is intended to ensure that any member of staff is able to reproduce such processes at will. Such descriptions, as with all the other types of documents described here, evoke and depend upon the contextual practical knowledge of the Centre's personnel which gives them their sense as documents of the organisation.

Documents as reports of the organisation's activities

Whilst Technical Reports are clearly descriptions of the organisation's activities, there are also many other documents circulating within the Centre and the broader organisation that are more explicitly managerial and administrative reports. Good examples of these types of documents are Project Control Reports and 'Soft' reports. Typically, and particularly in the latter case these reports are often syntheses of a number of previous reports, and are circulated to members of the organisation's personnel who in turn synthesise them with other reports to offer broad summaries of the organisation's activities.

Documents as produced for the organisation's personnel

As noted above, these documents evoke the practical knowledge of the Centre's personnel, and in a number of ways these documents are designed in such a manner that this can be so. These documents rely on standard formats and

conventional features in order that the information contained within them is available in a manner that is available at a glance to anyone with sufficient practical knowledge of the organisation.

Two good examples of this include, amongst many others, the use of ‘milestones’ within Project Control Reports, and the inclusion of results in a given place within the standard format of Test Reports: the former offer instantly available, organisationally accountable yardsticks of project performance, whilst the latter case enables personnel who are intimately familiar with the practical details of a given testing process to swiftly and effectively access the precise results in which they are interested.

Documents as having official status

A proportion of the Centre’s documentation has ‘official’ organisational status, such as TQM documentation, or any Technical or Test report that is ‘cleared’ by personnel of appropriate status and confirmed as having ‘official’ status. This process is clearly an essential one, particularly since much of the Centre’s documentation is open to external audit, for ISO9000 and other accreditation purposes. Once again the fact that the documentation produced by the Centre evokes practical, contextual or organisational knowledge on behalf of Centre personnel is integral to this accreditation process, a process which explicitly recognises these documents as *accountably* documents of the organisation.

Documents as the basis for future actions

As highlighted in the introductory remarks above, much documentation is not merely a record of ‘what has passed’, but is clearly evoked as a representation of where the organisation *is* at any particular moment, and thereby used as the basis for making inferences about the future activities of personnel and the progress of projects within the Centre. These documents constitute the foundation upon which future organisational actions can be based. This process is augmented by the *accumulation* of documents, as they form a record of, for example, project progression, with all its contingencies, adding further elements to these inferences, and greater detail to future plans (which might, for example, need to be adjusted as documentation accumulates and emerges as a coherent ‘record’).

Whilst Test Reports, Monthly Reports and Project Control Reports can be clearly seen as the basis for future actions, it is undeniably the case that the results within a test report (or indeed a series of test reports) have implications for the nature of future testing, what needs to be tested, which test is to be used, who is to carry them out, and more. Furthermore, documents such as Project Proposals have a ‘procedural implicativeness’, that is, they set in motion various organisational processes with regard to particular forms of costing against the Centre’s budget, a given Resource Area’s personnel and equipment budgets amongst others, whilst the production of a Technical Report on, for example, a new testing procedure, or

the calibration of a new piece of equipment, clearly implies that future actions on such tests or equipment be based on the information within these documents.

Documents as integral features of the orderliness of activities

Fieldwork at the Technology Centre has, in common with other studies, shown that documents are not only socially organised phenomena, but are also integral features of the orderliness of activities within a highly complex and dynamic division of labour. The use of documents generates a solution to the co-ordination of tasks within this division of labour and in many ways provides a socially available location of tasks within an information rich environment.

Documents and the 'egological division of labour'

Within the Technology Centre a broad range of projects and general research work is constantly being undertaken, with the involvement of many members of staff from a range of resource areas being sought at various stages of each project. The working day at the Technology Centre is not one of following pre-ordained work flow processes from their beginning to their conclusion in a series of consecutive steps: rather, and quite routinely, a given individual member of staff may be involved in many projects during the course of the day, dropping more routine tasks related to one project to answer the more urgent call of another. This is what is meant by the complex division of labour, a working environment which clearly requires skilful co-ordination of resources and co-operation between personnel to enable the Centre to achieve its more 'global' goals. That this co-ordination and co-operation is achieved is due in so small measure, we would argue, to the use of documents as coordinating mechanisms by Centre personnel and, in doing so, actively constructing, in the course of their daily work, a division of labour.

While the concept of a division of labour is a familiar one, our emphasis is to focus on the division of labour not as some preordained plan but as a pattern of work achieved in and through the activities of parties to the work. Thus, the notion of 'egological division of labour' points to how the division of labour appears to someone working within it and how their tasks are seen as interdependent with those of others similarly working within the division of labour. Such a concept is used to describe the fact that within a complex collaborative environment, any individual actor (member of staff) sees 'getting things done' as 'doing-what-I-do' and passing on tasks to others so that they can do what they do. Documents attend to this requirement since, as noted above, they can represent where the organisation *is*, in an organisationally accountable manner.

Passing through the organisation, documents gather additions that make plain who has handled the document and in a number of cases what action has been taken as a result (approval for status as a Technical Document for example); in such cases the document can be seen as a 'stratified trace' of the activities of the organisation and can be interrogated to this effect by those with practical knowledge of the organisation itself. Thus the individual member of staff can use the document as means of representing the completion of their task and implying that it is now someone else's task to take further appropriate action. Such a system generates an order suitable for co-ordinating tasks across a complex division of labour, by making socially available allocation of those tasks, and furthermore by enabling the individual member of staff to know what it is they have to do, and what can be left for other elements of the organisation 'to take care of'.

It is interesting to note in addition, that the physical movement of documents from desk to desk facilitates a sequencing of tasks: documents relating to projects that require a particular type of administrative attention can be located on the desk of the member of staff associated with that work (accountancy is a typical example). Its location at that desk serves the purpose of preventing interference from others (whose attention is not yet appropriate: requests for new equipment cannot be returned to Resource Managers until approved against the Centre's budget by personnel concerned with accounts)²⁷.

Another example is seen in the passing of 'soft reports' from Project Managers to Resource Managers to the Centre's Director, with the refining of information at each step: the collection of reported information in the workspace of each member of staff in the chain maintains an orderly working sequence preventing access to documents until an appropriate juncture (when a practical organisationally-informed decision is made by the member of staff), and thereby in turn preventing incomplete reports emerging 'higher up' the chain.

The fact that this co-ordination of tasks is socially accountable (the position, or possibly non-appearance, of a given document is meaningful to personnel within their egological organisation of work) enables those with practical, contextual knowledge of the workplace readily to 'gear into' the progress of these co-ordinated tasks, and adjust their working patterns accordingly, making the institutional structures within which they operate work effectively for them whilst maintaining their collaboration with others in the Centre.

Such ready 'availability' of information concerning where the organisation *is* also facilitates a certain degree of flexibility, allowing personnel to respond to what is typically a dynamic, changing division of labour, as staff at the Centre respond to the myriad of contingencies involved in research and development

²⁷ The 'procedural implicativeness' of a request for new equipment, is that a technical need has been identified that will be remedied by this equipment if approved, thus the budgetary implications need to be checked and approved by 'accounting' staff (this distinction is not a particularly clear one in the Technology Centre) and a response given to the originator of the request who in turn will take appropriate action, by ordering the equipment, for example, or revising the request to a lower value.

work: 'running repairs' to the division of labour are facilitated as priorities change and unforeseen tasks emerge, whilst collaboration, co-operation and the co-ordination of varied tasks.

Informal interaction surrounding document use

The organisational rationale for organising much of the work and the staff into projects is that this better reflects the character of the work of the staff of the Technical Centre. By this means, staff and other resources are coordinated and directed toward achieving the goals of the project. In other words, projects are planned activities involving a continuous process of checking, updating on a project's progress, coordinating available staff time and equipment, and so on. However, plans do not apply themselves but have to be applied within the practical circumstances of a working day. A project plan, as represented in the sorts of documentation we have discussed above, is an abstract construction which requires articulation with and application to the specifics of the circumstances in which it is to be followed.²⁸ More will always be involved in following a project plan than can be specified in it. In practical life plans depend upon 'good sense' and 'practical judgement' on the part of those who are to follow them to make appropriate applications of 'what the plan specifies' in actual circumstances

The co-ordination of the Technology Centre's resources are, quite clearly, essential in the process of carrying out Project work, particularly given the working context outlined already with a broad range of demands being made on any given individual, and the impossibility of any kind of effective day-to-day routinised procedure to working life. In order that such co-ordination might be achieved, a continuous process of checking and updating on project progress, availability of staff time, availability of equipment within the Centre is necessary. Staff also need to know who's busy, what they're busy doing, when they're likely to be finished, what the latest 'discovery' or 'problem' might be, to name but a few of the considerations taken into account when organising work as it emerges.

For example, while it is the case that projects are planned beforehand and project review meetings are held regularly, Project Control Reports completed and filed, the day-to-day monitoring of projects also relies upon a great degree of 'local knowledge' as a resource which, in its turn, is built up and maintained by constant informal and 'unplanned' interaction between the staff of the Centre along side the use of documents.

Indeed it is immediately obvious in the field study at the Technology Centre that this 'informal' interaction also underscores the relationship between staff at the Technology Centre and those at the production sites served by the projects; these 'informal' links with external sites are of vital importance to project work.

²⁸See COMIC Deliverable 2.1 for a discussion of this and other aspects of plans and projects.

On several occasions fieldwork has observed the informal exchange of information following external requests for Technology Centre documentation. Such informal exchanges can be characterised in many ways as a crucial element of the expertise offered to the rest of the organisation by the Technology Centre, since they typically contain the practical knowledge that often ensures successful technical work, through the use local knowledges and tacit skills.

Thus the use of documents and the informal interaction which surrounds that use can be seen as integral elements in the generation of the orderliness of activities through the employment of everyday practical knowledge by Centre personnel, maintaining co-operation and collaboration in a complex and information-rich environment. In addition expertise is effectively offered to the rest of the organisation, and contingencies can be responded to dynamically as they arise.

Concluding remarks

This report draws out a number of issues of importance related to document use in the Technology Centre, informing the development of the organisational browser and office ‘flythrough’. In doing this it has offered descriptions of the ways in which document use is an integral element of the active creation of an orderly, yet dynamic, division of labour within what is a highly complex, information rich environment. These descriptions bring forward a number of interesting research issues concerning the implications of the shift from organisational practice based in a ‘manual/paper’ environment to a ‘networked electronic’ environment.

It is within such a context that this report is intended to highlight the types of activity that must be supported effectively by an electronic document management system in order to contribute meaningfully to the development of these technologies; it is important to stress, therefore, that this document is indeed part of this development process and is in no way intended as a critique of particular organisational practices or technological strategies.

Chapter Three

MASSIVE: A Preliminary Report of an Ethnographic Evaluation

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“There’s no idea of manners or anything... it’s difficult... there’s no social protocol”

Although the fieldwork contributing to this study is still at a relatively early stage, in this report we will attempt to offer a preliminary account of the practice of undertaking a set of organised tasks within a distributed VR environment. In keeping with work emerging in other elements of this strand of the COMIC project this outline has emerged from a series of ethnographic observations of actual VR meetings, whilst this report draws upon the ‘framework for analysing the social organisation of work’ formulated and discussed elsewhere in this Deliverable.

Our aim here is manifold: primarily we wish to

- explore and describe the nature of the ‘real world’ work required to undertake a collaborative meeting in a VR environment,
- offer an evaluation of the suitability of the current ‘incarnation’ of the system in use for the holding such meetings,
- elaborate a little upon the themes we have associated with empirical observations of ‘real world’ co-operative work.

Additionally, and importantly, we wish to

- assess the suitability of applying an analytic framework devised from studies of ‘real world’ collaboration to that observed in a virtual world.

In order to address issues such as those outlined above, any ethnographic evaluation of the use of this system to hold collaborative meetings must bear in mind that the collaboration of individuals *in the real world* is required to collaborate successfully in the virtual world. As much is obvious, but what must also be remembered is that, for the most part, the only means by which this real world collaboration is articulated is through the interaction between participants’ embodiments in the virtual world; the collaborative work of participants is represented to one other, made available to one another, and thus articulated through their VR forms.

As a result, analysis of collaboration in a VR meeting is very much to do with charting the ways in which the system succeeds or fails in supporting this articulator role. In combination with this orientation such evaluation is also concerned with integrating the analytic framework outlined throughout this Deliverable as a set of ‘sensitising concerns’ for focusing design decisions on significant aspects of this co-operative working.

The VR System

The MASSIVE system (Greenhalgh, 1995) is a distributed virtual environment that supports multiple virtual worlds connected via portals. Each world may be inhabited by several concurrent users who can interact over ad-hoc combinations of graphics, audio and text interfaces. The graphics interface renders objects visible in a 3-D space and allows users to navigate this space with a full six degrees of freedom. The audio interface allows users to hear objects and supports both real-time conversation and playback of sound files. The text interface provides a MUD-like view of the world via a window (or map) which looks down onto an infinite 2-D plane across which users move. Text users are embodied using a few text characters and may interact by typing text messages to one another or by “emoting” (e.g. smiling, grimacing, etc.). A full description of the functionality of MASSIVE is provided in Chapter 1 of COMIC deliverable D4.2.

A key feature of MASSIVE is that different user interfaces may be arbitrarily combined according to the capabilities of a user’s terminal equipment. Thus, at one extreme, the user of a graphics workstation may simultaneously run the graphics, audio and text clients (the latter providing a map facility and allowing interaction with non-audio users). At the other, the user of a dumb terminal (e.g. a VT-100) may run the text client alone with a “dumb” graphics embodiment. By using a dynamic brokering mechanism (described below), MASSIVE matches compatible interfaces between objects whenever they meet in space (i.e. on aura collision). The net effect is that users of radically different equipment may interact, albeit in a limited way, within a common virtual world.

Each user may specify their own graphics embodiment through a configuration file. In addition, MASSIVE provides some default embodiments, intended to convey the communication capabilities of the users they represent (an important issue in a heterogeneous environment). Thus, an audio user has ears, a non-immersive (and hence monoscopic) user has a single eye and a text user has the letter “T” embossed on their head. The aim of such embodiments is to provide other users with the necessary basic communication cues to decide how to address them. The basic shape of embodiments is also intended to convey general orientation in a simple and efficient manner.

Two principle interfaces are provided by MASSIVE and a user can experience the environment in a least these two different ways. Figure 3 shows a typical view belonging to a graphics user. The figure is taken from a scenario with five people

sharing a space (we are one of them). Both text-only and audio-graphical interface users can be identified. Figure 4 shows a typical view belonging to a text user. Note the use of simple characters to represent other users, the conference table and walls, and the display of all currently known objects along with mutual awareness levels in the right hand column.

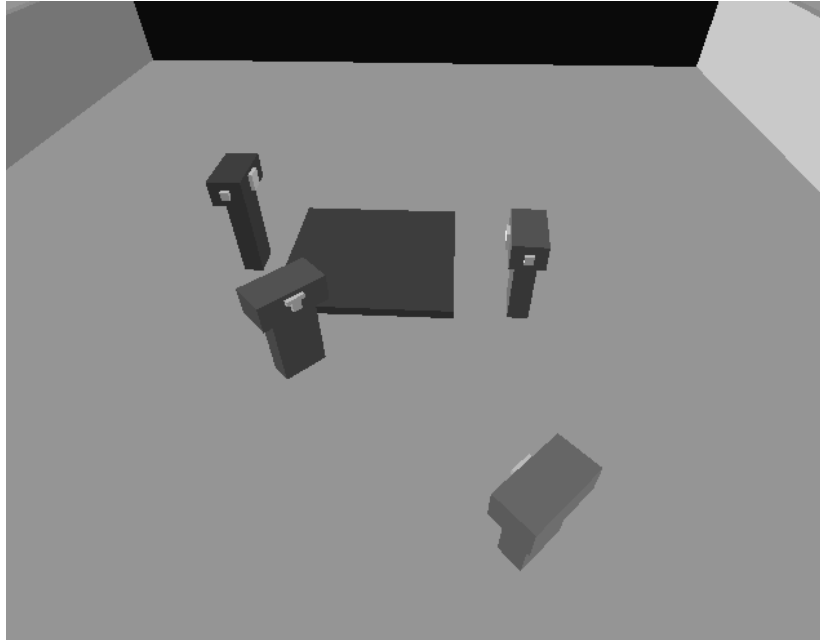


Figure 3: The MASSIVE Graphical interface

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Face: e  At: -0.6, 1.1, -0.7  Focus: narrow
-----
c c c c c c c c c c c c c c  c: conference room
c . + . . . . * . . . . + .  k: kevin
                                | 0-> 0.3, 0<- 0.3
c . + . . . . . * . . . . + .  le: eddie
                                | 0-> 1.0, 0<- 1.0
c * * * * * / * * * * * * * *  lt: table
                                @
c . + . . . . e . * . . . . + .  ld: door
                                |
c . + . . . . . \ . . . . + .  lr: rob
                                | 0-> 0.1, 0<- 0.1
c . + . . . . t t t . . . . + .  lb: bill
                                | 0-> 0.1, 0<- 0.1
c . + . . . . t * t . . . . + .
c + + + + + t t t + + + + +
-----
eddie says pardon : try 20
kevin says 20? what are you planning to do with them?
rob says well, 12 at least
(eddie says sorry, got to rush..)
You say wait a minute, Eddie, we need this
> █
    
```

Figure 4: The MASSIVE Textual interface

The distribution model used in MASSIVE is of independent computational processes communicating over typed peer-to-peer connections (running over standard internet transport protocols). Each computational process may have any number of interfaces, each of which is characterised by a combination of remote procedure calls (RPCs), attributes and streams. This architecture is sufficiently robust and standard to allow a range of different meetings to be held across sites that were geographically remote but connected through the internet.

A number of small-scale feasibility tests for wide area distributed virtual meetings were carried out using MASSIVE between Nottingham and Lancaster and another UK university (Queen Mary Westfield College in London) to hold a three site meeting in January of 1995. After the success of these trials, attempts were made to connect each COMIC partner to each other in small, two participant trials. When it was obvious that it was possible for each partner to contact the others (in isolation) a COMIC virtual project meeting was held. This evaluation reports on observations gathered across all of these meetings.

The sites involved in these meetings were connected in a variety of heterogeneous network arrangements. For example, the network topology for the pan-European COMIC VR meeting is shown in figure 5. Problems often emerged as a result of the particular network infrastructure supporting the virtual meeting. In this case the EMPB router that connects the UK to mainland Europe was probably the biggest bottleneck as this is only a 2Mb line. Large delays also appeared with the internal German networks, but on the whole the network connections were adequate.

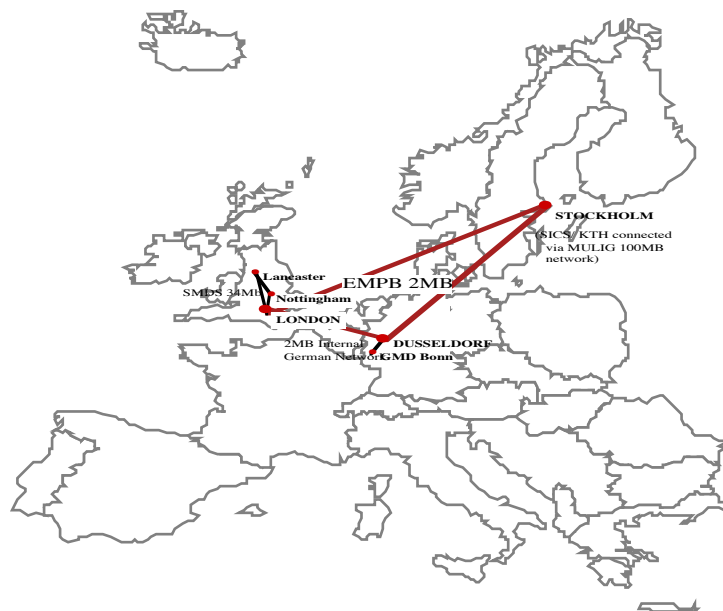


Figure 5: Network Topology for a European wide Massive Meeting

Independently of the actual physical network topology being used MASSIVE defined and maintain an internal virtual space where each participant was present.

The virtual conferencing space used in many of the meetings is shown in figure 6. When people first start MASSIVE they are placed in the Gateway world, from where there is a connection to a Local Gateway (Figure 7). Normally the server software would run at Nottingham, but it is possible for each site to have their own local gateway.

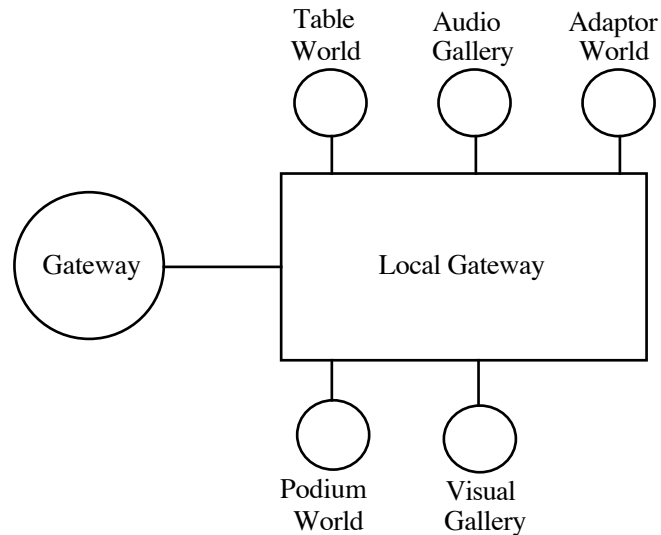


Figure 6: The virtual meeting place



Figure 7 The Local Gateway in MASSIVE

From within the Local Gateway there are a number of available worlds. Various tools are available dependant upon which world you are within in MASSIVE. For example, Adapter World houses a whiteboard, which was used to write down the meeting agenda and make it available to all the participants in the meeting (Figure 8).



Figure 8 Lennart and Steve in front of the meeting agenda

A significant technical infrastructure lies behind any virtual meeting using the MASSIVE VR conferencing system. Users need to establish the connectivity, set up the various process and ensure that configuration files are available. During the meeting user must manage both the space with MASSIVE and the technical infrastructure and communication space supporting it. Often the technical infrastructure stretches machines to the bounds of their performance limits and problems emerge from within the infrastructure. The following section reflects on a series of observations of using the MASSIVE system over a period of time.

The Method

The MASSIVE VR meetings observed in this study have fallen into three broad categories:

- ‘experimental’ meetings, attempting to get MASSIVE to run at a number of sites
- project meetings following agendas

- less formal meetings, used to demonstrate the system and offer tutorials in its use

These meetings have always involved participants distributed across a number of sites within the UK (notably Lancaster & Nottingham Universities and Queen Mary Westfield College) and sites in other European Countries (notably SICS and KTH in Sweden and GMD in Germany).

The observations to date have, for the most part, been of meetings at which the majority of participants have a degree of familiarity with the MASSIVE system, but most of whom are still developing their skills with it. As a result of this, the intention here is not to draw crude distinctions between ‘expert’ and ‘novice’ users of the system and their experiences of using it. Instead we wish to illustrate the ways in which the technology is used in attempts to achieve the successful running of a meeting.

In following an ethnographic approach to this work we have covered two broad perspectives on the work in hand:

- an ethnographic study of the ‘real world’ work to make the VR technology work,
- an evaluation, based on empirical observation of participants’ activity during these meetings, and their experience in using the system to attain their collaborative goals.

For each meeting observed an ethnographer has been present at one of the sites taking part in the VR meeting: this ethnographer observes the participants at the site preparing to hold the meeting, follows that meeting and listens to discussions of it afterwards, making notes and, where possible audio and video recordings of events. These sets of data contribute to an understanding of the first perspective outlined above, whilst also enabling the ethnographer to gather some sense of the activity, within the virtual world, of various parties to the meeting, the second perspective outlined above.

In addition to the material gathered and produced by the ethnographer the video outputs of various machines running throughout the meeting is recorded to VHS and made available for analysis: this material is clearly also of relevance to the second perspective.

Consideration of these two perspectives are then combined to undertake an assessment of the ways in which MASSIVE has supported participants’ co-operative endeavours, focusing on the framework for analysing the social organisation of work, reproduced in a schematic form once again below

Evaluating MASSIVE

In using such an analytic framework when undertaking studies of work, it is, of course, important to stress the fact that we are not offering prescriptive ‘recipes’ for undertaking empirical studies and analysis of work for systems design.

Instead, as we continue to stress, what we are offering is a range of ‘sensitising concerns’ for designers to draw upon in the system design process.

Broadly speaking, this evaluation will focus upon the notion of the **distributed co-ordination** of work as a key theme in this analytic framework: associated with this theme, are those of **plans and procedures**, and the **awareness of work**. These thematic distinctions are clearly interleaved and mutually constitutive in a number of ways, and we would not like to imply otherwise.

Distributed co-ordination

The virtual meetings observed are no different from many other types of working practices observed in so far as they consist of a range tasks embedded within some kind of organised composite of many varied activities. What is of interest, though is the fact such a composite is ‘organised’, and it is such organisation that is, we believe, generated through a process of distributed co-ordination as a routine feature of everyday working.

As noted earlier, distributed co-ordination features include the ability to monitor the activities of others and access to shared and readily available information and it is through ‘presence’ in the virtual world that such co-ordination is intended to be facilitated: the virtual world is, if you like, intended to constitute an artefact through which appropriate co-ordination in is facilitated.

Essentially, from this perspective on the work, the use of MASSIVE is intended as the means whereby the working activities of a number of distributed parties to the work of holding a meeting are represented and thus made available to others as ‘shared information’ integral to the successful completion of this task.

In evaluating MASSIVE as a system for supporting the distributed co-ordination of working practices, we will follow the themes of Plans and Procedures and Awareness of Work in greater detail.

Plans and Procedures

Plans are formulated in order to co-ordinate the work of numbers of people (in this case distributed over disparate sites) so that their separate and distinct work activities comes to have a coherence: in this case, so that they successfully cooperate in holding a meeting. When we speak of plans in this context, what we are interested in is the ways in which they are used as co-ordinating mechanisms within socially organised ‘real world, real time’ work activities.

It is, for example, a commonly held observation in empirical studies of work that following a plan will always involve more than can be specified within the plan itself, and that a range of competencies and skills will be bought to bear by parties to the plan in order that it can be followed. As a consequence, as highlighted earlier in this Deliverable, plans are ‘recipient designed’, that is, practically explicated to a sufficient degree for those who are to follow them. This is based upon and an understanding of the extent to which those following the

plans are familiar with the context in which the plans must be followed and on the fact that these people are at a level of experience necessary to complete those plans.

In addition we would contend that ‘procedures’, closely associated with ‘plans’, are the subject of ‘situated interpretation’, rather than slavish adherence: procedures do not simply ‘carry themselves out’ just as plans do not simply ‘fulfil themselves’.

Whilst procedures seen as necessary for the successful completion of a task such as ‘holding a meeting’ might be thought of as straightforward - simply turn up, listen and contribute where necessary - our observations of the VR lead us to contend otherwise. The skilled judgement and effective co-operation, displayed by those observed in the set up of the meeting make clear the extent to which such a view of plans is supported by empirical observations of these activities.

Meeting set up

Meetings are planned via the research group’s Email list, and on many occasions an agenda is drawn up in advance. It is in setting up the virtual meeting that these plans are instantiated through the activities of parties to the meeting. Immediately obvious from the following fieldnotes is the exercising of judgement and skill by PC in making the technology do the work asked of it by the plan.

Close to agreed meeting time (agreed via project’s Email mailing list) PC is checking network activity of machines that will participate in the meeting. Notes activity and thus starts up MASSIVE.

Problems with audio... there are other embodiments present but no audio: dead silence
 PC using text channel... asks for help.. no text response from any one else
 ‘tempted to restart it, but I don’t want to lose this... I think the audio’s independent’
 Attempts to fix audio - no joy - s/one starts to back up arb: ‘Oh no’ - it’ll slow everything down: P mails him, asks him to delay back up.
 Eventually restarts MASSIVE - informs others via text channel- ‘should clear everything out... just make it work’
 Re-enter MASSIVE env. burst of audio ‘Hullo - anyone hear me? Anyone there?’
 Approaches AF, says hello, no response AF heads in other direction

PC shows a considerable skill and resourcefulness in the face of contingencies that emerge to make problematic the fulfilment of the plan: he checks the network activity of other machines he knows will be used in taking part in the meeting and upon seeing activity he surmises that others are running MASSIVE and proceeds to launch the application on his own machine.

His audio channel is not operating successfully, the first problem and so he asks for help via MASSIVE’s text interface. This request for help is based on his knowledge that the system is being developed primarily by members of one institution taking part in the meeting. When no-one responds to him he considers his course of action and attempts to fix the audio first by altering various of

MASSIVE's audio settings and then by fiddling with the audio jacks in their sockets.

In the middle of this, PC notices MASSIVE's performance markedly deteriorate, he checks his machine and realises that someone located elsewhere within his institution starts to back up the server(called 'arb') which he is using. This is highly problematic in that it will continue to affect the performance of MASSIVE for this set-up period. To avert such problems PC fires off an Email to the individual his local knowledge tells him is usually associated with the task of backing up 'arb', requesting that the back-up is delayed whilst the meeting is taking place.

Such activity clearly relies upon PC's ability to make judgements about the activities and knowledge of others, both associated with and removed from the meeting and his skilled ability to draw conclusions about the nature of the technology he is using (he knows, for example, that he need not necessarily quit MASSIVE's visualiser in the first instance when he is having audio problems, the two are independent elements of the system). Following the procedure to implement the plan (to hold the meeting) is by no means a simple activity: local knowledge and tacit skills have to be employed in the process. It is also interesting to note that PC makes his actions available to others using alternative means ('flagging' his activities via the text channel) when MASSIVE's full facilities are not available for him to do so - he is able to exploit his knowledge of the system to keep to the spirit of the plan despite the contingencies that arise.

In addition to the skill and judgement of single users in isolation, **before** groups of users collaborate in holding the virtual meeting, a considerable degree of co-ordination, both between separate users at the same site, and between users at sites remote from one another, is required **to set up the meeting in the first place** (to undertake the procedures necessary to facilitate fulfilling the plan) as we can see from the following example:

JF & PC observed at Site A
BH & SN at Site B
JF enters room (the real one!) - 'Has it started?'
JF goes off to loo
BH asks if everyone's there who should be?
PC - JF's gone to loo!
BH starts meeting... PC focuses on him, initially
BH gives progress report - asks PC for Lancaster report
JF enters
PC says he will pass over to JF, who is starting up his own body: BH passes on to RK
JF starts up 'which world are we in?' PC tells him - appears to 'kill' PC who loses audio.
PC turns to JF: 'you've disappeared JF, can you hear anything?'
JF - not yet
PC - tries audio: then 'are you using the old version, JF?'
JF - Don't know... what's speech supposed to be on?'
PC - G
JF - Right
PC - have you got sound?

JF - yeah, got it now
 PC - you've probably killed mine: a reads text: 'SN [at Notts] says leave the room and come back in again'
 PC tries this while JF continues

JF, who enters the ('real world') room late, has to ask PC, which of MASSIVE's worlds they are in so that he can join in and contribute to the meeting. They also discuss possible solutions to the audio problem, and to the likelihood of JF's launching of MASSIVE having 'killed' PC's embodiment. Eventually a participant at another site offers them advice via the text channel as to how their difficulties might be overcome.

Such interactions, not at all untypical of setting up a meeting in MASSIVE, makes clear the co-ordination required of participants' activities as they undertake the set up. This co-ordination is based around the routine deployment of sets of skills and local knowledge (who knows what, who's busy, who's worth asking about 'x') and is entirely characteristic of much collaborative work. What is worth noting here is the extent to which this collaboration and co-ordination is required **for the purposes of establishing** a collaborative virtual environment.

Awareness of work

As we have stated before, this co-ordination of work to implement plans and procedures requires a degree of awareness of the work of those with whom the collaborative work is taking place. Of interest in the consideration of the social organisation of collaborative working is the way in which work tasks are made available to others as a matter of routine and the way in which this constitutes a major aspect of the means through which co-ordination of work tasks is achieved *as a practical matter*.

In terms of considering use of MASSIVE for collaborative meetings, it is stating the obvious to assert that users' embodiments are intended as representations of the presence (and therefore to some degree 'the work') of each user for the benefit of others - to make possible an awareness of their work. It is around this fundamental premise that the complex nature of collaboration in both 'real' and 'virtual' worlds exists.

Degrees of presence

If MASSIVE embodiments are to represent effectively the participation of users in the meeting a number of complexities must be borne in mind, not least the thorny problem of degree of users 'presence' in the virtual world. In the following example JF, who is participating in a meeting in MASSIVE, is interrupted by a more pressing concern (his boss) in the 'real world', removes his headphones and turns away from his screen to talk with the interrupter.

PC restarts - gets audio back - can hear progress report from other site: broken up

...

JF is talking to BB in real world (phones off): PC hears a question - thinks its for JF... tells him, JF still embodied in virtual world: has to switch back... hasn't heard question... can't pick up what's going on

Unbeknown to JF a question is asked of him in the virtual world, and it is left to PC to prompt him to 'return' to the virtual world. Turning his attention back to the meeting swiftly, however, leaves JF unable to 'pick up the thread', and as a result he cannot contribute effectively. In this example then, his embodiment in the virtual world was not able to make available to others the true nature of his work.

Discussing this with PC afterwards, JF highlighted the difficulties presented by presence in both the real and virtual worlds:

"Yeah like then... er people were talking then and BB was talking [in real world], so I was talking to BB... you've no idea, you've got two completely different conversations going on at the same time... you've got no idea"

Unexpected benefits

There are, however occasions when presence in both worlds can be beneficial for users of the system. In the following example, JF and PC are running MASSIVE on different machines in the same room:

JF covers mic and turns to PC I've got a 'fork fail' on Orchid - they discuss this in room momentarily - don't pay attention so much to meeting - discuss version of DIVE 3 that someone in meeting is trying to ftp - have they got it? what version is it... ' PC; "it's the binaries?"

Here the users' ability to 'side-step' out of virtual world and, in the real world, confirm the detail of what's being discussed in the meeting and to discuss a potential technical problem that is emerging.

Whilst this is clearly of benefit to those switching their attention out of the virtual world, what are the consequences of this behaviour for others who remain embodied in the virtual world? If these other users are, erroneously, depending upon the embodiments as accurate representations of the work of their collaborators in order to co-ordinate their behaviour, confusion will arise and co-ordination will break down.

There are a number of examples of precisely this type of confusion occurring, for example people interrogating bodies that are 'dead' (crashed and 'left behind') or temporarily uninhabited (those whose users are prone to lavatory breaks and the sudden recall of urgent phonecalls to be made).

By way of further contrast, however, there are important examples of occasions when switching between real and virtual worlds is done explicitly (flagged to other participants in the meeting) and successfully (confusion has not arisen). In these cases participants are provided with an accurate awareness of the work of the user 'switching' between worlds and are consequently able to co-ordinate their work with this:

BB enters room (real one!), asks who's there, asks when next planned meeting is
 JF (using MASSIVE) relays q to VR meeting: 'BB's here, wants to know when the next meeting is
 relays answer:
 BB: are they busy tomorrow at 5?
 JF relays q... gets response: to BB - "do you want a meeting?"
 BB - no, not particularly... but if there's someone around
 JF - (to meeting) is anyone free at 5 tomorrow?
 BB wants to demo this to assessors
 JF - AF will be there
 BB - great.

What is interesting to note in these cases, then is that the problematic nature of embodiments and their role in making the work of participants available to others is not one that *of necessity* requires a technical solution. In some cases the degree of presence 'problem' and its problematic implications for co-operative working is overcome, by what is essentially a socially organised solution.

Use of audio channel

'When you lose the audio you lose everything'

There are, in addition to the degree of presence issue, other elements of the use of MASSIVE which are worthy of consideration with respect to the notion of the awareness of work. Perhaps the most outstanding of these emerges from a consideration of the primacy of participants' use of the audio channel in doing the work of running the meeting.

Observations of meetings in MASSIVE tend to show that the vast majority of the work to co-ordinate activity in the virtual world is done via the audio channel

- when people join a meeting for the first time, they tend to wander around saying 'Hello!', 'Can anyone hear me?' and the like
- when a participant's audio fails they feel like they have 'lost everything', and that the space is no longer a collaborative one
- by and large if people are doing something other than 'sitting and listening' they have to tell other participants what they are going to do (momentarily turn their attention away from the virtual world;
- and perhaps most significantly they do not have the opportunity to take advantage of the broad range of subtle uses of the body and the environment in which work is done to make others aware of the nature of their work

Such restrictions can be seen in a crude form in the following examples:

JF & PC observed at Site A
BH at Site B
 End of reports: BH asks if there's anymore DEVRL stuff that anyone wants to talk about...
 silence... [no way for people to shake heads]... just have to wait for response or lack of it!
 PC looks over shoulder, checks out JF's machine
 More silence in meeting

JF asks question - when is meeting? silence no response. No way of knowing if people have heard

BH leaves, “bye” - “bye then”

End of reports: BH asks if there’s anymore DEVRL stuff that anyone wants to talk about... silence... [no way for people to shake heads]... just have to wait for response or lack of it!

People start playing around with embodiments: flying, sinking through floor, doing Jaws impressions

After 5 - 10 minutes

PC asks if that is it... everyone continues to wander around “someone has said is that it? and now everyone’s just wandering around”

BH attempts to wrap up: ‘have we had enough?’: ‘MASSIVE saturation?’

More silence in the meeting

Here we see the problems associated with the participants’ limited opportunities to use the embodiments to make others aware of their work. Unlike a meeting in the real world, participants are not able to make plain certain highly meaningful nuances of their perspectives on the virtual meeting - rapt attention on the speaker, rapt attention elsewhere (the latter surely as if not more meaningful than the former), a burning desire to speak, having nothing to say, vigorous concordance or disagreement, generally speaking, all the subtle means of making other participants aware of your participation with the supportive feedback and turn-taking cues associated with achieving and maintaining discussion.

Given that one of the most important elements of holding a meeting is, then, the ability to maintain a reasonable flow of discussion, the silences, lengthy pauses between comments and unanswered questions seen here present real problems to participants in achieving the work of ‘having a meeting’. As PC said after one meeting:

“It’s really difficult talking to people on that thing because you’ll say something, and you’ve no idea whether they’ve heard you, and then you don’t know whether they’ve heard you and they’re just ignoring you, and then they don’t know what to say, and they heard you and they’ve heard something which you can’t hear and so you haven’t replied. You’ve no idea...”

Precisely what PC identifies as missing, then, are a whole host of issues to do with supporting the awareness of work - there is no way of knowing the precise (perhaps even approximate) nature of others activities, activities which are central to the task in hand. He has no way of being aware of the **meaning** of the non-response of others, and is indeed left wondering whether his words have been heard at all.

The absence of a sense that the MASSIVE embodiments are doing any meaningful work in representing the activity of participants to the work or in making the user aware of the work of others, can clearly be seen as a result of the crude ‘blocky’ nature of those embodiments²⁹. This promotes the primacy of the

²⁹This is, in itself, a result of a combination of the pressures of the capabilities of the hardware in use, bandwidth pressure and the nature of MASSIVE as a concept demonstrator. It is important to note that no criticism of the system or those who design, maintain and regularly use it is implied by comments such as these. What is being pointed out is that future development of such systems might like to consider these issues as potential avenues for development.

use of the audio channel amongst participants, and leads them to regard the embodiment as of no interest as a mechanism for making others aware of their work, as is illustrated by the following comment from JF.

“Yesterday I was wandering around the room as I was talking, and it doesn’t make any difference. The audio is not linked to the video... so if I’m bored, I’m going to wander up and down, like, and tilt, and put my ears on.”

Use of embodiments and space in the virtual environment

Importantly, however there are a number of occasions when meaningful use of the embodiments and the virtual environments is made in doing the work of the meeting. In the following example CT distances himself from a group gathered together ‘messaging around’ in the middle of a virtual ‘room’, he moves over to the ‘board’ at one end of the ‘room’ upon which the agenda has been entered, and calls everyone’s attention to it.

CT at Site B
 TS at Site C
 CT stands next to ‘board’ which has the agenda upon it. Separates himself from others
 “OK everyone, we’re all here... gather around and we’ll run through the agenda... [Pauses while people continue to talk]
 Order! Over here!
 [Quiet(er)]
 Are we all here? Where’s TS? [Pause]
 [Someone else says he’s late]
 There is a sort of rough gathering away from CT, but vaguely oriented to him and board. CT runs through agenda: others appear to follow.

Here CT makes use of an artefact within the environment that can he exploits to make it ‘meaningful’, with the agenda as a point of focus, calling the meeting to order. He separates his embodiment from the group who have not begun the meeting and in combination with the agenda uses his embodiment and the environment effectively to ‘start’ the meeting - clearly a meaningful activity, making others aware of his work in the meeting.

Also emerging are occasions where participants are able to make use of some of the facilities MASSIVE offers to embodiments in the virtual world. in the following example the work in hand is apparently a more straightforward one than holding a meeting - it is simply to gather in a circle to prepare for a group activity:

CT suggests gathering in a circle. Some complaints... notoriously difficult to manage. Problems of orienting one’s own embodiments to those of all others. Some attempts at first, people’s embodiments run through each other.
 Someone from Site B explains that you can switch to a bird’s eye view and see your own and other embodiments from directly above, much easier to orient embodiments in relation to others.

Initially users struggled to co-ordinate their position in relation to other users, before it was pointed out that they were able to 'leave' their embodiments and look down on them from above, making such co-ordination much more manageable. Here the ability to exploit the 'freedom' of viewpoint in MASSIVE contributed to the successful completion of a task by making all participants aware of the work of others.

Some concluding thoughts

"There's no idea of manners or anything... it's difficult... there's no social protocol"

This evaluation has outlined some of the ways in which co-operative work is required from the outset in implementing the plan to hold a virtual meeting in MASSIVE. It has also revealed the ways in which MASSIVE has succeeded and also failed in supporting certain key elements of the socially-organised activity of holding a meeting.

Whilst it is worth noting the ways in which MASSIVE, in its own right, facilitates some forms distributed co-ordination and hinders others, it is equally important to bear in mind that the 'solutions' to some of the problems presented by the system in use are ones of social organisation as much as technical functionality.

As highlighted by the quotation from one user, the system is not currently providing for the fundamental basis of social organisation: users are currently unsure as to the **social meaning of activities** in the virtual world. As a result, distributed co-ordination and the awareness of work, mutually constitutive elements of the collaboration required to implement certain plans and procedures is hindered, even made impossible. Clearly these matters might be remedied by technical 'improvements': depending on who one could hear and see, the dynamic updating the appearance of one's embodiment to those people would offer a crude sense of who might be listening to or looking at a speaker, for example. Importantly however, and there are several examples of this already happening³⁰, the emergence of certain "social protocols" could be fostered that contribute to the awareness of work so crucial in achieving distributed co-ordination - JF's desire for 'manners' could be seen as essentially the desire for a social system through which a world known in common might emerge, facilitating the successful co-ordination of distributed work activities. It would be wrong to rush to a condemnation of the technical, without a full consideration of the potential for new protocols to emerge and facilitate particular awarenesses and forms of co-ordination.

It is also worth noting that there are a wealth of alternative work activities that might be undertaken more successfully within MASSIVE's distributed environment: to condemn it as 'not supportive of co-operative working' on the

³⁰JF's successful 'flagging' of his attention switch from the virtual to the real world and CT'S use of his embodiment and the board to begin the meeting are good examples of this

basis of a single would be naïve in the extreme. The ‘problems’ highlighted here by the framework for analysis (the limitations resulting from the primacy of use of the audio channel, for example), might of course be as much a result of the type of work activity observed, as the system itself. Observations of other work are clearly required before a conclusive evaluation can be offered.

A brief reflection on the application of the analytic framework

What we have offered here is the application of a framework for analysing the social organisation of work to produce an evaluative account of the use of MASSIVE for holding virtual meetings. The application of this framework has taken place in consideration of work in both real and virtual worlds, an important ‘test’ of the framework itself, particularly given the current trends in the ‘electrification’ of work and organisations. It has show that, just like ‘real world’ meetings, virtual meetings must be thought of as socially-organised, and that their embeddedness in ‘the electronic’ does not exclude them from the appropriate considerations of distributed co-ordination, awareness of work and plans and procedures.

The use of such a framework can be seen as a successful endeavour to the extent that what has emerged is a set of evaluations of the system based around its ability to support certain key aspects of the socially-organised activity of holding a meeting: where the framework has drawn attention to the systems’ failure to support elements of work described in the framework, the ethnographic record has shown problems with the participants’ endeavours to collaborate and co-ordinate their efforts in a manner necessary to run a successful meeting.

Should those who design and build MASSIVE decide, the issues raised here as ‘sensitising concerns’ for design could clearly be used as the basis for another design iteration, if support for certain of these important elements of the social organisation of work were to be facilitated.

Chapter Four

The politics of meetings and their technology — two case studies of video supported communication

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Introduction

As multimedia technology becomes less expensive and easier to use, video communication will become a salient feature of many applications for Computer Supported Cooperative Work (CSCW). Video supports non-verbal communication and peripheral awareness (Pagani & Mackay 1993), informal communication (Root 1988) and contributes to the building of rapport within groups of geographically-dispersed individuals (Abel 1990). Users like video (Tang et al 1993), even if work exists to suggest that the value added by real-time, visual communication is negligible (Ochsman & Chapanis 1974; Gale 1990) and that the success of dedicated facility teleconferencing has fallen short of commercial expectations (Egido 1988). However, to date, few such systems have moved beyond the laboratory and, as a result, there have been few opportunities to consider and evaluate the use of cooperative multimedia within natural work settings. Furthermore, we believe the self-assessment exercises carried out by research institutes (Bellotti & Sellen 1993) are insufficient to evaluate the full use of video-supported communication in an organisational context.

While research continues to suggest the *potential* of CSCW solutions to the coordination of distributed working (Malone et al 87), it is still the case that organisational implementation is frequently less than straightforward, involving not merely technological issues but also important organisational factors (Orlikowski 92). Similar experiences have been made throughout the history of IS development (Keen 1981; Kling & Iacono 84). Controlled experiments in laboratory-like environments often show increased technological efficiency and effectiveness, however, and in contrast, the move into the 'real world' of organisational use often proves disappointing (Dennis et al. 1990; Grudin 1994; Greenberg 1991; Egido 1988).

There are, then, clearly technological challenges concerning the implementation of video systems, however this paper emphasises the importance of viewing technology as enmeshed in the 'politics' of the organisation and that consequently any evaluation of video technology needs to take into account the implications and contingencies of organisational policies, politics and work.

The two case studies considered here allow us to offer some evaluation of the video systems in use, albeit systems which are used for different purposes: selling a product, as in the bank, and holding a meeting, as in the technology centre. Whilst small in scale, these two examples are intended to illuminate the wider context which bears upon the effectiveness of video based systems.

Placing video in its organisational context - the 'politics' of video.

Traditionally, problems associated with the introduction of systems have predominantly been defined from a development perspective (Andersen et al 86); insufficient analysis, careless design or incomplete testing and narrow communication lines on the managerial level being seen as paramount problems to address. These problems can perhaps be approached textbook-wise, and resolved with new and improved methodologies. Much previous work also takes the stance that lack of success stems from an organisation reluctant to change, even for the obvious benefit of the enterprise and its members. Thus, the job of the system designer includes the necessary effort to persuade managers and workers into changing the organisation of work, the work procedures, or even the people and their skills, to accommodate the technology being introduced.

To facilitate the adoption of multimedia technologies to support cooperation, Francik et al. (1991) suggest that several issues should be carefully considered:

- 1) Identify the suitable applications domain in which to introduce the system.
- 2) Assist the members of the organisation to envisage future use.
- 3) Select the right group for a pilot test situation.
- 4) Be careful not to ignore the actual distribution of work.
- 5) Even if a group seems to be clearly defined through its co-location, communication between group members and external parties can be more frequent and more in need of computer-mediation than the internal interaction for which there already might exist ample means.
- 6) Equipment should be assigned to group members according to the nature of the work they perform rather than the traditional roles of manual office routines.
- 7) Training is important.

As the following empirical studies suggest, adhering to such principals is no guarantee for success: in the example from the bank a thorough feasibility study *was* carried out and yet the system has still failed to meet expectations of it. Videolinks are introduced and developed in accord with a range of organisational, managerial and local priorities and policies; priorities and policies that are themselves subject to change and may even, in some instances, be in conflict. This is hardly, however, a novel situation as Yates (1989) notes, though for a

much earlier period (1850-1920) and much less complex technology. She shows how changing organisational demands for complex and formal communication systems allied with the development of new managerial philosophies resulted in particular deployments or usages of technology. Yates paints a complex, multi-layered picture of the interaction between the developing technologies, organisational requirements and evolving managerial philosophies.

Instantaneous access to expertise

At the Bank, the desktop video conference system became the central component of the RATE (Remote Access To Expertise) project. Internally known only as the *Video Link*, it had been installed in the 'Telehelp' section of the Insurance division of the Bank. One aim of this 6 month part of the project was to obtain customer and staff feedback. Furthermore, the Bank's research department wanted to consider other possible applications, such as in Home loans and in the Foreign and Commercial sectors, as well as assessing beneficial effects on the collaboration between staff in service centres and branches. In what follows we present fieldwork materials to illustrate the video technology *in use* in both the bank and the technology centre. Our aim is to show how larger organisational issues can interact, in complex ways, with the use of the technology under consideration.

Policies & politics

The role of the Telehelp team is to give insurance advice to customers as part of the wider bank strategy of centralisation of expertise and cost reduction. Several policies can be identified as part of this strategy. Firstly, increased routinisation of cases brings the cost down. Not only are exceptional cases more time-consuming to evaluate and record, but the decision making process in itself require experience and expertise that increases labour cost. By offering a standardised product, not more and not less, the Bank can rely on less educated, younger staff. This is traditional hierarchic organisational design and, as long as the exceptions are few or easily dealt with, e.g. by referring 'difficult' customer to other companies, it tends to work quite well. Also, the carefully calculated risk profile of the insurance services offered is more thus more safely maintained. Secondly, centralisation of expertise is one of the Banks explicit organisational goals. The people that now make up the service centres used to work in the 'back offices' of the branches, and were often all-rounders who preferred less pressure from customer contact and sales orientation. By bringing the back office staff together, many more branches can be served by the same people. This is happening in combination with increased specialisation, making training and managing easier, and perhaps increasing the individual competencies, albeit not those of the individual. Finally, increasingly international and competitive markets, alongside with a more mobile customer basis, have forced the Bank to abandon the

perspective of administering accounts. Not only has the business expanded and taken up new areas, such as insurance, but reduced profit margins have made the product focus paramount. Banking is now the business of selling financially related products. The aim for each individual staff should not only be to provide satisfactory service to the customer, but to take that opportunity to offer him additional products.

The use of the Video Link & Workflow system

One integral part of the Video Link system was the Workflow package designed to be used alongside it. From the managers' perspective, workflow systems are good because they enforce the business rules, and in this case it was intended to make sure that all the accepted home covers complied to the risk profile of the unit. For instance, the system would not let the specialist quote for properties in areas with higher than average crime or with a history of subsidence. The workflow system would also enforce limitations on the estimated value of the property and which occupation the owner or the tenant could have, i.e. no DJs or students. Perhaps as important is the normative effect on the behaviour of the workforce, which makes control easier and reduces the need for training. With a well-designed workflow system, people with little or no background in banking or insurance could be brought in to sell insurances, because all the rules they were supposed to enact during the interviews would be maintained by the system. On the other hand, the workflow system was also expected to make better salespeople out of 'back office staff' by displaying on the screen the right responses to negative customer reactions, alongside with a suite of effective selling expressions.

A typical session on the Video Link could look like:

1. Using phone - call (has phoned back to branch who has customer waiting to use link - phoned earlier to say they were available) - using videolink - intro - host at branch; customer...using headset (problem of feedback when using speakers) - customer using speakers.
2. Using screen - filling in details on form - asking customer questions - name; date of birth; initials; occupation; post code - then tells customer address - street/rd - (say that this impresses customers) asks for house number
3. Transfers info over - explains that this will take a few seconds and will make her image break up/go fuzzy a bit - asks to check if its OK.
4. Goes through policy - filling in form on screen - and asking customer questions - building and contents; rebuilding costs; contents; accidental damage; away from home.
5. Transfers quote over - explains again about the image breaking up.
6. Goes through the figures - gives details on policy - what it covers in addition - cycles; frozen food; £ 2 million owners liability; - and outlines repayment details.
7. "Do you know roughly what you are paying at the moment?"
8. Offers to print out quote - to take away and compare.
9. Takes daytime telephone number - "in case we need to contact you for any reason"
10. Gives 'official data protection script - on card in front of screen.
11. Transfers 'features and benefits' of policy (a list of other items covered by the policy).
12. Customer does questionnaire in branch - operator has headset on - can hear

13. Gets printout.

The first releases of the Video Link package included document sharing and a whiteboard as well, although experience had later modified and effectively reduced the usage to a simple Video Link and screen transfer of completed documents. For example, initially customers had ‘shared’ the document/form as it was being prepared by staff, but spelling mistakes had tended to erode customer confidence; consequently at the time of the study customers were only shown the finished form and asked to confirm details. Additionally, when document sharing was being used, while the ‘expert’ was dealing with Question 1 the customer may have read through to Question 6; and there were problems when the ‘expert’ pressed the wrong key. The managers also felt that if they made the customer focus on the document-oriented nature of work, they would miss out on the most important part the interaction from the Bank’s perspective, namely the non-verbal communication and facial expressions of the specialist making up the ‘sales pitch’.

There was a general belief that the customer needed to feel that they were speaking to an ‘expert’ capable of providing a service *above that* offered by the branch staff, thereby building confidence in Bank services which, it was hoped, would then be extended to the purchase of other bank products and services. This was expressed by managers as a concern about the loss of expertise from the branches as the back office staff were moved into customer service centres. The Video Link offers direct customer contact in a situation where the people with the deepest product knowledge are geographically dispersed from the branches. Furthermore, albeit not particularly for insurance products, the instantaneous access to expertise offered by the Video Link could potentially serve customers immediately. In some situations the customer’s local branch collects essential information, compiles a query for the centre that responds directly to the customer after a period of days or weeks. The Video Link could in this way be seen as improving customer relations, as well as rapport between staff at different locations.

Organisation of work

The Telehelp team was managed in a process oriented way with a light panel keeping them continuously updated on average service, waiting time, calls answered and calls in the queue. The panel also showed how many of the group’s members were ‘not ready’ and performance sheets for each period were put up on the wall. Various managerial sanctions are available to ‘improve performance’. Company politics were thus implemented both as a set of managerial sanctions as well as socially through various forms of peer pressure. It is in this context of intense pressure to perform that the Video Link would eventually be evaluated.

At the time of the study the Video Link was set up between the Insurance centre and ten Bank branches; and staff, selected for their insurance expertise, had

been trained to use the Video Link. The training had to a large extent been presentation oriented, and the specialist had also received instructions about how to use and interpret the workflow system. We have already emphasised the importance of 'expertise', and the branches will when preparing the customer for the Video Link make sure to imprint the expert status of the person at the other end. The interesting point to observe is that the Insurance Service's specialists aren't really supposed to be *experts*; they are, on the contrary, trained to follow procedures and either ask their supervisor to sanction exceptional or difficult cases, or plainly reject them.

Previously consisting mainly of 'back office' staff, but now increasingly recruiting 'salespeople' with alternative backgrounds, e.g. restaurants, hotels, the Insurance Centre does not encourage direct customer contact. This is of course not only a matter of staff not wanting to work with sales, it is also from a belief that it will be much more efficient to serve customers via the branches, or even better, directly on the telephone from their own home. The Insurance Centre does not have a conspicuous entrance or customer conference rooms. Some tension has arisen from this division, centralisation and specialisation. The foremost reward scheme in the Bank is that of 'sales points', which is a metric assessment of the commercial value of each transaction. The sales points for individuals and groups are added to see if they have met their expected standards for the period. There is, in other words, little to be gained in the short term for the branches to function as mediators of transactions between the customer and the service centres. The competition for sales points can create conflicts.

The work that makes technology work

What is perhaps less obvious is the considerable amount of 'work to make the Video Link work' both in the immediate context for the operator and, in a wider context, for the Manager of the Telehelp team. For the operator this principally consists of demeanour and 'face' work to make the customer feel at ease as well as the way in which the Video Link work is articulated or enmeshed with other aspects of the organisation of insurance cover, work that takes place away from the 'video booth'. For the Manager there is a need to balance his resources between the telephone and video lines; to ensure staff support for the Video Link and to attempt to encourage branch utilisation of the link. Experience – the comparative infrequency of calls – had also reduced the manning level of the video booths so that at the time of the study branches were phoning the Telehelp section in order to get the booths ready and manned for incoming calls. Again this was a product of the 'micro-organisational' politics of the office. The selection and training of an 'elite task force' for the Video Link was a process which, in its identification of *expertise* had, apparently, created some tension within the section. The Telehelp team worked under intense pressure to answer calls and besides the manager's concern to keep the 'response rate' high (at an average of 6 seconds wait), there was some resentment that the RATE team were not 'pulling

their weight'. The Video Link was regarded as very 'resource heavy' in comparison with the phone. For example there was a considerable difference in the time taken to complete a transaction - 5 minutes phone compared with 20 minutes Video Link - and there was a similar difference in the 'conversion' rate (how many calls resulted in actual policies) although this was partly because of the 'novelty' factor; bank customers were interested in the kit, not necessarily the insurance policy and also because branches were given a bonus for using the kit and therefore they "dragged all sorts in to use it".

1. PC1 - 'live' call from MK (i.e. - a customer not a test)
- 2." Hi J" (branch assistant)..talking to customer - "My name is...I need to take some information today.." Explains about transfer of data - 'picture freezes' - "At the bottom of my picture you should see some bits filled in" (contains name of branch and operator)
3. Taking details - name; initials; d.o.b; occupation - 'housewife'; "that's an occupation in itself.(laughs)"; takes postcode - gives street asks for house-number; - "I'm transferring across to your screen the information you've given me - can you just check that its correct.."
4. Working through details of cover - buildings and contents - asks about present insurance.
5. Explains about 'quick quote' - going through details - rebuilding.
6. Explains standard cover and accidental damage "if you put your foot through a ceiling..".."there's a difference of about £15 on the premium so its not that much.."
7. Explains buildings and contents cover - "buildings..includes everything that's fixed to the building"... "its a new for old policy so you must be sure you give me the full replacement value." explaining cover (again) "if you spill something on the carpet.."
8. Items taken away from the home - items over £1000 - unspecified items - explains minimum £2500 - "do you think that will be enough for any one time?"
9. Transferring across quote - "can you just let me know when you can see it?"
10. Payment details - goes through monthly payment - "..its going to take a couple of moments (to print out quote)..while it does this I'm going to put some details on the screen and you can ask me some questions"
11. Printing off - "J (branch assistant) has got some questions.."
12. Listening to conversation - laughs (customer said "its nice to talk to someone who's very approachable").."thank you very much - my telephone number is on the top of the quotation so if you've got any questions you wanted to ask me when you get home.."
13. Ends - goes and ticks chart.

Throughout this process the operator is engaged in extensive and skilful 'demeanour work' consisting of exaggerated smiling, nodding and facial gestures as well as varied conversational asides and 'jokes', maintaining a sensitivity to the customer's reception of both the technology and the information on insurance. This is accomplished whilst the operator is simultaneously completing the insurance details; a not inconsiderable task since in order to 'look' at the customer the operator has to orient herself to the camera on top of the screen and cannot actually see much of the screen - containing the customer's image and the document - in front of her. There is also a considerable amount of 'talking through the technology' - explaining to the customer what is happening, or is about to happen on the screen; explaining, for example, that "*the image will go fuzzy for a moment because of the amount of information I am transferring*" and so on, giving an 'account' of the ongoing transaction in a manner that will be easily understood

and accepted. This ‘account’ includes conveying an impression of the bank’s policies as ‘quality’ policies, (and therefore not the cheapest). That this is not a simple or straightforward process is illustrated in the next fieldwork extract when the operator suddenly finds herself dealing with an ‘awkward customer’ - in this instance the operator effectively ‘freezes’ her ‘body language’ but begins to engage in extensive explanation and justification of the details of the policies, thereby displaying her ‘expertise’.

1. Phone - ‘live’ call
2. Puts on headset - brings up screen of branch and assistant.
3. “Hello...(looking at camera)..turn the screen slightly”
“My name is...I need to take some information (gives standard script on information)..is that OK?” (Some problem here - later emerges that the customer said “No” and “if you send me details of any insurance I’m going to contact my PFA (Personal Financial Adviser) (At this stage the operator ‘freezes’ and becomes very formal and exact in what she says)
“Obviously that’s why we ask at the beginning”
4. Explaining about transferring information and picture freezing
5. Asking for details and filling in screen - surname; initials; date of birth; occupation (mature student “what subject are you studying”); postcode - gives street; number of house.
6. Explains what the insurance is - not connected to Life Insurance Department.
7. Transfers information over - “Can you just check that that’s correct?” - explains about postcode and address - stores it at this end.
8. Going through details - rebuilding costs; buildings and contents; accidental damage; items taken away over £1000; total taken away from home at any one time - “we have a minimum sum of £2500 - I’ll quote you for that” “I’ll transfer that - its just a premium indication and may be subject to future..(Interruption - asked question - answers “not at the moment”)
9. Paying the policy - “I can print off the quotation - put some details on the screen in front of you - some of the benefits..
10. Going through screens - printing options.
11. Asked question - answers “what do you mean? - if you have an alarm - if its an alarm with a service contract you can have a 5-10% discount..Is it approved by NACODS? - then you can have a 10% discount. There is an endorsement you must sign - that the alarm must be switched on - then there is a theft excess of £250 - some people don't like it..”
12. “I’m going to amend your quote to have the discount for having an alarm”
13. Customer asks question about letting out another property - “Is it let to professionals?”
14. Gets details of properties.
15. Customer asking questions - operator explains about going back to amend policy.
16. Asked question - “There is another one I can use.” - using screen - cover choice - for house that is let.
17. Transferring data.
18. General chat about videolink - “You wouldn't want to see me full size”
19. “Printing off quote for you now”
20. Answering questions - “H.(branch assistant). will give you one of our information packs..”
21. “Good-bye” - call ends.
22. “What a prat” Explains what the customer (a Physics postgraduate) was saying about the kit - that the mike was too big; the picture too small; he didn't like the delay; felt it was outdated. “I didn't like him..I let my feelings get the better of me..”
23. Marks call on board.

In the case of the bank the 'macro' organisational context for the introduction and use of the Video Link was a complex scenario; of implementing and evaluating a new technology whilst responding to changing market, managerial and organisational pressures. Like many other, similar, financial institutions the Bank was involved in improving profit margins by means of cost reduction through the centralisation of 'back office' processing and (what might be characterised as) a process of 'deskilling'. This required heavy investment in IT. At the same time the bank was attempting to defend its 'market share' by endeavouring to change from an organisation that had traditionally been concerned with administration to one that focused much more on customer service and the selling of a range of services.

Diffusion of expertise in a Manufacturing Industry

Fieldwork at the Technology Centre occurred at a time when the organisation of the company to which it belonged was undergoing major restructuring, indeed these changes were frequently mentioned to the ethnographer as taking place 'more or less all the time at the moment'.

Essentially what was taking place was the company's move away from a hierarchical 'divisional' and 'national' basis towards what company members referred to as a 'global footing': the company had bought into various new international markets by taking over manufacturing companies based in countries throughout Europe, America, Asia and Australia. This new organisational configuration brought with it new requirements of the work of company members, particularly those in the Technology Centre. Competition between sites within the company was fostered and as a result of this competition, Technology centre staff were no longer deemed to be serving a given set of production sites within their UK division. Instead, they were to serve the 'entire company', taking part in the competitive process seeking funding for new research and development in partnership with sites from diverse elements of the 'global organisation'.

This new organisational configuration was explicitly underpinned by the IT strategy fostered by senior management; in particular the use of electronic communication technologies was encouraged as a means of supporting the kinds of contact required between staff at disparate sites in discussing collaborative work. In particular videoconferencing was introduced as a means of holding meetings with other sites, in an attempt to maintain the 'richness' of interaction associated with these meetings.

A number of these videoconferences were observed between members of Technology Centre staff and members of the company based at other sites. These latter personnel are the 'customers' of the centre's work, and are considered very much in these terms, rather than as members of the same company and the need to maintain appropriate formal relationships as with any other 'external' customer remains a strong one. The importance of such meetings has increased

considerably since the organisation's reconfiguration took place: Centre staff no longer directly serve other sites within their 'division' of the company, but must establish collaborative relationships with others on an ad hoc basis, as contracts are gained and lost throughout the wider company. As a result, on many occasions, such meetings are increasingly to do with establishing the precise nature of an offer of collaboration, negotiating and confirming funding details and a whole range of similar tasks. As a result of the more 'competitive' basis of the organisation's configuration, ('basically a kind of internal market' said one member of staff) these meetings were characterised by participants from the Centre as 'less to do with working with people you know and trust', and more to do with establishing and maintaining important new working relationships for the Centre.

These meetings took place in a room formerly used as a library facility but which has subsequently been given over to use as a meeting room, and has recently had a PC with video conferencing software and camera installed.

There were two Centre staff taking part in each conference that was observed, on one occasion talking to three members of an external site, and on the others talking to two. These meetings were all arranged over the phone in advance, with parties to the meeting specifying suitable, mutually convenient times for the conference. The majority of our discussion here will be based upon some detailed observations of one of these video conferences: clearly this is not in any sense a comprehensive account of the nature of video conferencing, but it can provide us with some important insights into the types of working practices that evolve around such technology.

At the outset of each conference, time was spent ensuring that the software was functioning appropriately and that the image of each site was of a sufficient standard - this process typically took a few minutes, and was also treated as 'warm up' time, with "jokey" interaction taking place between participants at both sites, before the business in hand was tackled in the meeting proper. The video camera placed on top of the PC monitor had, on most occasions, to be tilted downwards by wedging a book underneath its base in order that it could pick up those sitting on the low chairs found in that room.

The meeting discussed here is not one in which Centre staff are dealing with unknown parties, but it is nevertheless of importance. Extended discussion of this meeting is, however, included as illustrative of many of the issues arising out of the exploration of this type of technology.

This meeting had, then, been called to discuss a document that had been produced and circulated by members of the Quality Management team at the Technology Centre which dealt with the reporting procedures connected to certain projects running jointly between the Centre and the Production Site - the particular concern is with consistency across a group of documents. As is clear from the following extract of transcript from a recording of a meeting the point at which the assembled conferees are called to order to begin the meeting proper is one which is not entirely clear to all:

A (a member of Technology Centre staff), B & C in the production site, D & E in the Technology Centre

A: You really need an inset of your own image don't you? [He appears to be switching between the technology centre's camera and his own - this is not clear to the Centre]

D: Eh?

A: I wasn't talking to you!

C: Hahaha

[All laugh]

B: I can't see you D... sit up

E: Simultaneous {Shall we start?

D: {Am I OK now?

[Pause]

A: Yeah, OK, OK do we want to start?

D: Can you see me?

[Pause]

E: Can you see him?

B&A: Yep, yep no problem

[Pause]

A: Let's start...

E: OK... have you all got the agenda? it's only going to be brief?

C: Yes (holds it up to camera)

As the business of the meeting continues it becomes clear the difficulties the participants are experiencing with the video conference: there is a very clear echo of each individual's words a second or two after they speak, which impacts on the ways in which the participants talk to each other: there are abnormally long pauses between sentences, as participants seem to leave sufficient time for the echo to die down, and to be sure that the conversational cues being offered are ones that imply turn-taking to be appropriate. Furthermore, throughout the meeting all individuals enunciated their words extremely clearly, adding to the 'stilted' or 'unnatural' feel of the conversation. The slow frame refresh rate meant that the images of the other participants on the screen appeared jerky and somewhat blurred, this seemed to make following visual cues particularly difficult to follow. The following transcript illustrates these kinds of issues:

A: [Finishes sentence]
[Echo]
[Pause]

E: [Leans forward] [Speaks loudly and slowly] Can I say something? [Echo - appears to wait for echo to fade, checks those at Production Site on screen, all three nod vigorously] [Starts to speak]

C: [Simultaneously] Go ahead

[Pause]

C: Sorry go ahead

E: OK

What is clear here is the amount of work that has to be done by conference participants to maintain some form of conversational 'flow': the exaggerated nature of turn-taking cues, and the highly demonstrative use of body movements

are all made use of to compensate for the crude image and sound quality provided by the videolink.

As the meeting progresses they discuss sections of the document to hand and all participants appear to focus more particularly upon the discussion document rather than upon the screen with the other participants upon it. Wrapping up the meeting is also bounded by a certain degree of overt demonstration on behalf of the participants.

E: Is there anything else we should discuss?
 [Pause]
 D: Did you get the package?
 B: From 'X'?
 D: Yeah
 B: Yes, the panel was fine, thanks
 [Pause]
 E:[Breathes in loudly, slaps side of chair] Shall we wrap it up?
 [Pause]
 B&C: Yeah
 B: Nice talking to you [Waves]
 [All laugh]
 D: See you soon, see you later A
 [Pause]
 A: OK
 E (to D): Can we hang up?
 [D nods]
 E: Bye! [Clicks 'close call' on screen] [Monitor greys out] [To D] I presume the call's hung up.

Clearly many of the problems being experienced in this video conference are related to the developing state of the technology. The staff are well aware of the limitations of this technology, and swap stories of their experiences with it: after the conference mentioned above D tells E of the time that he had faxed a document for discussion through to the external site, started the meeting, confirming that the fax had arrived - which was confirmed by holding it up to the camera - and entered into a discussion of the document in hand. It was five minutes before they realised that there had been a mix-up of faxes and they were discussing different documents. There was a clear need for a facility, argued, D for "proper" desktop conferencing, where electronic versions of documents might be discussed and updated effectively. The appropriate software had been ordered, stated, E and it was just the need for the 64k bandwidth that was holding things up. He added

"You can't really see what they're doing, but you know that they're doing something and you can't really say "What are you doing?" It makes it difficult to keep up a steady flow of conversation."

As the technology currently stands then, there is little or no scope for the 'added value' of a visual dimension to the conferencing set up, as was made clear by A on his return to the Technology Centre:

“I’m saying nothing! I don’t like it.. I don’t like it at all. Until the technology improves you can’t really achieve anything that you can’t do on the telephone.”

The description of the organisational context within which the videolink has been introduced, makes clear the expectations possessed by the policy-makers within the company with regard to this technology. Use as problematic as that observed during the fieldwork make clear that the process of the introduction of such technology has not kept pace with these policy decisions, and as such the technology was not always in a position to carry out all that was expected of it.

The crucial nature of such meetings at all levels of the Centre’s personnel, meant that for many staff such experiences with the technology were discouraging: on one occasion, serious problems were emerging with an overseas subsidiary of the company, and a meeting at directorial level was required. The Centre’s head accountant explicitly ruled out the notion of holding a video conference with these individuals, since they would need to “Stare the buggers in the eyes and see which way they twitched”. There was a real sense that the video-based technologies could not support such boardroom subtleties, and as such were not appropriate for the kinds of tasks they were intended to support. Thus, the perhaps hasty introduction of these technologies over a slow link has led to somewhat negative impressions of the role of the technology within the crucial working practises of the Centre staff, and subsequent scepticism regarding the policy behind such introduction:

“Little boys with new toys... they don’t play with soldiers anymore, they play with technology”

The implications of this sceptism reach beyond a straightforward ‘dislike’ of the technology, and highlight a range of important issues associated with the introduction of new technologies within an organisation.

In this example from the Technology Centre a new organisational configuration has been supported by the introduction and exploration of the potential of video technologies for holding meetings. At the same time this reconfiguration has generated new requirements of the work of staff at the Centre, concerning in particular the nature of the meetings in which they participate. Whereas previously a more stable set of established collaborative relationships underpinned the majority of meetings with other sites within the company, the Centre now operates within a competitive ‘internal market’ and staff increasingly find that meetings are the occasions at which delicate negotiations are carried out with those who cannot necessarily be ‘trusted’.

Thus the role of meetings within the organisation has shifted as well as the means by which they take place: the organisational reconfiguration has implications both for the technology being explored as part of this reconfiguration (the introduction of video conferencing) and the working practices this technology is intended to support. (Increasingly the need to ‘stare the buggers in the eyes’ and other such boardroom manoeuvres is emerging in these meetings as a result of the more competitive basis of the company’s organisation).

What has emerged here, then, is the fact that the technology under exploration cannot support the new practices related to the same sets of organisational concerns.

Discussion

A number of issues arise from these materials, in particular issues to do with the extent to which the technology facilitates communication. In these cases, the novelty of the technology, as well as some of its 'idiosyncrasies' mean that a significant proportion of the interaction is devoted to 'explaining' the technology itself. In addition, there are issues to do with the place of the technology in the day to day work of implementing the bank's policies as regards selling and the importance of face to face contact in selling to the customer and the Technology Centre's policies regarding meetings.

We observed how the organisation of work was derived from the strategic principles of the organisations, as was the exploration of new technologies. Our main point is that the resulting technology and the organisation of work, albeit off-spring from a common strategic basis, does not fit well, in fact their lack of mutual support can be read as leading to non-adoption of the technology and disruption of work routines. In order to 'get the job done' managers and staff alike need to engage in 'work to make the technology work'.

A number of complex and contradictory organisational pressures are involved here. For example, the Bank's emphasis on 'customer service', on being "first choice for customers"³¹ might be regarded as fundamentally conflicting with the heavy emphasis on centralisation, standardisation and routinisation of procedures. These same pressures can be seen in the introduction and evaluation of the Video Link – the customer service it provided, of individual, personal 'remote access to expertise' had to be balanced and judged against commercial considerations of time and sales produced. In the proposed framework, this can be illustrated as:

The advise and sales arguments can be better formulated if the advisor recognises the type of person on the other end, managers claimed. This is presumably easier across the video link compared to the phone. This means that they expect the specialist to be able to detect and interpret, but also respond in a meaningful way to concerns like: "What turns the customer on?", "Does the customer ask many questions?", and "Is he concerned?". This is strongly in contrast with the fact that the current trend is towards integration of all support with workflow systems, an efficient way of enforcing the plan and standardising the process.

Clearly, while the Bank was hoping to benefit and learn from its experiment with the Video Link, it also held certain expectations of the technology focusing on its extension into other areas of Bank services and the possibilities it offered of

³¹ As part of its attempt to defend market share and exemplified in the 'Customer Service Index' and monitored by the 'Mystery Shopper' campaign.

improved profit, market share and 'added-value'. Consequently this particular example of the use of video technology needs to be located in these particular, commercial, circumstances; circumstances which obviously differentiate it from other, primarily laboratory based, evaluations. While there was a recognition within the Bank of a need to 'embrace the future' and experiment with different forms of multi-media and communication technology there was also a contrasting pressure on 'generating results yesterday' and clearly demonstrating profitability. One aspect of the local culture is the importance of achieving sales points and meeting the Bank's expectations.

In the Technology Centre, changes in the organisational context within which the Centre's staff have to operate - to one which is more 'global' in nature, working in partnership with those not necessarily co-located with the Centre staff - has brought about changes in the nature of the meetings which they must hold. One element of the company's policy has been to use video-based communication in order to facilitate meetings between distant sites; in the example discussed here, however, the policy-makers' expectations of the technology have not been fulfilled, since the slow link has prevented personnel holding meetings in a manner appropriate for the organisational importance such meetings possess. As a result, both the technology and policy have become seen as inappropriate for dealing with the broader organisational changes with which they are designed to cope.

As a final point we believe that this work offers a tentative outline to a research agenda relating to a number of objections that have been raised with regard to the use of ethnography in CSCW design (Plowman et al '95). Such objections centre upon important concerns relating to the degree to which design implications can be unproblematically 'read' out of the fieldwork. Ethnography is not about translating a description of social situations into computer systems, but rather is about understanding the full range of organisational factors which might contribute to a problematic situation. In the examples described here the design of the organisation of work 'makes sense', as does the introduction of new technology - however it is *the co-existence* of these two factors that proves problematic.

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PART II
An Ethnography Handbook

An Ethnography Handbook

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Introduction

In recent years ethnography has gained some prominence as a means of informing system requirements, and CSCW system requirements in particular. The impetus for this arose from the wide recognition that the design of distributed and interactive systems needed to acknowledge the importance of the social. In previous COMIC Deliverables deriving from the work of Strand 2 the case for both the 'turn to the social' and the use of ethnography have been extensively discussed. The objective of this Deliverable is to provide a handbook for ethnographic fieldwork in system design. It aims to do the following:

- provide a guide for fieldwork methods in the context of system design
- outline a framework for analysing fieldwork materials
- review the use of computer support for fieldwork in system design

Compared to the previous Deliverables, this is focused more on the practicalities of fieldwork for CSCW design and in this respect is in-keeping with the stance of the work in this Strand throughout the previous years. Although we will not neglect theoretical and methodological issues, our objective here is to deal much more with the practical business of fieldwork and analysis for design.

The first chapter is a review of the development of the role of ethnography in social research and, more recently, its involvement in design.

Chapter 1

What is ethnography?

A brief historical review

Although in widespread use in the CSCW community, the term ethnography encompasses a wide variety of research activities, from interviews with people in a setting to prolonged forms of participant observation in a domain. Our own view on this is to resist defining the method in too strict a fashion for the very good reason that in system design, very often it is the practicalities of dealing with the problem which affects not only the choice of method but also how thoroughly and systematically one is able to employ that method. This is not an argument for no method at all; rather, it is a recognition of the fact that within both research and in commercial contexts, system design will be constrained by all kinds of factors not least those of resources and time..

There is, however, one consequence, again within the design context, that ethnography is likely to be a method used in conjunction with others. One of the major points we have been stressing throughout the research in this Strand is that design is a multi-disciplinary endeavour and while this can, and often does, generate serious issues of a theoretical kind, in more practical terms it requires us to address the problems of communication between the various disciplines. Again, this is an issue to which we will return. Our main objective in this chapter is to review some of the styles of ethnography and relate these to the design context.

Background to ethnography in social research

The distinctive feature of ethnography is that it involves the researcher in gaining first-hand contact with the people and the setting which is the focus of the research. Unlike other methods used in social research, such as the survey and the questionnaire, which are designed to gain information about persons and settings through a more indirect medium, the ethnographic fieldworker is required to spend an appropriate amount of time with the people being studied in order to observe what they do in the setting in which they do it.³²

The origins of ethnography as a method of social research lie in the discipline of anthropology though it is doubtful if a distinction was drawn between the

³² Note that we are using the word 'observe' in a wide sense to include talking with, interviewing when appropriate, rather than just watching what people do. In other words, ethnography in the sense in which we understand it is not simply a matter of observing 'outward' behaviour.

method of research and the discipline itself.³³ Initially, in the nineteenth century, anthropologists tended to rely on traveller's takes and reports from missionaries for their data. However, it became clearer that more systematic data was essential and, after the First World War and through the influence of Bronislaw Malinowski, fieldwork methods began to assume more prominence. Anthropology, it was argued, is the study of indigenous peoples and the only way to conduct this study was by going to live among the peoples concerned. How they lived, what they believed, how they worshipped, how they organised their family lives, how they fed themselves, and so on, could only be discovered by observing their lives as they lived them.³⁴ There was, and still is, more to the discipline of anthropology than this, but it was an essential prerequisite.

However, and as already alluded to, the method of anthropology was not seen as problematic and, as the quotation from the anthropologist Evans-Pritchard suggests, in the 1920's and '30's little by way of methods training was provided for anthropological researchers:

“When I was a young student in London I thought I should get a few tips from experienced fieldworkers before setting out for central Africa. I first sought advice from Westermarck. All I got from him was ‘ don't converse with an informant for more than twenty minutes because if you aren't bored by that time he will be.’ Very good advice even somewhat inadequate. I sought instruction from Haddon, a man foremost in field research. He told me it was really quite simple; one should always behave like a gentleman. Also very good advice. My teacher Seligman told me to take ten grains of quinine every night and to keep off the women. The famous Egyptologist, Sir Flinders Petrie, just told me not to bother about drinking dirty water as one soon became immune to it. Finally I asked Malinowski and was told not to be a bloody fool.” (Evans-Pritchard, 19NN)

In other words, fieldwork was seen mainly a matter of the practicalities of travelling to the research site and, once there, getting on with the business of learning the language and, through this, learning about the life of the peoples concerned.

By contrast, although ethnographic methods have been used in sociology since early in this century, it has not occupied the central place that they have in anthropology. The most prominent expression of ethnography in sociology came in the 1920s, following the move of Robert Park, an ex-journalist, to the Department of Sociology at Chicago. It was the programme of research that he initiated that is responsible for not only the presence of ethnography as a method of sociological research, but also for many of the methodological arguments in which it is implicated within the discipline. Since many of these are also relevant to the rationale for ethnography in system design, it is worth reviewing the salient aspects of the research of the Chicago School.

³³ More specifically, its origins lie in traveller's takes and go back much earlier than the origins of the discipline of anthropology.

³⁴ See Wax (1971) for a more detailed history.

The Chicago School

In an early article, Park outlined a massive programme of research centred around the city of Chicago.³⁵ This was to constitute the major research activity of the School for many years. It called for the application to urban life and culture of the same ethnographic methods of fieldwork that American anthropologists had been using to study the lives of the North American Indians. Hitherto, he argued, urban life had mainly been a field left to fiction writers and journalists but now needed a more systematic sociological approach.³⁶ Although not centring the whole programme of the use of ethnography, it does have a key role to play in studies of the neighbourhood. At that time, little was known about the basic social facts of urban neighbourhoods, about their racial composition, their social class, population stability, how the recent waves of immigrants were constituting their lives, and more. Park also called for research on issues of industrial organisation and, as a important part of this, encouraged a series of studies of occupations, including the shop girl, the policeman, the peddler, the cabman, the vaudeville artist, the night-watchmen, as well as studies of local social control organisations such as the police and the law courts.

The programme called for nothing less than a sociological study of urban life as represented in the city of Chicago. By 1925, much of the comparative statistic work had been done along with the formulation of the ecological theory of urban growth and decline which became one of the main contributions of the School to urban sociology. In addition, many of the ethnographic studies had also started, including Thrasher's study of the gang and Wirth's investigations of the ghetto (Thrasher, 1927; Wirth, 1928).

In the main, the fieldworkers were largely left to their own initiative in matters of method. Cressey, for example, as a special investigator for the Juvenile Protection Association, in the summer of 1925 was asked to report on a new phenomenon which became known as the 'taxi-dance hall' at which girls could be hired as dancing partners for '10 cents a dance'. He found that social workers knew little about such places and though some data could be obtained from case records, it was clear that other sources were needed. He tried formal interviews but had to abandon these due to lack of co-operation. He eventually chose an ethnographic method:

"Observers were sent into the taxi-dance halls. They were instructed to mingle with the others and to become as much part of this social world as ethnically possible. They were asked to observe and to keep as accurate a record as possible of the behaviour and conversations of those met in the establishments....These investigators made it possible to gather significant case material from a much more varied group of patrons and taxi-dancers than could have been secured through any one person. The investigators functioned as anonymous strangers and

³⁵ The original article, 'The City: Suggestions for the Investigation of Human Behaviour in the Urban Environment' appeared in the *American Journal of Sociology*, and has been reprinted a number of times. See Park (1952).

³⁶ However, it is worth pointing out that Engels (1892) had used what could plausibly be described as anthropological methods in his study of the Manchester working class as did Mayhew (1861) in his study of the lives of the London poor.

casual acquaintances. They were thus able to obtain this material without encountering the inhibitions and resistance usually met in formal interviews” (Cressey, 1932: xviii)

Not only is this quotation a concise description of what is typically known as ‘covert participant observation’, it also succinctly identifies two of the rationales for using ethnography, namely, first, the difficulties of using other methods and, secondly, the richness of the material that the method can obtain.

However, it is important to note that ethnography, although occupying a place as a key research tool, was not the only method used or even encouraged to the exclusion of others. We have already mentioned, albeit briefly, the statistical work that was done, and, in addition, formal and informal interviewing was also used as well as pioneering work on the social survey as a sociological method was also developed; work which was later to be systematised by Paul Lazarsfeld and his colleagues. Life history methods were also developed as well as the analysis of case records. Even ethnography varied from the ‘covert participant observer’ to ‘overt participant observation’. About the same time, Lindeman (1924) tried to introduce more methodological considerations of the research by raising issues about the validity of the data collection process and issues about the inferences that could be made from data collected by various methods, the basis of generalisation, and many more.

About the same period, another focus of interest relevant to the rise of ethnography as a method of social research was underway, that is, the community study.

Community studies

The inspiration for these studies was similar to Park’s clarion call to use the methods of anthropology to study modern society. One of the first of these studies was the Lynd’s study of the small town of Muncie, Indiana (Lynd, R.S and H., 1929; Lynd, R.S. and H., 1937). As with the Chicago studies, the main aim of these was to describe key aspects of the lives in a small town using participation and interviews with members of the community as the main means of data collection. The dimensions explored, however, were derived from a scheme developed by anthropologists for studying western society. At first, the Lynds were interested in religious beliefs but soon realised that these needed to be understood in the wider context of community life and so began the tradition of community studies which also spread to Britain.³⁷ However, this tradition has declined and to the extent to which the community focus is extant within social research, variable analytic methods now tend to be used.

³⁷ The Institute of Community Studies carried out a number of studies, mainly based in the London area, in the 1950s and 1960s. See Platt (1971) for a review.

Ethnography and the professionalisation of social research

In many respects, the 1930s saw the apogee of ethnography as a salient method in social research. By the 1940s, the urge to professionalise sociology, especially in the United States, so that it could stand alongside other human science disciplines such as psychology and economics, resulted in the move to adopt quantifiable methods of social research with the result that ethnographic methods became a subversive tradition in the discipline.

The move toward a greater professionalisation of the discipline of sociology was seen in terms of developing an agreed upon theoretical-cum-conceptual framework and a more systematic set of investigative methods. A key work in regard to the former was Parsons' (1951) statement of a general structural-functional theory which, at least in the 1950s to 1960s, was seen as, though not without its detractors, providing a conceptual theoretical apparatus which could stand alongside the more developed of the human sciences, such as psychology and economics. The methodological counterpart was the rapid development of what became known as 'variable analysis', a collection of investigative tools which owed much to the work of Lazarsfeld and his associates at Columbia.³⁸ Prominent among these were the social survey, although the antecedents of this method went back to the 19th century, and the statistical analysis of the covariation and correlation of variables. Lazarsfeld's objective was to begin the development of a quantitative method of social research which could handle the vagueness of sociological concepts yet be a step toward their refinement and, through this, build a corpus of theoretical generalisations. The strategy was largely empiricist in that, by using the methods of covariation and correlation, empirical generalisations could be identified and made consequential for theory through research designs which, it was argued, made hypothesis-testing possible.

Variable analysis became the framework which dominated much of the empirical work in sociology and, more widely, political science, educational research, organisational studies, governmental research, and more. It encouraged the incorporation of more sophisticated measurement techniques into social research, the development of variants of the experiment in research designs as well as more elaborate statistical techniques such as causal modelling and factor analysis. Training in these social research methods became a central part of the sociological curriculum with ethnography largely confined to a subsidiary role as a technique for conducting pilot studies which could inform the design of more quantitative research.

Ethnography did not disappear but it did become far less prominent a method in social research and little by way of training was provided apart from in one or two universities in Europe and the United States. Within sociology, it remained the preferred method of the symbolic interactionist perspective and, under this

³⁸ See, for example, Lazarsfeld and Rosenberg (1955), Lazarsfeld and Barton (1951) and Lazarsfeld (1958).

auspice, produced a number of classic studies of deviance and organisational life. However, it is fair to say that symbolic interactionism remained a submerged tradition within sociology and social research and one associated, in the main though still misleadingly, with research on deviance.

The critique of variable analysis

It is important to note that the development of variable analytic methods took a number of years and, although they became dominant, and still are, they were not without their critics. Blumer (1954, 1956), for one, argued that although variable analytic techniques had a role to play in social research, their biggest drawback was that they failed to capture much of what was vital to understanding social phenomena, namely, its negotiated and processual character. In other words, the argument was that variable analysis failed to engage with the fundamental phenomenon of social life. Cicourel (1964), in an analysis of the main methods of variable analysis from a Schutzian and Ethnomethodological perspective, argued that such methods were reliant on ‘commonsense knowledge of social structures’ in order for them to work and which was an unexplicated aspect of the methods. More recently, criticisms have been mounted by scholars working within the variable analytic tradition making the argument that despite its growing sophistication in statistical and other mathematical techniques, it has failed to deliver on its promise. Lieberson (1985), for example, in a detailed analysis of the assumptions behind many of the techniques of quantitative social research, shows that they violate many of the presumptions about the nature of social life as well as presumptions about the nature of causality which the methods are intended to incorporate. At root is the attempt of variable analysis to emulate the logic of the experiment by means of statistical controls in non-experimental situations. One of the major presumptions of the social sciences is that social life is governed by ‘massive selectivity processes’ which violate the necessary assumptions of the techniques of variable analysis. Such methods, he claims, produce a corpus of data which is both sadly deficient and often wrong by its own criteria.

One of the significant consequences of these developments is the structuring of the debate within sociology as a metaphysical dualism between quantitative and qualitative sociology. In other words, whereas during the era of the pre-eminence of the Chicago School the attitude to research methods was largely governed by a principle which can be summarised as, ‘do what you can to get what you can’, the growing hegemony of variable analysis as the orthodoxy of social research meant that any attempt to propose alternative methods of social investigation could not avoid challenging the fundamentals of the discipline as reflected in variable analysis itself. As mentioned earlier, Blumer’s critique of variable analysis was not a diatribe against the Lazarsfeldian project so much as an attempt to find a place for it within an umbrella of approaches which, he argued, sociology required. Nonetheless, Blumer’s arguments, despite his buying into so much of

what variable analysis was predicated upon, such as the need for theory testing, the need to empirically ground theory, the need to produce sociological generalisations, were read as a wholesale condemnation of quantification in social research. The issue of method became one of fundamental importance; an epistemological and ontological issue rather than simply a matter of method. It became, that is, an issue which involved a choice as to how sociology should properly be done and a contest between qualitative versus quantitative sociology. The critique of 'variable analysis' and cognate strategies was not an opposition to either formalism or quantification, but was, rather, an argument against the *inappropriate* and/ or *premature* employment of formal and quantitative techniques, often resulting from an underdeveloped understanding of the phenomena to be represented formally or quantitatively and of the actual, practical preconditions for using such modes of representation. The commitment to employing formal/ quantitative methods characteristically meant that the drive would be to impose the relevant scheme or measure upon whatever data was available, forcing the data into the representational forms and thus distorting their actual character.

Nevertheless, despite this epistemological obfuscation, the debates did identify a number of methodological issues in social research which are relevant to the role of ethnography in system design.

Some salient methodological issues

It is unnecessary to review all the intricacies of the debate surrounding the qualitative-quantitative divide in social research. There are, however, a number of issues which it is important to discuss because they have a bearing on not only sociological matters but also because they are significant for the rationale of ethnography in CSCW design.

Central to the variable analysis programme is the endeavour to shape social research into a form in which it could begin to build a corpus of well-tested theory along the lines of the more established of the sciences. The methods of variable analysis were the means to achieve this end. The methods were designed as standardised procedures which were explicit and theory-neutral allowing replication by others and, through this, estimates of their reliability. In survey research, for example, the behaviour of interviewers is specified down to the wording of questions and the order in which they are asked so as to make sure that each respondent receives the same stimuli. Statistical procedures, too, required standardised operational measures of concepts in order to achieve replication across studies. In sum, variable analysis proposed a format for effecting an inferential link between data and general associational relationships found in that data.

One fundamental feature of variable analysis is that not only is it an inferential structure for determining relationships among variables and, through this,

facilitating explanation, it is intendedly a descriptive apparatus and one with special qualities. Lazarsfeld's methodological proposals require that social actors, or any unit of analysis, be treated as an 'object' possessing certain attributes or qualities (Benson and Hughes, 1991). In this he was drawing upon an analogy with the formal and abstract structure of mathematics in which variables and constants are uninterpreted, simply standing for objects in the mathematical domain and only that. What qualities and properties they possess is defined formally by the axiomatics of the mathematical system itself. To the extent to which the mathematical system is applied, 'objects' in the application domain must be mapped onto 'objects' in the mathematical domain. If the mapping is successful then manipulation of the mathematics is equivalent to manipulation of the 'objects' in the target domain. Of course, the 'objects' in disciplines other than mathematics have attributes and qualities given by their theories. For physics, its 'objects' possess mass, velocity, density, and so on, while other disciplines have their own distinctive collections of phenomena abstracted from the concrete objects of the experienced world. For physics and other mathematised disciplines there is an established homology of structure between the mathematical and substantive domains. What variable analysis proposes is that this homology be achieved by what can only be described as a methodological stipulation that the social domain be homologous to the mathematical. The 'object-attribute' structure of variable analysis requires that social phenomena be described as 'objects-attributes' irrespective of whatever other character they may possess. As Wilson (1971) puts it, it is an attempt to produce 'literal descriptions' which amounts to "asserting that on the basis of those features the phenomenon has some clearly designated property, or what is logically the same thing, belongs to some particular well-defined class of phenomena". Thus, and for example, all persons possess the property of gender which can be categorised as either 'male' or 'female' but not both. Providing that there are rules for determining which of these two categories any particular person is to be placed, this would, on the face of it, satisfy the conditions of literal description. In this way a particular characteristic of a person, namely their gender, is made to appear a general characteristic by using the 'object-attribute' apparatus and deploying this upon a collection of persons.

The aim of such a format is to facilitate quantification. The indicators of properties or attributes, considered as variables, must satisfy the basic mathematical requirements for counting, namely, those of identity and equivalence. Also, units being classified in terms of their properties must be uniquely classifiable as belonging to a category or not and that all attributes so classified as belonging to that category or not are equivalent. To illustrate, if these requirements are met each mark on a questionnaire indicating some attribute can be counted as 1 and these added together to give a total of such marks for the collection of questionnaires as an operational measure for the number of units possessing that property. By comparing relative totals (usually expressed as percentages) between various subgroups, and with respect to similarly counted

properties, variable analysis can formulate patterns of association among attributes. That is, if the conditions of identity and equivalence are met, then the mathematical operations of counting can be used, so turning statistical 'results' into sociological 'findings'.

However, the issue is whether, within social research, such conditions can be met in other than a stipulative fashion. For, to effect a correspondence between the mathematical and the sociological domains the postulates of identity and equivalence must hold for the structure of the sociological domain. The classification of sociological objects must satisfy these postulates otherwise the mathematical procedures employed to quantitatively manipulate the categories, and through them the sociological domain, will be meaningless.

Despite such criticisms, the fact remains that the full apparatus of variable analysis has been in use for some years to produce what are recognisable as analyses of the social world. The argument, ostensibly between 'quantitative' and 'qualitative' sides within sociology is, in reality, an argument about different broad methodological strategies. Thus, the 'quantitative' side characteristically holds that a phenomenon may only be known *through* a set of abstractions, ones which are logically assembled and whose application is thoroughly systematic and, in order to be such, rigorously controlled. Naturally enough, given such an assumption, it seems necessary to begin 'top down', setting out the abstractions in worked out order *before* approaching the phenomena. To the other side of the argument, this seems to involve putting the cart before the horse, neglecting the fact that in order to know how to elaborate any effective system of abstractions one needs to know something about the phenomena they are to apply to, to be able to say what kinds of features of the phenomena the representations will need to retain if they are to provide recognisable abstractions of those phenomena, if, indeed, the phenomena are to be 'recoverable' from the abstractions. Harvey Sacks (1963) argued that the problem of 'generalised description' was one of the fundamental methodological problems in sociology, for the various descriptive apparatuses of sociology were only capable of depicting phenomena in a generalised way, such that one could not, with respect to data, determine just which features of it the sociological description was talking about.

The 1960's reaction against 'positivist' methods, as the formal/quantitative strategies were often termed, was one which encouraged a renewed and even strengthened interest in ethnography for (in some cases at least) fundamental methodological reasons. Ethnographic studies were a way of re-examining the relationship between phenomena and their social science representations, of making concrete observational studies of phenomena in order to clarify how these phenomena were transformed into the abstract representations of sociological schemes, and, insofar as that was satisfactory, to re-conceive the ways in which such phenomena could be recorded, analysed and represented.

The effect of this was greatly to relegate the significance of variable analysis within sociology. Rather than being taken as the *paragon* of sociological method, and the model for the fundamental logic of sociology, it was recognised that -

certainly as far as contemporary sociology is concerned - variable analysis had a restricted range of application and simply could not come to terms with a wide range of social phenomena. Rather than delimiting the range of topics to those which could fall within the reach of variable analysis, it was generally concluded that the range of legitimate topics of sociological inquiry were much wider than those which are (certainly currently) amenable to treatment in terms of variable analysis, and that 'qualitative methods' were performing to be the means for exploring a wide variety of these.

Chapter 2

The View from System Design

The recent attempts to incorporate ethnography into CSCW system design arise, in significant degree, from considerations akin to those which feed the attack on variable analysis within social research as well as disquiets expressed within the design community about existing methods. Many of these arguments have been extensively reviewed in previous deliverables from this Strand of the COMIC project. In this chapter we provide a summary of them and indicate in what ways the design context has a bearing on the method and what it produces.

The Motivation for Ethnography in CSCW

The motivation for incorporating ethnography in the CSCW design process arises from two main sources:

- the need for a sociological perspective to inform design
- the inability of orthodox methods to supply this perspective

The need for a sociological perspective

This constitutes a number of arguments, some of them fairly wide ranging in their implications for design in general as well as having especial relevance to CSCW. In essence, the point argued for is that systems, indeed tools of all kinds, are used within peopled environments which are, whatever else they may be, social in character. The intent of CSCW to design distributed and shared systems means that the social dimension has to be taken into account by design as well as those more cognitive concerns of HCI. A related set of arguments is that the success or failure of systems often has much to do with the organisational context in which users are placed and their attitudes toward the system.

However, granting the need for a social perspective to be brought to bear on system does not answer the question as to what sociological perspective is best suited to meet this need. As we discussed at some length in Deliverable 2.1 of this Strand, the invitation to bring sociology into design is a mixed blessing. Although sociology has long had an interest in work and technology, it has failed to develop a coherent set of analytical tools to bring to bear on understanding their social character. Sociology, like many of the human sciences, is characterised by a plurality of approaches and perspectives, and most of them, with one or two exceptions, have little to offer the practical concerns of design. In other words,

sociology brings into design its own concerns and disagreements which, again as we reviewed in D2.2, are brought into CSCW.

The inadequacy of orthodox methods

Again to summarise some of the main conclusions of D2.2, many of the orthodox methods requirements elicitation owe more to the technological needs of system design than they do to the mandate to examine the social character of work in its own right. We earlier, borrowed the term ‘the great divide’ to collect together the host of issues surrounding the problems of requirements methods. While arguing that it was vital to acknowledge the informational and constructional needs of software engineering, it was also argued that methods based on these were inadequate to representing the phenomena of the social organisation of work activities. As indicated earlier, this is an argument which closely parallels that made against the procedures of variable analysis with social research; that is, because the analytic apparatus owes much to the requirements of formalisation, it serves to obscure the phenomena of interest.

What is it intended to find out?

There is never very general agreement in sociology about anything, and we cannot therefore speak of a unified purpose in the pursuit of ethnography, any more than of any other element in sociology, but we can identify a significant direction of interest in such work, and one which has derived from (predominantly) from the ethnomethodological standpoint, and which has specifically motivated much interest in ethnographic work in CSCW.

As mentioned above, the primary motivation in sociological terms is to acquire an acquaintance with the phenomena *prior* to any incorporation into the formal methodological and theoretical categories of sociology, to ascertain what it is that sociological theories and methods will have to come to terms with in their descriptive and analytic operations. Ethnomethodology has a genealogical affiliation with phenomenology, and ethnographic work is, in many ways, the sociological equivalent of the phenomenological concern to return ‘to the things themselves’, to take a renewed and unprejudiced look at the phenomena which have, within the mode of theoretical discourse, frequently become obscured beneath layers of abstraction and speculation. ‘The things themselves’ are, in the sociological case, the ordinary affairs of the society, the activities of ‘everyday life’ and the aim is to observe and describe these independently of the preconceptions of received sociological theories and methods, to be ‘led by the phenomena’ rather than by the concerns and requirements of a particular sociological standpoint. This means, in effect, that one takes an ‘unmotivated’ approach to the activities, looking just to see what people are doing, rather than seeking to identify things which are ‘sociologically interesting in them.’ Another

way in which this approach might be seen is as a (sociological) analogue of Wittgenstein's philosophical injunction: don't think, look! This is very comparable to the phenomenological injunction mentioned above, with it being an aspect of Wittgenstein's philosophical method that it was designed to get philosophers to see, to notice, to attend to, what is before their very eyes. This is not easy to do - to set aside the pre-conceptions of sociological (or philosophical) schemes can prove, once one has become attached to these, very difficult, and the imperative to go out and observe, to make studies, was intended as a means for letting the phenomena 'reveal themselves' without being accessed through the discipline-imposing framework of a pre-conceived scheme. The effective contrast was between the more traditional conception that

- (a) it is necessary to set up a framework of preconceptions and relevances within which the phenomena may reveal themselves, and in which the question as to how the phenomena is to be presented must be decided on the basis of the requirements which those preconceptions and relevances impose, meaning that the phenomena is always a phenomena-shaped-for-the-needs-of-statement

and the more unusual notion

- (b) that the phenomena should be allowed to reveal themselves in whatever form they manifest themselves, and only then the question should be raised as to how those manifestations are to be adequately captured and characterised, with the manifestations of the phenomena - *whatever they may be* - driving the descriptive venture, *and not the other way around*

It should not be thought that the latter postulation involves a *naivete* about the possibility of what it proposes, though we cannot here provide a methodological defence of this 'presuppositionless' approach - it is not, remember, *entirely* presuppositionless, but seeks, only to dispense with the preconceptions of defined sociological standpoints. Thus, the actual inclination is to take an unmotivated and open-ended look at some set of activities. One does not have any *purpose* in making the study, other than to see what it is that those activities are, what the people involved in them are doing, and one does not have any standard for deciding which things people are doing are the ones that are interesting or that matter - for the ethnographer, on this programme, it is the fact that people are doing them that endows them with interest. Thus, one dispenses with the conventional sociological preconception that there are numerous things which people are doing which are *trivial* and thus not worth attending to, which are *trivial* in a *sociological* sense, i.e. do not matter with respect to the kinds of things sociologists think are (or, more accurately, should be) important about a given activity - the mere fact that people are doing it justifies the attention being given to it by an ethnomethodologically motivated ethnographer. In this way the 'false starts', 'glitches', 'diversions', 'distractions', 'digressions' which are aspects of all activities are notable features of the phenomena, not, so to speak, 'noise' to be eliminated from the data in order to reveal 'essential' or 'sociologically relevant' aspects of the data.

The phenomena which are to be investigated are to be studied in their character as ‘phenomena of everyday life’ and they are, thus, to be examined in their character as ‘everyday’ occurrences for those who are involved in the activities in question, and the investigator is, therefore, seeking to ascertain what the phenomena *mean* for those amongst them. It is not for the investigator to decide what things are, what matters, what is important, or trivial, but to ascertain how things are judged in that way by those who are doing them, to examine the familiarity with and understanding of these matters possessed by those who must live with them. There is perhaps a difference from other sociological approaches which concern themselves with the ‘point of view’ of those under study which is worth noting. This is the difference between a concern for ‘world view’ and for ‘sensibility’. It is common for sociologists to study occupational groups, and to wonder about how those in them think and feel, but they very often want to know how those in the group *think of themselves* and how they *envisage their position and role in society*. Thus, they often seek to find out these things by interrogation, by more or less formal interviewing, of the people in the group to see whether they feel, for example, that the work they do is valuable and important, whether they feel, by virtue of doing the work, better or worse than other groups, what it is about their work that distinguishes them from others, what they see their contribution to society as being and so forth: in other words, what is their ‘world view’, in the sense of *general conception of how things are and/or ought to be*. In studies of the kind that ethnomethodologically motivated ethnographers make there is little concern for these kinds of questions, and much more concern with the depiction of what we have termed ‘the sensibility’ and should perhaps better call ‘the working sensibility’ of those under study. The interest is remote from the kinds of general reflections that someone in an occupation can produce, and much more engaged with their consciousness and attention when they are ‘at work’: what kinds of things do they take for granted or presuppose in going about their work, what kinds of things do they routinely notice, what kinds of things are they ‘on the lookout’ for, how do they ‘tune themselves in’ to the state of being ‘at work’, what are the constituents of their ‘serious frame of mind’, how do they react to the things that occur within their sphere of attention, what objectives are they seeking to attain in their reactions to whatever occurs, and by what means - through what operations - will they seek to accomplish those objectives in adaptation to these unfolding circumstances. Thus, attention is focused - in a way which is otherwise almost unprecedented in sociological studies, even ethnographic ones - (in studies of work, that is) upon the study of *doing the work*, and the attention is directed in the same unmotivated, open-ended way described above. This is not to say, though, that the matters which normally interest sociologists about occupations are entirely uninteresting or irrelevant to such studies, for they may or may not be, but if they are to do so, then it will be because of the way in which they figure in, reveal themselves in the course of, the investigation of ‘sensibility.’ It is, for example, plain that there are many features of doing the job of air traffic controlling which hinge upon the controller’s sense

of the importance and consequentiality of what he is doing, of the *criticality* of 'safety', in the controlling - the very sense of the 'near miss' is, of course, not that one has made a mistake, or that one has exhibited some embarrassing incompetence, but that one has engendered a *potentially disastrous* error, and it is this which induces the distress attendant on such a mistake.

Thus the tradition of ethnomethodological-type ethnographies have been relevant to CSCW because they have sought (insofar as we are concerned with work) about *work in the raw*, about work as it is done, and in the ways in which it is done in *actual practice*, as opposed to *work in idealised form*. We use the term 'idealised' here to refer to the methodological techniques of abstraction which simplify or otherwise transform empirical materials in order to render them tractable to mathematical or other formal representations. Since the attempt is made to exposit the practice of work in terms of the 'at work sensibility' of those who do it, the portrayal of the work also provides some expression of the viewpoint of those at work, and gives this some more explicit representation within the design process.

Chapter 3

The Social Organisation of Work

This chapter reviews the stance toward the justification for ethnography in CSCW design. Its aim is to present a baseline of ideas which underpin the analysis of work settings to bring to inform the design process. Although what follows is deeply informed by a particular approach to sociology, exposition of this has been kept to a minimum. This — or so we intend — is not to oversimplify but is for reasons of presentation to an audience of predominantly non-sociologists.

The visibility of social organisation

The starting point for understanding nature of social organisation - at least from the ethnomethodologically guided orientation to ethnography which is taken in our studies - is to begin from the point of view of the social actor acting within a socially organised environment. While this will be elaborated further, at this stage we simply mean beginning from the point of view of someone working within, for example, an office, a factory, a laboratory, a classroom, etc.. That is, working within a culturally recognised environment.

The issue of recognisability is an important one since it brings to the fore one of the main presuppositions underlying the ethnographic approach; that is, that the members of some socially organised setting construct that setting for what it is through their own understandings of the setting and its character. This brings us to another important presupposition of the approach.

The world known in common

The presumption of a 'world known in common' is an assumption about the mutual orientation of members of society in the mundane construction of daily life and is treated as a condition of ordinary concerted action.

Take, for example, 'driving in traffic' is not only a mundane occurrence; it is also intricately and massively dependent on the assumption of a 'world known in common': the assumption as to which side of the road to drive on when going in a particular direction, the assumption that red lights act as signs and convey an injunction, that the injunction is to 'stop' and *not* 'go', that flashing lights signify a driver's intention to turn left or right, that certain lights on cars are 'brake lights', and so on, are all ubiquitously recognised and, as such, assumptions to which we trust our lives as we drive, depending on other, unknown, drivers around us to share our understandings of the conventions and practices of driving.

It is an integral part of driving — which is, of course, a concerted activity — that the parties to it can see what each other is doing, can understand what each other is doing. The ‘world known in common’ is a condition of the ‘intelligibility’ of social scenes and settings. A condition, to put it another way, of reciprocal recognition of what various parties are doing.

There is no assumption here that the ‘world known in common’ is invariably known in common. In the world of daily life, the members of society are aware that it is not necessarily to be depended upon; it is not an assumption which is invariably satisfied, but can, on occasion, let one down. However, it is not an assumption that can be dispensed with in daily life. In driving, for example, there is no alternative but to count on the reciprocal understanding of other drivers. Yet, the members of society are routinely aware that there are circumstances where the assumption has to be cautiously applied or even suspended (as when they deal with people who are patently ‘strangers’ or with those who have identifiable doubts against their general competence to manage affairs, such as ‘children’ or ‘the senile’). These, too, are typically, from the point of view of members, of a regular and identifiable kind and are themselves knowable features of the ‘world known in common’. For example, seeing a car with a foreign registration might well produce the anticipation that the driver may be operating on driving conventions which differ from our own.

The relevance of this to the conduct of ethnography is that the multifarious ways in which the world is assumed to be known in common are apt to be taken-for-granted, to be treated as things which are of such patent obviousness and familiarity that they need not be paid direct and explicit attention by those who deal with them, and it is, thus, that the investigator is not merely seeking to capture the standpoint and experience of the participant in the setting in respect of the things which that participant might note, explicitly comment upon or pay significant attention to, but also to identify those things which the participant is attending to, is *indeed* depending upon - which are, in the jargon ‘seen-but-unnoticed’ in the organisation of conduct within the setting but which have the *presupposed, taken for granted* status that we have mentioned.

The intractable practicality of action

The study is of people who are engaged in *practical* action. It is assumed that this is the orientation which pervades the world of everyday life: its denizens give priority to getting things done, and that their action is therefore organised with respect to the necessities of practicality, that they are engaged in doing whatever it takes to get the thing done. The purpose of observation is, therefore, to identify the specific activities in which participants engage to deliver some specific end, and the character of those activities is dictated by the *specificity of the circumstances*. The essence of practical action is the need to do whatever is to be done under *just these* circumstances, and therefore involves the adaptation of the course of action to the exigencies of its circumstances. Hence the concern with

the *interplay* of standardisation and specificity, of the way in which those involved in social settings seek to achieve standardisation of ways of acting, to engender articulated and structured procedures for carrying out relevant types of social action, but must, at the same time, enforce and implement these in exigent, unforeseen, *enforceable* circumstances which may be more or less tractable to compliance with those standardisations. This accounts for the CSCW relevant concern with plans and procedures, and with the way in which the 'idealisations' of courses of action and their circumstances, must be articulated with 'actualities', which engenders the desire to gain (fieldwork) access to the ways in which work is done *in practice*, and motivates the noticing of the ways in which people achieve (or fail to do so) conduct in accord with the standardisations that they seek to implement. This gives a reason for putting the exigency and variability of practice into a prominent position in fieldwork studies, one which would be lacking from many sociological approaches, because those contingencies and variabilities would not, for that approach, be considered sociologically significant.

Attending to the work

When we contrast different approaches to sociology, we are not talking in terms of 'rights and wrongs', suggesting that our approach is right, and other approaches are not. The contrasts we make have to do with the reasons why this approach is particularly relevant to informing ethnographic studies in CSCW. Thus, it is a simple fact that many sociological approaches would not be motivated to do ethnographic studies at all, and that others which were motivated to do so would not - for their own good reasons - consider the practicalities of activities worth noticing. Another point of differentiation is that many sociological approaches are inclined to shift attention away from the activities which are the stuff, or business, of the setting under investigation. The case of studies of work is a leading example, for though there are many sociological studies 'of work', they have very little to say about the work which goes on within the setting under study. Thus, it is a common sociological attitude to view specific social settings as sites of generic, abstract 'social processes' - with 'social control' or 'domination' or 'surveillance' being currently fashionable ones - and their purpose in surveying actual social settings is to *minimise* the differences between them, to abstract from data about them in ways which exhibit the commonality of such processes, to make the case that these are generic. The approach taken here, by contrast, is particularly focused upon the distinctiveness, the specificity, of the settings under studies for, of course, in terms of the organisation of *practical* conduct, though there may be abstract, general similarities between one setting and another, it is nonetheless unavoidable that one must come to terms with the particularities of the setting if the day-to-day affairs of the setting are to be carried out. In terms of many sociological strategies for generalisation, the fact that people are engaged in a particular kind of work is only an *analytically incidental* feature of what they are doing, is only a concrete

instantiation of abstract, generic and formal processes, which means that there is little investigative motivation to attend to the practicalities of work activities, to attend to the nature of those activities as realisations of the kind of work that they are. By contrast, the ethnomethodologically motivated approach has every reason to attend to the distinct character of the work in the setting, to give priority to the fact that these persons are doing 'air traffic controlling', 'registering hotel guests', 'writing code', and 'authorising a bank loan', and for directing its attentions to the activities which specifically, distinctively comprise those particular types of activity, and, thus, to give detailed characterisations of, and to seek to understand the particular circumstantial conditions for, carrying out those activities in actual cases. The CSCW relevance has been, then, in the engendering of studies directed toward understanding how *the work* gets done, and thus to describing the detail and intricacies of working practice for their own sake.

The account-able character of work.

Social activities are *concerted* activities, they involve different people - often very many people - fitting their activities together in quite complex patterns. We have already mentioned 'driving in traffic' and this is clearly a case of concerted and complex activities, whereby those travelling at some speed seek to adjust their activities to each other's in order to achieve safe passage. The activity of driving at high speed has got to be concerted by the drivers in the cars: reacting each to the others they have to ensure that they have space to pass, that they can match their speeds and so forth, so that concerting the traffic has to be done from *within the traffic*. The expression 'account-able' character of activities has precisely to do with this issue of concerting work, with the way in which people engaged in an activity - be it driving, or anything else - have to organise their own actions in ways in which other participants can see what they are doing, and can adapt to it. Participants in social actions have, therefore, to *make visible* the identity of their actions, to enable other people to identify those actions, and to identify also their purposes and intentions, such that they can respond appropriately to them, and can integrate their own actions, reciprocally, in the complex pattern that they are jointly, collectively, engendering. Thus, in the case of driving, the simple fact is that drivers use ways of indicating what they are doing to other drivers - they count on the brake lights and indicator lights, for example, to make it visible to other drivers that they are intending, shortly, to turn (say) left and that they are now slowing down to make that turn, perhaps braking briefly to bring up the brake lights, and indicate to the driver behind that they are now starting to slow down for the turn.

The notion of the 'account-able' character of activities emphasises, then, the degree to which activities are organised to be identified, recognised or understood as the activities that they are, the way in which they are done *so that* other people can see what is being done and, thus, how they can respond appropriately to concert their actions, to take their part in the pattern of affairs that is developing.

The *fact* that social activities are concerted has long been a commonplace of sociology, but a concern to understand *just how* such concerting can take place, how people manage to make their activities fit together whilst, and as part of doing those activities, is not something that was much considered until ethnomethodology came along. Its concern with the question of how concerted actions are concerted, and the associated emphasis upon the 'account-able' character of work, has combined to give studies a focus upon the ways in which the pattern of complex activities are 'made visible' to those carrying out those activities, to the ways in which people placed within some complex of action can figure out what is happening around them and how they can fit their own activities into that complex (both when, for example, the pattern of activity is a localised one, within their visual field, where the participant can directly monitor those activities which are relevant to their decision as to what to do next and when, on the other hand, they are engaged in patterns of distributed activities, and where they cannot immediately monitor the activities of other, collaborating, parties but need, nonetheless, to know in some more-or-less specific sense what those others are doing, so as to shape their own activity into the relevant pattern - thus, we have detailed the ways in which airtraffic control involves, often, the monitoring of much larger areas of airspace than those for which the controller is specifically responsible so that the controller can contribute to order-across-the-airspace and not just to order-within-his-current-sector.)

This emphasis upon the account-able character of activities explains another CSCW relevant aspect of this approach to fieldwork, for the concern with the concerting of activities (work) from within the activities (work) ensures an interest in working under distributed conditions and of the role of 'awareness' in those conditions, of the extent to which, and the ways in which participants in work can attune themselves to the state of the work process, and integrate their own activities - immediately or remotely - with those of other participants in the work process.

Conclusion

In these brief remarks, we have highlighted some of the reasons why ethnomethodology's specific approach informs studies which are cogent for CSCW concerns, paying attention to the sociological rationale behind the elements emphasised in our 'framework for work analysis' such as 'plans and procedures', 'distributed co-ordination' and 'awareness'. We hasten to add that we make no suggestion attention to these matters can *only* result from the adoption of ethnomethodology's view of how to do sociology for one could, no doubt, arrive at similar concerns from other points of view (as many participants in CSCW have done). The purpose was, only, to illustrate the particular coincidence of pre-occupations which have made ethnomethodologically-motivated field studies suitable to some central CSCW concerns.

Chapter 4

The Practicalities of Ethnography

The following chapters deal with the practicalities of undertaking ethnographic field studies for system design. Its aims are as follows:

- to outline the design choices involving ethnography
- organising the design team
- to provide some advice on describing ethnography to clients
- to give practical advice on carrying out fieldwork

It should go without saying that what follows are not intended as strict procedures to be followed in each and every case of fieldwork. They are very much guidelines which would need to be adapted to the setting and the nature of the design project itself. As we have indicated many times, ethnographic fieldwork is not an arcane discipline but it does take patience and tact as well as showing respect for the people being studied. We shall have something to say about this particular aspect of fieldwork later.

The nature of the design process

One of the problems in presenting these guidelines about the practicalities of ethnographic fieldwork for system design has to do with the nature of the design process itself. As we have discussed in previous deliverables, the design process is at least as variable as the recommendations as to how it should be organised. There are, for example, characterisations of the design process which treat it entirely as an engineering one understanding this in very formal rationalistic terms which have to be strictly applied (COMIC Deliverable 2.1, 1993). Others, and Participative Design is a suitable example, want to broaden the conception of the system design process to include a concern for the users, seeing this concern as going far beyond a narrow engineering conception of effectiveness but, rather, as a means of realising the political values of workplace democracy. Although there has been an unfortunate tendency to see the various approaches to system design in oppositional terms, for our part we have been at pains to treat the issues as practical ones; that is, a concern with the practicalities of producing effective arrangements of skills and resources to maximise the chances of realising effective CSCW systems.

We are aware that such an aspiration says very little about how this can be done. However, there are a number of points we wish to develop in order to elaborate what we mean by a concern with the practicalities of the design process and, in particular, what this implies for the relationship between ethnographic fieldwork and the design process.

The first point to make is that we do not believe that there is any single set of arrangements or procedures which can be specified for achieving optimum effectiveness in system design, unless, that is, ‘optimum effectiveness’ is construed in terms akin to the adage, ‘doing the best one can with available resources’. In other words, and contra the tone with which many methods of system design are proposed, we do not believe that there is a Holy Grail of system design — or to borrow Brooks(1987) overworked phrase, ‘no silver bullet’ — that will solve all the problems of design. As Shapiro (1994) plausibly argues, design is a ‘satisficing’ process in the ‘real world’ in which design is done, be this in industry or in research environments. System design is, and will be, an evolving skill which has to be responsive not only to changes in experience and knowledge, but also to having to face up to new challenges as new technologies open up potentials for new uses, as organisational changes provoke new new challenges for technology, as technologies become more complex and difficult to manage, as systems are brought into new settings for new activities, and so on; all of which work against the notion that, somehow, we will eventually discover *the* way in which to produce effective, guaranteed fool-proof system design processes.

However, this is not an argument for the abandonment of systematicity in the design process. The adage mentioned above speaks of ‘doing the best one can’ and a large element of being able to ‘do the best one can’ is bringing together available resources and manage them in an effective way. Although there may be arguments, and reasonable ones at that, about the best way to organise and manage the development of large-scale software systems, what is hard to deny is the need for some form of organisation and management. But, and as a number of studies are beginning to show, what is effective organisation and management is subject to a range of influences, including many which are outside the remit or the control of any design team.³⁹

The second point to make is that design is not always about conceiving and building a new system from scratch or necessarily building a large-scale system. System design is done for a variety of purposes. In the research setting, for example, it is usually directed at building concept demonstrators, whereas in the commercial and industrial context the objective is to build systems which achieve specified goals, are robust and relatively easy to maintain. Such systems may be developments of existing ones or totally new systems designed to perform roles which have never before been done by computerised systems. The point is, and perhaps an obvious one, is that what we refer to as system design can be a highly varied activity including the full range from the development of a new system, to modifying an existing system, to ‘tweaking’ an extant system in light of users’ experiences. All that we assume about the nature of the design process for the purposes of this Handbook is some decision has been made that the design will benefit from ethnographic fieldwork.

³⁹ Gärtner and Wagner (1994), for example, talk about the political and cultural forces which shape design strategies. OTHERS

Design choices

The first point to make is that ethnography is not the only choice of method open to system designers. A point that we have been developing throughout this Strand of the COMIC Project is that ethnography is not a panacea for the problems of system design even though it has considerable potential in this regard. Like any method it has to find its role in the design process. Experience needs to be gained in its use and, equally important, ways of feedings its results into the software engineering process need to be developed. We have already begun work of this kind using DNP.

However, the practical question that we want to raise at this point is the very important one, namely, why use ethnography? We hope that we have said sufficient to suggest that ethnography has considerable potential in design, but it does not follow from this that it is a method which should be used on each and every occasion. For one, at the present time the method is relatively untried; for another, it has been mainly used in a research context; and for yet another, it is relatively expensive.⁴⁰ Nor do its results, to repeat the point, translate easily into requirements useful for software engineering. Finally, there is the vitally important issue of the problem to be solved.

While it can be plausibly argued that even a cursory period of observation at a work site could be useful for design, it is not the case that every design problem requires extensive ethnography. Many of the problems of design, for example, are technological, while others, and examples here might include interface issues, require a more cognitive than a sociological input. Ethnography has come to the fore where the problems are mainly to do with the design of distributed systems or, to put a slightly different angle on it, where co-operation and sharing are the issues. Although it would be wrong to compartmentalise too strictly both the problems and the methods used to solve them, nevertheless, these are important considerations to bear in mind.

Given that ethnography is concerned with uncovering the social world (of a working environment, for example) from the point of view of participants in that world, it is able to contribute to an understanding of the demands of multiple users of a single system as they undertake their everyday co-operative activities. It is worth remembering that, given this methodological background, the types of design issues that ethnography can address are those concerned with the types of collaboration a system must support.

“Systems design used to be done by a bunch of techies, deep deep deep within some head office building somewhere. Here they would build their system. Test it, test it, test it, until they were sure it would work, and then they would throw it over this great high wall, and hope the user would catch it, on the other side” (Cooper et al, 1995)

⁴⁰ Of course, ‘expensiveness’ is a relative matter. Failing to use ethnography when it might have proved beneficial could result in an expensive failure of design.

This account of systems design was told to an ethnographer as a story from the 'mythical past', describing how design 'used to be': the ethnographer in Cooper et al's study uses the account to characterise the way in which users might be excluded from the design process, isolated from but nonetheless affected by the work of the others. One of the fundamental presuppositions of the work of ethnography and its role in systems design is that this type of scenario is to be avoided; this is not to offer a glib suggestion that if 'everyone gets together and communicates' then every thing will work out fine.

Instead we want to continue to suggest that the notion of just what constitutes a 'design issue' can be informed by the ethnography itself. There are clearly a range of 'conventional' computational design issues to which systems builders must attend, but to see these issues as entirely divorced from those emerging from an ethnographic analysis of the domain application ignores the sociality of work that such design must support.

Grudin (1990) suggests that it can be difficult for designers to foresee the precise types of iniquities that might emerge between different types of users of the system being designed. Making use of ethnography as an evaluative method throughout the design process can make plain the work activities of those working throughout the application domain and provide information as to the types of activity and co-operation that currently, exists and what impact a given system might have upon the full diversity of that collaboration: what contributes positively to one member of the workforce might not to another.

Organising the design team

Many of the methods currently available in software engineering devote a great deal of their focus on specifying ways in which the process should be organised and managed effectively. In the same way, the fieldwork study needs to be organised as part of the design team.

Making clear the objectives of the fieldwork

In its basic form, fieldwork is a diffuse and open ended matter, with the fieldworker going out to look, to see what can be found (perhaps with some gross, broad, direction of interest which has led to the choice of the field site - e.g. one is interested in work or in, say, salesmanship as a form of work which is why one chooses a workplace, even a sales office or a market stall - as the field site but within that having no definite collection of things that need to be found out) the actual course of the fieldwork being dictated by the organisation of the setting under study, with the fieldworker following participants (and events) to see where they lead, abstaining from any intervention to direct affairs, but letting whatever will happen do so, and taking, of course, as long as possible to let relations with those in the field develop and the range of their activities reveal themselves. However, the extent to which fieldwork can be such an open-ended and loosely

directed venture in CSCW is another matter, for whilst part of the point of the study might be to obtain a more diffuse understanding of a worksetting that is possible from other sources, nonetheless there will often be design purposes to be served by the investigation, and these need to be articulated clearly between the design team and the fieldworker at an early stage. It may be necessary for the fieldworker to undertake some work in the field in order for such objectives to be effectively set, to get some sense of what can be attained through observation there, how accessible things will be and how closely, extensively or with what continuous focus they can be observed.

Gaining Access

Quite obviously, once the design decision has been taken that a period of fieldwork is necessary to inform the design, then the next step is the choice of fieldwork site and gain access to it. If the design is being done on behalf of a company then, presumably, the relevant permissions to carry out the fieldwork will already have been granted. However, it is vitally important to realise that this kind of permission is not a guarantee that the fieldworker will be accepted in the site by those who work there. Securing this kind of acceptance is a quite different matter. As anyone who has lived and worked within organisations knows, the morale of organisational members, at whatever level, can vary tremendously. Management styles, the well-being of the company, the pressure of work, and more, can all affect the extent to which a fieldworker is likely to be made welcome in the site, and consequently, how effectively he or she can undertake the study.

In social research covert ethnography is occasionally used especially when the study involves groups to whom, or a setting where, the concealment of activities is important. However, in the design context it is probably unwise to consider this approach for a number of reasons. First, in our experience openness about the objectives of the research is more likely to secure access and acceptance. Secondly, the covert fieldworker is limited to whatever role he or she has chosen to play within the organisation or group and this can be very restrictive. In the design context, time is typically at a premium and, accordingly, it is important that the fieldworker is able to get access to as many aspects of the organisation as necessary in the shortest space of time. As indicated, covert fieldworkers usually do not have this freedom. Finally, covert fieldwork has dubious ethical justification.

Gaining access is typically a matter of obtaining formal permission from whatever level of management in the organisation is capable of giving such authorisation. This, however, is not always a simple matter even when very senior managers have given permission. It needs to be remembered that managers of organisations have their own problems, their own interests, their own responsibilities which are not likely to be those of the designers. Even though their own organisation may be backing the design, day-to-day problems, the need

to get on with colleagues and subordinates, and so on, have to be taken into consideration. A fieldworker is not only 'one more thing to worry about' but could well be seen as a potential source of trouble, especially if the organisation is going through a difficult time.

The first example we want to present is taken from experience of the air traffic control study. This was a research study funded by research councils. It was in no sense an applied project involving industrial partners which meant that the team had to initiate the process of obtaining permission from scratch. The research team was small and the system development

War Story 1: Getting permission for the air traffic control study

Obtaining formal permission can be a prolonged business. In the case of the air traffic control study this took many weeks talking to various groups and managers within the Civil Aviation Authority (CAA). Since the study was built on a previous investigation at least the research team had an initial contact in the organisation which was useful in directing them through the various people who needed to be informed and whose agreement would be necessary. Much of the activity involved in obtaining permission was speaking to the various interested parties to inform them of the objectives of the research, reassuring them about the low level of intrusion that the fieldwork would involve, and establishing the team's own credentials as serious academic researchers. This took various forms, sometimes one-to-one interviews with CAA representatives and sometimes presentations to a group of them.

One essential outcome of these meetings was an introduction to the line management at London Air Traffic Control Centre. Although we had the blessing of the relevant senior managers in the CAA, it was made clear that we would also need to obtain the agreement of the local line managers which necessitated a further round of presentations and interviews. While there were clear benefits in having already obtained the support of the CAA, it could not be taken for granted that local management would simply accede to the research without further ado. The fact that we had undertaken a previous study without any undue mishaps helped, but permission at the local level could not be taken for granted. As it turned out, once the team had talked to local management and to the local representatives of controllers trade unions, permission was given and arrangements made to facilitate the fieldwork.

Some lessons

The first point to make is that research such as this involves making an incursion into ongoing organisational life. Although those involved in the research may well have spent a great deal of time setting up the ideas, applying for funding,

appointing staff, and so on, so much so that it can easily become a major focal point of life, these are not likely to be considerations of much relevance or concern for people in other organisations who will have their own preoccupations, troubles and interests. This does not necessarily mean that senior managers of organisations are always going to be unsympathetic, or even antagonistic, it does mean that researchers do need to be mindful of the fact that they are in a dependent and subordinate position and to recognise that it is up to them to persuade and not to demand. This may seem an obvious point but it does have some very practical implications.

- *Gear fieldwork requirements to what the organisation can reasonably provide*

What this means is that permission is more likely to be forthcoming if there is a strong reassurance that the research will not involve too much disruption to organisational routines and responsibilities. This is an issue which needs to be considered early in the planning of the research.

- *Do not dissemble about requirements*

Despite the natural inclination to understate fieldwork requirements in order to facilitate permission being granted, it is wise to be as clear as possible about what is needed even though this might occasion some reluctance of the part of the organisation. While some negotiation is normally possible and, indeed, if the fieldwork is going well the possibility of extending it is often not much of a problem, it is important to be clear at the beginning to avoid possible repercussions later. Also, although there was only one possible place to do the study of air traffic control, it is important that the design team evaluates the consequences for the study of what the organisation can provide. If this is less than is required for the research, then it may be worth thinking about another research site or, if this is not an option, reconsidering the research objectives.

- *What is in it for the organisation?*

While it is not the case that organisations always demand a strict quid pro quo for granting permission, it is helpful to think about how the organisation and/or the managers, could benefit from the research. In the case of air traffic control, there was, to a large degree, a strong commonality of interest in controlling even though the research was not practically addressing the CAA's problems. Nevertheless, the willingness to share information and results was an advantage. Not all research, of course, is so closely tied to organisational interests as it was in this case. Nor is it always a matter of an instrumental exchange. Very often a willingness to give a presentation on the research, or to cite the organisation in any published papers, etc., can be sufficient.

- *Be clear about arrangements*

Once permission has been granted it is important to establish clear contact points, dates and other arrangements that will be necessary. Sometimes organisations may nominate a person who will take responsibility for making such arrangements, but in other cases it is important to obtain names and means of contact for relevant people and to follow these up as quickly as possible.

War Story 2: Getting Access to a Technology Centre

This arose out of a collaborative project in which one of the industrial partners was provide access to one of the technology support centres of the organisation. On the face of it, this looked to be a straightforward matter for the representative of the organisation on the research team to arrange. However, the process seemed to be taking a long time. It had been assumed, quite wrongly as it turned out, that beyond the needs of courtesy there would be no problem about gaining access by a manager within the organisation to another unit within the same organisation. What had been underestimated was the large measure of independence between the respective organisational units within the wider organisation and the effect of organisational hierarchy. It became clear that access was not so straightforward. Eventually, and after a number of presentations to the staff concerned, access for the fieldwork was reluctantly granted.

Some lessons

In the above case the fieldwork did not run as smoothly as hoped. The research team had not been directly involved in developing the contacts for access. This had been left to the organisation's representative and it subsequently appeared that rather more had been promised to the host organisation than the team could possibly deliver.

Organisations have their politics

An inescapable fact of organisational life are the politics that surrounds much decision-making and negotiation. There is little that the research team can do about this except to resist being drawn into it as far as possible. In this case, the research team failed to fully appreciate the nature of the relationship between the separate units of the wider organisation.

Try to get direct access to the research site

As far as possible, researchers should endeavour to get direct access to relevant personnel in the research site rather than through intermediaries. This minimises the risk of misrepresentation and any potential overselling of the benefits of the research to the organisation. However, such arrangements are not always possible.

The above ‘war stories’ do not, of course, encompass all the experiences fieldworkers have with gaining access to a research site. However, and in the context of design, what is important is that access is gained officially through the relevant organisational officers and, if necessary, involving not just senior managers but personnel at every level. It is always a good idea to give presentations to relevant parties, to introduce the fieldworker and provide reassurances about anonymity and confidentiality

What Happens If Access is Denied?

It may be that, at some stage in the process, access is not obtained. While networks of contacts are useful as are ongoing relationships with firms and organisations, in the end if access is denied, especially if the resistance is lower down any managerial hierarchy, then very little can be done about it except to look for alternative sites. Given the nature of fieldwork and the crucial importance of obtaining the co-operation of the people being studied, any reluctance of their part, or any feeling of being coerced to co-operate, is likely to make the fieldwork difficult if not impossible. This is one reason why the design team should think in advance about possible alternative sites should this happen.

Beginning fieldwork

“You arrive, tape recorder in hand, with a grin rigidly planted on your face. You probably realise that you have no idea how your grin is being interpreted, so you stop and nervously attempt a relaxed pose. Then you realise you have no idea how that is being interpreted. Soon you work yourself into the paralysis of the psychiatrist in the strip joint - she knows she can’t react, but she knows she can’t *not* react. It is little wonder that sometimes people hide in a hotel room and read mysteries.” (Agar 1980)

The temptation on beginning a period of ethnographic enquiry is indeed to ‘hide in a hotel room’, if you are lucky enough to have one. Knowing where to start the study is, indeed, a daunting prospect, until, that is you have gone and done it, when the answer becomes clear enough: start somewhere, anywhere.

The truth of the matter is that at the outset of a new study the rigidly-grinning ethnographer cannot hope to have a clear enough sense of the organisation he or she is observing to guide him or her to areas of that organisation of particular relevance to his or her endeavours. This should not be considered at all problematic since the ethnographer’s aim is to glean some understanding of the organisation and its functions basically unfettered by preconceptions of what that understanding might be.

What should be borne in mind, then, is that the initial phase of an organisational ethnography is one of familiarising oneself with that organisation. This phase will typically be characterised by the frantic collection of every piece of information that the ethnographer is exposed to; make notes on everything that you see and hear, on what you’re told directly and on what you hear on the other

side of the room; sketch plans of office spaces and desktops; glance at official documents and scribbled notes; tape record anything that you can.

So, at the outset, *start anywhere you can*, or with the person you think looks the most friendly and least likely to be bothered by your presence, collect as much data as you can of whatever sort, and you will find that at some point relatively soon, some form of understanding of the organisation will emerge. You will then be able to decide where to focus your efforts to cover the elements of the organisation most 'relevant' to the broader design issues framing your ethnography. Indeed, it may be that these broader design issues themselves begin to emerge from this initial period. Do not worry about issues of 'relevance' at this stage - they will be resolved with time.

What should also be remembered is that ethnography of this kind is in the business of making distributed co-ordination visible, outlining the socially organised nature of work being observed: this is not represented by any one type of work in particular, but is all around in every activity. Wherever you look you will find it - indeed one might contend that you don't need to *look* for it, it is there in front of you. As Sacks (1984) puts it

"That is, we may... take it that there is order at all points.... tap into whomsoever, wheresoever, and we get much the same things."

Such observations appear simplistic, but highlight an important feature of ethnographic research of this kind - start anywhere you can and you will come away with data that is useful in that it pertains to the social organisation of human activity.

War Story 3 - Things overheard in the Bank

In the initial phase of his study of one organisational element of a UK high-street bank, the ethnographer was dutifully taping every work activity that he observed. In this instance he was following a team of lending officers based around a large table in the bank's office, following work that, by and large, was undertaken in a quiet manner. As observation took place at one end of the table it became clear that an interesting conversation was taking place at the other end. Soon enough it became clear that it represented important elements of their work that were not as apparent in the work of those covered thus far. The ethnographer was able to 'half-listen to' and record the conversation for consideration later, and in the light of this consideration re-focused his attentions in subsequent stages of the ethnography.

The point here is that precisely this kind of chance collection of data *will* take place during this first phase of the ethnography, wherever it might take place. As long as you remain attentive to the sociality of the work that is being observed, elements of its organisation will become apparent.

Ethnographers also invariably come up against the phrase 'If only you'd been here last week, something much more interesting happened'. Do not let this worry

you, as it is the mundane, routine aspects of work that are of as much interest in this kind of work, as the spectacular and unusual: once again, the social organisation of work in its practical everyday sense will be made plain by observation of ‘the ordinary’

There is, finally, one other key characteristic of this phase of the ethnography that is important to consider: this is also the period during which it is most likely that the organisation you are studying is getting used to you and your presence. Do not work yourself into ‘the paralysis of the psychiatrist in a strip joint’, but simply behave as a courteous and considerate person who appreciates being offered access to the organisation.

Describing ethnography to clients

“I’m still not sure exactly what it is you do, but the more I hear about it the more I’m convinced it’ll be extremely powerful...extremely powerful”

A system engineer.

“What are you here for? To make us redundant?”

A bank employee

Both of the above quotations were taken from fieldwork and neatly set out two of the issues we have come across in our studies. The first, of course, expresses puzzlement about the nature of the method of ethnography and, in this case, its relationship to system design. The second expresses what is perhaps a more serious worry about the consequences the field study may have for the welfare of the particular workers being investigated. Individuals at all levels in an organisation have a range of ideas and expectations, and fears, about ethnography from the indifferent, even dismissive, to the puzzled, to the unrealistically enthusiastic. A common conception is to interpret the method in terms of other methods which are more familiar in organisations, such as work study, ergonomics, requirements capture methods, and so on.

Nevertheless, it is quite clear that the ethnographer, and other members of the design team if necessary, do need to say something about what the study will involve and why it is being done. Not only is this for reasons of courtesy — after all, the fieldworker will have to rely heavily upon the people being studied; without their co-operation, there is no study — it is also a measure of self-protection.

What is exactly said about the reason for the study, as opposed to what is said about the method of ethnography will, of necessity, depend considerably on auspices of the investigation. In research settings this is relatively straightforward. In cases where the study is part of internal developments in an organisation this can be more difficult. One of the concerns which surfaces in the literature on social research is the problem of alerting respondents or subjects to the topic of the research and, thereby, potentially biasing their attitudes and views. It also

raises a dilemma that in order to minimise this possibility, the researcher may well have to be less than honest to the subjects and denying them the opportunity to consent to the research. Much of this concern first arose in connection with questionnaire studies but it does surface in ethnography and is one of the justifications for more covert modes of fieldwork investigations. However, in the design context there are aspects of this problem which it is important to discuss at greater length.

The first point to make is that given the more extended and rounded nature of ethnographic fieldwork compared with the one-shot, short duration questionnaire, the issue of bias as this is usually articulated is perhaps of less importance in that the fieldworker is better placed to assess activities within the wider setting.

The second point to stress is that many of the concerns that might be expressed by those to be investigated are not within the control of the ethnographer or even the research team. Fears about redundancy, anxieties about job changes, worries about deskilling are all more to do with the broader economic climate and the organisation itself as they are to do with the occasion of the study. Moreover, it is undeniable in the context of IT development that much of the motivation for such innovations is to replace or reduce the cost of labour. Whether or not it actually succeeds in doing so is a much more arguable matter. What is more certain is that there is a widespread view that this is what IT developments are about.

There is little that can be done about such sentiments if such changes to working lives are on the agenda. If ethnography becomes a more widespread technique then situations such as these are likely to become more frequent. Nonetheless, and whatever the auspices, it is important to say why and in what ways the study is being done.

We include as an example of the kind of thing that can be done to effect better understanding the statement of 'the ethnographer's charter', prepared by Magnus Ramage, which can easily be handed out:

My work is to study the effect of technology upon organisations into which it is installed. The kind of technology I am especially interested in is computer technology - such as electronic mail and workgroup software - designed to support people working together in all sorts of ways: in teams, writing a report across teams, issuing invoices and many similar tasks. The evaluation of the technology produced by this could be used for redesigning the technology or the work practices surrounding the technology, or simply to provide information for people designing technology, or putting it into organisations, in the future. Often in the introduction of such technology things go wrong (as much to do with people factors as the technology itself): I am particularly interested in how they go wrong and how they might be put right.

I believe technology can only be studied within the context of the organisation it is being used in. This can only be done by spending a period of time in the organisation, as unobtrusively as possible, observing the work of the organisation, and talking to key people within it (at all levels of hierarchy).

What I would want to do in your organisation is to 'hang around': sit and watch what people are doing while they are working in their normal everyday work, take lots of notes about it, maybe (if everyone's happy about this) occasionally tape-record some of what's happening.

This observation would aim to be as unintrusive as possible, to not disrupt the flow of work in any way - that's not in your interest and it's not in mine!

I might, however, at pre-arranged times, ask to interview particular individuals about their work - not with any great agenda or list of questions, just to have them talk about how they work (particularly how they work with others) and how the computer technology affects that work.

I also have a slightly more active exercise to find out what people think of a computer system by having them redesign it - this might be useful to use in addition to these other methods if it were agreed (it only lasts an hour or two). This method has proved very useful in past studies as a way to explore problems with a system and has been designed in accordance with modern management theory.

Having done this study (for whatever length of time), I would write it up in two forms. Firstly, I would write a report to you, outlining how well in my view, based on my observations, the technology is working within the organisation. This would be written in plain English, rather than academic-ese or consultant-speke, and would represent a kind of mini-consultancy report.

Secondly, I would write an academic report of my study, possibly for publication in the literature (with your agreement). In all cases, I would preserve the total anonymity of the organisation and the people within it (as well as anything else necessary in a particular case). I would guarantee not to make known who was being referred to in the study to other parties - either individuals or other organisations. My aim is not to "blow the whistle" on anything in the organisation but to study what is happening.

I have used these methods previously in a number of different studies of the effects of technology on the work of groups, where they have proved very useful as ways to evaluate the technology and its effects.

To summarise, I am seeking to come and observe work in your organisation for a period of time to be agreed, without any intrusion of the work. My aims are completely academic and I am not answerable to anyone except the academic community. In return, I would produce a consultancy report on the effects of technology on your organisation. In all circumstances, I would guarantee anonymity of results.

Chapter 5

Reporting Ethnographic Findings

The literature on ethnography houses a broad range of worries about the partial nature of the ethnographic record. Is it accurate? Is it objective? What's missing from it? Does it simply reflect the prejudices of the ethnographer? A broad range of critiques emerge from such questions which typically question the 'authority' of the ethnographic text as a comprehensive, definitive description of a situation, seeing it instead as a distortion of 'reality' as the social constructionist vehicle of patriarchy, capitalism or the like. As van Mannen (1995) notes ethnography itself is now seen as part of the 'crisis of representation' which is alleged to undermine the suppositions which underpin all narrative forms, especially - from the point of view of ethnography - those which endow the narrative with any sense of being about an external, objective world.

"Ethnography is no longer pictured as a relatively simple look, listen and learn procedure but rather as something akin to an intense epistemological trial by fire. Boon (1982) for instance, takes ethnography to task for its reliance on unquestioned cultural conceits ("ours" not "theirs"). Rosaldo, (1989) sternly chides ethnography for its unwarranted claims of objectivity, whereas Clifford (1988) points to its inevitable but treacherous subjectivity. Clough (1992) indites ethnography for its gendered silences and impartiality. Denzin (1988) faults ethnography for its failure to abandon the scientific posturing associated with modernism or essentialism, and Said (1989) considers ethnography's link to the empire discrediting yet difficult to shed. For these reasons and more, the cultural representation business has become quite tricky."

The temptation is to take such concerns seriously to the extent that no ethnographic report could possibly be written for fear of imposing one's prejudiced subjectivity upon some situation. What must be remembered, however, is that any situation is infinitely describable, and that a notion of objectivity as an achievable goal is an impossible one and therefore not one to be worried about excessively (and it should also be borne in mind that it is, in many cases, ethnographic studies which are invoked to document the so-called 'crisis of representation'). These critical arguments are not to be taken lightly, but neither are they to be uncritically accepted in their turn, for there are many counter-arguments which can be mounted against them (as is indicated in some of the arguments set out in the appendix). It is by no means clear that these condemnations of ethnography will, in the end, stand, and there is no reason, therefore, why the making of ethnographic studies should be discontinued pending the outcome of that debate. If they are to be made, however, they will have to be made out of a pragmatic commitment to the spirit of offering a genuine understanding of the organisation as observed by the ethnographer is a sensible means to the end of communicating such findings in a manner appropriate for the

design issues at hand (rather than any conviction that one is in possession of the epistemologically authorised one-true-way of knowing).

By this latter point we mean that reporting the findings of ethnographic studies is an activity which, like many other activities, needs to be recipient designed to be successful. Ethnographic data typically consists of reams and reams of fieldnotes, transcriptions of cassette tapes and sets of documents produced by or pertaining to the organisation. Drawing out the key themes from such a wealth of information and presenting them to interested parties is a significant undertaking.

What needs to be distinguished at this point in the ethnographic study is

- the type of understanding that needs to be conveyed from the ethnographer to the design team
- how this relates to what we learn about the social organisation of work, or the ways in which these issues can sensitise the design process

Reporting findings to clients

As stated earlier, the success to date of a number of organisational ethnographies has been due in no small measure to the co-operation of members of the organisations studied. The least that these people can expect by way of acknowledgement of this help is to be made aware of the nature of the ethnographic findings : it is a matter of courtesy that the ethnographer should, by some means, offer them access to the results. In many cases a presentation of the key themes will suffice, perhaps contextualised within the design aims of the project to make clear the ways in which their co-operation has contributed to addressing an identifiable 'goal'.

In many cases access to the field site will be provided by an organisation (typically a commercial one) partnering the design team in a collaborative project. In these situations the organisation being studied is a 'client' of the ethnography as well as its subject, and in such cases a degree of care is required in presenting ethnographic findings to these 'clients'.

War Story No.4 - Reporting findings to the Technology Centre project team

The Technology Centre study also proved interesting beyond the initial stages of fieldwork: the reports produced for the project became embroiled within a range of organisational issues. These issues resolved around misunderstandings in the role of the fieldsite in the project to which the ethnography was to contribute.

- *From the outset of the study establish a relationship with the fieldsite that is free from ambiguity*

It is important that a clear understanding exists as to the relationship between fieldsite and research project: in the above example, management at the fieldsite considered themselves to be partners in the research project. Those undertaking the research were not aware of this. As a result, documents delivered to the project were read by the fieldsite management, and taken as a contribution to the fulfilment of their organisational agenda, an agenda with which the fieldworkers were not familiar. As a consequence of this, the documents were judged by the management at the host site as failing to meet their expectations (since they were ethnographic reports, rather than those of management consultancy).

Here the ambiguous nature of the relationship between fieldsite and research project, itself a product of the manner in which site access was negotiated, resulted in the misinterpretation and consequent rejection of the ethnographic study and its reports.

Furthermore given this ambiguous relationship, critique of working practices was inferred from relatively anodyne descriptions of work as it actually happened that were included in the reports. Managers at the site had been 'sold' ethnography as an evaluative exercise examining their management procedures and consequently gave the impression that they read the reports as saying 'The people at this fieldsite do not actually follow the Quality procedures that they claim to'. What in fact was being pointed out was that staff had to get their work done on an everyday basis in a practical manner as well as 'doing the work to make the Quality procedures work'. As a result of this misreading managers at the fieldsite felt that the reports would be 'dangerous' if they came into the hands of companies with whom they tendered for business. This unfortunate misunderstanding led to a 'souring' of the relationship between the ethnographer and 'clients' of his work which took some effort to resolve.

War Story 5 - Ethnography and The Technology Centre Project Team

During the study of work at the Technology Centre, the fieldworker experienced little discernible resistance to his presence; one or two individuals made it clear that they did not relish the prospect of being observed, and the fieldworker duly picked up on these signals and carried out observations elsewhere within the Centre. Such constraints did not appear to 'skew' the observation unduly and appeared as little more than run-of-the-mill courtesies underwriting the success of a given piece of fieldwork.

As the project progressed, the contribution of the ethnography to the development work undertaken in the project became problematised by a number of partners to this development. In particular the work did not satisfy the organisation 'hosting' the fieldwork: these dissatisfactions were discussed and

appeared to centre upon the disruptive presence of fieldworkers in the Technology Centre. The issue of disruption was investigated further and was characterised by our ‘gatekeeper’ within the organisation as a two-fold problem: the fieldworkers were said to have ignored the suit and tie dress-code associated with the Centre and to have followed around members of staff who were not willing to participate, on both counts disrupting the work, and thus distorting understanding of the Centre’s work.

Generally, then, the organisational ‘clients’ of ethnographic study need a comprehensive picture of the nature of the work, and the form that results might typically take: ‘warts and all descriptions’ was a phrase used by one manager, somewhat uncomfortably.

There is also a broader issue pertaining to such difficulties with the use of ethnography in organisations. Suspicions or misunderstandings of the method may emerge in complaints about its suitability when it does not deliver what, for whatever reason, is expected of it.

Be prepared to come across unexpected issues on occasions and deal with them in a manner appropriate to whatever requirements emerge for continuing the study. However, as stated earlier, be prepared for the need to re-focus the study and, even find a new field site.

Conclusion

In line with everything that we have said throughout our contributions to COMIC we have, in this basic handbook to ethnography, tried to recognise that there are difficulties, on both the sociological *and* the design sides of the equation, but have sought, in this presentation, to disentangle many of the practical matters of organising and delivering fieldstudies within the framework of the requirements capture operations of real design processes from those which raise issues of profound principle about the nature of sociology, about the role of ethnography, about the plausibility of ethnomethodology or about the fundamentals of design practice and organisation. We have not indicated at numerous points an awareness of those problems and of their scope, but take the view that the resolution of those matters of principle is a long-term matter and that everything cannot be put on hold pending their clarification and resolution (if any). We assume, instead, that matters will continue to be encountered and dealt with in a practical way, that design and requirements capture will go on, however fraught they may presently be, and assume that ethnographies will continue to be done also, and have therefore sought to highlight some of the practical elements involved in organising and delivering on an ethnographic study for design. Since the Handbook is addressed to designers we have sought to give them a passing awareness of the complexity of the history which leads up to current ethnographic practice and of the formidable nature of some of the argument which surrounds it, but have sought to balance this with the suggestion that for many of their

purposes there is no need to be overly concerned with nor intimidated by these - they can commonly disregard, but should not underestimate, the sociological complexities.

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Appendix I

Different Kinds of Ethnography: Ethnomethodology and Constructionism

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We have given, in the Handbook, a simple and *very practical* description of 'ethnography', dealing with it in its aspect primarily as *data collection*, and, having done so, might be thought to have provided the justification for the kinds of critique that Anderson (1994,1995) has made against the idea that 'ethnography' is a kind of mindless data collecting when, in fact, it is replete with intellectual, *sociological* considerations, and has the potential to contribute to the re-thinking of fundamental concepts. We do not necessarily dissent from Anderson's arguments, and indeed recognise that there are very different kinds of orientations in terms of which ethnographies can be conducted, and that there are matters of considerable substance to be debated over what is demonstrated through ethnographic studies. We have, in fact, argued predominantly for ethnographic studies of a certain kind - namely, ethnomethodological (or ethnomethodologically influenced) as being most suitable for CSCW - at least in connection with Requirements Capture - for these involve devotion to the study of work in its routine, everyday character which can provide the most effective informational input to designers designing for a particular setting. Further, though we have provided a sketchy history of the development of ethnography we might be accused of being out of date in our outlook, neglecting the fact that the ethnographic enterprise has, itself, been cast into question, of overlooking the extent to which the making of 'naive' ethnography has been challenged, the extent to which there is a demand for 'reflexive' ethnography, for a much more intense, self-critical, sceptically doubting approach to 'ethnography.' There has been a turn to the text, with ethnography attempts to convert ethnography into the ethnography-of-the-text, into ethnography-of-the-ethnographic-text. The fact which has impacted upon both anthropologists and sociologists is that ethnography is, in important respects, perhaps even *in essence* (depending on how you interpret Jacques Derrida's contention that 'there is nothing outside the text') writing, and, as such is presumptively (*necessarily*, if you accept, or perhaps it is misapply, Derrida's general arguments/method) exposed to deconstruction, to having its hidden agenda revealed, to its constituent texts being revealed to be self-defeating compositions.

The fact that ethnography is *writing* certainly comes as no surprise to ethnomethodology, and far from being open to the charge that we are unaware of this we can point to Harold Garfinkel's (1970) own comments on anthropological

writing in the 1970's and to Sharrock and Anderson's 'Analytic work' (1979), papers which date well before many of the writings which purport to be self-conscious about their status as writing. However, we do not concur in the arguments which undergird either 'deconstructionism' or 'social constructionism' as twin, sometimes interwoven sources of current scepticism about meaning, reading, representation or objectivity. The fact that the term 'reflexivity' appears in Garfinkel's earlier formulations of ethnomethodology does not indicate *any* affinity between that use and its contemporary employment in talk of, for example, 'reflexive ethnography'. Indeed, developments in both 'social constructionism' and 'deconstructionism' dispense with the very *essentials* of 'reflexivity' as it figures in Garfinkel's writings. It seems important, then, to spell out the suppositions on the basis of which *we* conduct ethnography from those on which 'constructivists' do so - we cannot deal with both social constructivism and deconstruction, and will organise our exposition, then, around the exposition of our differences with the former.

The differences are not ones which pertain merely to current practice, but arise from different conceptions about the most elemental features of sociological procedure, and they are ones which involve almost *diametrical* oppositions, ones which invest the ethnomethodological and the 'constructionist' exercises with a completely different sense of what they are doing.

A gross contrast can be made in this way - *social constructionism* places itself firmly within sociology's long and central tradition of 'debunking', from which *ethnomethodology* fundamentally and rigorously dissents. It is the characteristic purpose of *social constructionism* to demonstrate that something is not an *x* (e.g. a 'natural', 'biological', 'real' or 'factual' matter but is, instead, a *social construction*).

The social constructionists, then, seek *confrontations* with the understandings that the members of the society have, continuing the long and standard sociological tradition which maintains that *the members of society do not know what they are doing*. Thus, constructionism is, with respect to its conception of the relationship between its own analytic exercise and the conduct of member's understandings, *unreconstructed* in respect of the mainstream sociological apparatus. It could not, therefore, contrast more strongly with *ethnomethodology* which eschews the entire, classic, conception of the relationship between its inquiries and members' understandings.

Anyone familiar with the sociological tradition will know that there is frequent contention over the status of members' understandings, identified as these very commonly are, as 'common sense' understandings, and that the overwhelmingly popular position, as we have already indicated, it is that it is (virtually) sociology's purpose to challenge these understandings and set them right. The alternative, is seemingly to stand up for these understandings, to *defend* them against such criticism. Ethnomethodology is commonly seen as falling into the latter category, but this is to misapprehend its initial move, which is to disavow

the purposes of *either* criticising *or* defending those common sense understandings.

It is taken for granted, amongst those who controversialise for and against members understandings - debates between 'realism' and 'relativism' are one common, long running and tedious form which those controversies take - that the members' common sense understandings are already understood, that these are known, but ethnomethodology doubts that this is so, and characteristically finds that 'common sense understandings' *as portrayed in sociological studies seem an impoverished and caricatured version of the understandings that the members of society hold*. Ethnomethodology has some notoriety for complaining that sociologists characteristically treat the members of society as *dopes* but the import of that point seems seldom to be appreciated, which is that it makes the investigation of 'common sense understandings' the focus of inquiry, something to be *studied*, not something to be sided with, either for or against.

There is a significant difference between *refraining from all judgement on the validity of members understandings*, on the one hand, and *judging that members understandings are all equally valid*. This latter contention is the relativist's contention - and it becomes very much a bone of contention, as a result - and it is one to which ethnomethodology is frequently imagined to subscribe but to which it cannot coherently attach itself because to do so would be entirely inconsistent with its methodological step of *refraining from all judgement on the (ultimate) validity of members' understanding*, and to offer that, say, they were *all equally valid* would scarcely a way of refraining from judgements of validity. Hence, 'relativism' is not relevant to its agenda.

Simplistically put, then, ethnomethodology's purpose is the analyse the organisation of the *ways in which the members of the society conduct their everyday affairs on the basis of their common sense understandings, to understand how they organise those affairs in the course of carrying them out* - this latter qualification connecting its venture with a classic topic of social inquiry, the production of social order. It is neither more, nor less, than this, and it is clearly an important, and a *problematical* element in such a venture to identify and specify the 'common sense' understandings which are deployed in everyday affairs *in relation to* the actual *execution* of those affairs.

It is patently part of the organisation of those everyday affairs that the parties to them make adjudicate reality, determine matters of fact, that such adjudications are the basis for further inferences and actions. Thus, motorists seek, for example, to anticipate what the driver in front is going to do - and decide on the basis of the flashing left indicator, for example - in order that they may take precautionary judgements as to what safe driving requires and they do things to position their vehicles appropriately. The members of society have, for the overwhelming bulk of their affairs, ways of deciding what is the case, what has happened and so forth, ways upon which they extensively *rely* in the conduct of their affairs and *insofar* as that is the case, insofar as members of the society seek, in and as part of, their activities, to ascertain what is the case, what are the facts, what has

actually happened, whether things are as they appear, then we might speak of that as *defining* or *constructing* reality. It should be noted, however, for it is no small point, that in proposing such a locution we intend that it should capture what is *patent*, that which is itself a matter of ‘common sense understandings.’ Members have, as *ethnomethodology* should, in more proprietary terms, express it, have methods for sorting fact from fiction, speculation from confirmation, the joking from the serious, the actual from the imagined and so on and so forth. [We should insert to say that they have ways of doing this is not to *endorse* ways, for these might or might not, in any instance, be ones to which we - *as members of the society ourselves* - might subscribe] but is, rather, only to indicate their ostensive purpose for those amongst whom they find use - that this should be the case is no surprise to anyone, and it is surely sufficient for an agenda of work to examine the kinds of methods which persons variously use to determine these matters and to depict the ways in which they deploy them in the course of the affairs in which questions of fact arise. Air traffic controllers, for example, have ways of ascertaining the state of traffic in airspace generally, and specifically within the sectors that they control, and these ways are extensively built upon the provided technologies of the radar screen, paper strips and so forth, and on the collaborative conventions of work within the staff of the controlling suite. During their preparation for and undertaking of their shift’s work, and, of course, *for the purposes of (safe) controlling*, the controllers have ways of ascertaining where aircraft are and what they are/will be doing, how they stand to each other with respect to height, distance and speed and whether they present any risk to each other’s safety - by monitoring the screen, reading and annotating the strips and talking to pilots, other controllers and the denizens of their own controlling suite they can (assuming the soundness of the radar image, the up-to-date status of the strips and so forth) from their seat at the console ascertain the specific current and developing configuration of air traffic in their sector. In speaking of ‘their methods’, then, we refer only to those practices which are, for the controllers, the most ordinary and familiar things, to their dialoguing on the radio telephone, to their reading through the data printed out on their strips, to their calculating - visually, or with (say) a pencil as an aid - the deployment of traffic from the screen - and *if the possession and application of some such ensemble of ways is all that is meant by ‘defining’ or ‘constructing’ reality* then we should have no difficulty in employing such terms, and the only difficulty with respect to the members of society would be in explaining its meaning, in enabling them to understand that it was only, so to speak, a sociological term-of-art for matters which they well understood. It does not describe them as doing something - ‘describing’ or ‘constructing’ reality - other than or in addition to the things they are entirely aware of themselves as ordinarily, routinely, and largely unremarkably engaged in doing. Rather, it could only be a term-of-art for the collective identification of that extensive diversity of ways in which they survey the airways. ‘Defining’ or ‘constructing’ reality, *in that sense*, is something that the members of society characteristically do *as a matter of course*.

It is important to note that our account of these ways as ‘defining’ or ‘constructing’ reality - of their role as ‘methods’ - involves the characterisation of these methods as authoritative *within the setting* where they are invoked and applied. The extent to which these are *definitive* ways of deciding what is happening is something *internal* to an understanding of their use. The flight strips are not ‘definitive’ for example, for they are known to be printouts of data pertaining to matters which may have changed since the data was entered. Thus, the flight strips show the scheduled time of arrival of a given flight, but it is not to be automatically assumed that the flight will arrive at the scheduled time, if at all - flights are delayed, fall behind schedule or has been cancelled. The flight strips are to be checked against other things, against the radar, for example, to see if a given flight does materialise on the screen (and, thereby, in the air sector). The radar screen, in their turn, is counted upon to be accurate to within a thousand feet, so that controllers concerned with the vertical positioning of flights treat the radar height displays as unquestionably correct to within a thousand feet - but since a thousand feet of difference in height is almost entirely immaterial to their controlling as they designedly keep flights several thousand feet apart, they treat the radar height figures as unquestioned.

Our account, then, provides mere reportage, and treats the ‘definition’ or ‘construction’ of reality as something which is *matter of course, unremarkable and well known and worldly within any given social setting*. It is concerned with the way in which the identification of grounds for further inference and action is effected in the course of, and as *integral part of* any social setting. We add the formulation ‘worldly’ to our cumulating characterisation to emphasise that the determination of actualities is situated or located within an *organised social setting*, is done *in and through* and in *the execution of the affairs of* that setting. Thus, the air traffic controllers ‘definition’ or ‘construction’ of reality is done as part of their job, is done in carrying out the responsibilities of air traffic controllers, as the basis for making their controlling decisions with respect to the safe disposition of aircraft. As we mentioned, it is work which depends upon the radar, strips, radiotelephone, and, of course, involves determination in its term that, for example, the paper strips are appropriately up-to-date, that the radar is not ‘on the blink’, that pilots have understood the instructions they were given etc. etc. And, of course, the determination of these matters is done within the constraint of the time compatible with safe controlling. The controllers’ manifest concern with ‘planning’ i.e. with reading through flight strips to work out what traffic is on its way into the sector, is on the assumption - for them the certainty - that the conditions of their work is not under their individual control, and that the amount of traffic being fed into their sector is under regulation by airport and other administrators, and that, therefore, they will work in expectation of and preparation for phases when the number of aircraft under their control will border on the limit of what they can control, and when they will not, therefore, have stringently restricted opportunities to work out optimally safe and expeditious manoeuvres in real time, and so they plan in order to develop strategies and work

out decisions in advance of the situations in which they might be needed, at those times when their work load's intensity enables the reflective reading of flight strips. The 'worldliness' of their 'reality defining' or 'reality constructing' is something which involves the controllers attention to what they are doing as something with potentially serious consequences, something which they cannot abort or walk away from - the aircraft are in constant motion, they cannot safely negotiate the airspace themselves and must be controlled if they are to exit the sector without risk of collision - and, of course, the means with which to define reality themselves provided - defined or constructed as - immutably given *at the current moment*, such that however the controlling is done, it will have to be within the confines of the control room and on the basis of the ways of the control room as these are resourced, for the actual controlling cannot be conducted in an experimental or playful spirit. Things to be done 'just to see...' or 'for the fun of it' are excluded from the considerations of the controllers because of the earnest, sometimes deadly serious, nature of the work they are doing.

The 'definition' or 'construction' of reality as something which is, then, *matter of course, unremarkable and well known, worldly and socially organised, within any given social setting*. In the somewhat fraught venture of compartmentalising sociological strategies onto simplified axes of classification it is common to include ethnomethodology amongst those which are 'radically subjectivist', and to complain that its version of social phenomena leads it up to any given person to *define* social reality as they will, but our illustrations from air traffic should make it patent that this cannot be so, that the 'methods' which the controllers invoke, which are, indeed methods in their *personal possession* are not methods *of their personal devising*, that - indeed - part of their grasp upon those methods is upon their character as *socially derived, socially standardised and socially enforced*. The ways of air traffic control are, rather, the control room's ways, ones which are of no one's particular and specific contrivance, which make up a contingently accumulated ensemble, and which have been learned by each controller from others, and whose application depends upon the fact that others can be counted on to be abiding by them also. These ways are definitive, then, of 'good practice' in the setting, and their invocation and application and compliance with them will be expected to count as grounds for establishing that 'correct' decisions have been made, that, in any instance, the controller was not the source of any failure of the system - they are the ways which are invoked in the co-ordination and supervision of the controllers work, the ways in which controllers will expect others to judge them as 'in touch', 'on top of the job' and for proof of compliance with which evidence will be sought should any question of a controller's 'competence' arise. These are arguments, then, for speaking of 'the *social* definition' or 'the *social* construction' of reality.

What we are attempting in the above characterisations of air traffic control is a characterisation of what, in sociology's terms-of-art, are spoken of as *the sense* or *the meaning* of the activities of air traffic control, and proclamations that things are 'worldly' or 'socially organised' are not proposals, on our own behalf, about

how things are but are, instead, attempts to summarise our descriptions of *how things are from them*. We prefer, for reasons which are too intricate for consideration here, the term 'sense' over 'meaning' because it is less likely to mislead with respect to our meaning, less likely to misleadingly affiliate our argument with issues that are not germane to the present discussion. Thus, 'the sense' that we seek to capture is the sense that controllers have of what they are doing as they are doing it : thus, for example, the controllers have a sense of what they are doing as something being 'done over again', something that is done day to day, which has been done uncountably many times before. That they are doing something which they have done over many times before is not something *extrinsic* to the activity they are doing such that it would make no difference to the doing of the activity were it being done for the first time rather than the umpteenth. Far from it, for it is the very and extensively *practised* nature of what they are doing that it is integral to their doing it in the way that they do. Surveying the radar screen and the strips they are encountering *familiar* and *usual* situations, one which they have seen and managed before, and with respect to the current character and prospects they are entitled to an *assured* assessment - they can tell what is happening here, what will almost certainly happen next and what to do about it because they have been through this situation before - at this time of day, in this part of this sector at this time of year a certain pattern of air traffic recurrently develops, and these are the first signs of that patterns manifestation-as-usual - things can be done decisively, there is no need for tentative, provisional measures or for the contemplation of alternative and equally plausible possibilities *in this entirely usual situation*.

Description and Redescription

There are several, though ramifying, sources from which the difference between ethnomethodology and constructionism might be said to originate. The one on which we will focus here is the extent to which 'constructionism' *appears* to offer rival descriptions of the activities of those upon whom they report. The case of investigation into science provides as good an example as any, for the constructionists are concerned to challenge conceptions which they see as providing the very rationale for scientific work - such as, for example, that of 'discovery'.

We can begin to spell out some of these differences from, first, Collins' somewhat muted criticism of Garfinkel, Lynch and Livingston's (hereafter GLL) 1981 (cf. Garfinkel et al., 1981) description of the optical discovery of a pulsar. Collins' critique is summarised in this way:

...GLL's project is one that would apply the same analysis to all qualities of knowledge and is therefore at too high a level of abstraction to deal with scientific change. There are not activities and exercises of competence etc. in Cocke and Disney's [the discoverers of the pulsar] night's work of which one could say 'it was the particular way, or quality with which they applied this ability, or that competence or that ploy that led to their discovery, or led to

their discovery being accepted as a discovery'. We can see this because they would have done and said the same things even if they were not making a discovery. *The problem here is the fieldwork location* ; [italics added] if what Cocke and Disney had found turned out to be an artefact, this would happen in the interaction between them and their critics in the more extended scientific debate that followed their night's work. To know what it is about Cocke and Disney's night's work that makes them scientists is a very interesting question. To know what it is that makes them scientists who believe they have made a great discovery is also interesting. But to know what it is about their work that makes them scientists who *are making* a great discovery, one needs to look elsewhere. What it is that made it that they were making a great discovery is to be found outside their night's work.' (Knorr-Cetina, 1983, 105)

We'll overlook the way in which Collins' argument exemplifies those strange compulsions, so standard in sociology, to criticise a study for being one other than the critic would want to make, to suppose that the observation that it does not offer a question one wants answering is to make a complaint. Collins' comments trigger our further discussion because though they postulate that 'the problem here is with the fieldwork location' they in fact indicate that 'the problem' is with the lack of understanding (on Collins' part) of the different ways in which fieldwork materials are to be treated, how *the analysis* relates to the materials under examination.

Collins' quite rightly says that the decision as to whether Cocke and Disney, the two astronomers, have made a major discovery, is something which is settled by *the scientific community* and not just by those who participate in the activities. Thus, it is the subsequent examination of their work and debate over it, which establishes whether or not what these two scientists did actually make a discovery or not - and, obviously, such discussion does not take place until after the (putative) activities which are the candidates for an occasion of discovery. Thus, it seems as if the way to answer the question *what makes something a discovery* cannot be on the basis of looking to see what the discoverers did. In terms of what the 'discoverers' did, as Collins claims, they would have done the same thing, regardless of whether or not they were in fact making or discovery (or, as it would subsequently prove) they only *thought* they were making a discovery. This, of course, encourages the kind of paradoxical sounding argument which 'constructionists' are in the habit of cultivating, to wit, that there is nothing about some activity which makes it a matter of discovery, an activity which was not a discovery could, in every detail, be the same as one which did not make a discovery. Thus, one must look elsewhere for what makes it a discovery, and it looks as if one must look at *what happens after* the supposed discovering activities occurred, that it looks as if *what makes something a discovery* is the *argument within the scientific community and the eventual verdict that the scientific community gives* Thus, according to Collins, the understanding of what makes something a discovery involves the investigation of activities other than those of the 'discoverer's'. It thus sounds as though 'what makes something a discovery' is not the investigative activities of the discoverers but the 'social process' of scientific debate in the aftermath of the investigative activities. Thus,

and doesn't it sound like a bold claim, discovery is not a *momentary* occurrence, accomplished by an individual, but is an *extended* matter effected through a collective social process.

The problem is not, at all, with the fieldwork, but with the ways problems are formulated and *put to the fieldwork*.. The question 'what makes something a discovery?' is not, perhaps, a happy question, particularly if it is imagined that it is to be answered by, for example, looking at the details of the things people do, in the hope that there are certain kinds of activities which occur in the case of 'making a discovery' and 'making a mistake'. To expect to find distinctive activities characteristic of discoveries is to misunderstand the nature of the word 'discovery' which is not one which talks of particular activities at all, but, in Gilbert Ryle's terminology, is an 'achievement' word - it talks about the outcome or upshot of activities, not about the character or course of the activities themselves. Thus, the question 'what makes something a discovery' is best answered by: the character of its outcome. For example, Cocke and Disney would be discoverers if they were *the first to find* the pulsar - if someone else had already, but unbeknownst to Cocke and Disney - located the pulsar and filed a report on it, then Cocke and Disney would lose any title to discoverers. It does not matter whether they were right, but, for example, whether their getting the right result occurred *first* . Thus, the question which we can give to the question how we tell whether something is a discovery is the one that persons have always given, that competent speakers of the language are capable of providing - viz. that it depends on whether people did indeed find what they claimed to find, and also, upon whether they had the priority in finding it which is relevant to the characterisation discovery. Thus, for example, it is not *necessarily* the case that Columbus' claim to have discovered American is invalidated by the fact that people were living there prior to his arrival for, of course, the sense in which Columbus might still be credited with a discovery that he was the first person, as far as Europe was concerned, to ascertain the presence of the continent. That is what we mean by matters 'relevant' to the determination of priority. And, of course, the *stuff* of the scientific debate about possibly discovery will pertain to these two considerations - as far as the event's status as a discovery is concerned - was it indeed the case that that which was purported to be found out was found out?

What makes something a discovery, then, pertains to how: finding it out relates to what is already known (amongst relevant parties) and to whether or not the finding out is successful. But finding something out before someone else is not a specific kind of activity, does not involve us *doing* anything in addition to finding it out. Thus it was not Columbus's sailing skills or the route that he took or the boats that he used or the orders that he gave or anything else about the way his expedition was organised and carried out that made his voyage a voyage of discovery. What made Columbus' voyage one of discovery was that it was undertaken *before* anyone else, and the contestation of the claim involves giving evidence that someone else made the voyage before him.

So, it is not surprising that the examination of the details of someone's activity fails to differentiate one which results in discovery from one which doesn't - whether Cocks and Disney are making a discovery hinges on what has been happening throughout the world of astronomy - if someone on another continent has anticipated their findings, then they cannot be making a discovery, however confident they are *at the time* about this.

There is no reason for ethnomethodologists to regard Collins' comments about the fact that the *confirmed* status of Cocks and Disney's achievements depends upon matters happening outside their particular observatory-sited situation at the time they are making their discovery as other than bland. Assuredly, what may subsequently be revealed may make a difference to that status and may revoke the *initial* judgements that this was a discovery. However, to make this point to ethnomethodologists is rather a matter of carrying coals to Newcastle. It is rather to overlook the prospective/retrospective sense of determination, the extent to which persons may find that the sense or factuality of some occurrence must subsequently be revised. Waiting-to-see is a commonplace feature of people's activities (one which is notable primarily because of the awkwardnesses it ensures for formal/analytical approaches in sociology). Thus, it might come as a *nasty surprise* to Cocks and Disney if they did prove to be making a big mistake, but it would not come as any kind of surprise to them (nasty or otherwise) that there is the possibility that subsequent research might cast doubt upon the validity of their findings. That what they took, at the time, to be a successful outcome might subsequently be invalidated. The prospective/ *retrospective* determination of sense/facticity needs the *retrospective* aspect to be doubly emphasised, for, of course, the revision of sense/facticity is retro-active, it revises what the matter was in the first place, and all along. Thus, Cocks and Disney are oriented prospectively to the status of their outcome as a *discovery*, they are fully confident that they have found something that their science has been looking for, and that they have no predecessors in this matter. They are fully confident of that, and they count themselves as making a discovery. They are entitled to talk of themselves as 'making a big discovery' *at this point* because, so far as they can see, this is what they have done, and are not required to withhold or modify that claim because there is *the logical possibility* that they could be making a mistake, in either their scientific procedure or their assessment of priority. It subsequently proves that they have made a big mistake then they will have to withdraw the claim and do so with retrospective force - they never made a discovery. If, however, subsequent events are consonant with their claim, then it does not mean that the making of the discovery occurs at the time the assessment is complete, for, of course, the subsequent assessment provides, in such a case, *confirmation* of the claim they made and, again, has *retroactive* application - their claim does not *become a discovery* at the moment at which it is confirmed, for the confirmation endows that *it was a discovery 'in the first place', was a discovery 'at the time' and 'all along.'*

The constructivists have little interest in the analysis of action and no awareness of what is, for ethnomethodology, an essential preoccupation, to wit, the *time structure of action*. Attention to that dissipates any sense of an issue. Consider, for example, the difference between two cases - someone finds an item of value, and hands it over to the authorities. The authorities search for an owner for the item, but at a given point, they have exhausted the (practical) possibility of finding the original owner - they then hand the item over to the finder who, *at that point*, becomes the owner. This does not make the finder the owner 'in the first place' and 'all along', for there was a prior owner and the awarding of ownership to the finder is a *passing over* of that ownership. Consider another case: whether a person is guilty of a crime is decided by trial and conviction. The fact that a person charged with a crime must wait to see if they are convicted does not mean that they must wait until the trial is over before asserting, and unconditionally asserting, their innocence. Nor, of course, does the delivery of the verdict mean that *at that point* they become guilty of the crime. It means, rather, that they were guilty of the crime - for guilt of the crime means only *they did do it* and so, of course, they *were* guilty 'in the first place' and 'all along' even when they were asserting their innocence. Constructionists seek to misplace onto 'the fieldwork' what are differences in which the whole concept of what the fieldwork is for, and how it is to be construed, are involved.

Whilst Collins may concede that discoveries do occur - although with ambiguities about precisely what it is that makes something a discovery, as to when the discovery occurs, Woolgar (1988) puts into doubt whether discoveries can occur. Woolgar is concerned that the ordinary usage of the term 'discovery' is attached to an assumption which, he supposes, can be withdrawn, which need not be made, namely the assumption of an 'external world.' The assumption of an external world seems to be presupposed in the very meaning of the word 'discovery', which seems to pertain to the revelation of something which already exists, prior to the moment at which it is discovered - and Woolgar wishes, also, to dispute that there is a *moment* at which discovery occurs, and seeks to treat discovery as a 'process' word, to argue that 'discovery' - and it must be discovery-in-inverted-commas, for the burden of Woolgar's position is that we are dealing only what we would *call* discoveries, but which are not properly identified by such a name, since the word's meaning intends something which is false, to wit, that an external world exists. Thus, Woolgar's contention is that we are dealing with what-are-called-discoveries-but -are-not-really-discoveries. Those who are engaged in laboratory or observatory work cannot be engaged in making discoveries, but we do not need to undertake fieldwork in laboratories and observatories to establish this. It is not that, if we undertake field investigations in laboratories, we shall find that scientists are doing something otherwise than they say they are doing, that rather than 'making discoveries' we shall find that they are, instead, playing cards or doing the washing, for we shall only find that they are (on the whole) doing just what they propose to be doing, namely, attempting to make or, so far as they are concerned, succeeding at making discoveries.

The determination that they are *cannot* be making discoveries is a *logical* determination, made *apriori* - the scientists cannot be making discoveries because one can (on Woolgar's construal of the meaning of the term 'discovery') only make a discovery if there is something which exists prior to and is revealed by the discovery. But if one dispenses with the assumption that there is an external world, prior to the activity of scientific investigation, then one cannot discovery anything, and so, one cannot make a discovery.

How, then, should a formulation such as 'discovery is a social construction' be understood. Should it be understood in this way : discoveries, when they occur, are the products of social constructions. Or is it, instead, to mean: there are no such things as discoveries, there are only social constructions. Or is it to mean, the notion of 'discovery' is to be replaced, throughout, by the notion of 'social construction'?

But one cannot, of course, follow this injunction and put one's own assertions into their now allegedly canonical form: one cannot assert, 'social construction is a social construction' . The contention that 'discovery is a social construction' only makes coherent sense so long as the notion 'social construction' is recognised to be a 'second order' expression, such that the sentence 'discovery is a social construction' means only, 'the achieving of a discovery instantiates the phenomena we term, *for sociological purposes, strictly and specifically* social constructions.' But in this latter case, of course, the term 'construction' does not *rival* the notion of 'discovery' and to assert that something is a social construction would not be conflict with its vernacular characterisation as a discovery.

The consequence for investigations of this, at the least, ambiguity about the relation between sociological and vernacular formulations is that there is an analytical attenuation of the sense of reality which is attached to member's constructions. The demonstration that a phenomenon is a 'social construction' acquires the character of a demonstration that it is not what it seems, with the force of the argument becoming: it is not a reality but *merely* a social construction.

One prominent form of argumentation to this point is based upon the contention, which is, for reasons we do not know explore, very important to constructionists, to wit, that phenomena are contingent, *that they could have been otherwise*. In many ways, the argument is inherited from labelling theory, wherein it is a reproduction of the classic primary/secondary qualities argument of philosophy, a contrasting of the properties which are inherent in the phenomenon, and those which are, so to speak, projected onto the phenomenon by the perceiving subject. Thus, the contention that phenomena could have been otherwise is that they are *interpreted*, that they are assigned a specific sense, but that that sense is not intrinsic to them. They could be interpreted otherwise, they could be (could have been) assigned another, quite different, and equally credible sense than the one that is conventionally assigned to them. The analytic purpose is, of course, therefore to demonstrate how the assignment of a difference sense is/might have been possible.

Much of this involves what we would regard as a misapplication/misunderstanding of the 'context' principle, which is that a phenomenon possesses its identity, is the thing that it is, only in a specific context, in a particular ensemble of circumstances. The logic of the constructionist approach is, characteristically, to show that in different circumstances, this same phenomena would have been a different one. However, this is precisely to miss the point of the context principle: the phenomena's identity is specific to its circumstances - and on that basis it makes no sense to say that this phenomena could be inserted into different circumstances. For simple example, if I say 'five' then if I say that in response to your question : what time is it? my answer will be understood as - indeed my answer is given as - 'five o'clock'. If, however, I say 'five' in response to your asking ' How many sheep are there in the field' then 'five', in this case, means : five sheep. However, the phenomena is not saying 'five' in different circumstances, but of two different phenomena: I do not just say 'five' in response to your question, and leave it up to you to decide what those words are to say, for, of course, the context principle is that in one case I mean 'five o'clock' and in the other 'five sheep' and these are just different phenomena: one cannot transplant my saying 'five' and meaning 'five o'clock' into the other circumstances - the inextricability of the identity of the phenomena from its circumstances, the inhibition of speaking of it as 'the same phenomena' without reference to the identifying circumstances is precisely the point of the context principle, and to seek to talk about 'the same phenomena' in different circumstances is a *violation* of that principle. Thus, this is what constructionists are compelled to do, to argue that, under different circumstances, the same phenomena could be identified differently, and, thus, that it has no *intrinsic* identity - its identity is, so to speak, *endowed* upon it by the interpreter.

Thus, in the sociology of science, the attempt is made to show that the current scientific schemes are contingent, that there is no essential connection between them and reality, which is often done by locating points of controversy in the history of science and arguing that the controversy was not rationally resolved through the disproof of one side of the argument, but only through its suppression - had the controversy gone differently, had the exigencies of it worked out the other way, then it might be that a very different conception of some phenomenon might inform science, and that, therefore, the world would have been different - the world according to science would be populated by other entities that it is alleged to be by existent science. Thus, as noted, the attempt is to attenuate the status of scientifically defined phenomena as a reality by arguing that their connection with the world is arbitrary and interpretative, that some other version could readily be substituted for it. Thus, again, constructionism falls within the classic, 'debunking' tradition of sociology which seeks to subvert the reality of the phenomena of people's everyday worlds.

This contrasts very sharply with ethnomethodology's approach, which does not seek to either subvert or sustain the realities to which the members of the society subscribe. It seeks, rather, to understand how those realities *acquire* their

character as realities, and how their sense *as realities* is sustained through the conduct of the affairs of daily life. The status of certain matters as, for some members, *indubitable* is to be understood, but this is something which constructionism cannot and does not do - its concern is not to understand how the certainties, the patently obvious, transparent truths of persons lives acquire their status as that, how they are found to be, in the conduct of affairs, demonstrably, *evidently* the case, for all (relevant) persons plainly to see, is not something that constructionist studies seek to explore, for their concern is, rather, to show that the matters in question are *not* patent, self-evident, plain for all to see, but are, rather, interpretative constructions, which can and perhaps will be seen differently. Thus, the aim is to display the extent to which one more collections of members have a conception whose hold on the materials which that conception interprets is only a tenuous one, that those same materials can be detached from that interpretation, that there are aspects of the phenomena which *count against* the 'interpretation' of the phenomena that way.

One of the main *roots* of contemporary constructionist practices (and one of the major deficiencies in them) has, we think, been well diagnosed in one of Egon Bittner's landmark papers, whose title, 'Objectivity and realism in sociology' (1973) fully states his theme. Bittner's argument is that the reaction against the concept of 'objectivity' began to take, in the 1960's, a wrong direction. The reaction against 'objectivity' positions was to move in a 'subjectivist' direction, to denounce all notions of objectivity, and to purport to root social phenomena in and to explore the dimensions of subjectivity. These tendencies were, in effect, to deny the existence of *social* reality, to make social reality a matter of *individual* determination - it was up to individual's to define social reality as they will. This, however, engendered a concern with fieldwork experience as a subjective matter, shifted attention away from, so to speak, the *object* of inquiry and toward the *subject*, viz., the inquirer him or herself. There was much concern with ethnography as a personal experience, but this had the potential - one which has, we are arguing, been expansively realised - to lead to a peculiar and problematic understanding of the relationship of those under study to their own standpoint and experience.

Bittner, arguing on behalf of ethnomethodology, sought to distance it from just those tendencies, and to do so by arguing that the retreat from 'objectivity' as defined by those in the positivist traditions should not be toward 'subjectivity' but toward 'realism' - not realism, in the metaphysical sense, of asserting the existence of an external reality, but 'realism' in the phenomenological sense of faithfulness to the portrayal of its subject matter, a devotion to capturing society as it is actually experienced 'from within.'

The ethnomethodological tradition, because of its derivation from Schutz's work, is oftentimes mistaken for a species of 'subjectivism', but this is precisely what it is not: it does not seek to *reduce* social reality to subjective interpretations, to dispel the suggestion that there is a social reality, in favour of the claim that there are *only* subjective interpretations, for this is precisely to misunderstand the

phenomenological sources of Schutz's work, *and* Schutz's own twist upon that tradition. This begins from the recognition of the *intersubjective* nature of social reality, the *socially organised* and, so to speak, the *social controlled* nature of the individual's experience. It is not, by any means, up to the individual how they should interpret the world - for, of course, the individual's acquisition of a standpoint within the world, the individual's acquisition of a meaningful social world to inhabit, is not a matter of deliberation and choice. Backing up this argument, we can point out that it makes no sense to think of the individual acquiring experience and then contemplating how to interpret it, for, of course, the idea of an experience without sense is meaningless within the phenomenological/Schutzian scheme. The idea of a duality between the stimulus to or content of an experience and the experience is specifically rejected in Schutz's adoption of at Garfinkel has termed a 'congruence' presupposition. It is conventional, of course, to make a distinction between 'the object that is experienced' and 'the object in experience' which carries, of course, the supposition that the relationship between the two is contingent, that the object that is experienced might not square with the way the object manifests in experience, but the 'congruence' conception does not make this distinction. It recognises no difference between the object that is experience and the object in experience. The dualism is displaced by a concern with 'the object that is experienced.' Thus, the very logical grammar of the approach *does not allow* the formulation of questions about the relation between the object and the experience, though, by contrast, the constructionists descend from the more conventional tradition, in which it does make sense to view the relation between the stimulus for or content of experience and the way in which it is experienced. Thus, can be seen the sense in which ethnomethodology must decline to share the constructionist's supposition that 'it could be otherwise', at least as other than an indigenously experienced feature of the object, for there is, on the congruence supposition, *nothing* to be otherwise, nothing other than object-in-experience.

Those who read into these arguments attempted reductions to subjectivity are, who worry that these are, somehow, denying the existence of a 'real external world' are, alas, overlooking the actual force of them when applied within sociology, which is to maintain that a result of the more conventional conceptions is that 'experience' is presented in an *impoverished* way, a point which later reappears as complaints about the treatment of members of society as various species of 'dopes' by sociology's classic analytic schemes. We have already intimated how constructionists reproduce the 'dope' tradition, treating members of the society as being, so to speak, 'taken in' by their own constructive activities, failing to grasp that they are 'constructing' the reality that they (misguidedly) think is already there. Thus, far from seeking to extrude social reality from subjective experience, ethnomethodology - after Schutz - emphasises the extent to which experience is experience-of-the-pregiven-always-already-there and intersubjective social reality, how that experience originates in the 'handed down' transmission of a socially distributed stock of knowledge, and how the world of

daily life is lived under the auspices of a *socially sanctioned* apparatus of common sense understandings, and of the way in which the individual's experience is irreducibly of a *social world known in common*.

Bittner's argument is that the development of fieldwork strategies inclined to perpetuate that impoverishment in the portrayal of members' experience (which is *the same* remember as *society -as-experienced*) and is a move away from the pursuit of 'realism' in the sense of faithful rendering of the experience of members and, thereby, of the world they experience. We have now returned to the point at which, at the very beginning, we promised this discussion would arrive, that issue of the relationship between 'the members'' and 'the analysts'' standpoints.

Bittner's argument about the emphasis in faithfulness to 'the subject' i.e. to the experience of the fieldworker leads to a neglect - an underestimation of the import of - the fact that there is a divergence in the nature of the experiences of the respective parties, that the very nature of the fieldworker's experience divests phenomena of their sense of reality in a significant way.

It is supposed, Bittner argues, that realisation of the emphasis upon 'the subject' requires self-consciousness about and attention to the *fieldworker's* own experience and point of view, and to the supposition that 'social reality' is grasped through the elaboration of the fieldworker's own awareness. Bittner's diagnosis has been confirmed by the growing emphasis upon 'reflexivity' in ethnography, which demands that the primary object of consideration become the ethnography itself (cf. Woolgar and Ashmore, 1988). However, the treatment of the fieldworker's standpoint as the focus for consideration as to how social reality is engendered tends to overlook the extent to which the fieldworker's point of view is a peculiar one.

The fieldworker's objective is, initially, to take the viewpoint of those under study, to look at their world through their eyes, or as we have termed it, to become attuned to the sensibility with which the 'natives' of the setting conduct their affairs. It thus becomes the prized aspect of the fieldworker's skill that he or she can acquire the point of view of those native to the setting, but the fieldworker's occupation of that point of view is a temporary matter, and the succession of fieldwork studies involves the inhabiting of a number of different points of view. The fieldworker does not, however, characteristically *occupy* the point of view which he or she takes. The fieldworker *simulates* certain aspects of that view, but adopts it only for the purposes of the research, and as one which is freely taken up and from which it is equally possible readily to withdraw. To treat the fieldworker's relation to the 'points of view' which he or she may successively occupy as a paradigm for the understanding of the way in which social reality is 'constructed' is, however, to disregard the significant differences between that relation and the one that those under study have to the point of view are very different - the native's point of view is not something to which they have a contingent relationship, one which they may freely take up, abandon or exchange for another, for their 'point of view' is, in another sense, *their life*, and

this is not something they necessarily have chosen, nor is it something to which they can relate on a 'take it or leave it basis.' The airtraffic controllers do not individually and freely select the sensibility that they employ in their work, for it is one which they can be endowed by others, which is made available to them through prolonged and intense training - the fieldworker could not hope to occupy that 'point of view' on the basis of a few months of observational fieldwork, for the possession of that point of view involves saturation in the immense and varied details of the world of air traffic control, of numerous hours of practice at and many working days of involvement in developing air traffic control situations, with the accumulation of the immense background knowledge relevant to the air traffic environment and its ways, and the deeply 'grooved in' practices of attending to and managing shifts of active controlling. Within the air traffic controllers' point of view, the way in which circumstances are defined is not a matter of arbitrary selection, of attachment to a point of view which makes matters appear in a certain way, but which could readily be alternated so that they could appear in some other. On the contrary, the ways in which matters appear to the controller are *mandatory* for him or her and for others involved in the situation - these are the objective and *binding* ways of air traffic control, according to which all parties are required to act - the parties to controlling activities are *counting on each other* to understand matters in these ways, and they anticipate that there are considerable risks attached to seeing them in any other way. Controllers cannot playfully vary their points of view, just to see what the consequences of this would be, for the conditions of their work, as known to them, are such that there is no 'time out' - they are, for much of the time they are actively controlling, only narrowly within or closely approaching the limit of their capacity to keep on top of their work, to keep close enough watch on the disposition of the air traffic and to carry out the instructional tasks which manage the further development of that disposition. Where the controller is on top of the situation, is not pressed to sustain constant close monitoring, then this is the opportunity not for the controller to engage in some freeplay with his or her 'point of view', to experiment with constructing alternate realities to that which he or she has been occupying, but is, in fact, the occasion to do some 'getting ahead of the job', to do some planning, checking through the flight strips to see what traffic loads are to be expected, and to envisage the disposition of traffic they are likely to create, and to form some tentative conceptions as to how those will be best handled. The air traffic controller cannot, from his or her own point of view, merely 'walk away' from that point of view, for there are immense responsibilities attached to its adoption, for the adoption of it is the precondition of safe controlling, and the consequences of arbitrarily withdrawing from that standpoint would be anticipated to be disastrous.

Thus, Bittner argues, that the emphasis upon fieldwork as the experience of the fieldworking subject leads to an under-estimate of the extent to which the experience of those under study possesses traits of depth and stability, of the extent to which, for those under study, the much vaunted contention that 'it could

have been - it could be - otherwise' is a *merely* theoretical and fantastical possibility. That air traffic, the history of physics or any other matter of social affairs could, *from some alternative point of view*, be otherwise is immaterial from the point of view of someone at the air traffic control suite or the laboratory bench, for the matters with which they are engaged are not ones toward which they can adopt a 'take it or leave it' attitude, which they are engaged in an experimental, 'just to see what it is like' spirit but are, rather, matters which they are engaged with in a serious, perhaps even - as with the ATCO - a life-and-death seriousness, and from the point of view of meeting the demands which the reality-as-they-define-it the possibility that things 'could be otherwise' is a possibility they do not even have time to entertain.

Thus, it is easy to draw, from constructionist premises, the conclusion that social reality is much more readily mutable than it seems. If 'social reality' acquires its appearance as a result of holding a given point of view, and given that there is a multiplicity of possible points of view, then it is possible for reality to be transformed simply by exchanging one point of view for another. It is this kind of conclusion which has had some influence in the world of software development, and which has led Bo Dahlbom (1993) - on grounds different from those offered here - to argue that this is a delusory conclusion, that a 'socially constructed' reality will be no more easily and readily tractable than any supposedly (and contrastingly) 'natural' one:

Practically speaking, a socially constructed reality is just as real a reality that just *is*. To interpret the move from an objective, natural reality to one that is socially constructed as a liberation from social control is to misjudge the power of social norms. Social determinism e.g. is not easier, or more difficult, to escape from than biological determinism, even if you believe that the former is "merely" constructed and the latter "really" real. (120)

We have argued that the supposition that 'points of view' are readily interchangeable is an illusory one, an artefact of the conditions under which fieldwork is done and of an insufficiently deep rumination on the nature of 'points of view' and that way that these are themselves embedded in and organised under the auspices of social settings.

Conclusion:

We have attempted to indicate that the conduct of ethnographies as we do them does not leave us exposed to the charge that we are perpetuating a now outmoded practice of ethnography, one which, in the light of relatively recent developments in sociology, stands revealed as perpetuating the illusion that there is a reality 'outside the text,' that there is a 'real world' out there to be studied. We have sought to do no more than illustrate that our own lines of argument are not elaborated in ignorance of those recent developments, but, to no small extent, in defiance of them. We have tried to illustrate that there are both lines of defence for our position, and that, from these, it is possible to initiate counter-attacks on

these recent ‘constructivist’ and ‘deconstructivist’ approaches, that there is a strong and defensible lineage of thought behind the studies that we make.

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