

**Themes and Strategies in Early Requirements Gathering:
An Investigation into Analyst–Client Interaction**

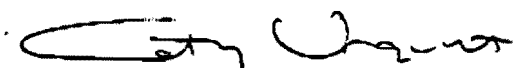
Cathy Urquhart

**Submitted in fulfilment of the requirements for the degree of Doctor
of Philosophy**

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Cathy Urquhart

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Abstract

This thesis examines early requirements gathering, a necessarily verbal interchange between an analyst and client which represents the starting point of specification of a new information system, or amendments to an existing system. Six case studies of analyst–client interaction are presented, consisting of a number of data sources: a video taped interaction and review, paragraphs from the analyst and client presented prior to the interaction, and individual interviews with analyst and client carried out before and after their interaction.

The findings from the study are viewed through a theoretical framework that groups the issues associated with early requirements gathering from four perspectives: Social, Definitional, Environmental and Individual. The videotaped interactions were first subjected to analysis using grounded theory techniques which yielded two major categories, that of Systems Analysis Strategies and Conversational Strategies.

The codes generated from this phase of analysis were used as foundation for further analysis of the videotaped interactions and the other data sources. In this way, the micro analysis provided a solid foundation for subsequent macro-analysis, with the use of topics as an intermediate unit of analysis of the interactions. This further analysis generated a number of themes that serve as a fruitful avenue for discussion of early requirements gathering: Issues to Be Discussed, Scope of System, Information Input to System, Processes Associated With System, Links in Information, Future Action, Problem Identification, Information Output from System, Analyst's Understanding of Processes, Future Solutions, Organisational Context, Personal Disclosures, Professional Relationships, Note Taking and Use of Props. These themes are further organised and discussed using the theoretical framework.

The thesis concludes by evaluating the methodology used and the theory produced. It is suggested that both the systems analysis and conversational strategies identified, and the themes, represent findings that could be usefully disseminated to IS practice and education, given the apparent paucity of treatment of the communicational aspects of early requirements gathering in these two arenas.

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1. INTRODUCTION

'First then, it is thought that every name has, or ought to have, one only precise and settled signification; which inclines men to think there are certain abstract, determinate ideas that constitute the true and only immediate signification of each general name, and it is by the mediation of these ideas that a general name comes to signify any particular thing.

Whereas, in truth, there is no such thing as one precise and definite signification annexed to any general name, they all signifying indifferently a great number of particular ideas.'

A Treatise Concerning The Principles of Human Knowledge, George Berkeley, 1710

The quote above, from Bishop George Berkeley over two hundred and fifty years ago, illustrates some fundamental constraints in human communication. He comments on the difficulty of signifying and naming ideas, and how people generally feel that there *ought* to be a precise signification or meaning of a name or idea, and that in reality a precise definition is hard to reach. It also indicates that a great number of particular ideas may be signified by a particular name. As such it encapsulates neatly the issues associated with the research presented in this thesis, which examines how analysts and clients approach the process of early requirements gathering. During early requirements gathering, the analyst and client progress toward a definition of what is required in the information system, and initially they use the spoken word to communicate their ideas. So the process of early requirements gathering can be seen as a negotiation of competing ideas and meanings which are then subsequently enacted in the real world by the building of an artefact in the form of an information system.

The research presented in this thesis explores how analysts and clients in six public sector agencies in Tasmania, Australia, approached and enacted early requirements gathering from the perspective of the strategies and tactics they used during interaction with each other, using case studies as a vehicle. The research presented also puts forward a number of themes related to early requirements gathering. Together, the themes, strategies and tactics explored in the study provide a substantive theory of how analysts and clients might approach an area of information systems development that is complex, concerned with the negotiation of meanings, and hitherto has received little attention in the wider IS literature.

1.1 The Problem of Analyst Client Communication

The process of early requirements gathering, founded as it is on human communication with recourse to language and little else, is an information systems (IS) development activity widely acknowledged to be fraught with difficulty. Assumptions made at the early stage of a project, if not carefully considered and agreed, can be likened to the digging out of foundations of a house – if not dug deep enough and in the right place, they can undermine the whole structure of the system and ultimately prove to be its downfall. The importance of the analysis phase, and the basic assumptions outlined therein, is perhaps best illustrated by DeMarco's (1982) classic statistic that 75% of the cost of error removal has its origin in errors in the analysis stage of a project.

The difficulty of human communication in systems development has been a consistent theme in IS literature for at least twenty years, since ineffective communication was found to be negatively correlated with project success (Edstrom 1977). In 1994 the Australian Computer Society devoted a whole issue of its practitioner magazine to the problem of communication with users (Kennedy 1994). IT professionals are still seen as lacking credibility, not in expertise but in relationship building (Bashein and Markus 1997). In longitudinal studies over ten years of researching computing professional characteristics (Dengate, Cougar & Weber 1990), computing professionals have been characterised as having low social needs, resulting in a need for communication skills training. Dengate, Cougar and Weber (1990) further concluded that there had been no improvement in the area of computing professional's communications skills during the lifetime of their study.

Previous research on analysts and clients has found many differences between the two groups in the areas of beliefs, attitudes, personalities and motivations (Pettigrew 1974, Gingras & McClean 1982, Green 1985, Kaiser & Bostrom 1982, Benbasat, Dexter & Manther 1980, Ferratt & Short 1986).

Researchers have continued to explore analyst–client relationships from a number of perspectives: as a paradigm of information systems development (Hirschheim & Klein 1989); modelling analyst–client interaction as a social process (Newman and Robey 1992); the limits of developer knowledge (Jones & Walsham 1992); implicit knowledge in knowledge intensive applications (Ngwenyama & Klein 1994); client led design as soft systems thinking (Stowell & West 1994); focusing particularly on communication skills in analyst–client pairings (Guinan 1988, Tan 1989); the implications of particular methodology use for analyst–client relationships (Hirschheim & Klein 1994, Beath & Orlikowski 1994); and the relationship between social and technical in user requirements (Westrup 1997). There have also been studies of analyst–client relationships from the cognitive perspective of differing 'frames' (Orlikowski & Gash 1994, Davidson 1996).

If early requirements are founded on human communication, the communication itself must necessarily be embedded in organisational, social, individual and cognitive aspects. Hirschheim and Newman (1991) using a symbolic approach, identified a number of tacit assumptions that underlie the social process of information systems development, and used the concepts of myths, metaphors and magic to demonstrate these tacit assumptions. For instance, the notion of the systems developer as high priest, and the apparently arcane nature of some rituals, such as walkthroughs, associated with information systems development.

Hirschheim and Newman (1991) also identified various myths about information systems development, such as the notion that information systems should always be integrated wherever possible, that the use of a top down approach led to successful design, and that the system developer is the best person to make decisions about the system. Their study casts light on a number of facets of information system development and the corresponding relationship between analyst and client in the organisation as very much a social and political process.

Those studies that have explored analyst–client communication by studying analyst–client pairs (Tan 1989, Guinan 1988) have variously identified rapport, client communication skills, analyst performance skills, communication competence and frame flexibility as factors in successful interactions. Tan (1989) found that communication satisfaction was determined by perception of rapport rather than goal achievement. Goal achievement was not found to be positively linked to communication satisfaction – for example, both parties may have found the communication successful even though it did not achieve their original goals.

The brief overview of the literature as presented here indicates firstly that there have been very few studies that have researched analyst–client communication at an interactional level; secondly, that the more general studies on social aspects of Information Systems Development (ISD) indicate that there are many issues associated with analyst–client communication; and thirdly, that there seem to be no studies that explicitly focus on the early stages of the systems development, characterised in this thesis as early requirements gathering, that early stage in information systems inception where working definitions are negotiated. This necessitates a deeper look at what is early requirements gathering, its foundation in human communication and how analysts and clients might approach the process.

1.2 The Spoken Word as the Foundation for Early Requirements

Given that the starting point of all requirements gathering is a verbal interchange between analyst and client, then it is not unreasonable to assert that how communication skills are employed will have a significant bearing on perceptions between client and analyst. Systems requirements verbalised by the client will be encoded into a set of system requirements by the analyst. This in turn becomes the reality of the new system. If the initial precepts on which the system is based are false or inaccurate, then there is every possibility of system failure.

The case studies described in this thesis represent an attempt to explore how that communication takes place, and how the analyst and client work towards a shared perception of requirements. Of necessity, the words they use, and how they use them, represent the starting point. Language forms have been described by Candlin (1985) as:

..the surface realisation of those communicative strategies involved in the interactive procedures working amongst those various social, contextual, and epistemological factors.. identified as crucial to the process of communicative inference and coherence.

Editors Preface (M Candlin) to an *Introduction to Discourse Analysis*, (Coulthard 1985) pp ix

In an analyst–client interaction, a shared perception of requirements is essentially the crux of the matter and arguably the most important outcome. It is also most difficult to observe or measure, given Candlin's point that language is merely the surface realisation of communication, and that there are a number of 'underground' processes to be considered when examining the communicative inference and overall coherence of an interaction. Coherence is said to be the extent to which a discourse 'hangs together', in terms of how relevant successive utterances are those to that precede them, and to the concerns of the discourse as a whole (McLaughlin 1984).

Communicative inference is much more complex, concerned with how people assign meaning to what they hear and how they make sense of information they receive. There are many views of how this might occur – for instance, the field of symbolic interactionism contends that meaning is constantly negotiated between individuals in the form of symbols (Wood 1982). In cognitive theory, Dervin (1983) puts forward a sense–making approach which assumes information to exist to a significant degree internally and assumes users of information to be making sense of it literally on a moment by moment basis. Bateson (1972) evolved a theory of framing behaviours based on levels of abstraction. Watzlawick, Weakland and Fisch (1974) extended this concept through to the notion of a *reframe* – essentially the meaning attributed to a situation is altered while the concrete facts remain the same. Guinan (1988) in her study of analyst–client interaction, defined the concept of 'perceptual correspondence' – where interactants assume they are seeing things the same way – and posited that this occurred through problem framing and reframing.

These sort of characterisations of early requirements gathering, with communication literature at their base, would seem to suggest that when early requirements gathering is seen as primarily as a verbal interchange, this also allows for exploration of how an actual information system might be defined through the medium of language. Further, that the meanings negotiated via the spoken word during early requirements are themselves the product of social, situational and epistemological factors.

1.3 The Research Problem

Given the view just presented of early requirements as comprising the negotiation of meaning, founded in the spoken word and subject to complex influences of a social, situational and epistemological nature, the research problem was initially defined broadly, with its general focus the question:

How do analysts and clients approach early requirements gathering?

As detailed, successive analyses were carried out on the data allowing discovery of further dimensions of the research problem, the following specific research questions arose.

- What strategies and tactics do analysts and clients employ during the process of early requirements gathering?
- What are the major themes of early requirements gathering, and how can they assist IS professionals to understand the process of early requirements gathering?

The following sections discuss an initial theoretical framework was developed in order to characterise analyst-communication and fully flesh out a view of the research problem. This is followed by a discussion of methodological and philosophical issues in the investigation. Finally, the qualitative analysis strategy adopted for the case studies is introduced by way of concluding this chapter.

1.4 Characterising Analyst–Client Communication

Clearly, there are many issues operating in analyst–client communication, as the brief overview given earlier of the literature indicates. A way of conceptualising the totality of the problem, of characterising analyst–client communication in early requirements gathering, was required.

Earlier in this chapter Candlin's (1985) view of language forms was considered. Language after all is the medium through which early requirements are constructed. Candlin (1985) characterised language forms as the 'surface realisation' of '*communicative strategies*', working through '*social and contextual*' (social and environmental) and '*epistemological*' (how we construct knowledge) routes (emphases added).

From the perspective of constructing ideas of systems in early requirements gathering, the "epistemological routes" can perhaps be further divided into two.

- Firstly, there are the individual epistemologies that are brought to an interaction in early requirements gathering; this can be seen as the product of an *individual's* background and education – in short, the way they think about information systems and how they construct knowledge about them. They are also bringing their individual ontologies to the interaction, and this includes their attitudes about information systems that are shaped by previous experience, and how they

interpret those experiences within the social and organisational contexts that they are situated in.

- Secondly, there is the epistemology of the requirements that the analyst and client build between them – they arrive at a joint epistemology as they constructed between them, that is dependent on how they conceptualise elements and assumptions associated with the system.

So, working from the original description of language forms presented by Candlin (1985), there are now four elements which might apply to early requirements gathering:

- social
- environmental
- individual
- conceptual

These last two elements representing epistemologies associated with individuals, and the epistemology of constructing early system requirements, respectively.

Figure 1-1 represents a preliminary framework that builds on these four elements. This framework assisted the design of the research, and at the same time amply demonstrated the multiplicity of the issues that might be operating when analysts and clients communicate. This framework therefore can be seen as a sensitising device for investigating the issues that might be in operation in analyst-communication, rather than as a model of how that communication might occur.

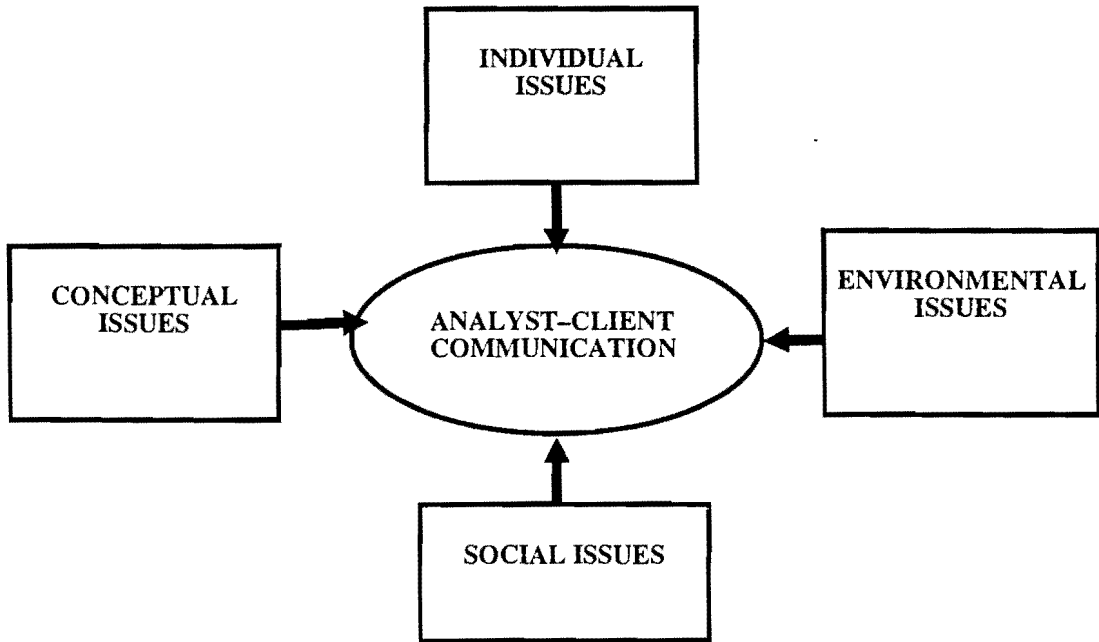


Figure 1-1: A Preliminary Framework of Analyst–Client Communication In Early Requirements Gathering

Conceptual issues can be perceived as those that affect shared conceptualisation of the problem, and, as such, are related to problem framing, use of language, and cognitive aspects.

Social issues relate to the social processes that may facilitate the process of requirements gathering, and are founded in interaction.

Individual issues relate to the education, background, role, and attitude of the participants and could be defined as those aspects each individual brings to the interaction

Environmental issues relating to the backdrop of the interaction. These could include organisational culture, the history of the project and its current situation, and other contextual factors.

1.4.1 Conceptual Issues

How the system is conceptualised is at the heart of early requirements gathering, and is embedded in the communicative context of the interaction. The manner in which the problem is framed and conceptualised, the extent to which unfamiliar language is used, and the cognitive style of the participants will all have an influence on that shared definition. Janson and Woo (1995) state that communication is essential to determining information requirements.

Schön (1983), in his studies of professional practice over a range of professions, contends that the role of a professional is at least as much engaged in *problem setting* as problem solving. In other words, how the problem is framed is critical to its resolution. Schön also posits that a model of 'Technical Rationality' underlying the professions, where the professional draws on rigorous techniques, results in a paradox – the contexts in which professionals solve problems are inherently unstable. He points to the 'complexity, uncertainty, instability, uniqueness and value conflicts' which are inherent in those contexts (Schön 1983, p.45). He demonstrates, through a case study of an architect critiquing a student design, how a professional might successively frame and reframe a problem through a series of iterations. Schön also applies a concept of 'Reflection in Action' to describe his case studies, where professionals could be seen to be performing what Schön calls 'on the spot experiments' – where they frame the problem in a certain way, and conduct certain experiments or checks to see if their conceptualisation of the problem fits. Depending on the outcome of that 'experiment', they extend the original framing of the problem or reframe it differently.

Reframing is described by Watzlawick, Weakland and Fisch (1974, p.94) as:

To reframe, then, means to change the conceptual and or emotional setting or viewpoint in relation to which a situation is experienced and place it in another frame which fits the facts of the same concrete situation equally well or better. What turns out to be changed as a result of reframing is the meaning attributed to the situation and its consequences, but not its concrete facts.

Guinan (1988) in her study of analyst–client interaction, defines the notion of 'perceptual correspondence' where interactants assume they are seeing things in the same way. She proposes that this perceptual correspondence can be reached in analyst–client interaction by problem framing and reframing, and identifies a number of frames in her study: outcome frames, used to define the goals of a meeting, back track frames, used to revisit statements, reframing, and also an as-if frame, where the frame is expanded beyond the available information.

Bateson (1976), suggested that frames existed at a number of levels of abstraction – whereas Guinan and Schön tend to discuss frames that exist on the interactional level, as a problem is conceptualised. More recent work (Tannen 1993) has explored the notion of frames at varying levels, from local to global.

Orlikowski and Gash (1994) speak of a 'frame' as essentially an interpretive scheme applied to information systems development. They equate a frame to a 'frame of reference', and point out that this has also been spoken in varying fields of literature as 'a cognitive map', 'mental models', and 'thought worlds', to name but a few. They too contend that frames can exist at varying levels – individual, group and organisational. They further argue that an incongruence in technological frames, where the same view of technology is not shared by all the stakeholders, can result in difficulties and conflicts in information systems development (Orlikowski & Gash 1994). Certainly this can occur during early requirements gathering, where analyst and client attempt to reconcile differing frames to a number of shared frames about those requirements.

Agre (1998) contends that systems designers effectively engage in discourse analysis – they reduce explanations of work practices to a grammar that is translated into technical objects. They have a repertoire of 'technical schemata' which consist of fragments of narrative, which, combined with formal devices, enables the embodying of that aspect in software (Agre 1997). He goes on to describe this as a powerful skill called 'transcoding' – paraphrasing other's language in terms of the technical schemata (Agre 1997).

As language is the only medium that gives us insight to shared perception, the whole issue of shared perception is problematic as people may assign very individual meanings to the same set of words. For instance, the field of symbolic interactionism contends that meaning is constantly negotiated between individuals in the form of symbols. Moreover, the meaning of symbols is individual and specialised, but collectively we take our broad agreement of a symbol from society (Wood 1982).

In the field of information systems, a language particular to that domain is used; many non specialists find this language hard to penetrate. The interaction between an analyst and client can also be seen to be an exercise in cross-cultural communication, where 'culture' is defined as shared knowledge of how to behave and recipes for understanding experience in specific ways (Barnett & Kincaid 1983). It has been suggested that miscommunication *between* cultures are essentially the same as *intra* cultural encounters, and that the problem is perhaps made salient by those differences (Banks, Ge & Baker 1991). Whether analysts and clients come from the same culture is perhaps a moot point in the light of this interpretation – certainly there are considerable differences in the use of language and how issues are perceived.

In the field of semantics, there are various categories of meaning associated with social situations; social meaning is said to be the extent to which a piece of language conveys the social meaning of its use, affective meaning reflects the attitudes of the speaker (how it is said), and conative meaning is what one associates with particular expressions or words (Leech 1981). Therefore the analyst and client could be said to be negotiating meaning at a number of levels, and this point is explored further in section 1.4.2.2.

The field of social cognition has long been dominated with discussions of attribution theory – how a social perceiver uses information in the social environment to yield causal explanations for events (Fiske & Taylor 1984). Derived from cognitive theory, Dervin et al have developed a sense making approach which focuses on how people comprehend the information they receive (Dervin, 1976, 1980, 1983; Dervin & Dewdney 1986, Dervin et al 1980, Dervin, Jacobson & Nilan 1982, Dervin, Nilan & Jacobson 1982). The sense making approach assumes information to a significant degree to exist internally, as something that can only provide an incomplete description of reality, and also emphasises that people make sense of information on a moment by moment basis. This would seem to imply that meaning is very much

situated – that is, people attribute meaning dependent not only on their frames of reference but the situation in which they find themselves.

Janson and Woo (1995) divide knowledge about ISD into two categories. The first category is knowledge of the design *environment*, such as the personal characteristics of users, the ISD method used and the kind of system being developed. In this literature review, these issues are treated as individual, environmental *and* conceptual. The second category Janson and Woo (1995) advance is language communication, where the focus is on the interaction. This could be seen as pertaining to the social element in this literature review, but with conceptual elements, as after all it is through language that ideas about systems are constructed.

Jones and Walsham (1992) speculate that there are in fact four types of knowledge required for the design of information systems: technical knowledge, domain knowledge, design knowledge, and organisational knowledge. Early requirements gathering can be seen as a synthesis of these elements. Firstly, the analyst brings their technical knowledge to the interaction, with the objective of eliciting domain knowledge from the client. While appreciating the domain knowledge and its implications, the analyst will also bring their design knowledge to bear on the problem. Secondly, organisational knowledge, proffered by both the analyst and the client, will influence the shape of the system when combined with the other elements.

Schön (1983) points out that some professionals seek the high ground by confining themselves to narrow technical practice (technical knowledge and some design knowledge), whilst others speak of experience, trial and error (domain knowledge and organisational knowledge). Jones and Walsham (1992) also observe that domain knowledge is not highly valued by developers, and that organisational knowledge may make it difficult for them to gain due to limited interactions in an organisation.

Ngwenyama and Klein (1994), when talking about expert systems knowledge elicitation, give a similar characterisation of the knowledge that an expert – or indeed a system developer – might employ. They speak of explicit foreground knowledge, incorporating rules and heuristics, but also social norms. In addition, they defined implicit background knowledge consisting of routine or instinctive knowledge, tacit knowledge or skills, and intuitive knowledge. This last category is not dissimilar to Schön's (1983) concept of 'knowing in action' where the practitioner finds themselves carrying out spontaneous actions and judgements that they are unable to fully describe the basis of –the original understandings on which these judgements were formed have been largely forgotten (Schön 1983).

IS professionals are largely concerned with the structuring of information into a systemised whole, which can then be used as the basis for processes producing or receiving information, encoded in programs. It is worth looking at how this professional knowledge about information is constituted. Boland (1987) enumerates some metaphors about information which guide systems developers. A metaphor is defined as a figure of speech where a word or phrase is applied to an object or action that it does not literally denote, in order to imply a resemblance (Collins Concise Dictionary 1982), or indeed to explain it better. The meaning of a metaphor can only be grasped as a second order process (Kittay 1987). The following metaphors about information were identified by Boland (1987) and commented on by Hirschheim and Newman (1991)

Information as structured data – this sees information as an object or entity. Boland contends that this is a means of by-stepping the problem of meaning in information and accompanying processes of hermeneutic interpretation. This metaphor treats information as an immutable, observable object (Boland 1987, Hirschheim & Newman 1991)

Organisation as information – the notion that organisational control rests in the distribution of information and decision parameters, and that organisations are guided and controlled by the manipulation of structured data. This ‘ignores the individual actor’s needs to interpret and make sense of organisational situations’ (Boland 1987).

Information is Power – the idea of information permitting control over an individual. This inflates the role of the systems developer, who through system design, creates and reallocates power (Boland 1987).

Information is Intelligence – information is seen as enabling the movement through a problem space, and equal to intelligence. Thus intelligence is reified and transformed into an object which is stored in a computer. Boland suggests that this removes human beings from the domain of information systems discourse (Boland 1987, Hirschheim & Newman 1991).

Information is Perfectible – the idea that information is perfect and ‘true’, and that systems can be developed to supply the decision maker with perfect information. This of course removes information from the situation or context in which it is placed. Boland states that it is impossible to endow information with immutable perfection, as situations will always be open to interpretation and reinterpretation (Boland 1987, Hirschheim & Newman 1991).

A major change in the context of information systems development (ISD) in the past twenty years has been the proliferation of system development methodologies (SDM) that guide the development of systems. These methodologies encode technical and design knowledge, and as well as assumptions about the role of clients in ISD. Methodologies therefore can exert a powerful influence on how the problem is framed – indeed it could be said that problem framing is their *raison d’être*. Methodologies are said to be a collection of techniques, tools and documentation to help a developer develop a system (Avison & Fitzgerald 1995). They are often founded on a philosophy, implied or overt. It is not difficult to see that, as ideas about the system are constructed between analyst and client, they can represent a constraining framework, as they effectively set the agenda about what will or will not be considered in the global problem frame represented by the methodology. Design issues cannot always be neatly cleaved from their surrounding context – for instance, Hirschheim and Klein (1994) point out that current data modelling approaches do not stress checks and balances which could compensate for typical organisational biases and distortions.

Wastell (1996) cites a case study using the methodology SSADM, where the communication between analysts and clients was effectively obstructed by the design language used – clients found data flow diagrams difficult to understand and locate in their context. Beath and Orlikowski (1994), when deconstructing the IE Methodology to unveil assumptions about the analyst–client relationship, noted the same sort of difficulty; in one section of the methodology they say that users can be taught to understand the diagrams employed – a case perhaps of IS professionals demanding that the users operate in their language in order to produce a successful system.

While there are methodologies which incorporate a much wider view of analyst–client relationships – such as Soft Systems Methodology (Checkland 1981, Checkland & Scholes 1990), these are not widely used in industry. The examples given above serve to underline how methodologies themselves comprise social constructions of how analysts and clients *should* interact, and how information systems development should take place. Moreover, the use of a methodology tends to perform ‘problem setting’ (Schön 1983) in a particular way which may either constrain or enable the analysts and clients in a given situation, depending on the appropriateness of the methodology for the particular problem.

1.4.2 Social Issues

As indicated in sections 1.1 and 1.4, early requirements gathering involves not only building an epistemology or definition of system concepts, but a social context in which this occurs. Central to this is the analyst–client relationship and to what extent the relationship facilitates or otherwise the creation of those requirements. The analyst–client relationship can be characterised as existing at two levels, that which exists between individuals, and accepted norms of interaction between the IS professional and their client. The analyst and client also negotiate meaning within a social setting using various communication practices, and this aspect is also discussed here.

1.4.2.1 *The Social Context of Analyst–Client Relationships*

The IS profession can perhaps best be characterised as ‘minor’ profession. Schön (1983) comments on Glazer’s (1974) distinction between ‘major’ professions such as the law, medicine and engineering, and ‘minor’ professions by saying that major professions have clearly defined ends whereas the ‘minor’ professions suffer from shifting ambiguous ends and from unstable institutional contexts of practice’. Lee (1991) also draws parallels between architecture and IS as professions both concerned with design. It could be said that the IS profession is an extreme case of shifting ends, given constant technological developments and changing views of the role of IT in organisations. The past thirty years have seen an evolution of role from a computer programmer who performed arcane rituals on a mainframe computer, to IS professionals who accept that theirs is a role that provides IT as a service, in a context of IT being central to many business strategies.

The Australian Computer Society (ACS) has increasingly tried to ‘credentialise’ its members, by introducing stricter qualifications for its members and opportunities to accrue professional training as a qualification for the next level of membership. The ACS has also attempted to introduce a ‘Body of Knowledge’ (Maynard & Underwood 1996) to be used in their professional recognition of undergraduate degrees – to a mixed reception in academic circles. This probably demonstrates the existence of shifting ends – as the mixed reception constituted challenges to what and what was not deemed to be core knowledge for the profession. Given these shifting ends and the fairly rapid evolution of IS as a profession, it is perhaps not surprising that there are a number of different models of analyst–client relationships, related to a shifting social debate as to what the role should be. The nature of that relationship, and the roles within it, will impact on how individuals might communicate about early requirements gathering, and have a practical impact on the information gained.

Hirschheim and Klein (1989) put forward four possible models or paradigms of information systems development (ISD), based on the roles that a systems analyst might play within a social context. The first is the ‘Analyst as System Expert’, (Hirschheim & Klein 1989) where the primary role of the analyst is to be the expert in technology, tools and methods of systems design. The assumption is that the specification is as objective as possible, and that organisational politics are irrational as it interferes with system design. As Hirschheim and Klein point out, this role is founded on positivist epistemology. It also illustrates well the ‘Technical Rationality’ model that underpins most professions as articulated by Schön (1983). As pointed out by both sources, this can result in undesirable consequences, as ends are rarely agreed upon without some debate. Moreover, at a practical level, the analyst who ignores the context in which the design is situated may have to deal with all sorts of consequences, such as incorrect specifications due to assumptions made about the user domain that are not checked with the user, and user resistance due to organisational politics. This first model can also be seen as a product of history, where IS professionals had exclusive access to systems development knowledge – this is no longer the case since the advent of end user computing.

The second model Hirschheim and Klein put forward is stated by them to be a reaction to the first – ‘Analyst as Facilitator’. In this model, the analyst works from the user’s perspective and system objectives emerge as part of the organisational construction of reality. The role of the analyst is to ‘midwife’ the new system into being. Hirschheim and Klein place this model within the paradigm of social relativism. This model also doubts the pre-eminent place which formal methods are placed in the first, and favours a great deal of participation (Hirschheim & Klein 1989).

Hirschheim and Klein also go on to outline two other models, ‘Analyst as Labor Partisan’, rooted in radical structuralism, citing trade union led projects in Scandinavia, and ‘Analyst as Emancipator or Social Therapist’. The latter is posed as an attractive alternative to the other three models, and is not yet observed in practice, although some individuals claim to have incorporated elements of it (Hirschheim & Klein 1989). They identify three realms on which this model is based – work, the use of language through which mutual understanding is achieved, and emancipation, being three ‘knowledge interests’ identified by Habermas (1974). System development would then encompass all three aspects, reflecting the ideal of rational discourse (Hirschheim & Klein 1989).

The social context of information systems development (ISD) is further elaborated on in Hirschheim and Newman’s (1991) paper on symbolism in ISD. Hirschheim and Newman (1991) identified the following, sometimes contradictory myths, or unsubstantiated beliefs, in ISD:

- user involvement is beneficial
- user resistance is both inevitable and dysfunctional
- that information systems should be integrated where possible
- the systems developer is the best person to make decisions about the system
- politics should not be the concern of the system developer
- the key to successful design is a top down approach

We can see here a reliance on Schön’s concept of ‘Technical Rationality’ on the part of systems developers. When discussing the first myth, Hirschheim and Newman (1991) contend that user involvement is seen as beneficial because it defuses resistance, and can be subject to manipulation by the designer. The second two myths are perhaps a result of the developer identifying wholly with organisational aims. Hirschheim and Newman point out that resistance is almost inevitable with large scale systems development, and that, while integration offers organisational advantages, it produces conflict as it undermines power structures. This brings us to the myth that politics are not the concern of the systems developer, again underlining technical rationality view of most systems development. The notion of the systems developer as being the best person to make decisions about the system, is, Hirschheim and Newman suggest, based in a belief of systems developers that technology is a civilising influence, resulting in the zeal of a missionary. They also say that this attitude has become more muted with time. Perhaps this lessening is due to the fact that IS knowledge in general has become more accessible to most people in the 1980s and 1990s, due to technical developments such as the PC and the general accessibility of the Internet.

These myths, in the main, come from the body of knowledge which developers are trained in and practitioner literature, and reflect how IS professionals define themselves in relationship to the world. In a world narrowly bounded by technical rationality, messy issues such as user resistance or politics are redefined in a way to lessen their importance in the problem framing that IS professionals engage in. Where at all possible, social issues are either incorporated and rationalised – as in “user involvement is beneficial”, or ignored – as in “politics should not be the concern of the systems developer”.

Hirschheim and Newman (1991) also spoke of 'magic' in ISD – this they distinguished from myths, which have some anchor in collective experience. Magic is defined as 'beliefs which cannot be destroyed by the presentation of contrary evidence' (Cleverly 1971, in Hirschheim & Newman 1991). Hirschheim and Newman talk of the 'System Developer as High Priest', where the developer appears to possess the apparently magical power of making an unintelligible piece of technology into a key organisational tool. They say the magic nature of ISD is reinforced by rituals such as walkthroughs and sign-offs, and that these rituals also express professional solidarity.

1.4.2.2 Communicating and Negotiating Meaning

The negotiation of meaning during early requirements gathering is undeniably a social process. Alexander (1969) gives an exhaustive treatment of how meaning is constructed, proposing that the process of constructing meaning has three phases; creation of meaning, expression and communication. Creation of meaning, where the individual shapes meaning in thought (Alexander 1969), can be thought of in early requirements gathering as the individual drawing on their frames of reference about ISD or their particular user domain to shape their ideas about an imagined system. Expression is defined as how the individual expresses themselves by putting their thoughts into language and gestures, and communication as what is actually conveyed from one person to another (Alexander 1969).

The first stage, creation of meaning, can be seen as relating to what has been termed in this chapter as *conceptual* issues in early requirements gathering. Obviously the role of frames at an interactional level play some role in the second stage, expression, and as such span both social *and* conceptual boundaries. How a person expresses meaning will probably be a product of their individual attitudes, education, feelings, and communicative style, and also the communication situation they find themselves in. Therefore this second stage can be seen as covering both individual and social issues. The third and final stage, communication, ideally results in the negotiation of shared meaning and can be said to relate to social and interactional issues. The meaning that is expressed and communicated or otherwise negotiated can exist at several levels. Alexander (1969) suggests four levels:

- meaning as intended
- content meaning
- significative meaning
- interpreted meaning

The first, meaning as intended, is self explanatory – what the individual intends to say. The second, content meaning, is more complex, as it relates not only to the content of the message they wish to convey, but the emotions and activities surrounding that content (Alexander 1969), and so has two other elements, emotive meaning and active meaning. For instance, a person might say 'I *feel* that this is a good plan (emphasis added), it ought to work', thus softening their commitment to full conceptual understanding (Alexander 1969) and conveying emotive meaning. Active meaning is associated with the activities and situation of the moment, and is relevant when one considers the building of meaning in early requirements gathering, where either participant might be responding to or redefining meaning as an ongoing component of creating requirements. For instance, we could view some of Schön's (1987) 'on the spot experiments', where a practitioner tests a certain interpretation of the situation as described, as being experiments in active meaning.

Significative meaning consists of three elements, verbal meaning, symbolic meaning, and natural signs (Alexander 1969). Verbal meaning is that which is conveyed by language, the words alone that are used. Symbolic meaning encompasses non-verbal

signals such as bodily gestures and facial expressions, but also non-linguistic items like flags or traffic lights – therefore symbolic meaning is more inclusive than verbal meaning (Alexander 1969). If natural signs are also added, such as clouds as signs of rain, then significative meaning stands for the widest range of meaning conveyors (Alexander 1969).

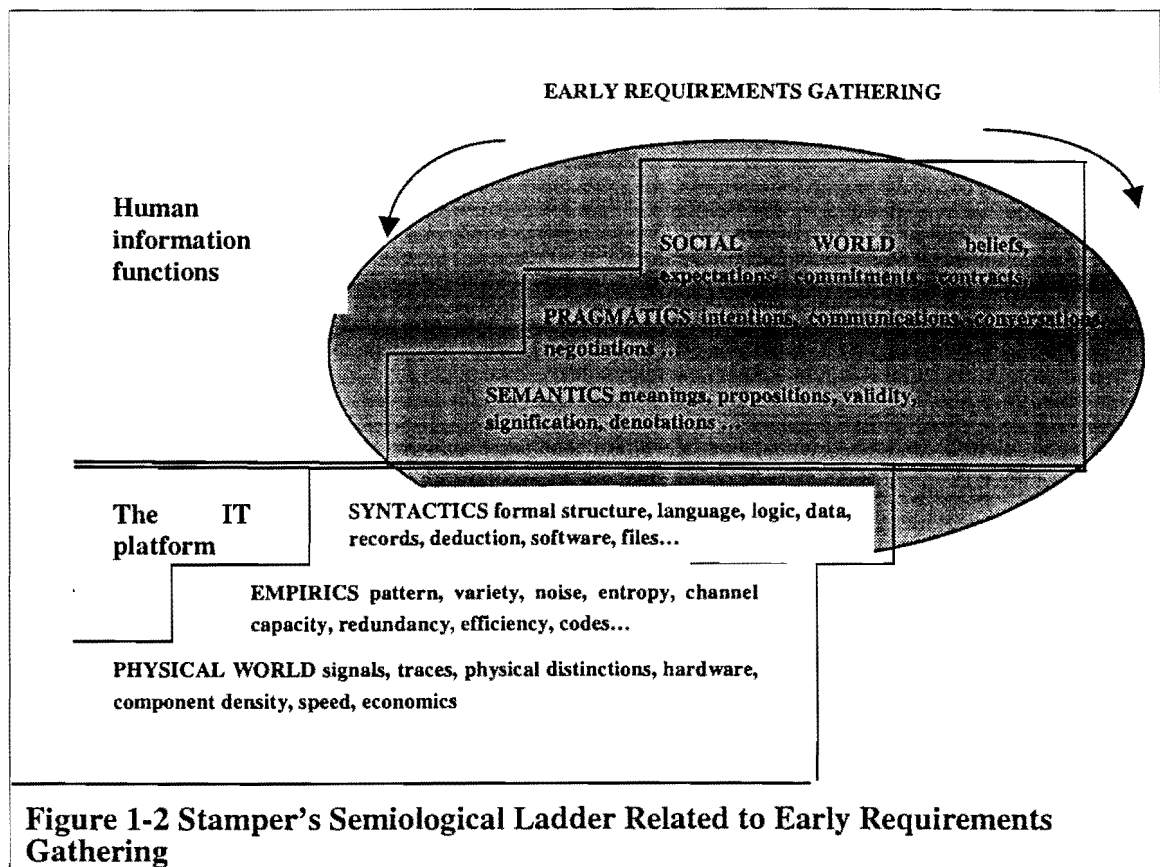
Alexander (1969) describes meaning as interpreted as first being concerned with interpreting the conceptual aspect, even if the content includes emotive and active aspects. This is because we must first understand a statement through the words it employs and relate them to our previous concepts. We can then pay attention to the significative meaning conveyed by tone of voice and facial expression. Alexander states the same is true of active aspects, in that one cannot act on these until the conceptual meaning has been conveyed.

From the above description it can be seen that the creation of meaning in early requirements is firstly, a complex matter, and secondly, that meaning is modified by social and situational aspects. Alexander (1969) contends that differences in schools of thought about meaning generally develop because different theoretical approaches look at different aspects of the process.

A good illustration of this latter point can be found in how social semiotics discuss the creation of meaning. Semiotics is described as the study of signs and a distinction is made between the signifier and the signified – for instance, a green traffic light is a signifier which conveys meaning, and what is signified, by linking to a referent ‘green is for go’ is the realisation that one can decide to move forward (Hodge & Kress 1988). Signs can be verbal or non verbal, natural or created by humans – and the meaning ascribed to them can exist at a number of levels. Hodge and Kress (1988) distinguish between the *mimetic plane*, implying some version of reality as a referent, and the *semoiotic plane*, linking producers and receivers and signifiers into an active relationship. Looking at these definitions from the perspective of early requirements gathering, it can be seen that conceptual issues in this literature review (Section 1.4.1) refer largely to the mimetic plan, and that the active, social creation of meaning about requirements occur on the semoiotic plane, which are treated under social issues in this review (Section 1.4.2). Further, that the semoiotic plane is where significative meaning occurs, as described earlier by Alexander (1969).

Stamper’s (1995) semiotic framework for information systems, (Figure 1-2) gives an indication of what levels of meaning might be concerned with the creation of information systems. The shaded part indicates what levels are covered by early requirements gathering – the areas of semantics, pragmatics and the social world, and how they are effectively embedded within each other.

From the perspective of the social aspects of early requirements gathering, what is of interest is how the world of pragmatics – intentions, communications, conversations, negotiations – impacts on the world of semantics which is where the concepts relating to the information system are created. Of course, all this takes place within the social world, which is why various enactments of professional relationships are important to the context of early requirements gathering.



The conversational task that a systems analyst and a client are engaged in can be seen to have a number of elements. Firstly, there is a transfer of information from client to analyst. The analyst will use that information in problem setting, as defined by Schön (1983), and then the problem will move through a succession of frames and reframes, where the information is successively interpreted, reinterpreted, and built upon conceptually. All this is being conducted through the conversational skills and language of the analyst and client, who are also engaged in a *social negotiation* about the definition of the problem, possible solutions, and future actions. So this interaction can be seen as comprising a negotiation not only about meaning but the accommodation of interests in a political sense (Kling 1987). Strauss (1978) developed a paradigm of negotiated social order that bears repeating with reference to early requirements gathering. Its major components are:

Negotiations. Interactions comprising actors, strategies and tactics, consequences of those negotiations, and embedded negotiation sub processes. In early requirements gathering, these aspects can be classified as those occurring at the interactional level between analyst and client

Structural context. That larger context in which the negotiation takes place, which has structural properties. In early requirements gathering, this could be seen as the organisational context and relationships between sections, in particular structural power (Markus & Bjorn-Anderson 1987).

Negotiation context.

- the number of negotiators, their experience and who they represent.
- the type of negotiation – one-shot, repeated, sequential, serial or linked.
- the relative balance of power exhibited by the respective parties in the negotiation itself.
- their respective stakes of the parties in the situation.
- number and complexity of issues negotiated
- clarity of legitimacy boundaries of issues negotiated
- options for avoiding or discontinuing negotiation.

In early requirements gathering, the negotiation context could be characterised by the degree of technical power exhibited by the analysts (Markus and Bjorn-Anderson 1987), the negotiation of various meanings over the duration of the project, who is involved in the project and what their respective interests are.

The social context of early requirements gathering has been explored from the perspective of professional relations between analyst and client in section 1.4.2.1. One aspect that also deserves exploration is how the communication that exists between analyst and client either supports or detracts from understanding in early requirements gathering. In her study of highly rated and poorly rated developers, Guinan (1988) finds that users report a higher degree of rapport with highly rated developers, and that those developers use *meta-communication* – communicating about communication – much more frequently than low rated developers. More importantly, these developers achieve more shared meaning, or perceptual correspondence with clients than other developers. So, it can be said that those developers who achieve shared meaning draw on a wider range of communication strategies than their more lowly rated counterparts. Tan (1989), building on Guinan's work, suggests that rapport is important because it facilitates the elicitation of difficult and controversial issues.

Drawing on Stamper's (1995) framework, the use of meta communication can be interpreted as the developer entering into the social world, and also negotiating not only meanings but interests. Also, those 'difficult and controversial issues' are often embedded not only in a political, organisational context, but may pertain to the client's need to resolve issues of process in their daily work. If an analyst concentrates too much on a bounded view of information, some of these larger issues may not emerge, to the detriment of the system itself. Both Guinan (1988) and Tan (1989) demonstrate that, where analysts use the tactic of reflection, summarising what the client had said (Tan) or backtracking (Guinan), there is an increased level of mutual understanding.

Both these studies would seem to point, not surprisingly, to a suggestion that the communication skills of the analyst are critical to achieving shared meaning and agreement about early requirements. Interestingly, many systems analysis textbooks are quiet on the subject, with some notable exceptions (Kendall & Kendall 1995). McGivern (1983) points to a similar phenomena in management consulting, where a book on the subject devotes just 3 pages out of 350 to 'creating and maintaining sound relationships'. This may be due to the IS profession taking a technical rationalist view, as discussed in section 1.4.2.1. That particular view can be seen to have extensive consequences when one considers how meanings are firmly embedded in a social context, and that language and social relationships are the primary routes for conveying such meanings.

1.4.3 Individual Issues

Early requirements gathering is normally carried out by one individual in communication with one or a number of others. Moreover, the approach taken in the process of early requirements gathering is a product of the person's communication

style, education, background, attitudes and personality. In short, while early requirements gathering takes place within a given situation and a social context, the individual characteristics of analyst and client also play a part. Relative differences in perceived status may also have an influence on the process, due to imbalances of power (Markus 1983). Gender also may come into play, given that researchers have found that men and women have different patterns of communicating (Spender 1980, Henley & Kramarae 1991).

Generally, IS professionals are held to be poor communicators, a fact remarked upon in the literature for about twenty years and in section 1.1. This may be because the profession does attract technically minded individuals who can be termed introverted on the Myer-Briggs Type Indicator scale – in a study done in 1985 (Lyons 1985), two thirds of a fairly large sample (1,229) were found to be I's (indicating introversion) rather than E's (indicating extraversion), the reverse case of the general population, where two thirds favour extraversion. Lyons also found that the same proportions existed in IS management, due to the tendency to promote the best technical people (very often I's) to management. So IS professionals might be 'different', and not predisposed to communication – Lyons comments that I's tend to be energised by solitary activities and exhausted by interaction with the outside world. The study also showed a strong ratio (80%) of T preferences, the preference for making decisions made on a logical, impersonal basis, as opposed to the F preference, for making subjective decisions based on personal values. Lyons suggests that the F preference is especially appropriate for dealing with people, as personal values involved on both sides are included in the process. Perhaps here we also see how the origin of one of the 'myths' identified by Hirschheim and Newman (1991) – that politics should not be the concern of the system developer. If a myth has an anchor in collective experience, then this would be indeed is the view of a group of people who are dominantly 'T' in their thinking style. Lyons concludes his article by remarking that just being aware of personality preferences can greatly improve communication.

Although this study is over fifteen years old, there can be no doubt that the same differences still exist between the IS profession and the community as a whole, as witnessed by the Australian Computer Society February 1994 issue of *Informatics*, their practitioner magazine, the cover showing an IS professional with an axe in his back, entitled 'Why Users Hate Your Attitude' (Kennedy 1994). The devoting of this whole magazine issue to the subject of communication with users shows an increased awareness of the problem by IS practice in Australia. Jung and Arnett (1991), found that IS managers valued such skills as listening, problem solving, user need and problem assessment skills, and communication skills, above baseline technical skills.

In a cross cultural study of 'excellent' systems analysts, Hunter and Beck (1996) find that Canadian stakeholders value a participative relationship as much as technical competence – by contrast, Singaporean stakeholders stress technical knowledge and professionalism as being very important. This serves as a reminder that in increasingly globalised IS profession there might not only be individual differences, but cross cultural differences as well.

Wastell and Newman (1993) examine the subject of ISD from the perspective of ISD as an inherently stressful experience, bound up as it is with organisational change. This is of interest from the perspective from the individuals involved in early requirements gathering, as individual differences play a large part in how people respond to stress. Wastell and Newman (1993) point out, that under stress, cognitive performance is reduced and in some cases may result in an 'Intellectual Emergency Reaction', where thinking becomes more rigid and simplistic in response to insecure situations. It is interesting to speculate on how this might affect assumptions made at the early requirements stage of a project.

A grounded theory study on conversations produced the concept of 'conversational sensitivity' (Daly, Vangelisti, & Daughton 1987). This concept suggests that individuals vary in their sensitivity to interactions. Some people pick up hidden meanings, and are more non-verbally sensitive than others. They may remember better than most what is said and be able to pick up deeper meanings. It is positively related to self monitoring, self esteem, assertiveness, empathy and social skills. Again, this serves as useful reminder of how individual differences may influence what is after all, a conversation about early requirements gathering.

Gender is said to contribute to problems of miscommunication (Henley & Kramarae 1991), and as such is worth examining in the context of early requirements gathering. The IS profession is still a male dominated, technical profession, though less so on both counts than in the past. Henley and Kramarae (1991) view male-female miscommunication in the context of male power and female subordination, citing communication patterns of polarisation, differential evaluation, denial, and reinterpretation in communication similar to those found between ethnic, racial, religious, age and class groups. Usually, one version of the communication situation will prevail, one speech style will be seen as normal, and one interactant will have to interpret the meaning of the other.

This interpretation has important ramifications for the process of early requirements gathering, as it suggests that, where inequalities exist, one person's interpretation may override another's. How the problem framed could influence this, so who contributes to problem framing and successive reframing is an important issue. Inequalities in the organisational situation may result from age, experience, or rank in the organisation, as well as gender. It is worth remembering that IS can be classified as a service function along with finance and human resources in organisations, yet few of these other professions have so much expert power. It is also interesting to speculate on relative inequalities between the IS profession and other groups in an organisation, and how this might affect communication in early requirements gathering.

Henley and Kramarae (1991) further contend that male-female miscommunication is not simply a by product of inequalities, and is a question not only of cultural difference but of cultural dominance, as males and females are learn to communicate in what are effectively different cultures (Tannen 1987). They cite the following examples of cultural differences, which result in cultural dominance, in male-female communication:

- positive minimal response (PMR) – a minimal response is something like 'uh-uh', or 'mm-hmm'. Women and men apparently interpret these responses differently, women seeing this as 'go on, I'm listening', whereas men see it as 'I agree, I follow you'. These different interpretations lead to a) women's more frequent use of PMRs, b) men's confusion when a woman's PMR does not necessarily indicate agreement c) women's complaint that men are not listening when they talk.
- meaning of questions – women use questions for conversational maintenance, men use them as requests for information.
- linking of one utterance to the previous one – women tend to make this link explicitly, whereas for men this rule does not seem to exist. This example seems to contradict Planalp and Tracy's (1980) classification of topic shifts, where there are several categories of explicit links, based on research on both sexes. The linking of one utterance to another in an explicit manner contributes to the *coherence* of a conversation McLaughlin (1984), something which is presumably useful in early requirements gathering.

- interpretation of verbal aggressiveness – women see verbal aggression as personally directed and negative, but for men it helps organise conversational flow.
- topic flow and shift – in women's conversations, topics are developed and expanded, and topic shifts are gradual. In contrast, men tended to stay on a narrowly defined topic, and then to make an abrupt topic shift.
- problem sharing and advice giving – women tend to discuss and share their problems, to reassure and listen mutually. Men tend to interpret the introduction of a problem as a request for a solution, tending to act as experts and offer advice, rather than sharing their own problems. This tendency takes on a different complexion when viewed in the context of early requirements gathering – it is quite possible that this particular conversational dynamic might result in a premature rushing to a solution, rather than hearing the whole problem that the client presents.

So, what might the ramifications of these differences be for early requirements gathering? Taking Henley and Kramarae's (1991) characterisation of communication in gender relations as having similarity to communication between socially unequal groups, it can be asked which social group – IS professional or client – is seen as higher in the hierarchy of conversation, and whose language will prevail. Added to this we can throw in individual differences, such as age, gender, seniority, and personality differences which make a person predisposed to communication in general. Early requirements gathering can be seen as a professional discourse predominantly male in character, due to its focus on expert power and the provision of solutions. The model of technical rationality on which the IS profession is based can also be seen to be indicative of a objective/subjective dichotomy, which can be expressed as a male/female dichotomy (Spender 1980). Still, meaning and negotiation of those meanings is an overwhelmingly subjective process.

Consideration of the social and organisational context of ISD is necessary to prevent project failure, as DeMarco and Lister (1987) point out in their book, *Peopleware*. At an individual level, there may be many reasons why this does not occur, due to various differences that affect communication between analyst and client.

Analysts in particular can be seen to wield both structural and technical power (Markus & Bjorn-Anderson 1987) – they represent both the organisation's interests in IT and also have expert power residing in themselves as individuals. This can affect the balance of power in the negotiation context (Strauss 1978), not only at an individual level but at a social and organisational one.

1.4.4 Environmental Issues

In addition to the conceptual, social and individual issues operating within the interaction between client and analyst, there will be a number of environmental issues that may influence the project situation, providing an overall contextual backdrop for early requirements gathering. These include the history of the project, project specific factors, relationships in the organisation between computer staff and users, and the culture of the organisation as a whole.

There may also be project specific factors, for instance a deadline influenced by legislation, the type of technology selected for the project, a requirement that it is linked to other systems, that a particular package is used, and so forth. All these factors can be interpreted as constraints within which the task of early requirements gathering has to be carried out, and will influence global problem framing.

The history of the project – for instance the selection and subsequent rejection of a package, may lead to certain conceptualisations of the requirements that are difficult to dislodge. Davidson (1996), demonstrates that various events in a project history lead to accompanying shifts in technological frames, or how the system is conceptualised.

Early requirements gathering takes place within a particular organisational context. It is worth quoting here a definition of organisational culture from Schein (1985), cited in Robey and Azevedo's (1994) paper on cultural analysis of the organisational consequences of IT. Schein states that organisational culture is:

a pattern of basic assumptions – invented, discovered or developed by a given group as it learns to cope with the problems of external adaptation and internal integrations – that has worked well enough to be considered valid, and therefore, to be taught to new members as the correct way to perceive, think and feel in relation to those problems (1985:9)

For instance, relationships between clients and IS professionals in the organisation may be subject to a number of assumptions in the organisation, which may modify or reinforce a wider set of social assumptions about how IS professionals and their clients relate. Markus and Bjorn-Anderson (1987) point to the structural power that IS professionals employ as well as their expert or technical power that can be exercised at the individual level. In this respect, IS professionals can be seen to represent organisational interests in IT, and this may sometimes be at variance with a client's interests.

Robey and Azevedo (1994) point out that there are also definitions of culture that encompass potentially disparate values between subcultures in organisations; certainly IS professionals and their clients can be seen in this way. Schein's definition also emphasises how organisational culture forms over time and is related to previous experience – this is relevant when one considers how assumptions about IS professionals may be formed from previous negative or positive project histories.

Robey and Azevedo (1994) further argue that the idea of socially constructed meanings attached to actions and artefacts (Berger & Luckman 1967), can be directly applied to information technology as an artefact. Therefore, it can be assumed that the organisation will assign a meaning to information technology and its role in the organisation, and that this will vary from organisation to organisation. So, early requirements gathering becomes a complex web of assumptions operating at many different levels. One issue worthy of exploration is how environmental assumptions affect problem framing, and this will be discussed further in this thesis.

1.4.5 Reflections on the Framework

These aspects of early requirement gathering, characterised here as conceptual, social, individual and environmental issues, demonstrate the very complex nature of early requirements gathering. Also, by their very nature, they can be seen to be to some extent intertwined. Therefore, their separation in this framework could be seen as artificial, but useful in that it enables a focused and detailed consideration on each aspect. For instance, the professional relationship between an analyst and a client can be seen as having at least three elements – the social context in which analyst-client relationships are defined, the organisational context which may modify that relationship, as will individual differences.

By paying close attention to language as a vehicle for expression, it can be seen that the creation of meaning occurs on several levels, and is influenced by the communicative process in which it takes place, as well as the overall environment and the cognitive style of the individuals involved.

All this would seem to call for detailed, qualitative analysis of analyst–client communication at a number of levels, in order to encompass the complexity of early requirements gathering

1.5 Methodological and Philosophical Perspectives

The research strategy adopted for the six case studies presented in this thesis was essentially to examine an analyst client interaction in depth, and to collect as much contextual information around that interaction as possible. This echoes Pettigrew's (1985) approach, and also incorporates a self reflexive element (Schön 1983) where participants individually and collectively reflect on the interaction. Thus the data sources surrounding that interaction enable varying constructions on that interaction, which can subsequently be distilled into a consensus construction using hermeneutic techniques (Guba & Lincoln 1994).

This strategy also implies a view of analyst–client interaction in early requirements as a social construction of reality (Berger & Luckman 1967) between two people. This in turn implies an interpretivist philosophy of research, favouring multiple, subjective interpretations of reality (Orlikowski & Baroudi 1991). The use of case studies are growing in importance in the IS interpretive field, providing opportunities not only for theory building but also for development of concepts, drawing of specific implications, and the contribution of rich insight (Walsham 1995), and as such represent fruitful avenues for exploring early requirements gathering. The methodology and accompanying philosophy of the research are explained in more detail in Chapter 2.

1.6 Analysing the Case Studies

The case studies are analysed at a number of levels across a number of data sources. Firstly, a grounded theory analysis gave insight into the strategies and tactics employed by the participants in that interaction. This constitutes a first building block in a theory of analyst–client interaction in early requirements gathering. The concepts produced from this first phase of data analysis can also be seen to operate in other cases, with some variations.

The grounded theory analysis constitutes a *micro analysis* at the interaction level, giving important insights into how the interaction might proceed. Glaser (1978), when extending the notion of core categories in grounded theory methodology to BSPs (Basic Social Processes) stated that the additional criteria for a core category that was *processual* constituted a feeling of change, process, and movement over time, where the changes have discernible breaking points.

Through consideration of this criterion, the need to incorporate a dynamic, chronological element, a secondary analysis was born – that of using *topics* as those discernible breakpoints. The grouping of these topics into *themes* represented a macro analysis of the case and provided a basis for future cross case comparison. A clear chain of analysis – from concepts to topics through to themes – enabled an essentially grounded view of the data, working as it did from the smaller units of analysis upwards, and across cases. Figure 1-3 illustrates the sequence of analysis.

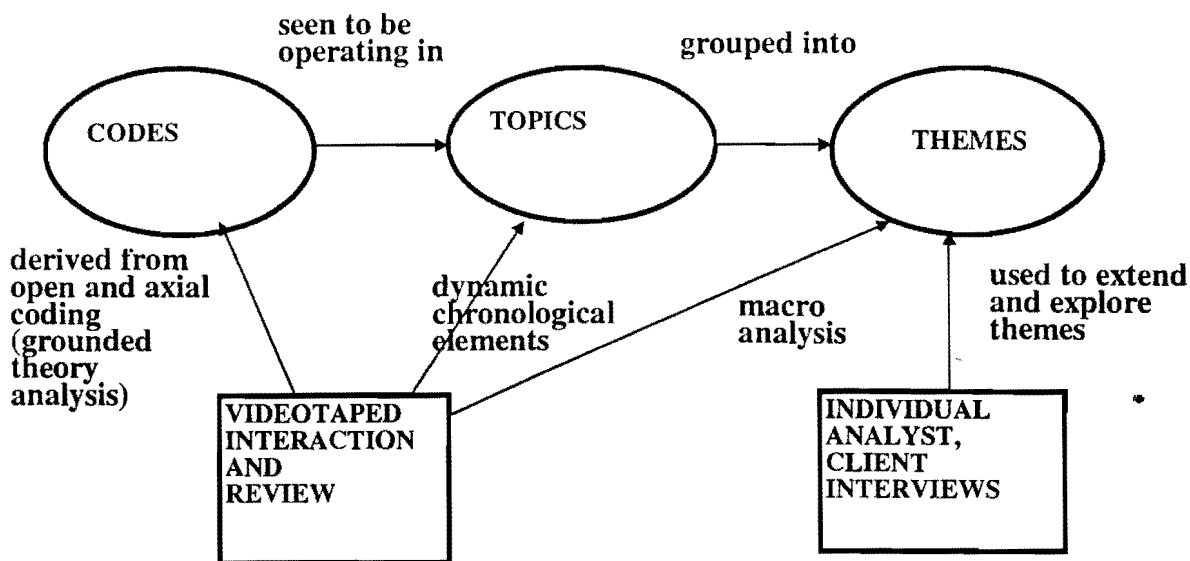


Figure 1-3 Sequence of Analysis

1.7 Summary

This chapter has described the motivation for the research, and discussed the issues that may be operating within analyst–client communication by virtue of a framework that characterises those issues. It then went on to briefly outline how the study proceeded, and how the results of the study were analysed.

The following chapters describe the study proceeded and its findings in more detail.

- Chapter 2 explains the research philosophy in depth and how this philosophy informs the case study methodology. It also describes the inductive theory building approach adopted for the study, and reasons for adopting grounded theory of as an initial mode of analysis for Case 1.
- Chapter 3 presents a rich description and analysis of Case 1, using grounded theory as a foundation.
- Chapter 4 extends the chain of analysis via topics to larger themes, and presents further findings from Case 1.
- Chapter 5 presents findings from Cases 2 to 6, and the substantive theory is built by virtue of discussing how these emergent themes operate in the cases over a number of data sources.
- Chapter 6 reflects on the totality of the findings, and relates them to both the initial grounded theory analysis and the theoretical framework. It also extends the theory by considering situational influences in each case and appropriate literature.
- Chapter 7 evaluates the study from two perspectives – the methodology and conduct of the research, and how the findings address the research questions.
- Finally, Chapter 8 concludes the thesis by summarising the major findings and their anticipated contribution to IS research and practice.

2. RESEARCH METHODOLOGY

'In order to prepare the mind of the reader for the easier conceiving of what follows, it is proper to premise somewhat, by way of Introduction, concerning the Nature and Abuse of Language. But the unravelling of this matter leads me in some measure to anticipate my design, by taking notice of what seems to have had a chief part in rendering speculation intricate and perplexed..'

A Treatise Concerning The Principles of Human Knowledge, George Berkeley, 1710

2.1 Research Strategy

The research problem described in Chapter 1 presented particular challenges with regard to the methodology used and the philosophical stance taken. Firstly, the nature of the problem being studied, the process of early requirements gathering and associated negotiation of meanings, influenced the philosophical stance taken. Secondly, the nature of the data, analyst–client conversation, raised particular issues associated with analysis, such as level of analytic unit, and the selection of an appropriate qualitative analysis technique.

This chapter explores these and other issues associated with the studying of the research problem. It discusses the evolution of the research strategy adopted to investigate how analysts and clients might approach the early stages of requirements gathering. Firstly, the general research approach and its accompanying philosophy are described. Secondly, reasons for adopting a case study approach and the use of inductive theory building are explained. Thirdly, the data collection procedures in the study are described. Finally, reasons for the use of grounded theory techniques as a basic building block for the qualitative analysis of the studies are discussed.

2.1.1 Research Philosophy

The research problem presented in Chapter 1 – *How do analysts and clients approach early requirements gathering?* – pointed to a study that was essentially processual and detailed in nature. The issue of subjective interpretation can be seen as an aspect of the research problem, given that analysts and clients in early requirements gathering are essentially negotiating meaning. An interpretative philosophy for the study seemed highly appropriate in order to be able to give an account of the process of early requirements gathering that reflects the views of the participants, one that gives a feeling of how participants create meanings and create interpretations (Neuman 1994). This can also be characterised as explanation within the realm of individual consciousness and subjectivity and concerned with individual frames of reference (Burrell & Morgan 1979), which seems to express the essence of the research problem. Interpretivist research methods have been increasingly applied to information systems research in recent years (Myers 1997, Walsham 1995) and are perhaps reflective of a greater emphasis on organisational issues in research (Myers 1997). Certainly in the cases studied, the interpretative approach used allowed consideration of the organisational context of the interactions and their influence on those interactions.

It was also useful to consider the research problem within the paradigms of information systems development advanced by Hirschheim and Klein (1989) which are themselves based on Burrell and Morgan's (1979) framework. Hirschheim and

Klein (1989) usefully relate four different views of the analysts role (as Systems Expert, Facillitator, Emancipator, and Labor Partisan) to the paradigms in Burrell and Morgan's framework. Their framework is utilised here to locate the current study and previous key studies in the area with regard both to research paradigm and the view of the system analyst role that is implied by that paradigm. Figure 2-1 locates the current study within the social relativist paradigm, and also attempts to locate other relevant studies by Guinan (1988), Tan (1989), and Davidson (1996). With respect to Davidson's (1996) work on the differing technological frames used by developers and clients, it is difficult to precisely locate the philosophical position as she states that she has tried to remain impartial, while acknowledging how difficult this can sometimes when working with participants over a long period of time. This position can be perhaps be represented as the tension evident in interpretivism, possibly due to unresolved contradictions between rationalist and romantic roots, where there is a struggle in drawing the line between the object of the investigation and the investigator (Schwandt 1994). As Hirschheim and Klein (1989) point out, the original Burrell and Morgan (1979) framework has its critics who claim that it is oversimplified and that the dichotomies portrayed therein are artificial. They further point out that the paradigms they put forward are best construed as ideal types.

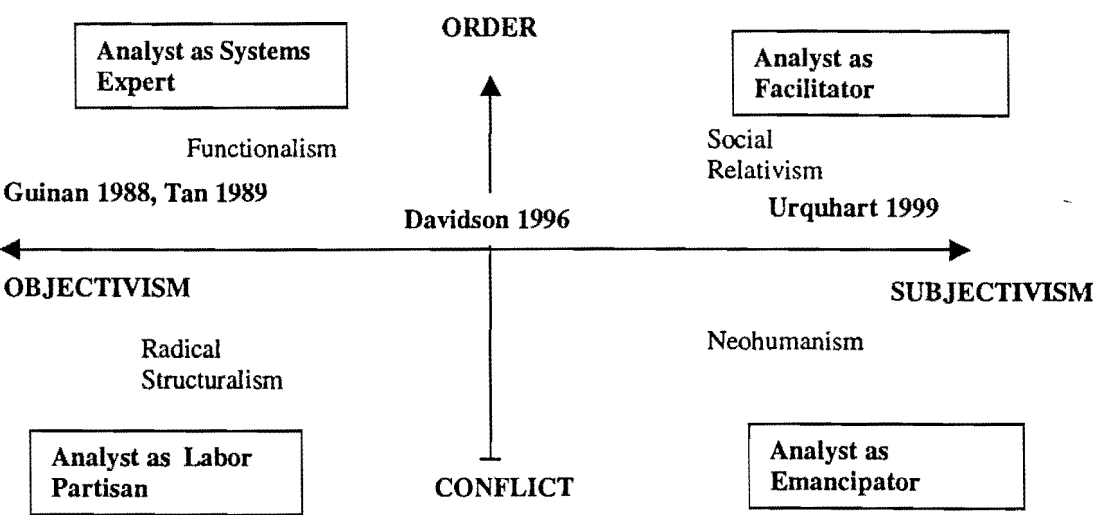


Figure 2-1 Paradigms of Information Systems Development (based on Hirschheim & Klein 1989 and Burrell & Morgan 1979)

Orlikowski and Baroudi (1991), when discussing research approaches to studying information technology in organisations, describe interpretive studies as being founded on social constructivism (Berger & Luckman 1967) and being concerned with the subjective and intersubjective meanings of that people create as they interact with the world around them. Schwandt (1994) begs to differ, stating that while interpretivism and constructivism have the same goal of understanding the complex world of lived experience from the point of view of those who live in it, they differ in a) how they deal with the purpose and aim of human inquiry and b) the question of how can we know about the world of human action (Schwandt 1994).

Schwandt (1994) distinguishes between interpretivism and constructivism in terms of their intellectual heritage and how they treat matters of being and knowing. He also illustrates how interpretivism draws on hermeneutics, the notion of *Verstehen*, philosophical anthropology and phenomenology. He then goes on to identify constructivism as of a later vintage, and while sharing with interpretivism a reaction against natural science, identifying constructivists as also deeply committed to a contrary view that what we take to be objective knowledge and truth is the result of

perspective (Schwandt 1994). In constructivism, the pluralistic nature of reality is emphasised and is seen as the product of complicated discursive practices (Schwandt 1994).

So, where does this study position itself with regard to interpretivism and constructivism? Certainly it is interpretivist in nature but is also concerned with varying constructions on reality by the researcher and participants, particularly in terms of how the participants create a joint construction of early requirements. The study is designed to elicit individual and joint constructions from the participants and these are subsequently combined with those of the researcher. Guba and Lincoln (1994) suggest that individual constructions can be elicited and refined only through interaction *between and among* investigator and respondents. They further suggest that these varying constructions are interpreted using conventional hermeneutic techniques, and that they are compared and contrasted through a dialectical interchange (Guba & Lincoln 1994). The final aim is to distil a consensus construction that is more informed and sophisticated than its predecessor constructions (Guba & Lincoln 1994).

It is also worth noting at this point that Orlikowski and Baroudi (1991) distinguish between 'weak' and 'strong' constructivism in interpretivist studies; the latter holding that the researchers assumptions are deeply embroiled in the research approach, the former viewing the research process as a retelling of actors stories. Many proponents of constructivism would hold that the investigator and object are interactively linked so the findings are literally created (Guba & Lincoln 1994), and that the observer cannot (should not) be neatly disentangled from the observed (Schwandt 1994). The strong constructivist approach holds that triangulation is impossible, as there is no objective reality on which to triangulate (Orlikowski & Baroudi 1991). This study firmly locates itself in the strong constructivist tradition by firstly presenting an initial framework in which the researcher's assumptions, values and biases are stated, and secondly by its treatment of data sources as an aid to theory building via extension and corroboration rather than as triangulation.

The study adopts a hermeneutic *method* in that it is concerned with the interpretation of spoken texts and subsequent reinterpretation of those texts. Schwandt (1994) suggests that ontological hermeneutics as a method is at odds with traditional method as suggested by logical empiricism. It argues for a normative sense of method in that:

..far from supplanting personal, subjective judgement, or eliminating the need for it, *is meant as an aid to good judgement*.

(Madison 1988 p.28, in Schwandt 1994, p.122), emphases added.

Schwandt (1994) further remarks that if interpretation is conceived as an ontological condition, rather than simply a methodological device, it puts the inquirer on the same plane of understanding as those being inquired into.

The hermeneutic process prescribes that as much as possible the interpreter should live with a text in order to understand it (Lacity & Janson 1994). Schleiermacher's concept of understanding as the reexperiencing of the mental processes of the author of the text, and the concept of the 'hermeneutic circle' as basically a referential process which utilises intuition (Schleiermacher 1959, 1838, in Palmer 1976) is of assistance when considering how both analysts and clients might assign meanings in early requirements gathering. It is also interesting to consider that hermeneutics, although historically associated with the process of literary interpretation, is explicitly connected with the process of 'saying'. Interpreters of literary texts are urged to consider 'oral interpretation' and the role of the 'inner ear' when considering their meaning – words in their original form being designed to be heard rather than read. (Palmer 1976).

Through the iterative process of reading, rereading and reinterpreting text material, a better understanding of the speakers intention arises (Lacity and Janson 1994). Gadamer sees the notion of one "right interpretation" as a thoughtless ideal and an impossibility – the text in question has to be understood in the hermeneutic situation it finds itself; it has to be present related (Gadamer 1965, in Palmer 1969). Gadamer can be seen to give the role of language ontological status, in that language has a central role as a mediator between frames of reference or traditions (Gadamer 1965, Giddens 1976, in Burrell and Morgan 1979).

Another important element of the hermeneutic tradition is the constant comparison of texts or fragments of texts with other texts; this can be seen in Newman's (1989) study of systems developers and users where themes were extracted from interviews and compared to other transcribed interviews to find alternative interpretations and insights. A similar comparison has been used in this study with the themes that have emerged from the videotaped interactions.

Thus the hermeneutic-inductive cycle can be seen as existing at several levels in the study:

- Firstly, at the level of the text, where an inductive cycle of rereading, reinterpreting has lead to the initial theories and concepts presented in this study;
- Secondly, at the level of acts of comparison between texts that are generated within the same culture (early requirements gathering in the Tasmanian public sector). In addition, the participants themselves can be seen to participate in a hermeneutic cycle when they offer interpretations of the review and continue to construct interpretations of the meaning they create between them.
- Finally, the whole study can be seen to operate in a hermeneutic-inductive cycle, as the research question was refined and evolved from constant interpretation and reexamination of the texts involved, and is a product of the researchers interaction with the text. Thus it can also be seen as comparing and contrasting interpretations (or constructions) in a dialectical interchange in the manner suggested by Guba and Lincoln (1994).

To summarise then, this study is located in the strong constructivist tradition and employs hermeneutic methods to assess and evaluate varying constructions from the participants and the researcher, with the aim of distilling a sophisticated consensus construction (Guba & Lincoln 1994) about the processes analysts and clients might adopt in approaching early requirements gathering.

What also should also be declared at this juncture is my previous professional experience as an analyst, which leads me to study analyst–client interaction from a particular vantage point. That vantage point is one that takes the view that everyday conversation between analysts and clients have both intended and unintended consequences, and that it is that everyday conversation that builds the stuff of information systems.

2.1.2 A Brief Review of Approaches to Studying Conversation.

On reviewing how conversation was studied in the IS discipline and in other disciplines, a number of issues emerge that seem to call for an interpretative approach rather than a positivist one.

For instance, the field of symbolic interactionism contends that meaning is constantly negotiated between individuals in the form of symbols, and moreover that very often the meaning of symbols is individual and specialised (Wood 1982). In the field of

semantics, various categories of meaning are said to exist in social situations (Leech 1981). Halliday's (1979) pioneering work on socio-linguistics talked of the *situation* as a predictor of linguistic features. Thus the context and social situation seem to be particularly important when studying the creation of meaning between people.

A number of issues raised by McLaughlin (1984) with regard to communication studies seem to support the selected research strategy, and at the same time highlight the difficulties of studying conversational phenomena from a positivist stance. These issues are:

- the size of the conversational database,
- the importance of non verbal communication to the database, and;
- the amount of evidence required for inferring a conversational rule, such as turn taking or face saving behaviours.

McLaughlin (1984) poses the question of how much of a conversational data base is required to be held as representative of the domain of interest. She notes that some researchers using conversational excerpts have been criticised for a highly selective approach to data, while at the same time generating praise for the diversity of topics and the apparent naturalness of the setting.

What is interesting is that, by taking a qualitative approach in analysis if not also in philosophy, this problem can be overcome by dealing with the transcripts line by line using an extensive coding methodology. Presumably the sheer volume of data presented by conversation makes it tempting for some researchers to take a highly selective approach to the data. The analysis of conversation is problematic from the standpoint of analytic unit, unless those units are also set against the whole. By taking a hermeneutic approach to conversation, attention can be paid both to individual meanings of various fragments and the context in which they are produced.

McLaughlin (1984) also raises the importance of non verbal behaviour to the data base. She notes that researchers following the 'rules' approach to studying interaction do not take note of non verbal behaviours, yet these non verbal behaviours may contradict or give a different interpretation of what is happening at the verbal level. She recommends videotaping on the basis that non verbal behaviours may play a critical role in the communication of intended meaning as opposed to literal meaning. Management of turn taking in interaction, and the overall intention of the speaker that the interaction be associated with one idea or intention, are also important. This point is well taken, and the major sources in the study are videotaped.

McLaughlin (1984) also discusses the evidence required for inferring a conversational 'rule'. We can see this as a discussion of how theory is generated and subsequently verified from a particular database. She cites behavioural conformity to the proposed rule, the actor's knowledge of the proposed rule, their intention to conform to it, evidence that the rule varies with the context, and that it has force, as ways of inferring a rule through evidence. Her contention that the *context* needs to be considered to establish a rule is an interesting one. Again, taking an interpretative approach ensures that context can be considered, as it is a vital part of both the participants world and the creation of meaning.

Social context is difficult to establish, and has been defined as 'mutually shared and ratified definitions of situation and the social actions people take on the basis of those definitions' (Erickson & Schultz 1977). Methods of establishing changes in context during the course of the interaction, by use of non verbal cues and significant verbal behaviours have been utilised in some studies (Erickson & Schultz 1977, Gumperz

1976). The case study design represented in this thesis provides for the context for the interaction by collecting a number of data sources surrounding the interaction.

Turning to methodologies previously used in the IS field to study analyst–client communication, the traditional approach is one of *measurement* of factors identified to be important. Previous landmark studies of analyst–client interaction (Tan 1989, Guinan 1988) have combined content analysis and independent measures to find significant relationships between variables. There are some problems that can be identified with this approach.

- Firstly, it is difficult to get large enough samples of interactions to statistically justify the number of factors under study. Video taping or recording interactions, together with taking independent measures, represents a significant investment of time for both the researcher and participants, so there are practical limitations. In addition, transcription and detailed analysis of transcripts are time consuming and require significant resources.
- Secondly, it is not clear why the factors selected should be more important than those not recognised in the experimental design. In other words, how can we be sure that the factors measured are not in some way confounded by other factors not in the experimental design. Non verbal signals would be a case in point, as would the tone in which the utterances of participants are made. Halliday (1970) stated that intonation is a means of saying different things – the tone of an utterance can alter its meaning. If this is indeed the case, then it would be relevant for a study in analyst–client interaction, where agreement on meaning can be seen as critical. Tone can also act as an indication of the tenor of discourse and its social context (Halliday 1979). Tan (1989) incorporated smiling, leaning, nodding, and interruptions as instances of non verbal behaviour to support measures of transaction management and rapport.
- Thirdly, Guinan's (1988) use of confederates instead of users goes against the idea of a 'natural' database of conversation (McLaughlin 1984). This particular study provided a system requirements case for the systems analyst to discuss with a confederate. It also makes the derivation of 'shared meaning' from a comparison of the actual requirements to those elicited by the analyst somewhat problematic.

While researchers undoubtedly have the right to study those factors which they regard as important, I felt that to take a quantitative approach to the study of communication between analysts and clients would be inappropriate given the nature of the research problem in this study.

If the objective of this study was to make widely generalisable statements about what are important factors in how analysts and clients communicate, then the number of cases that have to be collected would provide a considerable practical constraint. If, however, the objective to *explore* the process of communication between analysts and clients, then a case study approach is entirely appropriate and provides enough rich and contextual data that represents a step in inductive theory building as to how analysts and clients might go about early requirements gathering.

2.1.3 Using a Case Study Approach

Taking into account the philosophical and methodological considerations discussed above, the most appropriate approach to researching the problem seemed to be the use of a case study methodology within an interpretative framework. Walsham (1995) cites four types of generalisations from interpretive case studies, building on Yin's (1994) remark that case studies are generalisable to theoretical propositions:

- the development of concepts,

- generation of theory,
- drawing of specific implications; and
- contribution of rich insight.

The use of a case study which would assist in these types of generalisations seemed to sit well with the declared aim of the study in studying *how* analysts and clients approached early requirements gathering.

Given the difficulties in studying all aspects of conversational data described in the previous section, it is also worth noting here that Yin (1994) identifies the case study as a way of deliberately covering contextual conditions which are highly pertinent to the phenomenon being studied, and many more variables of interest than there are data points.

The following section discusses how Eisenhardt's (1989) approach to the use of a case study as a mechanism for theory building was adopted for this study within an interpretive philosophy.

2.1.4 Inductive Theory Building

The use of the case study approach as a mechanism for theory building was described by Eisenhardt (1989). She provides a 'roadmap' for building theory from case studies and discusses how theory generated from case studies might then fitted into the larger context of research. Her description of the inductive theory building process is implicitly positioned within a positivistic philosophy that places emphasis on replication and confirmation of objective findings. By contrast, this case study investigation places itself within an interpretivist paradigm that does not seek to postulate relationships between variables. Rather, it seeks to provide a "thick description" of the conversational dynamics of the early stages of requirements gathering and describe the process, in addition to building an inductive and substantive theory of early requirements gathering.

The theory building approach used in the study is essentially an adaptation of that of Glaser and Strauss (1967) where theoretical categories are derived substantially from the data, and the categories are closely tied to the data. Grounded theory methodology views substantive theory as a strategic link to the generation of formal theory (Glaser & Strauss 1967) and holds that the theory should be developed with a reflexive 'back and forth' interplay with the data (Strauss & Corbin 1994). The aim is one of 'conceptual density' where there is richness of concept development and relationships (Strauss & Corbin 1994). The concepts emerge naturally rather than being forced into predefined categories or relationships, and processes are a key element of consideration (Glaser 1992, 1978).

The first case study transcript was coded using a procedure called 'open coding' which meant that *each* phrase or word in the interaction was coded, rather than selective analysis of excerpts. Therefore, the extent of the conversational database is large – the *whole* interaction, rather than selective excerpts, have been used to build theory in this case. The theory itself then should be more representative of that interaction than rules generated by selective analysis. What is represented in this thesis then is a substantive theory of how an interaction proceeds in the professional domain of early requirements gathering, rather than a theory that is normative.

Table 2-1, adapted from Eisenhardt (1989), gives a framework for building theory from case studies, and briefly indicates how this framework was applied to the whole

investigation. A similar approach is used by Pare and Elam (1997) in theory building from case studies of IT implementation.

Table 2-1 Theory Building Steps Used in the Research (Adapted from Eisenhardt 1989)

STEP	ACTIVITY	COMMENTS ON APPROACH USED IN THIS STUDY
Getting Started	<ul style="list-style-type: none"> • Definition of A Research Question • Possibly A Priori Constructs • Neither theory nor hypotheses 	<ul style="list-style-type: none"> • Initially, a very broad research question, processual in nature – how do analysts and clients approach early requirements gathering? • Some broad constructs generated as result of literature review.
Selecting Cases	<ul style="list-style-type: none"> • Specified Population • Theoretical, not random sampling 	<ul style="list-style-type: none"> • Small number of case studies selected due to detailed level of analysis of conversations. • Criteria used to select cases was theoretical – each case was an instance of early requirements gathering.
Crafting Instruments and Protocols	<ul style="list-style-type: none"> • Multiple data collection methods • Qualitative and quantitative data combined • Multiple investigators 	<ul style="list-style-type: none"> • Video taping, audio recording, and interviews used. • Data is qualitative. • Different sources of data on the same phenomena – individual and joint viewpoints on interaction as well as interaction itself. • One investigator
Entering the Field	<ul style="list-style-type: none"> • Overlap data collection and analysis, including field notes • Flexible and opportunistic data collection methods 	<ul style="list-style-type: none"> • Not possible to take this approach within the chosen design of day long case studies. • Outputs from pilot case studies were analysed and influenced subsequent design of the main case studies.
Analysing the Data	<ul style="list-style-type: none"> • Within case analysis • Cross case pattern search using divergent techniques. 	<ul style="list-style-type: none"> • Case 1 used to generate substantive theory using coding techniques adapted from grounded theory. Theme and topic analyses also used to enable cross case comparison. Other cases used to extend and corroborate theory generated in Case 1
Shaping Hypotheses or Theory	<ul style="list-style-type: none"> • Iterative tabulation of evidence for each construct 	<ul style="list-style-type: none"> • Codes and categories, together with themes, used as theory building blocks and compared to data in successive cases.
Enfolding Literature	<ul style="list-style-type: none"> • Comparison with conflicting literature. • Comparison with supporting literature. 	<ul style="list-style-type: none"> • Emergent theory compared with literature where literature is available for comparison.
Reaching closure	<ul style="list-style-type: none"> • Theoretical saturation where possible. 	<ul style="list-style-type: none"> • Analysis of cases 'saturated', by virtue of successive linking of analyses and cross comparison.

The remainder of this chapter is devoted to the first four steps – getting started, selecting cases, crafting instruments and protocols, and entering the field. These steps are explained in the section 2.2. The steps of theory building – namely analysing the data and building emergent constructs are addressed in chapter 4. The steps of enfolding literature and reaching closure are addressed in chapters 6, 7 and 8.

2.2 Case Study Design and Implementation

As a foundation for the case study design, a preliminary framework characterising aspects of analyst–client communication in early requirements gathering was developed, and is described in detail in Section 1.4. The framework consists of four major elements:

- *Conceptual.* Those issues that affect shared conceptualisation of the problem, and, as such, are related to problem framing, use of language, and cognitive aspects.
- *Social.* Those issues relating to the social processes that may facilitate or hinder early requirements gathering.
- *Individual.* Those issues relating to the education, background, role, attitude of the interactants which could be defined as what each individual brings to the interaction.
- *Environmental.* Those issues that provide the backdrop to the interaction. These could include organisational culture, the history of the project and its current situation, and other contextual factors.

The case study was designed to incorporate consideration of as many of these aspects as possible, within practical constraints of the time it would take to record such conversations and access to various organisations.

An important issue was the varying levels of analysis that it was anticipated would be applied to the data sources in the study. It was anticipated that a micro analysis of the dialogue would be required to fully understand how systems analysts and their clients approach the process of early requirements gathering, and the degree to which the social process and conceptual aspects interact to influence early requirements.

However, individual and environmental aspects were also held to be important in that they provided a significant backdrop to the interpretation of the interaction. Thus the case study includes various units of analysis, and as such can be considered an ‘embedded’ case study design (Yin 1994).

The research strategy adopted for the case studies was essentially to examine an analyst–client interaction in depth, and to collect as much contextual information around that interaction as possible, echoing Pettigrew’s (1985) approach. The case study design also includes a reflective element, where the participants review the interaction, giving the opportunity for ‘reflection-in-action’ as outlined by Schön (1983). Thus the data sources surrounding that interaction form a backdrop to the interaction, enabling varying constructions on that interaction, which can subsequently be distilled into a consensus construction using hermeneutical techniques (Guba & Lincoln 1994).

Figure 2-2 gives an overview of the process of case study design described in this chapter.

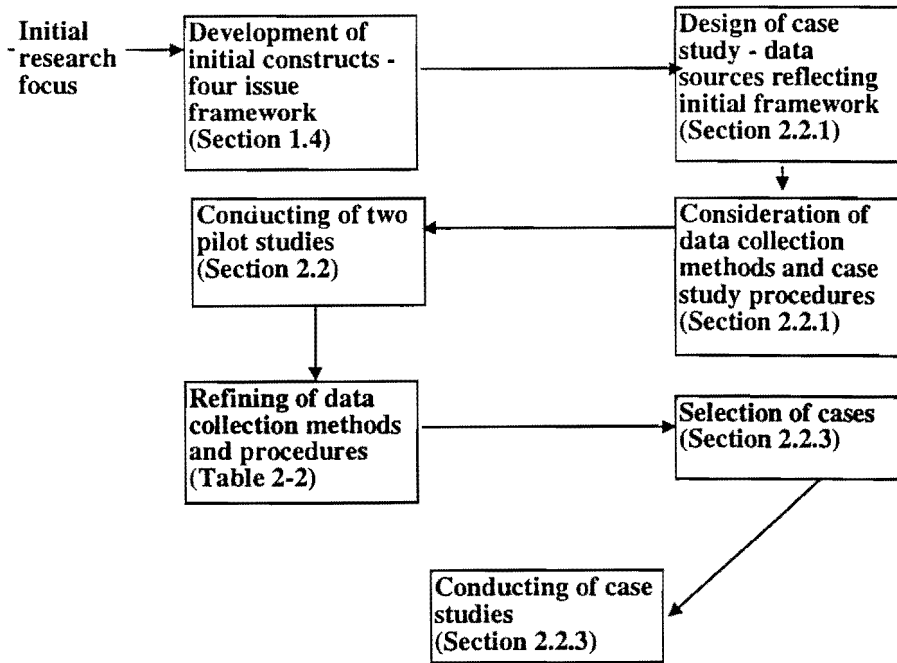


Figure 2-2 Process of Case Study Design

2.2.1 Data Sources and Collection Methods in the Case Study

The case study design has as its main focus the interaction which takes place between analyst and client. The interaction in each case discusses a real life case of early requirements gathering, and takes place at either the analyst's or the client's workplace. The other data sources provide either contextual information to aid understanding of the interaction, or insight into other constructs identified in the initial framework. The aim was to collect as many relevant data sources as possible within the constraints of studying a single interaction on a given day.

Briefly, the data sources in the case study design consist of the following:

- a paragraph on the early agenda of the meeting, outlining what is to be discussed, submitted by each participant approximately a week before the interaction.
- a videotaped interaction between the client and the analyst.
- a review of that interaction by the participants (also videotaped).
- audio recordings of individual interviews with both the client and analyst (before and after the interaction).

The data sources, and their relationship to the preliminary framework (conceptual, social, individual and environmental aspects of analyst-client communication), are discussed in the following sections. It should be noted that at this point that, although the case study was designed with all four aspects in mind, the resultant theory has tended towards social process issues. Eisenhardt (1989) remarks that no construct, no matter how well represented in the original design, is guaranteed a place in the resultant theory, and that the research focus may well be subsequently reconsidered due to emergent analyses.

Dyer and Wilkins (1991) argue, in critiquing Eisenhardt's approach, that the stories that emerge from case studies have more importance than the constructs. They go so

far as to say that too much concentration on constructs can lead to a lack of richness of detail which detracts from theory rather than contributes to it. This study has sought in its findings to place as least as much emphasis on the stories told by participants as the constructs that have emerged.

Throughout the duration of the investigation, the research question has been refined as analyses have emerged – this is consistent with the inductive-hermeneutic cycle of enquiry adopted for the investigation, and is often a natural consequence of qualitative data analysis (Dey 1993).

Each data source, the method of collection, and its relationship to the preliminary framework, are described below. To assist the reader, the data sources are described in the (chronological) order they are collected. Readers should also refer to Table 2-4 in 2.2.3 which illustrates the typical running order of the case study.

2.2.1.1 Paragraph on early agenda

Both analyst and client were asked to submit a paragraph on what they perceived the up coming discussion to be about. At this stage, were not asked to outline their goals or intentions for the interaction, rather what, in their own words, they anticipated the discussion to be about. This was faxed to the researcher approximately one week before the interaction. The purpose of this was to gain an understanding of how the analyst and client as individuals viewed the interaction prior to entering into the interaction.

Of particular interest was whether the conversational issues as outlined in this data source were reflected in the subsequent interaction, and whose perceptions were reflected in the subsequent interaction. With regard to conceptual aspects, the words used by each participant could be examined to see if they did indeed subsequently shape how early requirements were viewed.

In other words, this data source allows an insight into how the early agenda may have been set by either analyst or client. For instance, the conversational issues may already have been framed around certain existing constraints or the problems might have already been viewed in a way that prescribed a certain solution. The inclusion of this data source in the case study therefore gives insight into individual, conceptual and environmental issues in the framework.

The inclusion of this data source also acted as a valuable check on the subject matter of the interaction – this was important, as for the purposes of the research, the interaction had to be representative of early requirements gathering. This was defined as an early discussion on a brand new system or an early discussion on an amendment to a system.

2.2.1.2 Interviews with client and analyst prior to the interaction

Prior to the interaction on the day, the analyst and client were each briefly interviewed to as to what their aims for the interaction might be. This data source could be said to represent the individual's perceptions as they enter into the interaction. It also served the purpose of giving important contextual information. This interview was tape recorded, enabling subsequent examination of the tape for clues such as voice tone and transcribing for detailed analysis. As such, this data source and its collection method was designed to give insight into environmental, individual and conceptual issues.

2.2.1.3 Background questionnaire

This questionnaire asked the participant for details of their education, training and previous experience, and addressed mainly individual issues that might affect the

interaction. For instance, an analyst's training might predispose them to ask questions or view a problem in a certain way. The questionnaire also enabled an appreciation of differences between analyst and client that might influence the interaction. For example, a person with an Arts background might approach a problem very differently from someone with a Science background. Communicating across such paradigms might well result in very different perceptions of early requirements. The professional experience that someone brings to an interaction was also seen to be important – for instance, many years of experience as a systems analyst may have modified that analyst's approach. Similarly, experience in other professions may have added or modified the way they approach such interactions.

The inclusion of this questionnaire in the case study was inspired by the recognition that barriers to communication can stem from gender, education and profession, and that in many cases analyst–client communication can be likened to cross cultural communication. As such, this questionnaire enabled some insight into what each participant brought with them to the interaction, and was designed by reflecting on the individual issues in the initial theoretical framework.

This questionnaire was completed prior to the main interaction, and one participant being asked to complete this while the researcher briefly interviewed the other participant, and vice versa

2.2.1.4 The videotaped interaction

The videotaped interaction comprised the centrepiece of the case study: all other data sources were regarded as casting further light on the interpretation of this interaction.

The analyst and client were asked to discuss the early requirements for approximately thirty minutes; in practice most interactions exceeded this time as it was felt that the interaction should flow as naturally as possible. Indeed, the interactions represented functional work meetings which the researcher had no wish to curtail. Videotaping of the interaction seemed to present no difficulty from the participants point of view – in practice those who were initially nervous soon forgot the camera's presence. Videotaping seems to have little impact on anxiety and responsiveness, as evidenced by non verbal behaviours generally held to be beyond interactants control (Weimann 1981).

Videotaping enables consideration of nonverbal and paralinguistic features, which are important to definitional elements in the initial framework. How something is said, both in non verbal and tonal terms, can do much to modify meaning, and in early requirements gathering what is meant by a particular concept or label can be critical to subsequent formulations. Videotaping also gives insight into how the social process factors operated throughout the interaction. For instance, the development of rapport depends largely on nonverbal and paralinguistic signals.

The majority of data analysis activity centred on this interaction, and the coding was carried out largely using transcripts of the interactions. That said, the videotaping made a critical contribution to the analysis, the videotape being frequently referred to in order to decide how a given word or phrase should be interpreted in the grounded theory analysis. This underlines McLaughlin's (1984) point about the importance of non verbal data to the conversational database.

2.2.1.5 Review of videotaped interaction

The analyst and client were asked to review the interaction together in the company of the researcher, five minute segment by five minute segment. The purpose of incorporating this source in the case study design was to give insight into how the participants themselves might have viewed the progress of the interaction. It also constituted 'reflection-in-action' (Schön 1983), allowing the analyst in particular to

reflect on their practice. This data source also allowed the researcher's interpretation of the interaction to be extended and to some extent corroborated. It should be noted that the five minute by five minute segment analysis on the part of the participants is of a very different order to that of the researcher's analysis of the same interaction, being mainly focused on a joint view of points of understanding and misunderstanding rather than detailed examination of words or phrases. At the same time, this review aided the researcher's understanding of processual aspects of the interaction, as it provided their perspective on how the interaction unfolded.

This data source also gave further insight into the social process and environmental factors operating around the interaction. The use of videotaping again allowed consideration of important nonverbal and paralinguistic features which may impact on conceptual issues. As the review represented to the participants a continuation of the dialogue between them, this source provided important indicators as to joint understanding, agreement on certain issues, and meanings ascribed to certain concepts. As such, it served to illuminate the researcher's analysis of the interaction.

2.2.1.6 Interviews with each participant after the interaction

Each participant was interviewed after the interaction and review, and also asked to provide a rating as to the success of the interaction on a five point scale, and to give their reaction to the interaction. This interview was relatively unstructured and tape recorded. This data source gave insight into both individual and environmental aspects. The positioning of the interview after the interaction and its review in the case study also gave the participant the opportunity to give a 'private' reaction to the interaction, as well as the 'public' reaction given in the joint review of the videotape. Use of tape recording again allowed consideration of paralinguistic features, which is – important when trying to assess a persons private reaction to the interaction. An added advantage of tape recording is that it allows reexamination and reanalysis, something not possible with a set of field notes which provide a static view. The relatively unstructured nature of the interview allowed the participant to come forward with contextual information that formed a vital backdrop to the interpretation of the interaction.

2.2.2 Pilot Studies

Three pilot studies were conducted to test procedures and data collection methods. The first two pilot studies were carried out within the University of Tasmania using participants known to the researcher, while the third and fourth pilot studies were carried out in the Department of Community Services and the Communications and Computing Division in Hobart, Tasmania. These last two very much constituted a rehearsal for the main study. Extensive piloting was required for two reasons; firstly, given the number of data sources being collected, it had to be established if the methodology itself was feasible within the anticipated time frame (a day) for each case study; secondly, videotaping procedures and technical aspects needed to be evolved and rehearsed with participants.

The major changes in study procedure occurred in two areas – technical procedures, and the addition of data sources. Technical procedures were modified to make it easier to conduct the case studies with minimal assistance.

Data sources were added to the third and fourth case studies for two reasons: Firstly, on reviewing the case study procedures, it was noticed that there was the opportunity to do so – an activity was required for the other participant while the other participant was being interviewed. Secondly, it was felt that the first interview with each individual might be perceived as too leading – in the original pre interaction interview, questions were asked as to how the individual perceived their role in the upcoming interaction. On reflection, this seemed to be moving away from the objective

of capturing ‘real conversation’, albeit on video at a prearranged time. What was really required was contextual information around the interaction – the other data sources forming a backdrop to the interaction and giving a number of different views, especially those of each individual. Therefore it was decided to make the interview with each participant prior to the interaction much less structured, and then to add a new data source – an interview with each participant *after* the interaction.

This gave an important processual dimension to the design – one could then perceive these data sources as windows into an evolving process, positioned at different points in that process. The participant would also have the opportunity to give an individual, private reaction to the videotaped interaction and its review. This was also consistent with the interpretivist research philosophy adopted for the study, as it ensured multiple views or interpretations.

The final change to data collection procedures, not enacted in the pilot studies but adopted in the main study, was to tape record each individual interview with participant. This enabled a more complete record, enabling consideration of paralinguistic features, and also enabled the researcher to pay complete attention to the participant rather than be distracted by the need to take notes.

Table 2-2 illustrates in summary the sequence of pilot studies, and changes in data sources and procedures.

Table 2-2 Sequence of Pilot Studies and Enhancements to the Case Study Design

DATE OF STUDY	LOCATION	PARTICIPANTS	CHANGES TO DATA COLLECTION PROCEDURES
5/7/94	University of Tasmania	Case 1: Technical Services Manager, Dept of Computer Science Team Leader, User Services Case 2: Research Scientist, Institute of Antarctic Research Team Leader, User Services	<ul style="list-style-type: none"> Positioning of camera Changes to equipment, including mini monitor attached to camera Audio taping of interview rather than using field notes Addition of post interaction interview
10/11/94	Communication and Computer Division Hobart	Program Review Officer Senior Systems Analyst	<ul style="list-style-type: none"> Information sheet and consent form as required by University Ethics Committee Interview with each participant after interaction Incentives for participants to return final questionnaire
18/1/95	Department of Health and Community Services Hobart	Senior Program Officer Senior Business Analyst	<ul style="list-style-type: none"> Background questionnaire amended to cater for all levels of education

2.2.3 Conducting the Case Study

All six case studies were carried out in public sector agencies in Tasmania. A list of IS managers was constructed, all those IS managers who were known to the Computer Science Department through consultancy and other contacts. This list grew as in turn those IS managers recommended others who would be interested in joining such a study. Managers were telephoned and asked if systems analysts in their employ were carrying out development work and would be willing to participate in the research project. The study was presented to them as a study in communication in early requirements gathering and as an opportunity for a member of their staff to examine their communication in this area.

The response from IS managers was most gratifying in that they all without exception expressed an interest in the project and said in many different ways that the issue of how requirements were communicated caused them concern in their organisations. A number of them asked to be kept informed of the findings. This gave some reassurance that this study was indeed of some relevance to practice, and could ultimately be useful to those in practice. This concern echoes that of Keen (1991) who, when discussing the emergence of information systems research as a field, stated that relevance was the primary driver for information systems research.

The criteria for inclusion in the study, to meet the broad definition of early requirements gathering, were as follows:

- the development work being undertaken should be at an initial stage (generally the first or second meeting between analyst and client about the project)
- the work to be discussed should comprise the development of a new system or a substantial amendment of an existing system.

Unfortunately, a number of organisations did not meet the criteria for inclusion in the study as they were not undertaking current development work at the appropriate stage at that time (October – December 1995). This probably reflected the changing nature of systems development; fewer organisations carried out work in house, and more use packages which are subsequently modified. One organisation, for instance, had all its requirements definition done centrally, in Canberra, and resolved queries using telephone and email communication. So while in many organisations essential analysis work was still being done, for instance, packages requiring substantial analysis and modification, it could not always be guaranteed that an in-house analyst would be involved at an early stage. While consultants contacted who were carrying out early requirements gathering were also extremely supportive of a study in communication, their very often compressed schedules made it difficult for them to participate in such a study.

Thus the preponderance of in house systems analysts in the case studies is a result of logistical convenience, rather than a preference of the design. The focus of the study was how early requirements gathering might proceed and what strategies were used. – as such, it was the nature of the interaction that was important rather than the category of player.

The final number of cases solicited was then a consequence of circumstances and availability of cases fitting the criteria in the data collection period of October – December 1995, although some effort was made to achieve a mixture of participants in the case studies. It was particularly fortunate to have one all female analyst-client pair represented in the case studies, as this enabled some consideration of gender differences.

2.2.3.1 Contacting the participants

Having secured in principle agreement from the IS manager, the systems analyst they had suggested might participate was contacted. In some cases the systems analyst contacted the researcher directly once they had heard about the study. The purpose of the study in broad terms was explained and possible benefits to them and their client also stressed. An indication of the time commitment required was given, assurances of confidentiality – the study's procedures had been scrutinised by the University Ethics Committee. It was made clear that if at any time they found videotaping uncomfortable, the process would be terminated. They were then asked to suggest a client that they would like to participate in the study with them. In most cases, the

client was then contacted direct or they contacted the researcher. The objectives, procedures, and confidentiality arrangements were then explained to the client. Most clients seemed to be as intrigued as the systems analysts by the study – several remarked that they felt that there were difficulties in communicating with their technical colleagues, but that it was hard to pinpoint what these difficulties were.

A date and time for the study was agreed upon, and each participant was asked to supply by fax a rough outline – no more than a paragraph – of the issues they thought they were meeting to discuss. The purpose of this request was twofold – to see what initial (and often disparate) perceptions of the topic to be discussed the participants held, and as a final check that the interaction indeed fell into the definition of early requirements gathering.

- The other remaining task was to arrange a room for the meeting that allowed videotaping. In all cases, this room was a meeting room at the workplace. The room was visited approximately a week beforehand to work out the best (generally the most unobtrusive) position for the camera, to check the location of power points, and to consider how lighting might affect the video taping.

2.2.3.2 *Participants in the case study*

The table below gives details of participants, their work roles, their organisations, the topic of the interaction, and the dates on which each case study was carried out. Each case study took a morning or an afternoon to conduct, followed by a visit approximately a week later to collect the final questionnaire. In all cases, the participants commented that they felt that the review component of the study was a valuable exercise for them.

Table 2-3 Case Study Dates and Details

ORGANISATION	PARTICIPANTS	TOPIC	DATE
State Agency A	Senior Information Technologist Executive Officer (Student Assistance)	Improvement of Student Assistance Scheme	12/10/95
City Council X	Manager of Building Surveying Information Technology Projects Officer	Development Application Tracking System – Building Module	20/11/95
Federal Agency B	Accreditation Officer Senior Systems Consultant	Generating monthly accreditation agendas and letters from accreditation database.	24/11/95
City Council Y	Waste Management Coordinator Information Services Programmer	Property based tracking system to cater for introduction of kerbside recycling.	6/12/95
State Agency B	Forester Softwoods Information Technology Officer (level 3)	Royalties and Reporting modifications for the Softwoods System.	8/12/95
City Council Z	Customer Service Officer Computer Systems Officer	New Subdivision Register for Planning and Development Division.	13/12/95

2.2.3.3 *The running order of the case study*

The table below gives the running order of the case study. As can be seen, a number of different sources were collected before, and after the interaction itself. This gave a good deal of contextual information about the circumstances surrounding the interaction, and the views of the individuals involved in that interaction. A further point to note is that, although the videotaped interaction was nominally deemed to run for thirty minutes, in practice this very often overran. This occurred for two reasons: firstly, the desire for the conversational database to be as 'natural' as videotaping

would allow, and secondly, the recognition that to interrupt would affect the evolution of requirements occurring in the conversation. Additionally, if the participants were generous enough to give their time, it seemed entirely reasonable to allow them to finish the task they had set themselves.

Table 2-4 Running Order for the Case Study

DATA SOURCE	ORDER OF COLLECTION
Paragraph on issues to be discussed during the interaction.	Submitted approximately 10 days before the interaction by each participant.
Individual interview	Audiotaped on the day of the interaction, prior to the videotaped interaction
Individual questionnaire on background and training	Administered prior to the videotaped interaction
Interaction between analyst and client	Videotaped after both participants completed interview and questionnaire
Review of interaction by analyst and client	Videotaped after the interaction
Individual interview	Audiotaped after review

2.2.3.4 Follow up procedures

Each participant was visited approximately a week after the interaction in order to deliver a bottle of wine to thank the participant, and also to ask them if they had any further comments about the interaction and/or data collection procedures. Where comments were made (and there were only a few) they tended to be self reflective and come from the analyst. No comments were made about the procedures, except verbally from some participants that they had enjoyed taking part in the study.

2.3 Coding and Analysing The Conversations

The process of settling on a method of analysis that is described in this chapter can properly be characterised as the first step of what was to be a lengthy analytical journey – the use of grounded theory techniques represented the first and most important step, as it provided a sound foundation for subsequent analyses in the forms of topics and themes. The detailed analysis which grounded theory techniques afforded enabled a rich understanding which acted as a key which effectively unlocked a door to the creation of larger themes and an emergent theory.

2.3.1 Deciding on a Method of Analysis

There are many ways of analysing spoken texts and a number of approaches were considered before settling on the use of grounded theory technique. These approaches come from diverse fields and all offered the possibility of different insights on the data. These were evaluated from two perspectives; firstly, as to whether the approach drew on all features of the case study, secondly, whether the philosophy of the approach imposed pre-existing theories of interaction. There may be special features of analyst–client conversation, as a phenomena in a professional setting, that may not be served by adopting a purely social interactional approach. Early requirements gathering represents a bounded situation of professional discourse which has some standard features and the overt objective is not to socially interact, but to converse in order to solve a given problem.

Previous studies (Guinan 1988, Tan 1989) employed content analysis according to a strict predetermined coding scheme. Conversational analysis is a much used approach and focuses on discovering structures and orderliness in interaction (Psathas 1995). Goffman (1967, 1981) did much pioneering work in this area and introduced many new concepts for describing interaction. However, use of conversational analysis,

whilst very informative about social structures and giving a processual perspective, was not appropriate for two reasons. Firstly its orientation toward social relations gives limited insight into how a client and analyst might reach agreement in a professional sphere. Secondly, the adjacency pair concept means that analysis is confined to pairs of sentences rather than examining a temporal whole.

Discourse analysis sets itself a rather broader agenda (Coulthard 1985) and incorporates diverse elements such as consideration of tonality and speech acts, but much of the analysis occurs at a micro level rather than considering how an interaction might evolve. In both discourse and conversational analysis there are also elements of orderliness imposed on the data which can amount to the application of a pre-existing theory. However, McLaughlin's (1984) work on topics and conversational coherence gives some guidance as to how people structure conversations and this may be important when considering how people might manage an interaction in requirements gathering.

Ethnomethodology, with its emphasis on social meaning and tacit knowledge (Holstein & Gubrium 1994), might be considered a suitable approach, but again its focus on social-cultural rules might not reveal all there is to know about the process by which analysts and their clients reach shared understanding.

The field of semiotics, which studies systems of signs and claims to treat all cultural processes as processes of communication (Eco 1976), would be a way of exploring client-analyst communication by examining denotive and conative meanings of terms used in system requirements. Using a semiotic approach however would not give as many insights as to the processes which analyst and client might employ.

Using a deconstructionist approach could also be an option, especially with its aim of seeing words in context and examination of changing contexts on meaning (Manning 1992, in Feldman 1995). However, as in the case of using semiotics, using this approach might restrict consideration only to meaning rather than the process by which that meaning is reached.

As has been pointed out by Candlin (1985) when reviewing the field of discourse analysis, structural and processual approaches to analysing texts, while very different, cannot be easily abstracted from each other and this dilemma is not easily resolved. It was decided that the application of grounded theory techniques that allowed the properties of the conversations to emerge was an appropriate way of resolving this dilemma.

2.3.2 Reasons for Using Grounded Theory Techniques

Grounded theory method (Glaser and Strauss 1967, Glaser 1978, Strauss 1987, Strauss and Corbin 1990, Glaser 1992) is a "qualitative research method that uses a systematic set of procedures to develop an inductively derived theory about a phenomenon" (Strauss & Corbin 1990, p24). Because it does offer well signposted procedures, it has some attraction for a researcher using qualitative techniques for the first time. More importantly, it is a general style of doing analysis which does not depend on particular disciplinary perspectives (Strauss 1987), and, therefore, would seem to lend itself to information systems research which can be described as a hybrid discipline. The goal of grounded theory in seeking a theory that is compatible with the evidence, that is both precise and rigorous (Neuman 1994) is an attractive one. It also has the benefit of producing theory intimately tied with the evidence, so that the resultant theory is likely to be consistent with empirical observations (Orlikowski 1993, Eisenhardt 1989).

Grounded theory method requires that the researcher demonstrates 'theoretical sensitivity' (Glaser & Strauss 1967, Glaser 1978) by being well grounded in technical

literature as well as from personal and professional experience, and in collection and analyses of the data (Strauss & Corbin 1990). At the same time, the inductive nature of grounded theory techniques encourage researchers to steer their thinking *out* of the confines of technical literature and avoid standard ways of thinking about the data (Strauss & Corbin 1990). The interplay between emergent theory and technical literature comes to the fore when extending generalisations from the study. This is achieved by either integrating supplementary or conflicting analyses into the theory by including them as categories or conditions, or criticising them in terms of what has emerged (Strauss 1987).

As use of grounded theory analysis is founded on the premise that theory at various levels is indispensable for a deep understanding of social phenomena (Glaser & Strauss 1967, Glaser 1978), it seems particularly suitable for a case study aimed at exploring how systems analysts and their clients reach agreement. It is also useful for understanding contextual and processual elements (Orlikowski 1993) that constitute the main focus of this case study.

2.4 Summary

This chapter has explained in detail the research philosophy that informed the study and its data gathering procedures. In particular, the reader is asked to note the location of this study within a strong constructivist tradition and the notion of the varied data sources in the design as different constructions.

The case study design has been described, with each data source and its relationship with the preliminary framework explained. The procedures of piloting the study, contacting the participants, and conducting the case study have been described to give the reader an appreciation of how the case study design evolved as it did and the reactions of the participants to such an undertaking. Successive chapters will detail the analytical approaches taken in order to generate the findings, and explain how the findings from the case studies are synthesised in order to put forward a substantive theory of early requirements gathering.

3. CASE 1 – TOWARDS A THEORY OF ANALYST CLIENT INTERACTION

‘Thus, leaving everyone to the liberty of judgement, I have ventured to print this play, and leave it to the general censure’

Thomas Walkley, The Stationer to the Reader, in The Tragedy of Othello
1622

3.1 Introduction

- This chapter describes in detail the findings from Case 1 – The Student Assistance Scheme. The findings are presented in such a way as to enable the reader to appreciate firstly the context of the interaction and its internal dynamics, together with some concepts derived from analysis of the interaction. This is achieved by the presentation of the interaction in chronological sequence in combination with commentary on the concepts derived. These concepts are then elaborated on and form the initial step of theory building from this particular case. The analysis of Case 1, using grounded theory techniques, represents the building block from which the analysis of the other cases proceeded.

3.2 The Interaction Presented as a Play in Four Acts

The use of a theatrical motif to present the findings in a chronological and contextualised sequence has been adopted for a number of reasons. Firstly it provides an immediacy and context that enables the reader to appreciate how various aspects of the interaction develop over time. Secondly the metaphor is particularly apt; Goffman (1981) uses the metaphor of theatre extensively in his descriptions and analyses of everyday conversations. He goes so far as to claim that “deeply incorporated into the nature of talk is the fundamental requirement of theatricality” (Goffman 1981: p4). Thirdly, presentation of the text in this manner invites the reader to enter into a discourse with the text; this can be seen as leaving purposeful space for ambiguity which allows the reader to construct their own interpretation (Harvey 1997), in addition to providing a representation that encompasses the chronological and contextual aspects.

What follows then is a representation that attempts to combine ideographic or ‘thick’ description (Wolcott 1990, Neuman 1994) together with illustrations of analytic concepts generated from the application of grounded theory technique (the details of the coding process are described in the following chapter, Chapter 4)

These analytic concepts are *italicised* throughout. The purpose of presenting these concepts thus embedded in the text is to allow the reader to appreciate the close tie that these concepts have to the data, by seeing them in their context. As these concepts were generated by close examination of the text (using open coding) it seems appropriate to present them initially in close conjunction with the text from which they were generated.

The themes that emerged in the interaction, have also influenced the grouping of various scenes into Acts. Each Act illustrates one or more themes. Thus this first analysis is also intertwined with successive analyses, as it shows the analytic concepts that were generated from coding the transcript, and the overall organisation reflects some of the themes that were generated subsequently. These themes, and their application to various case studies, are discussed in chapters 4, 5 and 6.

3.2.1 The Tale of the Analyst and the Client – A Play in Four Acts

Cast List

Client	A senior worker at the Education Department
Systems Analyst	A systems analyst from the same Department
Researcher	A lecturer from the University of Tasmania (the author)

Prologue:

The researcher meets the analyst and the client in a room that has been specially set aside for the purpose of video recording the interview. An approximate timetable is worked out and the running order is explained – an initial interview with each participant, followed by the videotaped interaction, followed in turn by a joint review of the videotape and finally an interview with each participant and a request to fill in two questionnaires. This is the first time the researcher has met the client, though they have communicated by phone prior to meeting. The researcher is meeting the analyst for the second time, having visited him previously to arrange a venue for the case study. Pleasantries are exchanged; the client apologises for having a cold, the researcher tells the participants about the morning tea she will provide. Consent forms are signed and arrangements for confidentiality are explained. These include details of who will have access to the data and how and where it is likely to be presented. Participants are informed of their right to terminate proceedings at any time should they feel uncomfortable with any aspect of the interview(s) being recorded.

The video camera is in position, and the researcher asks the participants to talk about anything at all for the first few minutes, in order to get used to the camera and to enable her to check the set up. They obligingly jest about the weather. They are now ready to commence. The analyst and client are planning to continue a previously unrecorded conversation about possible amendments to the database that supports the Student Assistance Scheme.

Act 1 – The Beginning of the Interview

This first Act shows how the client and analyst negotiated what was to be discussed, and also how it was to be discussed. As such, it represents identified themes of issues to be discussed and the scope of the current system.

In many ways, this first Act sets the template for what is to follow. Both scenes account for only the first two minutes of the conversation. From the first scene, it is evident how the analyst is conceptualising the problem and how he proposes to process it. The issues for discussion, and how they are initially described, have a profound impact both on the tenor of the conversation and how the problem is conceptualised and described by both parties.

The analytic concepts, derived from line by line coding of the transcript are represented in *italics* throughout the scenes. The purpose of this is to enable the reader to see these concepts alongside the dialogue from which they were directly derived.

Scene 1: 'Basically we're looking at...'

The analyst commences his interview of the client by saying;

..what I've done.. I've drawn up, a little, sort of a couple, of points from when we talked last...when you gave me an overview of the system.

In addition to providing a starting point for the conversation, the analyst seems to be trying to gain trust by using the tactic of *deprecation* – what he has drawn up is only 'a little', 'sort of', 'a couple' of points and therefore is not threatening. The use of

personal references is also interesting – ‘we’ spoke last and ‘you’ gave the overview of the system, the inference being one of *joint ownership*.

The analyst then proceeds to outline what he perceives as the *function* and *purpose* of the system. He can also be observed to engage in some *agenda setting* at this point – the video tape reveals him to be reading from his synopsis of the previous meeting. It is interesting to note that perhaps not unreasonably, his primary focus is on the computer database rather than the clerical scheme it supports

..basically what I've sort of got down here is the database is about keeping statistics of approved and non approved students, for a Student Grants Scheme.

The client confirms this; so far she has said very little.

- The analyst goes on to outline a possible objective for the conversation from his understanding of the *conversation topic*. The *conversation topic* “how the database works” posed from the perspective of the analyst gives a clue as to how he might be perceiving the topic from a conceptual viewpoint. He again signals his desire for *joint ownership* by the use of ‘we’.

Basically we are looking at.. how the database works and possibly some of the points we are thinking about improving.. you know, recording of information..

At this point the client interjects:

You've got by school have you?

She seems to be checking that this particular issue is within the *global topic* or *agenda*. The analyst confirms this, and also mentions a number of other functions or processes and ‘general things we are thinking about as we are going along’. It can be seen that this scene sets the template for what is to be discussed, but that the interactional tactics used to manage the discussion are still evolving.

Scene 2: ‘Maybe if you can give me a bit of a run down’

Here the analyst and the client come to an agreement as to how to discuss the problem, having agreed on the general *conversation topic*. This scene represents an interesting negotiation, as it illustrates how two people resolve the issue of possibly conflicting ideas on how to conduct the process. The analyst starts by saying:

..but to get to that sort of point what I've got to.. we need to try and work out, or I need to work out what the actual database does and how it functions at the moment?

There is a pronoun shift from ‘we’ to ‘I’ as the analyst makes clear what his personal objective for the interaction is but also requests *joint ownership*. This statement also indicates how the analyst proposes to process the problem. So here is a general *problem solving mode*. It also gives an indication of the *problem type* from the perspective of the analyst – the focus being on what the ‘actual’ database does. From this, one can speculate that the problem might be one of *scope*. The issue of the scope of the system emerges as a persistent theme in the early part of the interaction.

Again it is interesting to note in the light of later interaction that the stated area of analyst interest is the database. Most of the subsequent interaction, in fact, hinges on the relationship between the database and the clerical procedures it supports, as later scenes will show. But to return to the present scene, the client agrees to his statement and the analyst then goes on to make clear the intended outcome of his objective:

So we'll be able to look at umm what changes we can make to improve things?

The concept of ‘improvement’ has now been mentioned by the analyst twice in the space of a minute’s conversation, and the frequent use of ‘we’ indicates his desire for *joint ownership*. He then goes on to suggest a process by which things can get started:

So maybe, maybe to start that out, start that off, maybe if you can give me a bit of a ..rundown just to..

The client's reaction is rather surprising, she interrupts with:

.. I actually just printed a copy of the range for you.. for you to have a look at.

The client may be simply offering information, or suggesting a different process. It may be the latter, given the remark immediately following:

.. would you like me to go through the procedures we have at the moment step by step or?

The analyst responds with:

Yeah that might be, well just as an overview, well just as I said before we've got it's for approved reports statistics for approved or non approved applicants.

There are several possible interpretations of this remark – the analyst seems to be *reframing* the client's suggestion to be more in line with his previous suggestion for conducting the discussion – 'well just as an overview'. A *reframe* (Guinan 1988, Watzlawick, Weakland & Fisch 1974) is essentially a different view on the same set of information. The existing facts are 'reframed' to draw new conclusions, and in doing so the interaction is taken forward. The restatement of the *conversation topic* gives an indication of what he perceives the 'baseline' of the conversation.

The client then responds by giving a *justification* for examining those system areas the analyst mentions in the *conversation topic*:

The reason we need that is because we pay the schools..

The analyst asks if the database helps with assessment of students, and the client says it does not, and states her desire for a *process* in this area.

That would be good, if we could get a process ...but it's quite involved.

It is not clear at this stage whether the client is conceptualising the notion of a process as a computerised process or a clerical one. By looking at the overall context of the conversation, one can probably assume the former, but at this stage in the conversation it is not clear, and may not be yet evident to the client.

What is evident is that by the end of this scene, both analyst and client have put forward their objectives, and they have (almost) agreed on how to proceed. The conversation is still at a very early stage – these negotiations on the conversation topic and how to discuss it only account for two minutes of the conversation.

Act 2 – The Interview Proceeds

The scenes presented in this Act occur approximately at two and three and a half minutes into the conversation. They commence discussing the conversation topic agreed on in Act 1, and rapport starts to grow in Scene 2 through the efforts of the client. These scenes reflect subsequently identified themes of Scope of System, and Personal Disclosures.

Scene 1: 'if you could just go through the information'

In this scene, the analyst and client start to discuss information utilised and generated by the computer system. The analyst makes a request for information by saying:

All right, if you could just go through the information you get from schools...and the sort of information you put into the database, so then you've got a list of files that you keep.. umm paper records.

Later he adds:

I just need to get an idea of what's, what you get from schools and what you actually put into the database.

So here the analyst is delineating between the various *information types*, held in the database or on paper, and its various forms (files, records) and its source (from schools). These remarks would seem to confirm that the problem is one of scope, as evidenced by a *systems analysis strategy of scoping* – the analyst is using *information type* – clerical, computer, to distinguish the scope of the database function.

The client imposes a temporal order on things by starting from the beginning – consistent with her offer to go through ‘step by step’. She says:

each applicant has an application form which is submitted directly to the school, they can't come directly through us because the schools have a recording mechanism too.

The analyst takes the opportunity to establish the *ownership* of the *function* or *process* of assessment by asking:

Is it the schools that basically do the assessment?

She replies and gives an insight to the *actions* that the school carries out.

No. We do the assessment. They gather the information ..and collect the application forms.

What is also noticeable here, is that the respective roles of schools and the department as providers of information emerge early on in the interaction. This is consistent with the analyst's conceptualisation of the issue as one of *scope*.

Scene 2: ‘You too...’

This scene is notable as it is where *rapport building* is evident between analyst and client. They are after all only three and half minutes into the conversation. The client is explaining the *information* and *process rules* associated with a particular process. She explains:

because they (the parents) need both to apply, the application form and the verification of income...and that can be by umm a tax assessment notice.

She then drops into an aside, and says laughingly:

That's if they've done their tax return – not like me!

The analyst replies:

Right. I haven't done mine yet.

She says:

No, I haven't done mine yet, no. You too..

and then drops seamlessly back into the previous topic:

..or by a statement of pension or benefit..

After *rapport building*, the interaction seems to flow more easily, as evidenced by what follows immediately afterwards. The analyst says:

Right. So what, what sort of information do they send back to you, so you guys in Student Assistance can assess them?

The language ‘you guys’ denotes an informality that was not present before. The following exchange illustrates a speeding up of the transfer of information from client to analyst, as they repeatedly confirm or agree to what the other has said. It is also interesting to note that in the first statement the analyst makes, there is an effort made to express the function of the system in the client's language:

Analyst: Right, do the assessment, decide whether they are eligible for the scheme.

Client: That's right, so that when the school receives the applications summarise each applicant on a form we have devised.. so that is their record of the number of applications they've received..

Analyst: Right

Client: ..and who the students are.

Analyst: So, so they then send that summary of information do they?

Client: Yes with the application forms.

The analyst starts using an interactional *tactic* at this point, which is readily identifiable all through the interaction – he makes *posits* or suppositions about the system based on the information he receives from the client.

Act 3 – Understanding the System

This Act illustrates a number of conversational and systems analysis strategies that the analyst is using to understand the system and its associated information and processes. The themes of information input to the system and the keys associated with the system take up the bulk of the interaction, at least twenty minutes of a thirty minute conversation. The scenes below have been chosen as they best illustrate these predominant themes, as well as the tactics employed by both the analyst and client to understand the information and processes.

The opening scene shows some of the strategies used by the analyst that start to emerge through what is discussed. It also shows how, by the second scene, the views of the system from both the analyst's and client's perspective are starting to converge as a result of a new tactic. The third scene illustrates some further tactics that the analyst and client use to understand the system. These scenes occur at seven, twenty, and twenty five minutes into the conversation.

Scene 1: 'Do you have a code number or something like that?'

This scene illustrates some strategies employed by the systems analyst when exploring the processes and information associated with the system.

In this scene, the strategy of *key searching* on the analyst's part is particularly noticeable. The analyst's use of this strategy persists throughout the interaction until this particular issue of linkages between input information is resolved.

From the perspective of the client, things appear somewhat differently. She raises some existing problems and raises further issues for discussion during this scene. For her then, the issue of the *conversation topic* or the evolving *agenda* is not quite concluded.

The analyst asks:

OK, so when you put in the summary information you put in, you put in the number, ..does each number.. apply to each application?

He is *key searching* – looking for links in the data that could be subsequently used to access that data. The client replies:

Yes it does.

The analyst proceeds to clarify the precise nature of the link.

..so you sort of have another code number or something for each applicant that gets put into the database?

The client realises where his conclusion might be heading and says:

It's not, it's not a reference to the stu(dent), the moment it can't be referenced to any individual student..

She uses this temporary termination of this line of questioning to proceed with some *agenda setting* of her own, via some *problem identification*. She says:

..but we don't have any student records there, so.. the capacity you know.. twenty seven thousand or so.

SACS was going to solve this problem

SACS is a planned system for the Education Department. They then reaffirm the boundaries of the solution, as agreed in outline at a brief preliminary meeting. They both agree on this particular organisational constraint, Note again the analyst's use of "we".

Analyst: A few years off

Client : Yes (laughs ruefully)

Analyst: Anywhere between two and four years I'd say

Client: " Yes it looks like it

Analyst: we have to just get through until then

Client: mm, so its an interim solution

Analyst (interrupting) yeah an interim solution.

This piece of dialogue also illustrates the use of a *forward reframe* by the client with respect to this exchange. In this particular instance, the client reframes the analyst's statement about 'getting through until then' as an 'interim solution', in order to reaffirm what they have previously agreed. Presumably, she wishes to ensure that an interim solution is indeed the outcome of this conversation.

The analyst immediately resumes *key searching*, as seen by the following sequence:

Analyst: So like each of these applicants have like a numerical or reference number?

Client: Yes'

Analyst: Does that get recorded on their application form or something?

Client: Yes it does.

Analyst: So you can then go back to the paper files and find out which one it talked about?

Client: So that's vital.. that number.. otherwise you would be powering through a host of forms looking for particular applicants.

The analyst indicates a *future action* he might take resolve the question of *scope* of the system. This last statement is perhaps triggered by the mention of the forms by the client. He says:

Mmm, what I'll have to do sometime is to have a look at this database, and see, see exactly what information you have in there.

The analyst briefly returns to the topic of information input to the database:

..what else do you put in apart from the reference numbers?

The client doesn't get a chance to answer this; as the analyst goes back to *key searching*, as something else that he wishes to ask about the reference number occurs to him:

..does it also say if they are approved or non-approved this reference number?

The client replies:

..as I said at the beginning, as they come in, we just put the school and the number of who the assessors are. But once they have been assessed.. the assessors file them in that order.

It is interesting to note here the different styles that are emerging – the analyst is consistently information focused, probably as a result of training. By contrast, the client is very process focused, presumably stemming from her long involvement with the processes of the system.

The analyst prompts:

In the paper files?

The client takes up the prompt and replies thus:

In the paper files, and then we.. take a copy of what the original says. Which has to go back to the school to advise them of the approvals or non-approvals. Before they are sent to the schools we enter the information on this database.

Here, the client is cottoning on to the analyst's concern about what and what isn't entered into the database. While giving a good account of the process and the sequence in which things occur, she also states which information is entered in to the database. She continues in this vein for some time while the analyst asks more questions about the information that is input to the system.

Scene 2 : 'There's a column here that says'

This scene represents a point in time, twenty minutes into the interaction, where analyst and client views of the system start to converge. One can see how they might be advancing towards 'perceptual correspondence' at this stage. The convergence of views about the working of the system starts to occur after a *prop* is used – in this case, the analyst and client mock up a batch summary sheet and place the information being discussed on this mock up.

This scene is also notable for the last instance of *key searching* in the interaction. The issue of the reference number is finally resolved here, a direct result of the analyst seeing how it might appear on the batch summary sheet.

The scene opens with the analyst confessing his confusion and returning to his strategy of *key searching* to resolve his concerns over the reference number for the applicant:

I'm slightly confused. With a batch summary sheet umm, say it gives you like the school et cetera, and so forth. For each applicant does it have an individual number, or..?

The analyst starts to draw a batch summary sheet on his notepad, and angles it toward the client. The client nods. The analyst continues;

So instead of just saying the school..

The client peers at the notepad and says:

I should have brought one with me.

Both analyst and client then start working intently together to produce a facsimile of the batch summary sheet, their attention entirely on the notepad. The conversation proceeds as follows. During this excerpt, the analyst is drawing columns on the notepad and filling them in:

Client: Yeah, the school would be the heading, yeah..

Analyst: We need to look at one of these, umm some sort of batch or are they..?

Client: No, its just a school batch summary sheet. So, there's a column here which says consecutive number. And there's a column which says.. parent/guardian surname.

Analyst: Right, and that's ..

Client: And a column which says the student. And another column that says.. the address, another one which is the sector.

Now that the analyst can see the information that is contained within the batch summary sheet, he needs only to *key search* once more to resolve the issue of reference numbers.

Analyst: So each reference number is actually an individual group?

Analyst: (*pointing at mocked up form*) and when you initially put it in, you just say school, the sector, and these are all consecutive numbers?

Client: Yes.

Analyst: ..so you just put in the range, initially.. so you've got a summary.

Client: Yes we just put in the range for the summary.. and then we, you know, mark it down if its yes, no, whatever. And so when we enter their details once we assess them, we have the running sheet numbers, on there. (*Points to mocked up form*)

The issue of keys now appears to be resolved; the analyst does not return to *key searching* mode during the rest of the interaction. It is now 21 minutes into the interaction.

Scene 3: 'So what happens when?'

This scene occurs approximately five minutes after the previous scene, and finds the analyst and client deeply engrossed in tracking the processes associated with the system. Various strategies and tactics, such as *imagining* and *narrative*, that the analyst and client use to assist each other in understanding the processes, are also demonstrated here. As the interaction has progressed, the language has become progressively more informal and their rapport has increased.

The analyst interrupts more in some places; as his knowledge of the system increases, he is better able to anticipate what the client might say. At the same time, there are long periods of time where he is actively listening to the client, without interruption.

The analyst starts some more *process identification*, using a *posit* (what happens if) by saying:

So what happens when you actually receive back something, like a review, umm application or some more information?

The client replies:

Its then reassessed. And then we have to..

The analyst interrupts with a *posited action* that gives insight into the *scope* of the process.

So you have to go to the paper files?

The client confirms that this is the case, and goes on to explain the *actions* that are carried out and some *process rules* or *conditions* associated with the process

..we actually put all reviews in a separate file, but we still yeah have to go back to the paper files, and when its being reviewed.. to change the detail. You know, that its now been approved.

The analyst continues with further *process identification* by pursuing the last point as an indication of another process:

..if they were approved.. what would happen to them then?

The client replies by explaining the *actions* associated with the process he inquires about:

We'd have to notify them that it's been approved, and the school.

The analyst *reframes* the facts in the following manner:

So, through a, through a reply. And if they are still not approved, I guess you'd still have to send them back a reply.

The *reframe* enables the analyst to put forward another *posited action*, which proves to be accurate. The analyst is also trying to pin down a *temporal sequence* for the action and isolate the *condition* or *process rule* for the reply. This piece of dialogue is also interesting as it is evident that the analyst is thinking aloud, and quickly enough to formulate a subsequent query on the basis of the reframe.

The analyst and client continue to follow through the chain of *actions* associated with the process of review. First, the analyst seeks a *process rule* or *condition* by positing one of his own suggestion.

So once you get a review back, you're going to have to send them a letter regardless of what the outcome of that review is.

The client gently rebuts this and goes on to give the actual *process rule* and provide some further *process identification*.

Client: Well we usually we notify the school.

Analyst: Oh, right.

Client: Because, its, its..., apart from code 1's, they're usually not approved, until we receive information, so we.. the main thing is to notify the school, if its subsequently been approved.

At this point, the analyst looks up, smiles, and looks rather puzzled. The client responds to this cue by clarifying the *process rule*:

We notify the client if it's not approved rather than if it *is* approved, because the notification goes to the school. Its a bit complicated, I'm probably not explaining it terribly well. Umm, after a review.

The client then proceeds with *exemplification*; this has been used by both parties during the creation of the mock up form.. There is also *process identification* using a *forward reframe* where she identifies another process as an adjustment.

Client: For a code 1 we'll say, .. if it is approved we let the school know and let the client know, so there is a mail merge process there and that's an adjustment. ..., if its a, in any of the codes like two, three, four, we have to notify the school. But we don't need to notify the client because..

It is noticeable how the analyst has listened and prompted throughout this exchange, and has kept interruptions to a minimum. It is as if the whole pace of the conversation has been altered by the previous scene.

The analyst asks a question that could be seen as *scoping*, in that he is exploring the boundary of the process;

..does the school go back and?

Apart from the way the client anticipates the analyst's query, her reply is interesting as it illustrates how she is literally *imagining* what takes place, to the extent of assigning *dialogue* to the school. She uses these tactics to assist her continued *exemplification* of the process.

Client: Well, they would then say, yeah they would then say, ohh yes you've been approved, that the department has.. because they, as far as the clients are concerned, they are not approved.. at the two, letters two, three and four aren't approved.. until they, umm, provide that information, because the reason they are not approved is that, as far as the schools go and us, is that they haven't provided sufficient information.

Analyst: Right

The client then reiterates the what to her is the point of this exemplification – that this process notifies the school, rather than the client. So she is actively *scoping*, but also giving *process assumptions* and *rules* to *justify* that *scope*. The client uses *imagining* and *dialogue* as part of her continued *exemplification*. Her exemplification also contains a *process assumption* – slightly different from a process rule – it is as if she is explaining the assumption on which the rule is based.

Client: So, after the review process we notify the school, we don't need to notify the client.

The analyst shows he has understood the *scope* of the process by saying:

..the school will do that

The client continues with *exemplification*, using more *imagining* and *dialogue*:

Client: It's sort of back to square one, yeah, they, the client quite often *will* say (researchers italics), come into the school and say 'ohh I sent in more information to the Department can you tell me if I've been approved yet?'

Analyst: Right

Client : And because we've notified the school..

The analyst enters into both the *dialogue* and *imagining* when he makes the following remark.. He is mirroring her verbal style by doing so. This mirroring or converging of styles is probably a reflection of the increased rapport that has built up since they have worked jointly on the mocked up form. He also takes the opportunity to insert a small joke at this point, which the client seems somewhat bemused by.

Analyst: I imagine the student coming in and giving the headmaster a big serve or something 'why haven't I been approved?!

As the analyst actually uses the word 'imagine', *imagining*, therefore, indicates an 'in-vivo code' (Strauss 1987) where the term is taken from or derived directly from the language used by the actors themselves. In vivo codes have 'analytic usefulness' as they are often used precisely by the participants, and they often have very vivid imagery (Strauss 1987).

The client acknowledges what the analyst has quite seriously, with a slight smile.

Client: Ohh, quite often they do contact us directly but..

One interpretation of this is that the client 'stays in role', where the analyst slips into a more informal one. He quickly returns to a more 'professional question' and proceeds with identifying the *process rule*, using a *forward reframe*.

Analyst: So, so with a review, if they are not approved, you basically.. send the school notification that they weren't approved?

Client : Yes.

Act 4 – Action for the Future

This Act, represented by the single scene below, shows how the analyst and client draw the discussion to a close and consider what action is needed for the future, a theme identified in the interaction.

Considerable negotiation takes place, and it is interesting to note how this negotiation takes place within the parameters set in a previous scene (Act 3, Scene 1), which in turn has been set by the previous meeting.

Scene 1: ‘We need just to have a look..’

This scene is the final scene of an interaction that has lasted for approximately thirty five minutes; the participants have been asked to ‘wind up’. The analyst says:

Yeah, what we probably need to do now is really have a look at the database.. so I can get a look at how its actually working, because it's a bit...Now I've got a fairly good understanding of the processes you want to have.. seeing the *actual* (researchers emphasis) information that's on there in real life I guess.

These statements illustrate a number of interesting points: Firstly, the analyst's use of ‘we’ to indicate *joint ownership* of *future action* associated with improvement, an objective advanced early on in Scene 1, Act 1. Secondly, there is confirmation that the analyst's mode of thinking has been one of *process identification*, given his statement that he now has a good understanding of the processes. There is also acknowledgment of the client's requirement for computerisation of various processes.

The references to ‘really’, ‘actually’, ‘real life’ seem to indicate a need to confirm what information has been gathered here, or maybe is an implicit reference to all the *imagining* that has taken place. It may also imply that the *scope* or boundaries of the processes under discussion are an important issue for the analyst.

The analyst goes on to outline some *future action* for their next meeting:

..maybe just having a look from the start, maybe just walkthrough what would happen if you got a bunch of applications and a batch summary sheet. What you'd put in, what would happen if someone is approved, obviously you would tick them on the sheet and their number.. but what happens if someone is not approved? The letters you'd produce and that sort of thing.

The analyst is clearly still very engaged with what the *actions*, *process rules* and *information* are associated with various *processes*. He is also still *imagining* the various processes.

The client responds with something of a *reframe* in support of a *negotiation* – she is evidently trying to make sure that the analyst takes into account the need for solutions – she responds thus:

Yes, that's what it needs...refining.. mm.. so that if we do have a client ringing up and saying have I been approved, we can, you know, find it, or the number if a school rings up and says has this person been approved. We can look it up, some sort of reference to the name.

The analyst seems to be thinking about future solutions when he mentions:

Cos' you've got a lot of, twenty seven thousand applicants, so it's a lot of information going through there.

This is a reference to an earlier *negotiation* (Act 3, Scene 1) and some statements made by the client about the capacity of the database and the number of student records (27,000). They agreed that they would ‘get through’ until SACS was introduced, and that they were discussing an ‘interim solution’. It seems that a constraint on the future solution is existing capacity.

When the analyst continues to outline *future action*, 'numbers' do emerge as a possible *constraint*.

Analyst: And maybe for all the ones that aren't approved, we will have to look at the numbers, maybe looking at the current years database.

Client: Yeah.

The analyst then returns to *key searching* and *scoping* as a prelude to *solution searching*.

Analyst: ...I guess we can get it from the statistics, the codes two and four, umm aren't kept in there, I mean the non approved codes one..

The client interrupts with a firm *problem identification* which can also be seen as the prelude to some *negotiation* about the solution.

Client: Yes, and twos and fours, that's the problem area actually.

Analyst: Which means, they, which makes it harder if someone phones up..

Client: That's right..

Analyst: And that's the reason you have to go to the paper file.

The analyst appears to be pondering on the *scoping* aspect and its impact on the problem, and is still *imagining* the existing process. At the same time, he is confirming to the client that he entirely understands the problem identification,

The client gives further *exemplification* of the problem, using *imagining* and *dialogue*

Client: We've got to go to the file and say you weren't approved because of so and so..

After demonstrating that he understands the consequences of the problem to the client, he offers a way forward and a possible solution:

Analyst: So probably have a look at the total numbers of those, and see if it is feasible, possibly, to keep some sort of indication, maybe just the reference number of the approval code?

The analyst proposes *future action* and a *possible solution*; note how *key searching* is part of that possible solution.

Client: Yeah.

Analyst: ..or the status or something like that?

Client: Sounds exactly what we need..

He then makes it clear that this is one of many possible solutions; this can also be seen as *negotiation*, in that he wishes to maintain a flexible position. The use of 'we' indicates that he wishes *joint ownership* of this position.

Analyst: There's lots of different ways that maybe we can look at something like that.

He also indicates that *possible solutions* are linked to the future action. The use of 'but' is probably significant

Analyst: But we need to just have a look at the database and see how its been running, yeah.

And so the interaction ends, with both parties in concordance as to the nature of the problem. Over the course of the interaction, they have clearly adopted a joint problem solving approach and have enjoyed working through the problem together. One only has to contrast the opening scene with the final scene to appreciate both the depth of understanding of the problem that has developed between participants, and also how informality has increased and assisted with the exchange of information and solutions.

Epilogue

The analyst, client and researcher review the videotape of the interaction. The researcher stops the tape at approximately five minute intervals and asks each participant in turn to tell her what they think is happening in that particular segment. Most of their comments were directed at the strategies used as opposed to specific comments about individual statements they made. The analyst can be seen to engage in 'reflection-in-action' (Schön 1983) with regard to his note taking practices, as shown by his comments about Act 3, Scene 3:

I think what would have been really useful, looking at that, was maybe if we had used the whiteboard or something.. I think my note taking was a bit suspect. It would have been a lot better if I'd have to really try and say what was happening on a piece of paper in nice clear symbols to tell what was going on. Umm I think my concentration was starting to wane a bit there and I was starting to lose the plot, trying to follow that..

The analyst's reference to 'nice clear symbols' is interesting – it illustrates both his training, and the way he wished to process the problem.

The client added:

Yeah we really needed a flow chart, you know, from this to this..

The analyst replied:

That's something I really should have tried, to do something like that there.

Later he says:

..and it probably would have been worthwhile just to take a few minutes out and write what's been happening.

The client makes an interesting comment about Act 4, Scene 1 – the difficulty of describing detailed procedures and her expectation of his understanding.

..I didn't explain a lot of it very well, ..like the codes two to four are actually not approved until they.. we get the forms back from the parents and I didn't even explain that.. Assumed that they would, you notify the schools, they notify they are not approved at the.. yeah. It's sort of an internal process you wouldn't be expected to understand and..

The analyst comments on the difficulty of processing the information from his perspective:

..just looking at my notes it isn't really clear the information we've actually come up with and we are into such a really, fairly complex area, and I'm trying to rely on the information I have already got and trying to remember what we've already, what I should already know, what we've already found out.. and applying it to our situation.

These comments about the difficulty of the process notwithstanding, in subsequent individual interviews both participants rated the interaction as having gone 'very well'.

3.3 Summary

This chapter has concentrated on describing in detail the findings from Case 1, using a theatrical motif to demonstrate analytic concepts alongside the data in a chronological sequence. In this way the reader is invited to experience an interaction as an (almost) coherent whole, and observe the evolution of various strategies and tactics in this case of early requirements gathering. Chapter 4 continues to examine Case 1 and extends its analysis from the emergent concepts to themes and topics, and describes in detail how the chain of analysis developed.

4. EXTENDING THE ANALYSIS – FROM EMERGENT CONCEPTS TO THEMES AND TOPICS

‘..the declared meaning of a spoken sentence is only its overcoat, and the real meaning lies underneath its scarves and buttons’

***Oscar and Lucinda* by Peter Carey, p.190**

The previous chapter presented a rich description and analysis of Case 1 using the vehicle of a theatrical metaphor. The analytic concepts interwoven with the description in the previous chapter were derived using grounded theory techniques. This chapter explains how the chain of analysis developed for Case 1, that chain of analysis being subsequently applied to the remaining cases. In particular, it gives a detailed account of the application of grounded theory techniques to Case 1, and how this was used as a foundation for the development for themes via an intermediate unit of analysis, the topic. All data sources in Case 1 are examined in this chapter and findings relayed.

This chapter then has twin aims – illustrating how the chain of analysis proceeded and describing in detail the findings from Case 1.

4.1 Applying Grounded Theory Techniques to Case 1

In the first instance, the transcript of the interaction in Case 1 was subjected to *open coding*. This is essentially a line by line examination of the data, to generate concepts or codes. The exercise is extremely time consuming, but has the advantages of yielding many rich concepts and maintaining a very close tie with the data. Open coding quickly forces the researcher to break apart and fracture the data analytically, leading to grounded conceptualisation (Strauss 1987).

Axial coding, examining codes in terms of the ‘coding paradigm’ of *conditions, interaction among the actors, strategies and tactics, and consequences* (Strauss 1987) was then carried out. The use of this coding paradigm is said to enable the researcher to link subcategories to a category in a set of relationships and enable further dimensionalisation of categories (Strauss & Corbin 1990).

It should be noted at this point that Glaser (1992) has criticised the coding paradigm in particular and the publishing of strict procedures in general (Strauss 1987, Strauss & Corbin 1990). Glaser (1992) regards the paradigm as ‘forced conceptualisation’ of data and says categories should be allowed to emerge naturally. (Further discussion of this area of important disagreement between the co-originators of grounded theory will be provided in later sections). Strauss (1987) does point out that the procedures outlined should be thought of as rules of thumb, rather than hard or fixed rules – and advises researchers to study these rules of thumb, use them, and *modify* them in accordance with the requirements of the research (ibid). Certainly, in this study, the paradigm was substantially modified in use, and Section 4.1.1 explains the process of adaptation during analysis.

4.1.1 Applying the Coding Paradigm and Adapting Grounded Theory Techniques

During axial coding, the application of the coding paradigm to the open codes was used selectively, and viewed not only as an aid to understanding the relationships

between open codes and emergent categories, but also as a means of drawing some preliminary distinctions in the data.

When examining the open codes generated from the transcript, using the coding paradigm of *conditions, interaction among the actors, strategies and tactics, and consequences* it was found that the open codes tended to fall into one of two areas: those associated with *interaction* aspects (interaction among the actors, strategies and tactics); or those associated with the *conceptualisation* of the information system (conditions and consequences). This drew a natural distinction in the data and also allowed the research questions to be addressed in a straightforward manner. *Interaction* and *conceptualisation* can also be thought of as initial core categories. Strauss (1987) recommends one core category, certainly not more than two, in any given study.

Obviously there was an element of choice in applying the coding paradigm in this way. For instance, some conditions and consequences could be found among interactional aspects, but it was found that the vast majority of conditions and consequences did apply to the conceptualisation of the information system (the topic under discussion), rather than how the discussion was managed vis a vis interaction. That the data naturally fitted the paradigm in this manner, rather than being forced, supports its selective application in this particular case.

The methodological question of whether to start with predetermined categories or to start with line by line coding is one that confronts all qualitative analysts. Dey (1993) recommends a 'middle order' approach, where some broad distinctions are drawn initially, based on fairly common sense categories. Analysis can then proceed in either direction, towards subcategorisation or linking and integrating the middle order categories (Dey 1993). In this case study, rich concepts were yielded using line by line coding. The subsequent application of the coding paradigm in a selective fashion, examining the broad distinctions of interaction and conceptualisation, enabled a further development and consideration of the research problem.

The application of the paradigm in this manner gave an additional benefit, as the distinctions made go some way to abstracting the processual/structural dichotomy evident in discourse analysis (Candlin 1985). Attention can be given to the social processes by which analyst and client reach agreement (interaction), and structural analysis of the text can give insights as to how an analyst and client might jointly conceptualise an information system (conceptualisation). The relationship between the initial core categories, and subcategories, can be regarded as the interplay between social processes and how the dialogue itself is structured as a consequence.

Another way of viewing this distinction is to say that what is of interest in this study is the following:

- how the participants manage the interaction, and;
- how the management of that interaction impacts on the subsequent conceptualisation of the information system.

Table 4-1 illustrates how the paradigm was selectively applied, with some sample codes that were generated during the open coding phase.

While using the coding paradigm to consider relationships it became clear that an alternative way of examining relationships between codes had to be sought. As the paradigm had also been used to draw distinctions in the data, it became more complex to apply when considering relationships between codes. For instance, it is difficult to think of *conditions* as both pertaining to the information system under discussion and

also pertaining to interactive social processes; yet clearly causal and other relationships exist between the two.

Table 4-1 Applying the Coding Paradigm and Some Initial Open Codes

INITIAL CORE CATEGORY	PARADIGM ITEMS	SAMPLES OF INITIAL OPEN CODES
INTERACTION	Interaction among the actors Strategies and tactics	acting out, imagining, vivid description, posited action, prop, reframe
CONCEPTUALISATION	Conditions Consequences	information source, information type, document ref, computer system ref, clerical system ref, information link, process identification, condition, client action

Spradley's (1979) domain analysis was used to assist formulation of relationships between codes and categories. Spradley defines a *domain* as an organising idea or concept, akin to a category in grounded theory methodology. These domains can contain 'folk' terms, used by the members of the social setting, analytic terms generated by the researcher and relevant theories, and mixed domains containing folk terms to which the researcher adds other terms.

In grounded theory methodology, these translate into:

- 'in-vivo' codes based on phrases used by the participants,
- the concepts generated by the researcher during open coding, and ;
- theoretical sensitivity demonstrated by using terms from the technical literature.

In addition Spradley provides *semantic relationships* that can exist between domains. The benefit of using these semantic relationships was that they allowed a finer grained analysis of relationships between codes. They enabled an extension of causal conditions, intervening conditions and consequences given in the later version of the paradigm provided by Strauss & Corbin (1990). These nine semantic relationships vary from strong causal relations to those that specify characteristics.

The nine relationships are:

- *is a kind of,*
- *is a part of/a place in,*
- *is a way to,*
- *is used for,*
- *is a reason for, is a stage of,*
- *is a result/cause of, is a place for, and*
- *is a characteristic of.*

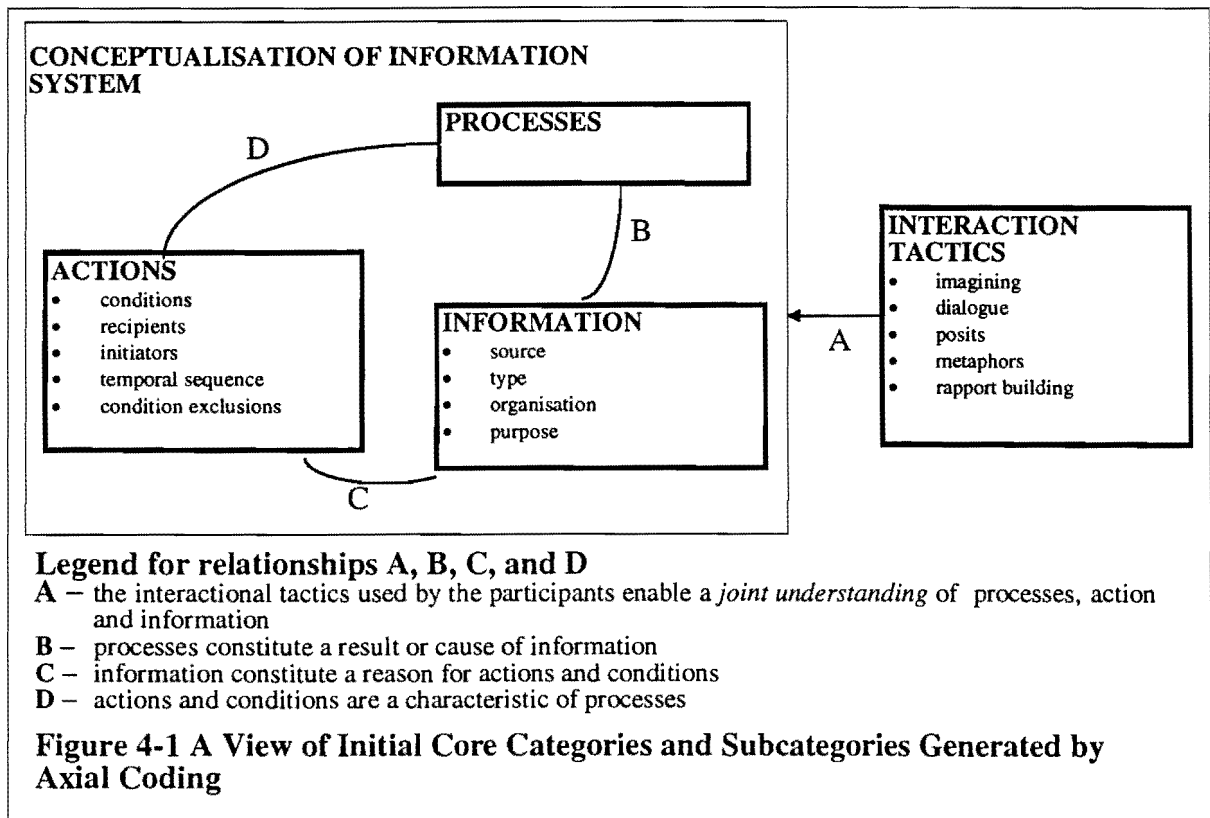
Other than the references to place which presumably are important for studying social settings, these relationships seem to offer enough variation to cover most kinds of connections between categories, but are comprehensive enough to offer ease of use.

An alternative route would have been to use one or two of the theoretical coding 'families' advanced by Glaser (1978), such as the 'interactive family' which talks of mutual effects, reciprocity and interaction of effects, or the 'strategy family' which talks of 'strategies, tactics, mechanisms, ploys, means, goals', or even the 'cutting point family' which proposes 'boundary, critical juncture, turning point' as useful ways to look at the data (Glaser 1978). There are 18 families proposed in all, and Spradley's semantic relationships would seem to cover at least some of the informing ideas of these families. These theoretical coding 'families' were found to be invaluable not only when thinking about relationships, but the codes themselves, as they serve as reminders to consider very different views of the data.

Another (preliminary) view of the coding process is presented in Figure 4-1. Here the initial core category of *conceptualisation* contains three sub categories, Actions, Processes and Information, which seemed to be key to conceptualising information systems in the case study. Two of these subcategories, Actions and Information, have subcodes represented in the boxes. Actions and Information are seen as having a relationship with Processes. No codes were generated for Processes, as Processes were seen as being at a higher level of abstraction than either Actions or Information. (It will be noted by the alert reader that there are no codes for action in the axial coding phase – Actions were subsequently reformulated as *process rules*).

The initial core category of *interaction* is here entitled Interaction Tactics, which demonstrates how thinking about this initial core category had evolved and had been influenced both by the coding paradigm (Strauss 1987) and Glaser's (1978) coding families. Some initial codes for this category are also provided here.

The relationships A, B, C, and D use Spradley's (1979) relationships and are seen as initial theories as to the nature of the relationships between the core categories and sub categories. Some of the subcodes represented in the boxes have relationships between themselves as well as with the subcategories. The advantage of using Spradley's (1979) domain analysis is clear; it prevents consideration of codes as purely hierarchical and so allows the consideration of all types of relationships and the generation of a rich theory.



4.1.2 Reconsidering the Core Categories

What occurred next with regard to the initial core categories is probably a good example of the iterative nature of qualitative analysis. Tesch (1990), in a summary of principles used by the majority of qualitative researchers, states that categories are tentative and preliminary in the beginning, and that they remain flexible. Glaser & Strauss (1967) state the lower level categories (or codes) emerge relatively quickly, and that higher level categories tend to come later when integrating concepts.

A second pass of the transcript, looking particularly at conceptualisation and how issues were introduced, revealed conceptualisation to be so firmly embedded in interaction tactics it was difficult to separate the two. For instance, *key searching*, where the analyst actively seeks links or keys between system information, was identified. Clearly, it is difficult to say whether *key searching* constitutes an interaction tactic or conceptualisation – it could be a interaction tactic aiding conceptualisation, or could constitute conceptualisation in its own right.

Similarly, looking at how the topic of the system was introduced, and by whom – *agenda setting* – could be said to fit in both initial core categories. Therefore, labels of interaction tactics and conceptualisation were not particularly helpful in this instance, and gave rise to the thought that what constituted the core categories should be reconsidered. If one wished to be true to the spirit of grounded theory by not ‘forcing’ the data into preconceived categories (Glaser 1992), and, at a more fundamental level, ensure that concepts indicated by the data were actually represented by the data and truly grounded, then the original labels necessitated a rethink.

Figure 4-2 illustrates the difficulty of orientating some of the codes provided by the second pass (left hand box) in accordance with the initial core categories. The right hand box shows the subsequent orientation of those codes after reformulation of categories.

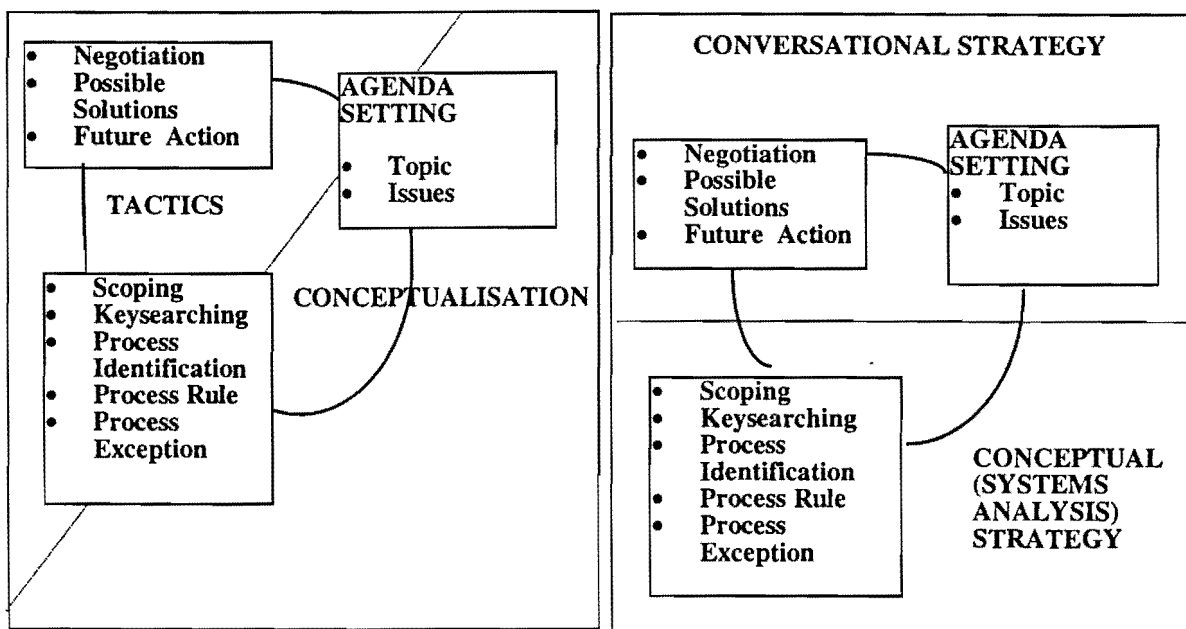


Figure 4-2 Reorientation of Initial Core Categories in Axial Coding Phase

It was at this point that the coding paradigm (Strauss 1987) made a second useful contribution to the analysis effort, in that it not only mentions tactics, but strategies as well. If one considers the role of tactics as part of an overall strategy, one can see how various tactics might be part of a number of different strategies in requirements gathering. This idea provided a higher level of abstraction which was also commensurate with the concepts that had emerged on the second pass. How the reformulation of the initial core categories proceeded, leading to the production of the right hand box in Figure 4-2, is explained in the following section.

4.1.3 Reformulating the Categories

It can be seen from Figure 4-2 (left hand box) that none of the axial codes provided by the second pass fell purely into the category of *conceptualisation* – those things key to

the conceptualisation of the information system. This is perhaps not entirely surprising, given the difficulty of analysing language forms – Candlin (1985) characterises language forms as:

..the *surface realisation* of those *communicative strategies* involved in the interactive procedures working amongst those various *social, contextual, and epistemological* factors. (researchers emphasis).

Note that here too, strategies are mentioned. During the coding of the first case then, it is not surprising that interactional tactics were much easier to detect than any epistemological factors informing them, because the data analysed is conversation.

Conceptualisation can be seen as equivalent to the epistemological factors – the building of an epistemology of the system between analyst and client. However, conversation conveys underlying concepts imperfectly, and it seemed impractical to construct a category of conceptualisation, if categories are to be truly grounded in the data.

Glaser (1978) signposts a core category as being a dimension of the research problem, and indicates that it can also be a process. Given the processual nature of the research question – *how* do analysts and clients reach shared understanding – this would not seem to be an unreasonable proposition. Given also the previous use of the coding paradigm to focus on tactics used by analyst and client, this might be one of the dimensions of the problem.

Returning to the *how* aspect of the research question, if conceptualisation was characterised in an activity central to requirements gathering, then this would overcome the difficulty connected with its degree of abstraction and facilitate analysis. It could be related more firmly to the process of early requirements gathering by its renaming to systems analysis.

So, the categories were reformulated as one core category – *strategies in early requirements gathering* with two sub categories – *conversational strategies*, and *systems analysis strategies*.

Thus the research problem – how do analysts and clients approach early requirements gathering? – revealed its first research question or dimension: ‘what strategies and tactics do analysts and clients employ during the process of early requirements?’, via the process of detailed analysis. Dey (1993) remarks that questions vaguely formed at the outset may be considerably redefined and reformulated by the time the final stage of analysis is reached, and certainly we can see here how the successive reanalysis of the data aided in the definition of the first research question.

The reformulation of the core categories are illustrated in Figure 4-3 .

Formulating the categories in this manner recognised that some of the tactics previously identified could be used in a number of circumstances. For instance *metaphors* are a device used to aid understanding in a variety of conversational situations. In Case 1, *metaphors* are clearly a tactic, as they occur both in *imagining*, and *reframing* and many other instances.

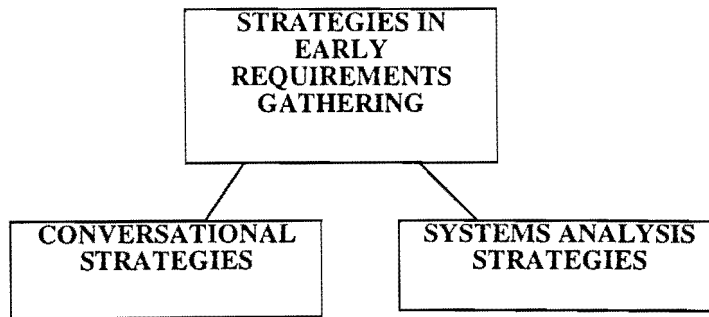


Figure 4-3 Reorientation of Categories in Axial Coding Phase

Table 4-2 gives examples of how the codes previously identified, together with lower level codes identified in the axial coding phase, were reclassified as strategies and tactics and then related to the new categories of conversational strategies and systems analysis strategies. The lower level codes, designated tactics, could be drawn upon by a range of strategies in either category. Some of the individual codes and categories were also reformulated at this point; for instance, *process rule* was deemed to be a tactic rather than a strategy, and seen as supporting the strategy of *process identification*. Similarly, *future action* was recast as a tactic supporting the strategy of *negotiation*. The strategy of *possible solutions* was discarded as it was seen to be encompassed in the tactic of *future action*.

Table 4-2 Reclassification of Codes into New Categories, Strategies and Tactics

CATEGORY	STRATEGIES	SAMPLE TACTICS
CONVERSATIONAL STRATEGIES	Negotiation	<i>posits, future action, forward reframe, problem identification</i>
	Agenda setting	<i>conversation topic, issues</i>
	Rapport building	<i>'we', joint ownership, personal disclosures</i>
SYSTEMS ANALYSIS STRATEGIES	Key searching	<i>posits</i>
	Information Identification	<i>information type, exemplification</i>
	Process identification	<i>posits, process rule, process exception, problem identification</i>
	Scoping	<i>posits, information typing</i>
	Imagining	<i>metaphors, vivid description, dialoguing, exemplification</i>
	Reframing	<i>metaphors, forward reframe</i>

A question that might be legitimately asked at this point is – if the core category is a dimension of the research problem, does a reformulation of the core category constitute a reformulation of the research problem? The answer has to be in the affirmative, as in qualitative research, problems become successively refined when moving through the research process.

In this instance, the successive refining of the research problem through analysis resulted in the first research question. Dey (1993) puts it more elegantly and suggests that, during analysis, the analytic focus needs to be reviewed and perhaps revised given the implications of earlier decisions for the development of the analysis.

4.1.4 Using Analytic Memos and Integrative Diagrams

During the axial coding phase, integrative diagrams and analytic memos were used to consider relationships between codes and to develop theory. The use of analytic memos and integrative diagrams are suggested by Glaser and Strauss (1967), Glaser (1978), Strauss (1987) and Strauss and Corbin (1990) and are viewed as critical for theory development. They should be utilised throughout the lifetime of the project and Strauss and Corbin (1990) go so far as to suggest that sparse use of these tools will result in a theory which lacks density. Use of analytic memos provide an opportunity for the qualitative researcher to think aloud, explore new categories, integrate borrowed concepts, and to establish the grounding of concepts. Analytic memos are a generic tool in qualitative research (Neuman 1994), and are not confined to use in grounded theory method.

When analysing Case 1, they were found to be most helpful when considering how codes might be grouped and what relationships existed between them. In addition, it was found useful to illustrate emergent concepts by relating back to instances in the data to ensure that the emerging theory was truly 'grounded'. Appendix 2 provides excerpts of various analytic memos as they were written during the study, and demonstrates how analyses were also extended across cases through a constant dialectic of comparison and reconsideration.

Integrative diagrams were also used extensively during the axial coding process to assist understanding of relationships between codes and grouping of codes, and to bring together various analytic clusters (Strauss 1987). Spradley's (1979) relationships in domains were assigned between various clusters. An example of an integrative diagram pertaining to interactional aspects is reproduced in Appendix 3. This particular diagram makes a distinction between those interactional tactics used when information gathering, and those used to facilitate understanding. It as if participants have a battery of tactics that they use depending on the difficulty of the subject matter, and this diagram helped thinking about the distinction between strategies and tactics. In this way, successive analytic memos and diagrams aided the development of a substantive theory about how analysts and clients might approach early requirements gathering.

4.2 Extending the Analysis – Using Topics and Themes

While the analysis of Case 1 presented in Chapter 3 gives a good account of the conversational strategies and tactics used by analysts and clients in early requirements gathering, this is of necessity a static view of what is essentially a process, and it needed to be combined with a *dynamic* view in order to give a complete understanding of the interaction. That said, making these strategies and tactics explicit undoubtedly has value in terms of understanding practices that are engaged in during early requirements gathering. However, there is also the question of early requirements gathering as an evolutionary *process*.

The grounded theory analysis can also be seen as a *micro analysis* at the interaction level, giving important insights into how the interaction might proceed. Glaser (1978), when extending the notion of core categories in grounded theory methodology to BSPs (Basic Social Processes) stated that the additional criteria for a core category that was processual constituted a feeling of change, process, and movement over time, where the changes have discernible breaking points.

Through consideration of this criterion, the need to incorporate a dynamic, chronological element, a secondary analysis was born – that of using *topics* as those discernible breakpoints. The grouping of these topics into *themes* represented a macro analysis of the case and provided a basis for future cross case comparison. A clear

chain of analysis – from concepts to topics through to themes – enabled an essentially grounded view of the data, working as it did from the smaller units of analysis upwards and across data sources. Figure 4-4 illustrates the sequence of analysis.

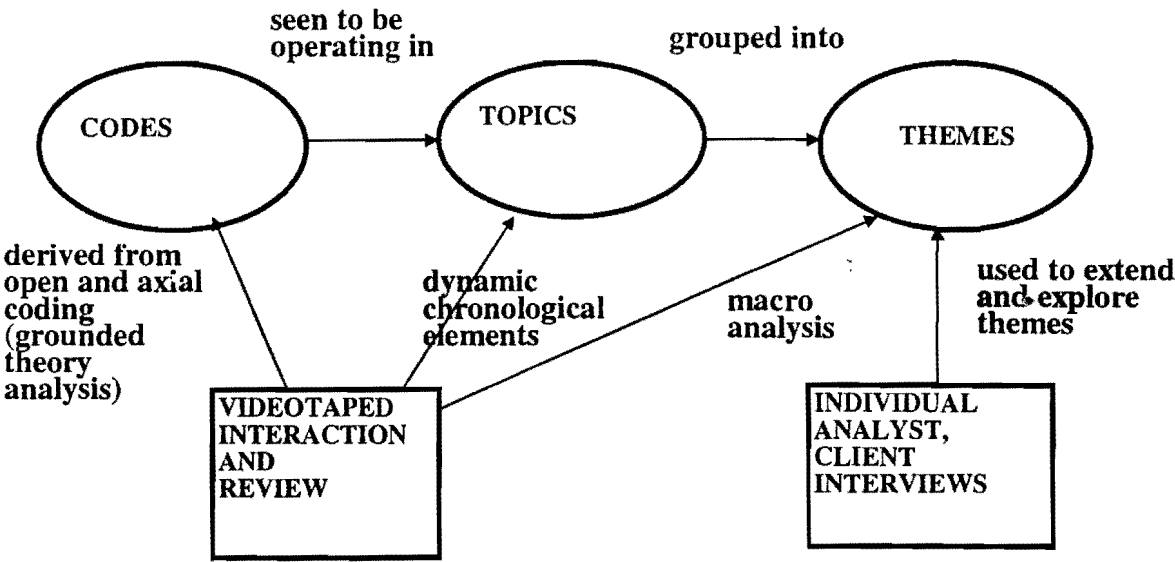


Figure 4-4 The Chain of Analysis Adopted for Case 1

4.2.1 Using Topics as a Unit of Analysis for Case 1

Topics provide a straightforward unit of analysis that are readily identifiable in conversations, probably because as conversationalists we all manipulate topics on an everyday basis. As such, a topic can be seen as a naturally occurring unit of conversation (Planalp & Tracy 1980). In particular, people are able to identify the transitions or breakpoints in a conversation (Newtson 1976, Newtson et al 1977, Martin et al 1971).

Planalp and Tracy (1980) demonstrated that most people could distinguish topics with a high degree of reliability, which backing their contention that a topic is a natural unit of conversation. In their study, subjects were asked to distinguish topics in conversations using transcripts and or video tapes. Twenty subjects were asked to read transcripts and view videotapes, and twenty subjects to read transcripts alone. Reliabilities in their experiments for identification of topic shift were quite high; 92.6% in the first case using transcripts and video tapes, and 91.9% for the second case using transcripts alone. They concluded that videotapes did not assist much in identifying topic shift, and that verbal cues from transcripts seemed sufficient. The experience in this study seemed to be that non verbal cues did not seem to particularly signify transitions, though they might signal that the speaker wished to make one.

Planalp and Tracy (1980) then went on to identify a typology of topic change strategies, based on the premise that rules of conversation exist that facilitate understanding by making contextual information available to the listener. In other words, there is an implicit contract that obliges speakers to make contextual information available to listeners so that they can understand each new message. To ensure that a remark is understood as intended, the listener must be able to infer the correct context within which it is to be interpreted (Planalp & Tracy 1980). Planalp and Tracy contend that this is also the case for a newly introduced topic of conversation – the speaker will often provide the transitions for a listener. The more informal the conversation, the more likely it is that the listener will be left to infer the appropriate context.

Planalp & Tracy's typology is given in Table 4-3. The typology is based on contextual information stemming from three sources – the topic may be relevant to the one that preceded it, it may refer to information in the social and physical environment, or to general information shared by listener and speaker. Table 4-3 demonstrates how the typology has been applied to the case study by providing examples from the transcript of each type of topic.

Table 4-3 Topic Change Typology with Examples from Transcript (Adapted from Planalp & Tracy 1980)

TYPE	DESCRIPTION	EXAMPLE
Immediate Implicit	Topic is most closely related to topic which precedes it.	"but to get to that sort of point". Previous topic – points of improvement
Immediate Explicit	As in immediate implicit, but the connection is explicitly designated	"Is it the schools that do the assessment?" Previous topic – information from schools
Earlier Implicit	Topic is most closely related to a topic which came earlier in the conversation	"What else do you input apart from the reference numbers?" Closely related topic – information input to database
Earlier Explicit	As for earlier implicit, but the connection is explicitly stated	"Does it also say if they are approved or non approved this reference number?" Connected topic – Links from information input to applicant
Environmental Implicit	New topic introduced because of some cue in the environment	None Evident
Environmental Explicit	The environmental change which triggered the cue is stated	"I was just watching Cathy there" Environmental cue – researchers presence
Unspecified Implicit	No clear connections apparent	"that's if they've done their tax return, not like me"
Unspecified Explicit	Lack of connection is stated	None Evident

The examination of topic changes using this particular context related typology confers two major advantages:

- Firstly, the degree of relatedness between topics gives a basis for evaluating the degree of understanding between the participants. It is said that the competent speaker will ensure relevance by introducing topics in such a way that the relevant contextual information is shared by both participants (Planalp & Tracey 1980). By examining topics from the standpoint of relevance and context, one can get a feel for the *coherence* of the discourse – the extent to which a discourse 'hangs together' in terms of how relevant successive utterances are those to that precede them (McLaughlin 1984). Relevance has been described by Jucker (1994) as the relevance of individual utterances within a conversational context which guide conversationalists in the production of the structure of that dialogue.
- Secondly, one can get a feel for how the early requirements are formulated by examining topic evolution over time. Given that the early requirements *constitute* the global topic of the conversation between analyst and client, there is great value in examining the process by which each individual topic is introduced, its relationship to the previous topic, and whether it is finally deemed to be part of the early requirements. Tracking topic shifts enables other insights into the process, such as who introduces the majority of topics, and whether previous topics are subsequently referred to, indicating that they are major themes in the conversation.

The table below illustrates the topic shifts identified in Case 1. It shows who was responsible for introducing a new topic, and the type of topic change that occurred using Planalp and Tracey’s (1980) typology.

Table 4-4 Topic Shifts and Initiators of Topic Shifts

TOPIC SHIFT	Frequency		
	NEW TOPIC INTRODUCED BY ANALYST	NEW TOPIC INTRODUCED BY CLIENT	TOTAL
Immediate Implicit	1	1	2
Immediate Explicit	19	8	27
Earlier Implicit	6	1	7
Earlier Explicit	11	0	11
Environmental Implicit	0	0	0
Environmental Explicit	1	0	1
Unspecified Implicit	0	1	1
Unspecified Explicit	0	0	0
Total	38	11	49

There are a number of observations that can be drawn from Table 4-4. Firstly, the analyst makes the vast majority of topic changes. This can perhaps be explained by the analyst’s questioning role in the interaction, where he is actively seeking information about the requirements. It also tells us something about the dynamics of the conversation – the analyst has the conversational floor by virtue of controlling the topic. It is significant however that the analyst backtracks to previous topics frequently, as illustrated by seventeen Earlier Implicit/Explicit topic changes. Throughout the conversation the analyst seeks information about various themes which he has identified by earlier questioning – subsequent information causes a backtrack to the earlier topic.

The client confines her topic changes to mainly to Immediate Explicit topic changes. The fact that she makes no Earlier Explicit changes perhaps reflects her role as the questioned rather than the questioner, and may also reflect differences in communication style that could be attributed to gender. It also indicates that she was not actively able to control the topic flow.

The small number of environmental or unspecified topic changes are also noticeable in this table. Presumably because this is a ‘professional’ discourse, requiring a focus on the task at hand, the level of conversational coherence, in terms of how the topics are linked, is appropriately high. This is demonstrated by the vast majority of topic changes being explicit, that is the connection between it and a previous topic is explicitly stated.

Table 4-5 gives more information on the actual topics identified in Case 1, and the sequence of their introduction. The topics as identified in this table form the basis of the themes identified and discussed in section 4.2.3

Table 4-5 Topics in Case 1 Listed by Number, Name and Time of Introduction

TOPIC NO	TOPIC NAME	INITIATOR	TIME INTRODUCED
1, 4	Our last meeting	Analyst	.00
2	Points of possible system improvement	Analyst	.35
3	How to discuss possible improvements	Analyst	.55
5, 32	Role of database in assessment	Analyst	1.58, 16.52
6	Need for process to help with assessment	Client	2.07
7,12	Information received from schools and relationship to database	Analyst	2.11, 4.01
8	Role of schools with regard to assessment	Analyst	2.53
9, 11	Role of schools with regard to scheme	Client	2.57, 3.55
10	Doing one's tax return (rapport building)	Client	3.52
13	Summary information from schools	Analyst	5.15
14	Process of assessment	Client	6.09
15, 20, 22, 24, 26	Information input to database	Analyst, Client (22)	6.51, 9.07, 9.55, 11.05, 11.20
16, 18, 21, 33, 35, 37	Links from information input to applicant	Analyst	7.27, 8.26, 9.13, 17.17, 20.07, 20.41
17, 23	Problem of nil capacity for student records	Client	8.05, 10.56
19,46	Future Action	Analyst	9.00, 31.51
25	Distraction in environment	Analyst	11.10
27	Problem of lack of approval information	Analyst	11.40
28	Letters produced by the system	Analyst	13.31
29	Initial letters in early stages	Analyst	14.14
30	Reviews of Code 1 approvals	Client	15.11
31	Summary of analyst's understanding so far	Analyst	16.21
34,38	Process of approvals	Analyst	18.03, 21.19
36	Contents of batch summary sheet	Analyst	20.19
39, 41	Process for non approvals	Analyst	22.07, 23.18
40	Process for Code 1s	Client	22.50
42	Subsequent process for non approvals	Analyst	24.41
43	Notification of approvals and non approvals	Client	27.04
44	Review processes	Analyst	28.45
45	Adjustment for subsequent approvals	Analyst	30.24
47	Future solutions	Client	32.35
48, 50	Specific solutions	Analyst	32.56, 33.38
49	Problem identification	Client	33.18

Table 4-5 allows some further insights into the dynamics of the conversation by giving the name of each topic, who introduced it and also importantly the sequence of the topics themselves. There are a number of issues that emerge from Table 4-5:

- Firstly, it is clear that it is the analyst who takes the lead in terms of defining the global topic and how to discuss it.
- Secondly, it is noticeable that the client brings up the need for a process very early on in the conversation (Topic 6), the problem of nil capacity for student records (Topic 17 and 23) and is identifying a problem as the conversation closes (Topic 49). Perhaps this is indicative that not all the issues that the client has brought to the conversation have been dealt with satisfactorily from her perspective.
- Thirdly, after some rapport building initiated by the client (Topic 10), the backtracking between topics increases markedly – the topic of Information Input to the Database and Links to the Applicant occupying the next fourteen minutes. One can speculate that the rapport building has enabled this increase in information exchange, and also note that in both cases the topic was introduced by the analyst.

Thus the use of topics as a unit of analysis can give many insights into the dynamics of the interaction and also assist with seeing how a particular set of requirements

might evolve over time. Table 4-5 shows how the analyst maintained control of the topic and to some extent set the agenda for discussion. It enables the tracking of the issues that emerged during the interaction, and the examination of various breakpoints between topics, allowing a view of how the global topic (in this case the definition of requirements) might evolve and change over time. The definition itself is intimately intertwined with the analysts stratagems identified in the preceding sections – for instance, if the analyst starts off with a strategy of *agenda setting*, and is actively *scoping* (trying to establish the boundaries of the new system) one would expect to see this reflected in the topics – *if the analyst had control of the topic*. Therefore the use of topics provides both a processual perspective and a means of understanding how social processes interact with the requirements in a very involved manner.

4.2.2 Relating the Grounded Theory Analysis to Topics in Case 1

Table 4-6 shows the occurrence of codes as reflected in each topic in Case 1. It is interesting to note that, over time, the use of imagining, dialogue and props increased as topics became ‘deeper’ – for instance, discussions of links in information and detailed exposition of processes. Clearly, as more information was introduced, both analyst and client used more conversational strategies to help them deal with that information.

Table 4-6 also starts to demonstrate how a path from comparatively low level codes to eventual themes might be constructed – for instance, the many occurrences of *key searching* identified at the topic level were finally grouped into a theme of Links in Information.

There is also, to some extent, a mismatch between some topics and the clustering of codes therein. This is due to a fundamental difference – the topics, of necessity, are ‘about’ something, whereas, the codes demonstrate clearly that a wide range of conversational tactics can be used within a topic. The codes also fall into two categories – conversational and systems analysis strategies. Of the two, later analysis came to depend more on those systems analysis strategies, and it is these that tended to influence the ordering of topics into themes. One reason for this is that, in Case 1 and others, the systems analyst tends to set out with a clear strategy for conceptually ordering the information they receive – as such they tend to influence the conversational agenda or global topic and how it is managed.

Table 4-6 Codes As They Appeared in Topics in Case 1

TOPIC No	TOPIC NAME	CODES
1, 4	Our last meeting	<i>agenda setting, conversation topic</i>
2	Points of possible system improvement	<i>conversation topic</i>
3	How to discuss possible improvements	<i>conversation topic, scoping</i>
5, 32	Role of database in assessment	<i>scoping (many references)</i>
6	Need for process to help with assessment	<i>scoping, problem identification</i>
7, 12	Information received from schools and relationship to database	<i>scoping, information type</i>
8	Role of schools with regard to assessment	<i>scoping, process identification</i>
9, 11	Role of schools with regard to scheme	<i>scoping, process identification, information type</i>
10	Doing one's tax return	<i>rapport building, personal disclosure</i>
13	Summary information from schools	<i>forward reframe, information identification</i>
14	Process of assessment	<i>process identification</i>
15, 20, 22, 24, 26	Information input to database	<i>information identification (many references), process identification, key searching</i>
16, 18, 21, 33, 35, 37	Links from information input to applicant	<i>key searching (many references), information identification, process identification, scoping, imagining, metaphors</i>
17, 23	Problem of nil capacity for student records	<i>negotiation, conversation topic</i>
19, 46	Future Action	<i>future action, imagining, reflection</i>
25	Distraction in environment	<i>personal disclosure, rapport building</i>
27	Problem of lack of approval information	<i>problem identification, imagining, negotiation</i>
28	Letters produced by the system	<i>information identification</i>
29	Initial letters in early stages	<i>information identification, process identification, problem identification, scoping,</i>
30	Reviews of Code 1 approvals	<i>process identification, scoping, imagining, dialoguing</i>
31	Summary of analyst's understanding so far	<i>reflection, process identification, key searching</i>
34, 38	Process of approvals	<i>process identification, information identification, imagining, dialoguing, forward reframe, scoping</i>
36	Contents of batch summary sheet	<i>information identification, prop, imagining, exemplification.</i>
39, 41	Process for non approvals	<i>process identification, process rule</i>
40	Process for Code 1s	<i>process identification</i>
42	Subsequent process for non approvals	<i>reflection, process rule, imagining, forward reframe, process identification</i>
43	Notification of approvals and non approvals	<i>exemplification, forward reframe, process assumption, process rule, imagining, dialoguing</i>
44	Review processes	<i>process identification, imagining, dialoguing, process assumption, process rule, process exception</i>
45	Adjustment for subsequent approvals	<i>process identification, imagining, scoping, process rule</i>
47	Future solutions	<i>reflection, future action, negotiation, exemplification, imagining, dialoguing, future solution</i>
48, 50	Specific solutions	<i>solution searching, key searching, scoping</i>
49	Problem identification	<i>problem identification, negotiation</i>

4.2.3 Using Themes as a Macro Analytic Device for Case 1

The topics identified in the transcript were subsequently organised into *themes*. Using themes as an analytic device is a useful way of scaling up analysis – for instance, themes were used by Martin (1992) as a way of analysing organisational culture from diverse case study material. It is also a recognised strategy of organising qualitative data (Miles & Huberman 1994) and enables the building out of concepts from the data that can then be applied to other data sets and other situations – as such it represents a powerful means of gaining an overview of the data.

The organising principle of themes applied in Case 1 is used for two analytic purposes. Firstly, it allows a meta analysis of topics. Secondly, the grouping of topics into themes allows a future comparison of those themes with conversational and systems analysis strategies identified in the transcript. The use of themes confers a further advantage; if the themes are at a reasonable level of abstraction, they can be used for analysis of the remaining case studies. Similarly, they can be used for analysis of other data sources contained within each case study.

Table 4-7 below illustrates the themes extracted from topics in 4.2.1 and how the topics mapped onto themes.

Table 4-7 Mapping of Topics in the Transcript to Themes in Case 1

THEME	TOPIC
1. Issues to be Discussed	T1, T2, T3, T4, T6, T17, T23
2. Scope of System	T5, T7, T8, T9, T11, T12, T32
3. Personal Disclosures (Rapport building)	T10, T25
4. Information Input to System	T13, T15, T20, T22, T24, T26, T36
5. Processes Associated with System	T14, T30, T34, T35, T38, T39, T40 T41, T42, T43, T44, T45
6. Keys in Information System	T16, T18, T21, T33, T35, T37
7. Future Action	T19, T46
8. Problem Identification	T27, T49
9. Information Output from System	T28, T29
10. Analyst's Understanding of Processes	T31
11. Future Solutions	T47, T48, T50

The grouping of topics into themes in this manner shows that a reasonable number of topics were focused on Information Input to the system (Theme 4) and the Processes Associated with the System (Theme 5).

A number of topics are also devoted to finding links between the applicant and the database (Keys in Information System, Theme 6). Comparatively few topics are dedicated to Information Output From System (Theme 9) , or Future Action (Theme 7). However, this is probably consistent with what the analyst outlines as essentially an information gathering mission where he is looking for ‘points of improvement’.

It is noticeable that the theme of Problem Identification (Theme 8) has only two topics, the first introduced by the analyst, the second by the client very close to the end of the conversation. This could indicate a failure by the analyst to identify problems, or merely indicate that the analyst’s focus was gaining an understanding of the system prior to tackling any problems. However, the client’s introduction of this topic at the end of the conversation would seem to indicate that she felt it was either not addressed or that she did not have the opportunity to do so earlier – perhaps a reflection of the analyst’s consistent control of topic throughout the majority of the interaction.

When the themes are graphed against time in the interaction (Figure 4-5), it is noticeable that, as the interaction proceeds, analyst and client spend longer on themes in the middle of the interaction. Seeing the interaction represented in this way also tends to reinforce the view that the client has not had much control over the direction of the interview as evidenced by her return to Theme 2 (Scope of System). This may of course also indicate that client and analyst have different ways of perceiving what is to be discussed (and therefore by implication the early requirements).

The very early part of the interaction comprises themes of Issues to be Discussed (Theme 1) and Scope of the System (Theme 2) and are primarily dealt with in the first five minutes. Note though that there is a return to Scope of System (Theme 2), on two occasions up to five minutes into the conversation – these were initiated by the client. This may indicate that the agenda were not fully negotiated before proceeding into the themes which take up most of the interaction, Information Input to System (Theme 4) and Processes Associated with System (Theme 5). There is also some Rapport Building (Theme 3) before the interaction settles down to its preoccupation with Themes 4 and 5.

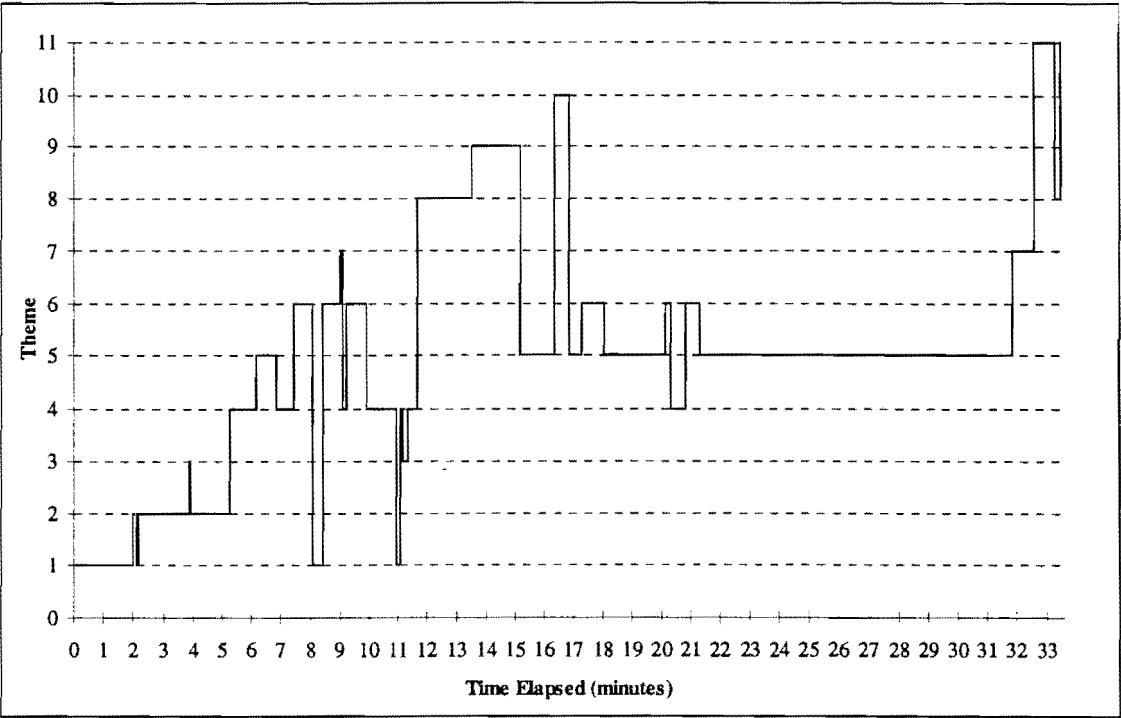


Figure 4-5 Themes Graphed Against Time Elapsed in the Interaction in Case 1

There is a regular return to Keys in Information System (Theme 6), until this is resolved until 20 minutes into the interaction. Future Action (Theme 7), and Future Solutions (Theme 11) take up comparatively little time in the interaction overall, but this is probably appropriate in an interview that seems to be dedicated to information gathering.

4.2.4 Relating the Grounded Theory Analysis to the Themes in Case 1

The table below shows how the codes derived from the grounded theory analysis of Case 1 were reflected in their larger macro analytic counterparts, the themes. Codes marked by an asterisk have a number of instances.

Table 4-8 Themes and Dominant Codes in Case 1

THEME	DOMINANT CODES
1. Issues to be Discussed (T1, T2, T3, T4, T6, T17, T23)	<i>conversation topic *</i> , <i>agenda setting</i> , <i>scoping</i>
2. Scope of System (T5, T7, T8, T9, T11, T12, T32)	<i>scoping*</i> , <i>information type</i> , <i>process identification</i>
3. Personal Disclosures (T10, T25)	<i>personal disclosure *</i> , <i>rapport building</i>
4. Information Input to System (T13, T15, T20, T22, T24, T26, T36)	<i>information identification *</i> , <i>process identification</i> , <i>key searching</i> , <i>prop</i> , <i>imagining</i>
5. Processes Associated with System (T14, T30, T34, T38, T39, T40, T41, T42, T43, T44, T45)	<i>process identification *</i> , <i>scoping</i> , <i>imagining</i> , <i>dialoguing</i> , <i>information identification</i> , <i>forward reframe</i> , <i>scoping</i>
6. Keys in Information System (T16, T18, T21, T33, T35, T37)	<i>key searching *</i> , <i>information identification</i> , <i>process identification</i> , <i>scoping</i> , <i>imagining</i> , <i>metaphors</i>
7. Future Action (T19, T46)	<i>future action</i> , <i>imagining</i> , <i>reflection</i> , <i>scoping</i> , <i>process rule</i>
8. Information Deficit in System (T27, T49)	<i>problem identification*</i> , <i>imagining</i> , <i>negotiation</i>
9. Information Output from System (T28, T29)	<i>information identification*</i> , <i>process identification</i> , <i>problem identification</i> , <i>scoping</i>
10. Analyst's Understanding of Processes (T31)	<i>reflection*</i> , <i>process identification</i> , <i>key searching</i>
11. Future Solutions (T47, T48, T50)	<i>reflection</i> , <i>future action</i> , <i>negotiation*</i> , <i>exemplification</i> , <i>imagining</i> , <i>future solution</i> .

Table 4-8 quite clearly shows a pattern of analytic decisions, based mainly on the instances of codes within those topics grouped in themes. It is worth discussing those themes which seem to diverge from this analytic rule of thumb. For example, Future Action may only have one instance of a code of the same name, so why elevate it to the status of a theme? The answer lays in the nature of the code. *Imagining* as a strategy and *reflection* as a tactic are used throughout the conversation, so do not really inform us as to what is actually *happening* within the topic. Similarly, *scoping* and *process rule* are systems analysis strategies and tactics used (generally) by the analyst. It is only the code *future action* that informs us of what might be occurring in that particular topic. As such, it has a dynamic nature which the other codes do not – underlining the whole reason of seeking topics as an additional layer of analysis in the first place. Another reason for deciding to label the theme 'Future Action' is that it can be judged a theme of importance, worth discussing in the context of this interaction and others. The other codes can then be used as a mechanism for understanding what might be occurring in that particular theme. The theme is then, to some extent, supplying another layer of analysis that helps us understand how these codes might operate in particular situations.

A similar argument applies to Future Solutions. It was noted that, in this particular interaction, that there existed a fairly sharp distinction between indications of future action and the suggesting of actual solutions. As such, it is worth exploring from a thematic standpoint the differences between Future Action and Future Solutions as played out in a number of cases. It is interesting to note, for instance, the many occurrences of *negotiation* that occur within this theme, which gives us a key for understanding how an analyst and client might reach the point of agreeing future solutions.

4.3 Providing a Context – The Other Data Sources in Case 1

The other qualitative data sources in the case study – the pre and post interaction interviews with analyst and client, the interaction review, and the paragraph submitted before the interaction – all provided context for the main interaction. As stated in Chapter 2, the videotaped interaction can be seen as the heart of the case study design – all other sources can be seen as surrounding it and enabling a number of

interpretations. Dey (1993) describes context not only as the key to meaning in qualitative data analysis, but also the means by which a number of interpretations can be made.

The themes generated from the interaction provide a means to analyse these contextual sources. As those themes were generated from the analysis of the videotaped interaction, they also provide an interesting mechanism to extend the theory, given that all the contextual sources are related to the interaction in some way. For instance, the analyst and client are asked about the videotaped interaction before and after it takes place; similarly, the review is a review of the interaction – so the analyses become tightly interrelated.

Table 4-9 shows how the themes occurred in the contextual data sources, and includes the videotaped interaction for comparison.

Table 4-9 Occurrence of Themes across Data Sources in Case 1

THEME	INTERAC- TION	PARAGRAPH - ANALYST	PARAGRAPH - CLIENT	INTERVIEW - ANALYST	INTERVIEW - CLIENT	REVIEW
Issues to be Discussed	✓	✓	✓	✓	✓	✓
Scope of System	✓	✓		✓	✓	
Personal Disclosures	✓					
Information Input to System	✓			✓		
Processes Associated with System	✓		✓		✓	
Links in Information	✓					
Future Action	✓		✓			✓
Problem Identification	✓					
Information Output from System	✓					
Analyst's Understanding of Processes		✓		✓		✓
Future Solutions	✓					
Organisational Context		✓	✓		✓	✓
Professional Relationships				✓	✓	✓
Mutual Understanding				✓	✓	✓
Note Taking						✓
Use of Props						✓

It should be noted that further themes were discovered when the other data sources were analysed, and these are also included in Table 4-9. For instance, the theme of Professional Relationships had as its origin a question in one of the individual interviews, and was also raised independently by participants during the reviews. Similarly themes of Mutual Understanding, Note Taking, and Use of Props emerged during the review and the interviews.

The following sections provide a discussion of each data source with reference to themes identified. Other data sources not analysed in this way, such as the participant

background questionnaire, are also discussed by way of providing the full context to the interaction.

4.3.1 Paragraph on Issues to be Discussed

Each participant was asked to furnish a paragraph on what was to be discussed. The reasoning behind this was twofold; firstly to identify any differing perceptions that might exist at the outset, and secondly as a check that what was to be discussed fell within the requirements of the case study in terms of the topic being a new system or system amendment in the early stages.

This request provoked an unusual response from the analyst, not repeated in any of the other case studies – he put forward an agenda, which is reproduced in full in Figure 4-6. During the videotaped interaction, the agenda was not put forward formally, but is of interest as to how it shaped the discussion and how the analyst conceptualised the problem.

X and I had a chat about the upcoming meeting and here is my synopsis of what we will be discussing.

Meeting agenda.

To discuss the current Student Assistance Scheme (STAS) database in order to determine some means of improving

- * recording of information
- * assessment of applications
- * handling of enquires from public
- * general useability and reporting

The STAS system is not a system which I have not dealt with before. X gave me a brief overview. The system is used to maintain statistics on those students approved and not approved for the Student Assistance Scheme.

Statistics are held on a school by school basis.

Mail merge letters are produced to inform non approved applicants of their non approval status.

Currently upon public inquiries an applicants paper records must be searched.

No approval code (including non approval) is currently included in the database.

The current STAS database is basically an interim system which will hopefully be succeeded by an organisation wide project currently under way. Expect 2-4 years before new integrated system is implemented.

I doubt that I'll even understand the current process within the allotted 20 minutes or so!

Figure 4-6 Analyst's Paragraph for Case 1

There are a number of points of interest in the initial paragraph provided by the analyst, shown in Figure 4-6. Firstly, the analyst has already isolated the major functions of the database – one could say that this shows a structured approach to information received and this might be a consequence of training.

Secondly, where the analyst remarks that no approval or non approval information is *currently* included on the database, he shows that he is beginning to conceptualise it as a *scoping* problem, and this came out very clearly in the videotaped interaction [identified theme, Scope of System].

The third point is perhaps the most interesting – the current database is characterised as an interim system, and set in the context of an integrated system which will supersede it. In the videotaped interaction, presented in Chapter 3, the reader will

recall that any amendments were characterised as an 'interim solution'. What is interesting about this is it reveals the extent to which the analyst is *agenda setting*, and further, the ability of the analyst to do so. By contrast, the paragraph from the client is focused very firmly on current needs. In the videotaped interaction, the mention of the delay to the organisation wide system seems to come as a surprise to the client, and they effectively negotiate about what appears to be a *forward reframe* from the analyst, calling what they are talking about an 'interim solution'. Note also that it is the database itself which is called 'interim' in the paragraph put forward. So one inference is that the notion of an 'interim solution' has its origin from the analyst.

If this issue is considered as an example of the theme Organisational Context, it raises a number of interesting questions about the analyst's role in this case and indeed the role system analysts play in organisations. While it is within the professional role of an analyst to give an organisation wide view of information and to incorporate the information needs of a client within that view, it is interesting to note that it is organisational context, and a fairly implicit aspect at that, which is driving the type of solution offered.

During the videotaped interaction, the analyst states that the organisation wide system is 2 to 4 years hence, and he reiterates the notion of an interim solution which is mentioned in his paragraph. What is of interest here is how this is decided, rather than whether the course of action proposed is a sensible one. The client appears to have no knowledge of the status of the organisation wide system – except to say that she thought that it was supposed to solve the very problem they are discussing. This appears to be a good illustration of the power the analyst, and the IT section – can wield, possibly without realising it.

The client has to accept an interim solution because of the lateness of a system, but there seems to be no 'rational' mechanism for deciding what solution the client is entitled to under those circumstances. The 'interim solution' is a product of the fact that the analyst happens to know more about the state of that organisation wide system at that point in time, and that there appears to be no way of the client stating what level of solution she requires, even less chance of her knowing what level of solution she might be entitled to, if any. Looking at the videotaped interaction, one can see that the implicit organisational context in this case is driving what is proposed, and yet it is hardly mentioned during the interview itself – the discussion about the 'interim solution' arises almost by accident.

The analyst's paragraph also signals something that was detected as a theme in the videotaped interaction – Analyst's Understanding of Processes. The analyst in this case obviously had an objective of understanding the processes, as indicated both in the paragraph and on the day when he voiced his concern that he still may not have fully understood what was required.

The client's paragraph, (shown in Figure 4-7), being much shorter, correspondingly seems to reveal less. She includes the organisational and state wide context of the system, and discusses what the system is used *for* – statistical information. The processual view of the client is also much evident during the interaction.

First Meeting:

Discussion was held with Y to explain the purpose of the Student Assistance Scheme and how the current database records statistical information for all schools in Tasmania regarding the number of students approved for the scheme and those not approved. We discussed some enhancements which were necessary for the database for 1996 in order to eliminate the need to frequently access paper files.

Regards

X

Figure 4-7 Client's Paragraph for Case 1

She succinctly states why the amendment is required – because they have to frequently access paper files. In the videotaped interaction, this point was mentioned only in the last five minutes by the client. It is also interesting to note that she indicates that the enhancements are necessary for 1996 – she is in effect giving a time by which she requires these amendments to be delivered. This can be seen as perhaps a first step in negotiation. Interestingly, the timescale for the project was not discussed during the interaction, although there was considerable negotiation on future action. This is probably due to the fact that, given they were going to meet again soon, the timescale was perhaps not going to be a problem.

If these two paragraphs are taken as a representation of how the parties are thinking about the issues to be discussed, it can be seen that they are indeed an indicator of things to come – the analyst can already be seen to be taking an information based and scoping approach, as evidenced by his reference to the approval code and paper based files [(identified themes Scope of System and Information Input to System)]. The client, by contrast, talks about frequently accessing paper based files and the purpose of the system [identified theme Processes Associated with System]. She also indicates a timescale for the project [identified theme Future Action].

4.3.2 Analyst Interviews

Both analyst and client were individually interviewed twice, once prior to the videotaped interaction and review, and then afterwards (the questions used in the interviews are contained in Appendix One). These two interviews give an intriguing window into how the thought processes of both the analyst and client evolved over time, and reveal the seeds of some major themes.

The interview with the analyst prior to the videotaped interaction seemed to confirm his focus on information and reveal his intention to use the paragraph he has written to structure the upcoming meeting. From what he says, it is clear that he wrote the paragraph for the benefit of himself and the client rather than the researcher. When asked what his thoughts are about the upcoming interview with the client, he says:

what I did was jotted down some notes, before we start, for the interview, that we're going to be going through, sort of, a few points about the database they've got there, because I actually haven't seen it before, I haven't seen it running. And she gave me a bit of a quick run down over the phone of it before, we talked for about 10 minutes about it. So I jotted down a few things and then wrote down some topics, some things we can go through in the meeting, I don't think we'll have time to go through all the things I've got there, but its sort of a start, its where I see things starting, its really the first meeting for the project.

It is clear then that the analyst wishes to structure the interview in a certain way, perhaps to the extent of directing how the issues will be discussed. He then goes on to

give his initial conceptualisation of the problem. This certainly does influence how he chooses to discuss it in the interview, and confirms an information focused view and a concern with the scope of the system.

They keep some sort of database of statistics of approved and non approved students, some sort of Student Assistance Scheme, they keep it on a school by school basis and they run off mail merge letters and I'm not exactly sure what they are, and what information they actually hold on the database. It seems like they've just got statistics, but they still send mail merge letters, so I'm not sure how much information they keep on actual students. She was saying about inquiries from the public, they have to go back to paper records, so it sounds like they don't really keep student information on there. So I'll have to get an idea of what the current system is, find how things are done, and how we can improve it. That's sort of where I think we're going.

So, the genesis of the themes of Scope of the System and Information Input to the System can be seen in the analyst's conceptualisation of the problem. As he maintains control of the topic for the most part of the interaction, this is perhaps not surprising. What is surprising is how the analysis of the videotaped interaction, carried out *before* the analysis of this interview – uncovered the analyst's use of strategies that are very consistent with the ones he has outlined here. This underlines the strength of the analysis carried out at the three levels of code, topic and theme, and provides useful corroboration.

The analyst then goes on, unprompted, to comprehensively outline his strategy for the interaction – and for solving the problem. He says:

The first thing I want to do is get an idea of the function of the current database, what its really used for, from there get a bit of an overview of how it works, how they get information in and what they do with it, which information they put on the database and what they just keep in their paper records..

Again this reiterates a scoping and information focus. He then reveals the processes associated with the system as a second priority for his attack on the problem:

And have a look, it seems to be about assessment, non approval and approval of applicants, just get an idea of how they do that.. get an idea if they feel that there are any improvements that they already know about, that they think they could make, and see how that might fit into maybe improving the system.

It is interesting to note that he is actively seeking the client's view of how processes could be improved. This gives rise to the speculation that, at some level, he regards his role as one of structuring information, and the clients as owning processes. It is also noteworthy that the client's suggestions for improvement would have to 'fit into' the improvement of the system.

Once the videotaped interaction and review were completed, the analyst was again interviewed. He was asked about his goals for the interaction, and whether he felt he had achieved those goals. He said his goals were to:

get a good overview of what the database is all about, to start to generate a bit of rapport with the person, get us talking about the database, the system, and what they use, and just get the ball rolling I guess

So, as well as simply discussing the system, the analyst had in mind some relationship building with the client. One theme that emerged across a number of sources in many cases was Professional Relationships – at one level, this can be seen as a direct consequence of the question 'how would you describe your professional role in interactions such as this?', that was asked of both analyst and client in their second individual interview. However, in individual interviews and during the review, many analysts and clients raised this issue independently.

When the analyst was asked in the second interview how he saw his professional role, he replied thus:

..a bit like a facilitator, to help the client tell you what you need to know. Its pretty hard because ..you both have different ideas about what's going on and different areas of knowledge, and you've got to ask them questions so they give you the right answers. Sounds a bit contrived.. And.. a helping role, really what I'm doing is trying to make the systems better for them, I see that as helping them to do a better job I guess

The analyst's concern that he had understood the client, characterised by the theme Analyst's Understanding of Processes, and echoed in other cases, was expressed thus:

I wasn't too concerned about how far we really got through it, as long as we started to get a good idea of what was going on with the system, what they wanted, have I really got what they wanted?

He then went on to say:

I didn't quite get to discuss what they really wanted.. I never got in to tackle those particular things properly, it was more of an overview.

In a reflective vein, he reviewed his strategy for the interview:

Because for me I had to come to grips with and understand what the current system and database are used for, so, maybe I've done it the right way.. so maybe for the next meeting we'll get into those things, now we both have an understanding of the system, we tend to be talking the same language a bit more.

Several things are in evidence here: Firstly, he confirms that, for him, understanding the database and the system were priorities – in particular here he was probably alluding to the *role* that the database played in the system as a way of scoping the problem. So, from his perspective as an analyst, it seems that getting a handle on the problem, especially with regard to information used and scope [identified themes Scope of System and Information Input to System], was a professional priority that needed to occur before he attended to the client's needs – he had first to place the problem within his own technical constructs in order to understand it. Secondly, the theme of Mutual Understanding, which came out in the review, is also echoed here, when he says they are now talking the same language. This can also be seen as a consequence of the process of the interaction, where both participants have constructed a common frame of reference to work with.

4.3.3 Analyst Background Questionnaire

Participants were asked to fill in a short background questionnaire, asking them for details of age bracket, education, current job title and associated activities, and previous posts and associated activities (details of the questionnaire are contained in Appendix One). The aim of this questionnaire was to attempt to ascertain contextual information that each individual brings with them to the interaction, especially information that might influence how they approached the interaction, such as education and training, and organisational role.

The questionnaire filled in by the analyst in Case 1 gives some information which helps understand how he might approach the task of analyst–client interaction. His previous two posts were in the area of user support, in a Help Centre. He writes down 'client focus' as a task associated with one of those posts. So, this may well be why he sees his professional role as a 'helping' one. From the indication of the tasks associated with his current post, 'programming, analysis, maintenance and support of small systems', it can also be deduced that this is his first post that has a sizeable formal analysis component. This may be why he has a concern with making sure he understands the client's processes [identified theme Analyst's Understanding of Processes], articulated by him in the interview as a concern, and also evident in the interaction and review.

Finally, the analyst's Computer Science/Maths undergraduate degree, completed at the University of Tasmania gives further insight into how he might cognitively

approach systems analysis. During the review of the videotaped interaction, he talks about 'conditions' existing in processes, and during the interaction itself he seems to be actively seeking exceptions to various actions that take place within processes. Conceptualising in this manner would seem to be consistent with a strong programming background.

4.3.4 Client Interviews

When asked in the first interview what her thoughts are about the upcoming interaction, the client responds by saying:

We currently have a database for monitoring statistics for the Student Assistance Scheme, we find it inadequate. We need an interim database before a rather broader one, SACS, which is a total departmental database, which would be used by all schools, providing its approved by the Minister.. so this is an interim measure to monitor Student Assistance numbers for every school in Tasmania. Last year we established our own database in Access, and we find inadequacies in that, so that's why I am basically talking to X, to come up with something a bit better for our needs.

From this, it can be inferred that the notion of an interim solution has already been conceptualised and agreed in the previous meeting between analyst and client, as evidenced by her reference to 'an interim database' [identified theme Issues to be Discussed].

She then goes on to give some background about the scheme, describing it as a 'hassle' as it deals with some 27,000 applicants, and she describes the processes her section engage in:

its a big process, because of the numbers, and the provision and verification of income which the clients need to provide, quite often they don't do that, they have to provide a tax assessment notice, or proof of income, the majority of them are on pension or benefit, and its difficult sometimes to communicate what we actually need from them to verify the income..

When asked whether the database plays a role in the process, as well as collecting statistics, she replies:

Yes, its collecting statistics by school, hopefully in future we'll be able to access complete student information, and say 'yes, this person has applied for student assistance', and the history of the student and the movement between schools. But this database is purely for a limited amount of time, this SACS database will hopefully in future monitor that information, but this is purely to provide statistics in order to pay schools the appropriate funding.

So, the client is clearly very engaged with the processes of the system, and the role that the database plays within those processes to provide statistics. This is consistent with her processual focus both in the interaction itself and the review, and represents the first major instance of the theme Processes Associated with the System.

When asked about the quality of information provided at present, her response is as follows:

The quality of the information and also how, how we monitor it. For each application we need to know the number of approvals by school, the sector.. what type of school, and the number of applicants who have applied and not been approved for our scheme, they have an opportunity to have it reviewed which may ultimately result in an approval. So, a system for letting a client know the reason they haven't been approved, reviews of those non approvals, and the way they let schools know. They currently do that by using this database, by merging information with Word.

Again, the client is processual in focus. She then goes on to express succinctly what is needed now [identified theme Future Action], and by implication from the upcoming interaction:

But, after a year of using the system, we find that enhancements are necessary, so that we can basically look at a screen and say ' yes, that is what has happened with that student', rather go to the manual files, which are monstrous as you can imagine! (laughs)

It is also interesting to note here that the client engages in *dialoguing*, as identified in the grounded theory analysis of the main interaction.

In the second interview, the client is first asked what her goals for the interaction were. She says:

To finally come up with a system which better monitors the statistics, and being able to access information on a computer screen (laughs), rather than accessing cumbersome paper files.

So, her aims for the system, and what she requires, are quite clear, and from her remark about accessing information on a computer screen, the analyst was certainly correct to divine the problem as being one of scope [identified theme Scope of the System].

She goes on to reflect:

I didn't think we'd have enough time to get to the bottom of it all, and I was conscious of that all the way through. We were going into quite a lot of detail which I felt he needed, a lot of background things without actually getting to the point where we were looking at enhancements or modifications, I thought that would happen anyway, any program needs time, and I'd rather spend time on it than rush it and not get the end result, because I've found that from experiences with other databases.

The remark about the analyst needing a lot of background is consistent with her view expressed in the review that it was important that the analyst understood the processes, [identified themes Analyst's Understanding of Processes and Processes Associated With the System]. This is also consistent with her processual focus in general which has been exhibited throughout. She is perhaps someone who has a process approach to tasks in general, given that she talks about the need not to rush the task. Some context [identified theme Organisational Context] also emerges here about her previous experiences with other systems, which seems to be informing her current approach of attention to detail and getting all the background across.

She goes on to expand on her previous experiences with the IT Section in her organisation and her relationship with the analyst [identified themes Professional Relationships and Organisational Context].

Working with X, this is a really positive thing, the last year is something that should have happened a long time ago, because we were actually landed with it.. the database was devised here, programmed here (the IT Section), but there was never any documentation, and there have been lots of improvements or modifications in two years, but we didn't actually ever talk (said with some emphasis) to the analyst or the programmer, until, just prior to X working on the project with us, and that's been ideal because he actually learns what the client needs, and understands the system..

Obviously the client places great value on having a working channel of communication with Y, and contrasts this against what seems to be a history of very little communication about this particular database with the IT Section.

She then goes on to describe what she perceives as a communication gulf between clients and programmers:

its always something that's been needed I think, its as though its perceived that the programmer and client with probably a lot of technical jargon and things that to the user don't make sense, and there is a perception in the area I work in that they are almost not human! (laughs), because they don't really understand what we want, and they talk in such a manner that they don't understand what we're getting at!

She also echoes the analyst in expressing the need to 'talk in the same language' [identified themes Mutual Understanding, Professional Relationships and Organisational Context].

With Y, and some others, he actually talks our language, and that's really important, not to express it in computer jargon.

When asked if she felt that she had achieved her goals, the client said that she had, given the time allotted. The client was then asked what she perceived as her professional role in interactions such as this, replied:

I find it really challenging, I really enjoy it, because its developmental, because its a learning process for me, understanding the technological side, and trying to see their viewpoint (laughs), what they are trying to achieve.

It is interesting to see here the expression of an idea of IT people somehow being very different, almost alien beings, in her repeated use of they or their. She could be talking as an anthropologist studying a completely different culture [identified theme Professional Relationships].

She goes on to give a view as to how the clients and the IT Section *should* interact, from a professional perspective.

My view is that there should be a lot more personal interaction.. a lot of it (previous programs) was just done and presented. You actually feel far more part of the project..(trails off).

When asked to rate how well the interaction had fared, the client rated it as a 5 (very well).

Overall, the client's concern with processes [identified theme Processes Associated with System] and communication [identified theme Mutual Understanding] come out strongly in the second interview. She was also much less inhibited, and frank, in her views when discussing them with the researcher as opposed to her role in the interaction where the analyst tended to have control of the topic.

She also provides some comment on the theme of Organisational Context as well as reflecting in detail on the theme of Professional Relationships. It is interesting to note how, although Organisational Context was not identified as a theme in the interaction itself (there were very few references in the interaction itself), it emerges strongly in the surrounding data sources as an implicit backdrop that influenced how the process of requirements gathering proceeded.

4.3.5 Client Background Questionnaire

The client background questionnaire revealed little in the way of training or educational discipline, but confirmed a great deal of administrative experience. She had been working in the Student Assistance area for at least four years. Her current role also included the development of policy in the area, and advice to clients.

4.3.6 Videotaped Review

Although the review has already been partially discussed as the Epilogue in section 3.2.1, it is also helpful to view it from a thematic perspective. In the review, the themes of Processes Associated with the System and the Analyst's Understanding of Processes, and Issues to be Discussed again emerged.

Organisational Context surfaced strongly here, as in many of the subsequent reviews of other cases. One reason for this may be that, during the review, participants had the opportunity to explain *why* certain decisions were taken, and also the focus on the process of the interaction allowed implicit issues to emerge which were generally organisational in nature. A theme which emerged in the interviews was also reiterated

here – Professional Relationships, discussed by way of Organisational Context. Some themes specific to the review were also identified – Note Taking, and Use of Props.

When reviewing the 5 minute period where a prop was used – a mock ‘batch summary sheet’ and there was a great deal of discussion about the processes for approvals and non approvals (Act 3 in section 3.2.1, and topics 37–41 in section 4.2.1), the following comments were made.

The analyst said of the client’s explanation of processes:

I think you did a really good job at that because we were getting into the real nitty gritty stuff.. Like ‘given these conditions what actually happens?’ you were still able to even though you made a mistake to start with. She was still able to tell me exactly what does happen, and it was really good, without actually having to run through the data base to see what happens (addressing the researcher and client simultaneously, in a complimentary tone).

The use of the phrase ‘given these conditions’ would seem to reveal how the analyst conceptualises these processes, presumably from a programming point of view where, given a set of conditions, a processing decision is taken [identified theme Analyst’s Understanding of Processes]. It is interesting to note that the analyst is very complimentary about the client. In a number of the other cases, the participants did use this review time to build or affirm their relationship [identified themes of Mutual Understanding and Professional Relationships]. His remark about ‘without actually having to run through the database to see what happens’ related to his declared intent at the end of the previous interaction to do precisely that. He may be conceding a point here that it is useful to discuss processes in depth. The client had remarked privately to the researcher that she felt he needed some detailed background (section 4.3.4).

The analyst then describes how, from his point of view, once they had mocked up the batch summary sheet, (use of a *prop*), things fell into place:

..halfway through that last five minutes.. I could sort of see.. how important that summary sheet was, how that all fitted together, how it was used in conjunction with the database.

The analyst remarked how he felt that his note taking had been inadequate [identified theme Note Taking]. This excerpt from the review followed the comments made in the Epilogue in section 3.2.1.

As I look down here (looks at notes) and I actually just wrote those bits in a while ago (said in an ironic tone, he has filled the notes in during the review). I had ‘not approved’ and I never actually wrote what was going on. So I think that was a bit to do with concentration, a bit of fatigue there, that I didn’t follow through and actually document what we were, note it down (looks at client).

So here he is indicating a difficulty with absorbing information. He goes on to talk about the importance of documentation:

Because I think the documenting of what you are actually talking about that is really important.. if we were to meet again in a few days time, I would have lost all that information, there was no way I was going to remember exactly what was happening at each stage. I’d have a pretty good idea of a few points, but.. we would have had to go through it all again.

He then goes on to describe what can be said to be the note takers dilemma:

I think what happens is that you try and keep it going’ (waves hands in a flowing motion). And it would probably be worthwhile to just to take a few minutes out and write what’s been happening (looks at client).

The client makes a different suggestion:

Or maybe, another day.. to go through it, so you’ve got a complete grasp of it, and then you could say, come back. and say ‘well, this is how I perceive it’..

The client is actually suggesting what is suggested in most systems analysis textbooks – producing a summary of the interview and checking it with the client. It is also interesting to note that she thinks that the analyst should have a ‘complete grasp’ of the information (and processes) from the interview.

The analyst goes on to reiterate the dilemma of maintaining the flow of conversation versus recording the information:

..you sort of think you want to get it all done, and if you stop then, or just slow down, you sort of get stuck and you won't get going again, but its really important to take notes. Because Note Taking is very individual, as you're writing you've got your head down, and the other person is sort of waiting, so if you could do it together, try and write it down..

When talking about topics 44–50, where they discussed review processes and the action they might take in the future, the analyst expressed *again*,* as he had in the individual interviews, his concern that he captured what the client needed [identified themes Analyst's Understanding of Processes and Mutual Understanding]:

One thing I just wrote down.. what do they really want?', and I was sort of going along with that, what do they really need and what do they currently do, or what do they really need to do.. I never really got into that sort of area, it probably should have come up, like exactly what letters do they have to send and actually write down these situations.. and if there are any other needs you have for it (looks at client) just so that you and I have a firm understanding of what is required.

He then effectively admits to having focused on information rather than processes:

Like after that meeting I had a good idea of what's going on with the database, what it does and what information its storing, and ..where it goes. But.. for the cases where they actually send letters.. I haven't got it very well documented here.

Both continue to discuss the segment, which is the last one to be reviewed.

The client comments on the summary that the analyst gave on the tape they are viewing, and his comments about the letters as a major problem:

That was a really good summary, also exactly what you've just said, what we really need. ..what you've mentioned, which is why you've got all that sort of background..

There are several interesting things about this remark – firstly it reaffirms mutual understanding [identified theme Mutual Understanding] and secondly it seems that she is using the opportunity proffered by the review to continue to negotiate about what is required [identified theme Future Action]. She also reiterates her view, expressed in the interview and again later in the review, that the background is necessary.

The analyst is of the view that the interaction could have proceeded more efficiently, perhaps as a consequence of his remarks about the difficulty of absorbing information [identified theme Issues to be Discussed].

I was just thinking that, maybe for this meeting we went into too much detail, we could have broadly done it like, for the not approved and the approveds, we could have broadly sketched out what happens. And then so the next meeting gone back to the database and actually had a look.

He seems to be proposing a top down approach here, perhaps based on his software engineering training. What is interesting also is that he seems to be advocating a focus on processes – what happens for the approveds and non approveds, followed by a focus on information in the form of the database.

The client still thinks the stepping through of processes in detail, and the provision of background information was entirely appropriate. She says:

Yes, maybe we were a bit long winded, finding out more about the scheme. I think you have to have that background though, actually.

The client and the analyst go on to reflect on how relationships between analysts and clients are normally conducted in their organisation [identified themes Professional Relationships and Organisational Context]. The client says:

Just really within the last three years, just from experience, often analysts said 'we were told to get this project up and running', and they didn't even communicate, you know, you gave specifications, and things like that (addressing analyst), but they didn't actually communicate until you're given the program, you know 'here it is', and that was it, I know that happened with the database that we have.

The analyst offers a possible organisational reason for this story:

That's often a problem with resources in.. IT Branches as well...like it takes a lot of time to go through this sort of thing, but its worth it, that's the only way you're going to get a successful project really, but they just try and fast track everything and its..

He elaborates:

And things get cut back. A couple of the systems I've been doing a bit of maintenance on, there is never any documentation written.

Interestingly, he then goes on to explain how he has approached the problem of lack of documentation in another system he is working on. This can be variously interpreted as an attempt to reassure the client that he takes a different approach, and or a statement of professional standards:

..people using this database last year, with no user documentation, with a five minute run through when they set it up and said 'this is it, this is what it does and you can use it'. And that's the only thing they've received.. as part of the modifications I did for them last year, I've wrote up a quick, it was very simply worded but it was a user document which described all the functionality and we had a quick, it was very simply worded but it was a user document which described all the functionality, and we had a quick training thing, it was for a Recruitment Database. (looks at client)

Again, his training shows when he talks about 'functionality'.

The client murmurs approvingly:

Ohh right.

The analyst talks a bit more about the training session, and in doing so makes a point about how better communication often reduces user demands for enhancements:

We had a training session yesterday, and lots of their questions, that they were making for changes, that it actually did already, but they just didn't know, and it, it wasn't extremely obvious how to make it do those things I suppose.

The client responds with:

It sounds a bit like ours as well..

The review terminated at this point. Overall, it can be seen that the review did enable the bringing forward of valuable, implicit information about the history of the project and the analyst's approach to user communication. The themes that emerged in the review – Note Taking, Professional Relationships, and Issues To Be Discussed, reflected mainly professional concerns of the analyst, as did the theme of Analyst's Understanding of Processes which started to develop at the beginning of the case study. The analyst can therefore be seen to be engaging in 'reflection-in-action' as advocated by Schön (1983).

The client reiterated her view that it was essential for the analyst to understand background processes, and was responsible for the emergent theme of Organisational Context, which allowed a discussion of the theme of Professional Relationships.

4.3.7 Summary

Using a themed approach to the analysis of the case study enables an overview where we can start to see the root of certain themes and the subsequent development. Figure 4-8 illustrates how these themes and sub themes developed over time in various data sources, by positioning the individual data sources in sequence.

Viewing the themes in this way, it can be seen that themes that emerged in the interaction are in the main to do with the task or global topic associated with that interaction.

That said, a number of themes that are established prior to the interaction then are reflected in the interaction – for instance the analyst's concern with understanding [identified theme Analyst's Understanding of Processes]. Similarly, the client preference for a processual view [identified theme Processes Associated With System] and concerns about action to be taken [identified theme Future Action] and also the analyst's information focus [identified theme Information Input to System] are well illustrated in data sources prior to the interaction.

The theme of Organisational Context is was well represented in every data source except the interaction, and indeed this was the only case study where Organisation Context was not represented as a theme in the interaction. This may be due to the content of the pre-meeting of the analyst and client referred to in their paragraphs. It seems perhaps the major organisational constraint on the solution, the forthcoming SACS system, had already bounded the problem before the interaction studied here took place. This indicates that some 'problem setting' (Schön 1983) by the analyst has taken place, where what will be treated as the 'things' of the situation is selected and the boundaries of attention are set (Schön 1983).

Figure 4-8 Themes in Sequence Across Data Sources

Issues to Be Discussed	Analyst Para	Analyst Interview 1	Interaction	Review	
	Client Para	Client Interview 1			
Scope of System	Analyst Para	Analyst Interview 1	Interaction		Analyst Interview 2
					Client Interview 2
Personal Disclosures			Interaction		
Information Input to System		Analyst Interview 1	Interaction		Analyst Interview 2
Processes Associated with System	Client Para	Client Interview 1	Interaction		Client Interview 2
Links in Information System			Interaction		
Future Action	Client Para	Client Interview 1	Interaction	Review	
Problem Identification			Interaction		
Information Output from System			Interaction		
Analyst's Understanding of Processes	Analyst Para		Interaction	Review	Client Interview 2
Future Solutions			Interaction		
Organisational Context	Analyst Para	Client Interview 1		Review	Client Interview 2
Professional Relationships				Review	Analyst Interview 2
					Client Interview 2
Mutual Understanding				Review	Analyst Interview 2
					Client Interview 2
Note Taking				Review	
Use of Props				Review	

4.4 Extending the Themes to Further Cases

The succeeding chapters show how these themes were applied to the remaining five cases to extend the theory. As the situations in which the themes were operating varied from case to case, the themes were further built out and added detail to the substantive theory. As has been noted, the theme of Organisational Context ran strongly through the other cases, including the interactions. The theme of Keys in Information System – was subsequently widened and redefined as Links in Information, to cover all circumstances that were identified where the analyst was seeking connections in the information discussed.

Table 4-10 summarises the occurrences of the themes across all cases.

Table 4-10 Occurrence of Themes across Case Studies

THEME	CASE 1	CASE 2	CASE 3	CASE 4	CASE 5	CASE 6
Issues to be Discussed	✓	✓	✓	✓	✓	✓
Scope of System	✓	✓	✓	✓	✓	✓
Personal Disclosures	✓		✓			✓
Information Input to System	✓		✓	✓	✓	✓
Processes Associated with System	✓	✓	✓	✓	✓	✓
Links in Information	✓		✓	✓	✓	✓
Future Action	✓		✓	✓	✓	✓
Problem Identification	✓	✓	✓	✓	✓	✓
Information Output from System	✓		✓			✓
Analyst's Understanding of Processes	✓		✓		✓	✓
Future Solutions	✓		✓			
Organisational Context	✓	✓	✓	✓	✓	✓
Professional Relationships	✓	✓	✓	✓	✓	✓
Mutual Understanding	✓	✓	✓	✓	✓	✓
Note Taking	✓		✓			
Use of Props	✓			✓		✓

It will be seen that both cases 2 and 4 exhibited fewer themes. The reasons for this are discussed in the following chapter and are related to how the topic was discussed and situational influences in those cases. Chapter 6 explores in detail how situational influences impacted and varied the themes identified.

4.5 Summary

This chapter had the twin aims of illustrating how the chain of analysis and presenting detailed findings from Case 1. The process of applying and adapting grounded theory techniques to Case 1 has been described, in particular how the initial core categories were reformulated. It then went on to explain how the chain of analysis was extended by using the results the grounded theory analysis as a foundation for subsequent development of themes using an intermediate unit of analysis, topics identified in the interactions. All the data sources in Case 1 were examined in detail for the themes identified from the transcript, and those themes were developed by virtue of their consideration with reference to these data sources, in some instances contributing new themes.

The following chapter introduces Cases 2 to 6, with a particular focus on how topic and theme analyses extended the emergent theory. This is followed by further discussion of each theme as it played out in various situations or contexts in Chapter 6.

5. EXTENDING THE THEORY – CASES 2 TO 6

'On this view, the language which different people seem to share, consists, as it were, of flesh and bones. The bones present its public aspect; they serve alike for all. But each of us puts flesh on them in accordance with the character of his experiences.'

The Problem of Knowledge, A.J Ayer

This chapter proceeds with the analytical journey started in Chapter 4 by describing how the subsequent analyses were applied to Cases 2 to 6. It effectively represents a colouring in and extending of the substantive theory as topic, coded, and themed analyses are presented for each case. A vignette for each case introduces the reader to the context of the case, and this is followed by details of topic, codes and themed analyses for the interaction in the case. This is followed by a detailed consideration of the surrounding data sources from a thematic perspective. Finally, the themes are considered across cases, and the situations that varied the themes in each case are summarised. This provides a foundation for Chapter 6, which reflects on the themes identified in Chapters 4 and 5 and develops their analytic standpoint.

This chapter can then be seen as an integral building block in the analysis, where the themes are considered in close conjunction to the data in order to develop a well grounded theory and an analysis that is 'saturated' (Eisenhardt 1989, Strauss 1987). The chapter can also be seen as illustrative of the hermenutic nature of the analysis, where varying constructions are compared and contrasted through a dialectical interchange (Guba & Lincoln 1994). The aim then is to provide the starting point of an eventual consensus construction presented in later chapters that is more informed and sophisticated than the proceeding constructions (Guba & Lincoln 1994).

5.1 Case 2 – City Council A

Vignette

At City Council A, an Information Technology Projects Officer, in his mid thirties, meets with the Manager of Building Surveying, who is in his mid fifties and superior in rank in the organisation. They meet to discuss the requirements of Building Services with regard to a new system that is being designed to track building development applications. There seems to be strong advocacy from the client for his section, and he seems to exploit the age/power differential to some advantage. The analyst to some extent tries to set the agenda by requesting that the client goes through a document that represents a 'first cut' at requirements [Issues to be Discussed]. The client responds to this by putting the issues in the document in the context of current processes and possible effects on those processes. [Processes Associated with System and Scope of the System]. Prior to the interaction, it is evident from interviews that the analyst and client have slightly different agendas [Issues to be Discussed]. An overriding issue for the client is the need to maintain his ownership of the system. As one could reasonably expect with the discussion of a new system, a fair amount of time is devoted to establishing boundaries of what will be computerised [Scope of System].

5.1.1 Topic Analysis

Table 5-1 categorises the types of topic changes that occurred in the interaction in Case 2, using Planalp and Tracy's (1980) typology of topic shifts which are identified on the basis of context and their relationship to the previous topic.

Table 5-1 Topic Shifts and Initiators of Topic Shifts in Case 2

TOPIC SHIFT	<i>Frequency</i>		
	NEW TOPIC INTRODUCED BY ANALYST	NEW TOPIC INTRODUCED BY CLIENT	TOTAL
Immediate Implicit	5	10	12
Immediate Explicit	9	6	15
Earlier Implicit	3	1	7
Earlier Explicit	5	1	5
Environmental Implicit	0	0	0
Environmental Explicit	1	0	1
Unspecified Implicit	0	0	0
Unspecified Explicit	0	0	0
Total	23	18	41

It is interesting to note that it is the analyst who makes the most explicit topic changes overall, this probably comes from the analyst's role as questioner in the interaction. However, the client also makes a number of Immediate Explicit topic changes, and this occurs throughout the interaction, indicating that the client feels free to raise issues of concern. The table shows that the division of initiation of topics is approximately equal. The client makes the major share of Immediate Implicit topic changes, and these are mostly made in the shared context of discussion on client processes.

The topic analysis in Table 5-2 below, giving the sequence of topic changes, reveals a very different pattern from Case 1 of conversation between analyst and client. This is probably due firstly to an age and power differential, as in this case the client is older and outranks the analyst, and secondly we have two males discussing here – there seems to be a tendency for one or the other to 'hold the floor'. It is only in the latter half of the interaction, where there is considerable detailed discussion on the client's processes, that the topic sharing becomes more equal.

There are fewer topics than in Case 1, and this could be due to a number of reasons. Given the number of Immediate Implicit topic changes, where the topic is immediately related to the one before it but not explicitly referenced, one can assume that there is much shared context between analyst and client. This is also known as a high degree of coherence, the extent to which the topics are related to each other. It can probably be assumed that this is due to the document that they are using to structure the discussion, and also that there is pre-existing shared context between the two about the processes.

This assumption of shared context is based on the apparent stage of the project, as the analyst has already drawn up a first cut at requirements, and that the basis for the information in the document would have come from the client.

Table 5-2 Topics in Case 2 Listed By Title And Time of Introduction

No	TOPIC	INITIATOR	TIME INTRODUCED
1	Issues to be discussed (draft requirements document containing Development Application (DA) process)	Analyst	.00
2	Mistake in document	Client	.019
3	First stage of DA process	Analyst	.52
4, 6	Reviewing first stage of DA process	Client	1.24, 2.48
5	Change from Worksheet to Admin Form for DA Recording	Analyst	2.07
7	Client preference for paper checks	Client	3.20
8	Justification for paper checks	Client	4.05
9	Changes to work allocation of DA s to staff	Client	5.16
10	Allocation of commercial DA s	Client	5.57
11	Extra information required for allocation	Client	6.19
12	Using classifications for allocation	Client	8.31
13	Automating allocation	Client	9.04
14	Implications of allocation for requirements	Analyst	9.49
15	Process for allocation and reallocation	Analyst	11.05
16	Clarifying reallocation and backlog	Analyst	12.45
17	How backlog occurs in process	Analyst	13.45
18	Second stage of DA process	Analyst	14.50
19	Timescale for allocation	Analyst	15.13
20	Measuring backlog of allocations	Client	16.02
21	How measuring backlog might work	Analyst	17.30
22	Improving referrals process	Client	20.22
23	Distinguishing backlog from throughput	Client	21.28
24	Thirty day timescale for assessment	Analyst	24.08
25	Detailed explanation of assessment	Client	25.30
26	Establishing start date of assessment	Analyst	26.30
27	Internal timescales for processes	Client	27.32
28	Recording dates of application receipt	Analyst	28.00
29	Consulting researcher if they have time to proceed	Analyst	29.13
30	Broad processes undertaken by client	Analyst	29.43
31	Basis of DA allocation by client	Analyst	30.05
32	Other possible basis for allocations	Analyst	31.21
33	Proposed new basis for allocations	Analyst	32.33
34	Clarification of referral processes and assessment start	Analyst	33.19
35	Modified assessment processes	Client	34.28
36	Planning and plumbing referrals as exceptions	Analyst	34.55
37	Other referrals modifying assessment completion	Client	35.20
38	Differences between internal and external referrals	Analyst	36.60
39	Plumbing referrals	Client	36.29
40	Internal referrals	Analyst	37.15
41	Referrals from plumbing	Client	37.54

5.1.2 Relating the Codes to Topics

It can be seen from the codes in Table 5-3 that the majority of the interaction is taken up with *process identification*. This seems to be due to several factors: Firstly, the client had at least equal control of the topic. Secondly, the use of a document to structure discussion had the effect of enabling them to go through each function or process step by step. Thirdly, the client was aware that the processes proposed would have a great deal of impact on his manual processes, and so he wished to assess this effect in detail.

Table 5-3 Codes As They Appeared in Topics in Case 2

No	TOPIC	PREDOMINANT CODES
1	Issues to be discussed (draft requirements document containing Development Application (DA) process)	<i>agenda setting, conversation topic</i>
2	Mistake in document	<i>agenda setting</i>
3	First stage of DA process	<i>conversation topic, process identification</i>
4, 6	Reviewing first stage of DA process	<i>process identification, forward reframe, imagining</i>
5	Change from Worksheet to Admin Form for DA Recording	<i>scoping, process identification</i>
7	Client preference for paper checks	<i>scoping, information identification, process identification, process rule</i>
8	Justification for paper checks	<i>scoping, process identification, process rule, dialoguing, imagining</i>
9	Changes to work allocation of DA s to staff	<i>process identification</i>
10	Allocation of commercial DA s	<i>process identification, scoping, exemplification, reframe</i>
11	Extra information required for allocation	<i>information identification, scoping, problem identification, imagining</i>
12	Using classifications for allocation	<i>information identification, imagining, dialogue, mirroring, scoping</i>
13	Automating allocation	<i>scoping, process identification</i>
14	Implications of allocation for requirements	<i>process identification, process rule, exemplification, dialoguing, imagining</i>
15	Process for allocation and reallocation	<i>process condition, imagining, dialogue, process identification</i>
16	Clarifying reallocation and backlog	<i>forward reframe, exemplification, dialogue, imagining, prop, process identification</i>
17	How backlog occurs in process	<i>process rule, mirroring, power ploy</i>
18	Second stage of DA process	<i>conversation topic, agenda setting, process identification</i>
19	Timescale for allocation	<i>imagining, process rule, process requirement, metaphor</i>
20	Measuring backlog of allocations	<i>problem identification, imagining, process requirement</i>
21	How measuring backlog might work	<i>scoping, process identification, imagining, dialogue</i>
22	Improving referrals process	<i>scoping, process identification, process requirement, process rule</i>
23	Distinguishing backlog from throughput	<i>process rule, information identification, exemplification</i>
24	Thirty day timescale for assessment	<i>process rule, information identification, exemplification</i>
25	Detailed explanation of assessment	<i>exemplification, process rule, process identification</i>
26	Establishing start date of assessment	<i>process rule, information identification, process identification, metaphor</i>
27	Internal timescales for processes	<i>forward reframe, process rule</i>
28	Recording dates of application receipt	<i>process identification, information identification</i>
29	Consulting researcher if they have time to proceed	<i>conversation topic, agenda setting</i>
30	Broad processes undertaken by client	<i>conversation topic, scoping, metaphor, process identification</i>
31	Basis of DA allocation by client	<i>information identification, exemplification, process identification</i>
32	Other possible basis for allocations	<i>process rule, information identification, organisational context</i>
33	Proposed new basis for allocations	<i>conversation topic, scoping, process identification</i>
34	Clarification of referral processes and assessment start	<i>process identification, information identification, process rule, exemplification, imagining</i>
35	Modified assessment processes	<i>exemplification, process rule</i>
36	Planning and plumbing referrals as exceptions	<i>forward reframe, process exception, information identification</i>
37	Other referrals modifying assessment completion	<i>process exception, process rule, process identification, exemplification</i>
38	Differences between internal and external referrals	<i>process identification, process rule, information identification</i>
39	Plumbing referrals	<i>exemplification, process identification, process rule, process exception, imagining, dialogue</i>
40	Internal referrals	<i>process rule, information identification</i>
41	Referrals from plumbing	<i>exemplification, process exception, process identification, dialogue</i>

There is also a great deal of *dialoguing*, *imagining* and *exemplification*, strategies and tactics drawn on by both analyst and client to support their in depth exploration of processes. The analyst is responsible for most instances of *information identification*, as he tries to establish the impact of processes identified on the new system. A new code was also identified in Case 2 – that of *mirroring*. This is not dissimilar to *reflection*, but in Case 2 the analyst very frequently not only reflected language but strategies and tactics used by the client very closely. As such, *mirroring* can be defined as a very obvious effort to enter the client's domain by all means at hand.

5.1.3 Mapping Topics To Themes

The table below shows a mapping of the interaction topics to themes. The table shows a marked concentration in the **interaction** on only a few themes: Processes Associated With System, Scope of System and Information Input to System. This is probably due to the use of the requirements document that structured the interaction which outlined the existing and proposed processes. It is also due to the coherence of topics noted in the earlier topic analysis, where topics are tightly related.

Table 5-4 Mapping of Topics To Themes in Case 2

THEME	TOPIC
1. Issues to be Discussed	T1, T2, T3, T18, T29, T33
2. Scope of System - including extension of processes, and what to leave manual/computerised	T5, T6, T7, T8, T10, T13, T21, T28, T30, T32
3. Personal Disclosures	
4. Information Input to System - data currently held - data currently input - data that needs to be held	T11, T12, T23, T31, T40
5. Processes Associated with System	T4, T9, T14, T15, T16, T17, T19, T22, T24, T25, T26, T27, T34, T35, T36, T37, T38, T39, T41
6. Links in Information	
7. Future Action	
8. Problem Identification - general information deficit	T20
9. Information Output from System	
10. Analyst's Understanding of Processes	
11. Future Solutions	
12. Organisational Context - affecting system design and project conduct - general	

In allocating topics to themes, attention was paid not only to the topic name, but also the occurrence of codes within those topics (Table 5-3). The most obvious example of this is the allocation of topics to the themes Processes Associated With The System and Information Input to system. What was noted in the interaction was that that the analyst would follow up *process identification* with *information identification* – once he had established the process, he then enquired about the information required to establish that process. Instances of this can be seen in topics 22, 23, 26, 28, 31, 32, 34, 38 and 40.

Only some of these topics were grouped in Information Input to the system, other topics were grouped into the themes Processes Associated With System. The interrelationship can be noted in Table 5-4 by observing how topics flip from Information Input to System to Processes Associated With System, and vice versa. From the numbering of the topics, we can see that this 'flipping' between themes occurred later in the interaction. Topics 28 and 32 were held to be critical to the determination of scope, and so were subsequently moved into the theme of Scope of System.

A similar interrelationship can then be seen between themes of Processes Associated With System, and Scope of System can be seen by following the topic sequences between these themes in Table 5-4. This makes particular sense in this case as a concern of the client that emerged early on, and one that was reflected in client interviews, was the impact of the new system on existing processes. The topic allocation here bears out the client's early concern about the scope of the proposed system.

The reader will also note 'extra' information about themes and what they might constitute in Table 5-4. As themes were further considered in the light of successive cases, they were correspondingly extended to cover new phenomena in the cases.

5.1.4 Relating the Codes to Themes

Table 5-5 gives an indication of how the codes in the interaction mapped on to themes.

Table 5-5 Themes and Dominant Codes in Case 2

THEMES	DOMINANT CODES
1. Issues to be Discussed (T1, T2, T3, T18,T29,T33)	<i>Agenda setting*, conversation topic*, process identification*, scoping</i>
2. Scope of System (T5, T6, T7, T8, T10, T13, T21, T28, T30, T32)	<i>scoping*, process identification*, process rule*, information identification*, imagining*, dialoguing* forward reframe*, conversation topic, organisational context</i>
3. Personal Disclosures	
4. Information Input to System (T11, T12, T23, T31, T40)	<i>information identification*, process identification* process rule*, process condition, exemplification*, scoping*, problem identification*, imagining*</i>
5. Processes Associated with System (T4, T9, T14, T15, T16, T17, T19, T22, T24, T25, T26, T27, T34, T35, T36, T37, T38, T39, T41)	<i>process identification*, process rule*, process exception*, information identification*, forward reframe*, exemplification*, imagining*, dialogue*, mirroring, metaphor</i>
6. Links in Information	
7. Future Action	
8. Problem Identification	
9. Information Output from System	
10. Analyst's Understanding of Processes	
11. Future Solutions	
12. Organisational Context	

All codes marked with an asterisk occur more than once, and the most frequent code is put first. It is on this basis that the organisation of topics into themes occurred. For example, there is an instance of a *power ploy* in topic 17, but it does not dominate or shape the topic, there are more significant instances of other codes in that particular topic that can be seen to embody the topic. Again, close interrelationships can be observed between the themes of Processes Associated With System and Information Input to System, and between the themes of Processes Associated With the System and Scope of the System.

5.1.5 Considering Themes Across Data Sources in Case 2

This section considers how the themes occurred over all data sources in Case 2, with the aim of discovering how particular themes originated and evolved in relation to particular contexts across the case. The table below summarises the themes as they occurred in all data sources in Case 2.

Table 5-6 Occurrence of Themes Across Data Sources in Case 2

THEME	INTERAC- TION	PARAGRAPH - ANALYST	PARAGRAPH - CLIENT	INTERVIEW - ANALYST	INTERVIEW - CLIENT	REVIEW
Issues to be Discussed	✓	✓	✓	✓	✓	
Scope of System	✓	✓			✓	✓
Personal Disclosures	✓					
Information Input to System	✓			✓		✓
Processes Associated with System	✓		✓	✓		
Links in Information						
Future Action			✓			✓
Problem Identification				✓		
Information Output from System						
Analyst's Understanding of Processes		✓		✓		✓
Future Solutions						✓
Organisational Context		✓			✓	✓
Professional Relationships				✓	✓	
Mutual Understanding				✓	✓	✓

The following sections discuss the occurrences of themes in each data source in turn, with the aim of tracing through how themes originated and were amplified in the context of the case.

5.1.5.1 Paragraphs from analyst and client

The paragraphs submitted by the client and the analyst can be seen as the starting point of the case, and provide some important clues as to how the themes operated in this particular context.

The paragraph from the client (Figure 5-1) shows a focus on both Information Input to the System and Processes Associated With The System.

The focus on information is obvious from the client's paragraph, the emphasis on process less so. The indications of a concern with processes can be seen to be signalled by the use of the phrase 'work through', the reference to impact on screen design, and the intention to discuss how the information is accessed, especially the use of the phrase 'how we want to access it'. This last phrase seems to indicate a concern with user control over the design of the system, and indeed this was brought up in the client interviews in a fairly forcible manner.

The analyst's paragraph (Figure 5-2) provides some organisational context for the project, and gives insight into the stage of the project as well as the analyst's expectations for the interview.

Dear Cathy,

Following our discussion this morning I have put together some thoughts on my expectations of the meeting on Monday of next week.

It is my intention to provide Y with an outline of my needs in the building module of the tracking system, and to work through the kind of information we want on the system and how we want to access it. I will separate the information input which is entered by different users which may have an impact on ultimate screen design.

I intend discussing the options for accessing information, and try to determine some priorities. The ongoing development of the system will be influenced by these decisions.

Yours faithfully,

X

Figure 5-1 Client's Paragraph for Case 2

Brief outline of project

The project brief is to produce a Development Tracking Software System that is designed to track Development Applications (DAs) that have been lodged. Once a DA has been lodged by a member of the public, it is accessed and processed by one or more Business Units within City Council A until approval is granted. These Business Units include Plumbing Services, Building Services and Planning Services. The proposed software will produce separate modules catering to the specific requirements of each of these Business units.

It is an important requirement that staff can account for a DA's status and processing history at all times, and that the software should provide a clear indication of what DAs require attention.

The decision has been made to write the application software in Visual Basic 4.0 and use Microsoft Access for data storage.

Brief outline of current status

We have had several discussions between representatives from the Business Unit areas involved in DA tracking and Information Services to get a broad outline of the processes involved and the data that should be captured. I am currently writing up this broad outline, and the next step involves focusing on each of the modules in turn.

Expectations of client interview

I intend to discuss with X his specific requirements in terms of the proposed Building module software. I intend to go over some preliminary Requirements Definitions I have produced and to ask some questions of X on items that I will like him to clarify. I intend to discuss the processes that X goes through in assessing a Building Application, and to discuss the data he is interested in capturing. I would also like to discuss what conditions might affect how he might process an application. (For example, when he sends out a Request for Information, does all processing stop pending a reply, or can he still schedule inspections?)

Figure 5-2 Analyst's Paragraph for Case 2

In the analyst's paragraph, there seems to be some evidence of *agenda setting*, in the form of a document used to structure discussion [identified theme Issues to Be Discussed]. There is a focus on both processes and information in this document [identified themes Processes Associated with the System and Information Input to System]. The analyst's descriptions of 'several discussions' indicates that the project has advanced beyond the initial stages. This to some degree explains the coherence of topics observed in section 5.1.1 and the density of themes in section 5.1.3 – one would surmise that there has been time for the analyst and client to build up a shared frame of reference. The paragraphs themselves show a similarity in focus that is unlike Case 1.

When considering, then, what these paragraphs demonstrate about contextual influences on themes, it might be concluded that the stage of the project is highly influential on what is to be discussed and how it is discussed [identified theme Issues to Be Discussed] because of the degree of shared context that ~~will~~ have been built up about the system. Again, as in Case 1, but in this case overtly, a document has been used to structure discussion and it is interesting to speculate on the effect on what actually is discussed [identified theme Issues to Be Discussed].

The effect a stage of the project has on the themes of Information Input to the System and Processes Associated With the System could also be considered here. For instance, the great deal of time spent during the interaction considering topics associated with Processes Associated with the System and Information Input to the System could be due to the fact that they are progressing closer to implementation and actively need to 'walk through' the requirements.

5.1.5.2 Analyst and client interviews

The analyst's statement of his initial thoughts about the interview were essentially a restatement of the paragraph he had submitted, and confirmed his focus on the document he had written.

OK. What we've done.. we spent a little bit of time going through the Building Module, just as a first cut at it, and as a result of that discussion I wrote up these requirements. ..I really want to clarify X's procedure with him.. and also I've got some questions arising from what I wrote up, and I'd like to clarify that. Then following this interview I'll incorporate what we've discussed into this document, again, and these requirements will be a working document throughout the project. In short the goals are to get more of a feel for the building module.

When asked in the second interview what his goals were, the analyst gives an answer that illustrates his conceptualisation of the problem [identified themes Processes Associated With the System and Information Input to the System].

I guess it was to pin down, or not so much pin down, but get more of an understanding of the Building Module, and the processes X goes through, and identify really, the critical aspects of the data that I am trying to capture and how the data flows through the program. When we were talking.. we introduced.. new definitions were introduced, so we spent a lot of time clarifying those, and we didn't cover as much ground as we hoped, and that's just the nature of the beast when you do these things.

He pronounces himself well satisfied with the outcome, stating that they had done 'pretty well' even though they didn't get as far as he would have liked, due to the production of new terms.

When asked what he thinks his professional role is in interactions such as these, he says:

Its really to write down what I believe **their** requirements are.. I like to let the clients read what I've written, so its no secret, and I think there's advantages there, in that they can go back and correct them, and say 'yes, but we really need that'. So I like to do that, my goal is.. as I say, to write down what I think their requirements are, and having written that, use that as the basis for something.

Here he justifies his mode of approaching the task [identified theme Issues to Be Discussed] and reveals something of his view of analyst–client relationships [identified theme Professional Relationships]. He uses *dialoguing* to make his point about user participation. Perhaps the most interesting part of his remark is that ‘its no secret’. He seems to be justifying a degree of user participation, but at the same time seems to be reflecting a certain paradigm of analyst–client relationships. This particular issue is discussed further in later sections.

The client, too, has very definite ideas as to how relationships with analysts ought to be approached, and to some extent this is related to previous experience in the organisation [identified themes Organisational Context and Professional Relationships].

When asked what he had in mind for the upcoming interaction, the client explains his view of achieving of achieving the identified theme of Mutual Understanding:

I just hope we can work through the process in a logical way with a minimum of misunderstanding. The interesting thing is, here are two professionals, who probably don't in all honesty, understand each others role, and the aim of the process is to develop that, and to continue to develop a closer understanding, and to reduce the amount of misunderstanding.

He then goes on to say, that for him, it is going to be exciting to work on a project that he has participated fully in from the beginning [identified theme Organisational Context]. He expands on this by explaining his perspective on the project history.

I have had a lot more freedom to to express my own needs, rather than be compromised by what has been imposed, parts of which I might be talked into accepting.. I can now say these I are the things I want to achieve.. Y has to show me reasons **why** things can't be done. In comparison with the other system, I never had the opportunity to put those views through, the design occurred first without having the opportunity to explain things.

He remarks further that there had been a package proposed previously for the tracking system, but now there was a ‘clean slate’. The excerpt above also explains his assertive attitude to the client from the beginning [identified theme Professional Relationships] and how his attitude has been influenced by previous project history.

This attitude, one of maintaining ownership over the process was exemplified by the amount of control the client had over the topic in the interaction. It was also amplified by remarks made in the second interview, when the client was asked about his goals:

Really, to start to, to get down to some more detail, and marry the processes that I go through, marry that to Y's intended outcomes for the programs, to make sure that what he was doing didn't force us to do things we wouldn't normally do, and that the program served us, rather than us changing our ways to fit in with what the program is trying to do.

His emphasis on *I* is interesting in light of the analyst's emphasis on *their* in his second interview. This gives some insight into his view of client-analyst interaction [identified themes Professional Relationships and Scope of System]. When asked specifically about his role in such interactions, he says:

..my feelings are that the best way to achieve an outcome in a case like this, is to try and be selfish, to the extent that.. you want to use Y's abilities to make your own job easier and work better, and really, I don't care much about Y's aims in terms of what his package is going to be like from his point of view. If it doesn't work for me, there is no point in getting involved with it, so I think I've probably learned to be, more, what's the word, I suppose selfish comes to mind. I am more determined to not to compromise on things I think shouldn't be compromised just because the program or whatever doesn't do it..

So, he has been very clearly influenced by previous project history and interactions and has arrived at a position where he feels he has to strongly advocate for his section when discussing requirements [identified theme, Professional Relationships].

Interestingly, he states that he finds Y very easy to work with:

..I find Y a really easy going guy to work with, he's enthusiastic, and he listens.. I think he's really keen and motivated to try and build something that's going to be of benefit to both of us, we both feel the same I think.. that tends to be the working relationship.

When asked to rate the interaction, both analyst and client rated it at a 4 (meaning that they thought it went well).

5.1.5.3 Background questionnaires

The background questionnaires of the analyst and client showed a considerable age differential, with the analyst in his thirties and the client in his fifties. The client was manager of Building Surveying and had been so for six years, whereas the analyst had only been in post a year as IT Projects Officer after completing a Graduate Diploma in Computer Science. So it would be reasonable to expect the client to be far more strongly rooted in the organisation and its context.

From a conceptual point of view, the language used by the analyst in both the interaction and review showed a strong software engineering and programming emphasis. What was interesting about these questionnaires is that they did reveal similar discipline bases. The analyst had previously worked as a structural engineer on commercial and industrial buildings, and the client was an architect whose career spanned both residential and commercial experience. This may account for the some of topic coherence noted in the interaction, especially the number of immediate implicit changes. It may also account for what seems to be a strong joint conception of the project, also contributed to by the stage of the project.

5.1.5.4 Videotaped review

During the review, the theme of Scope of System identified itself strongly from the outset, and was elucidated by the client in this way:

..I was trying to come to grips with how the.. computer process interfaced with what we actually did. ..as soon as you start talking about computer processes, it really asks the question, as to what your procedures are and how they might change given a tracking system. ..I was starting to question in fact whether the way we did things ought to be modified, or whether Y's reflection of what he thought we were doing was in fact the way we wanted to go at all.

So here it can be seen that there is a continuation of the theme identified in the very first interview with the client, and how it is strongly allied with the need for system ownership, which in turn has been influenced by the project history.

The analyst's view of manual processes, perhaps understandably, is one of not really including it the scheme of things. When talking about the segment of the tape where they are discussing the effect of the proposed computer processes on manual processes, he says:

..I didn't even consider the fact its going to appear in their tray, and when they are going to start work on it. I just assumed that the system would allocate it to them cos that's how I was thinking.

The theme of Mutual Understanding surfaces strongly, and both use *dialoguing*.

The analyst said:

..I'm thinking ohh yes we'll need a form for that to come up, and this, also I guess we're looking at the criteria.. So, I guess, probably yes I think we're on the same wavelength.

Upon this remark, the analyst and client looked at each other and both nodded.

The client frequently uses 'we' when reviewing the topics, and seems to view understanding [identified theme Mutual Understanding], as very much an intuitive process – as evidenced by this remark:

..we were looking around for a way of attaching that to the system and we didn't really have.. we developed a feeling I think, and now we've got a feel, but we don't quite know what its going to be.

As in many of the reviews, work was still effectively being done as the analyst and client reflected on the topics. For instance, the analyst could be observed writing down extra information about classification as they reviewed Topic 11.

Later on in the review, the analyst acknowledges the issue of boundaries in this way [identified theme Scope of System].

I guess what I was thinking about...in this case we're using a computer program and we're using a manual procedure when you assess it, ..so someone's going to put something in their in tray and they are going to have to let the system know that they are working on it.. so there is a difficulty there of.. trying to marry the two systems together..

Finally, the client uses the opportunity of the review, as did a number of clients, to attempt to negotiate about what happened next [identified theme Future Action]:

Just while you're on this, I'll raise a question. We've got BC Ada, which is the electronic assessment program. We don't use it at the moment, but if we did use that to assess everything.. I mean you log into it, and it just keeps asking you questions.. You could argue that if that was linked across to the clock, that the minute you entered that.. and that will actually produce reports on non compliance.

The analyst remarks:

You guys have got it but you don't use it.

The client goes on to say that his section's computer skills are improving and they have got to the point where they could use this package. The analyst seems non committal about the proposal, and they run out of time to discuss it further.

5.1.6 Contextual Influences On Themes

Looking at the themes broadly, one can see how the context or situation influenced how the themes were played out. Firstly, there was the use of a document to structure discussion [identified theme Issues to Be Discussed]. It is interesting to speculate how this affects and possibly limits discussion. Secondly, the project history had an impact not only on the project itself, but on how the client approached his relationship with the analyst and issues of system boundaries [identified themes Scope of System and Professional Relationships].

The stage of the project might be influential in how much processes are discussed – certainly it seemed in this project that, once possible processes had been outlined by the analyst, the client was able to review these at length [identified theme Processes Associated With the System]. However, this phenomena might equally have been due to social and individual factors, such as the relative age and power differentials between the two participants, and the client's self professed determination to maintain control over processes.

5.2 Case 3 – Federal Agency B

Vignette

In Federal Agency B, the Accreditation Officer has arranged to meet with the Senior Systems Consultant about her suggestion that agenda details regarding accreditation of courses be automatically generated from the Access database where they are held, rather than being generated independently using Word. Both analyst and client are approximately of the same age and have met only briefly prior to this meeting – the

client is new to the organisation. Most of the time is spent discussing the processes from the client perspective [Processes Associated with System] and discussing the problem as raised by the client [Problem Identification]. The analyst, taking an organisational view, points out that some of the client's information is also relevant to another section in the same organisation (Links in Information). He also points out that there is no key to link course accreditation and registration (Links in Information), and is informed that a member of the client's section is already in the process of linking the two databases. There is also a great deal of discussion of where the client's processes fit in to organisational changes [(Organisational Context], possibly because the client is new to the organisation and the analyst is unfamiliar with the work that the client's section undertakes. The interaction is quite wide ranging, identifies a number of issues associated with the client's database [Problem Identification] and the analyst decides to pursue possible commonalities in information by discussing it with the relevant section head [Links in Information].

5.2.1 Topic Analysis

Table 5-7 categorises the types of topic changes that occurred in the interaction in Case 3, using Planalp and Tracy's (1980) typology.

Table 5-7 Topic Shifts and Initiators of Topic Shifts in Case 3

TOPIC SHIFT	Frequency		
	NEW TOPIC INTRODUCED BY ANALYST	NEW TOPIC INTRODUCED BY CLIENT	TOTAL
Immediate Implicit	3	12	15
Immediate Explicit	10	8	18
Earlier Implicit	3	7	10
Earlier Explicit	8	2	10
Environmental Implicit	1	0	1
Environmental Explicit	1	0	1
Unspecified Implicit	0	0	0
Unspecified Explicit	1	0	1
Total	27	29	56

Here the topic shifts are shared almost equally between analyst and client, with the client making slightly more topic changes. The client makes many more Immediate Implicit topic shifts, and this would be consistent with her role as the person who is being interviewed in this interaction. The analyst makes more Earlier Explicit topic changes, due to the need to back track and check on information provided by the client. The almost equal sharing of topics could be due to many reasons – this is the first time they have met, and the agenda is not particularly structured or predicated on a task. The fact they are approximately the same age might influence the equal sharing of the topic, though there may simply be other individual factors at work, such as the articulacy of the client.

Table 5-8 gives more information about the topics themselves and the sequence of topic changes. There is a great deal of to-ing and fro-ing between topics and their initiators – it is almost as if they are wrestling control of the topic from each other. It is only later in the interaction, for instance, that the client has control of the topic for an extended period of time. This switching between speakers could be viewed as a natural process with two people who don't know each other and are establishing a common frame of reference.

Table 5-8 Topics in Case 3 Listed By Title And Time of Introduction

No	TOPIC	INITIATOR	TIME INTRODUCED
1	Social pleasantries	Analyst	.00
2	Issues to be discussed	Analyst	.008
3	How to discuss issues	Analyst	.30
4	Current processes	Client	.39
5	Originators of database	Analyst	1.24
6	Information input to database	Client	1.44
7, 17	Dual purpose of database	Client	2.10, 5.47
8, 10	Accreditation process	Client	2.18, 3.11
9, 11	TAFE courses covered by accreditation process	Analyst	2.54, 3.37
12	Volumes of registration applications	Client	4.03
13, 15	Relationship between registration and accreditation	Analyst	4.26, 4.57
14	Registrants as providers	Analyst	4.46
16	Related changes to other systems	Analyst	5.41
18	Information output from database	Client	6.03
19	Registration process	Client	6.11
20	Links in Information	Analyst	7.20
21	Database deficiency	Analyst	7.33
22	Current action on deficiency	Client	7.36
23	Problem with accreditation process	Client	7.58
24	Extent of problem with accreditation process	Client	8.34
25	Volume of courses	Client	9.05
26	Problem with generating agendas (double entry)	Client	9.56
27	Agendas and registration	Client	10.55
28	Agenda information in database	Analyst	11.08
29	Timing of agenda production	Client	12.05
30	Process of agenda production	Analyst	12.19
31	Problem with data entry for process	Client	12.52
32	Suggested solution for agenda production	Client	13.29
33, 36	Data entry problem also in letter writing process	Client	13.55, 15.40
34	Need for notification stage in process	Client	14.05
35	Analyst's understanding of process	Analyst	14.22
37	Revised information from letter process input to database	Client	16.17
38	Information output from database	Client	16.55
39	Problem identification	Analyst	17.17
40, 45	Personal disclosure about job stresses	Client	17.46, 22.43
41, 46	Future action	Analyst	18.36, 23.28
42	Future improvements	Analyst	19.27
43	Problem with single user updates	Client	20.32
44	Organisational pressures	Client	21.31
47, 49	Organisational roles and links	Analyst, Client	24.01
48, 50	Commonalities in organisational information bases	Analyst	24.54, 25.36
51	Anomalies in information bases	Client	26.43
52	Distinction between information commonalities and roles	Analyst	27.33
53	Agreement on information duplication	Client	27.58
54	Future action on commonalities	Analyst	28.03
55	Problem of agenda process and database	Analyst	28.16
56	Future Action	Analyst	28.46

There is some looping back to topics by both analyst and client, and this would tend to support the idea that there is a common frame of reference being established. The Earlier Explicit and Earlier Implicit topic changes noted in Table 5-7 also illustrate the extent of looping back to previous contexts. This also contributes to a general lack of coherence in the conversation structure, where coherence is defined as the extent to which utterances are related.

5.2.2 Relating the Codes to Topics

Table 5-9 shows how the codes in Case 3 featured in the topics of the interaction.

Table 5-9 Codes as They Appeared in Topics in Case 3

NO	TOPIC	DOMINANT CODES
1	Social pleasantries	<i>rapport building</i>
2	Issues to be discussed	<i>agenda setting, conversation topic</i>
3	How to discuss issues	<i>conversation topic</i>
4	Current processes	<i>process identification, process justification</i>
5	Originators of database	<i>organisational context, rapport building</i>
6	Information input to database	<i>information identification</i>
7, 17	Dual purpose of database	<i>process definition, process justification, imagining</i>
8, 10	Accreditation process	<i>process identification, process justification, reflection</i>
9, 11	TAFE courses covered by accreditation process	<i>organisational context, posit, reflection</i>
12	Volumes of registration applications	<i>process identification, information identification, problem identification</i>
13, 15	Relationship between registration and accreditation	<i>process identification, process justification, reflection, forward reframe</i>
14	Registrants as providers	<i>organisational context, posit</i>
16	Related changes to other systems	<i>organisational context</i>
18	Information output from database	<i>information identification</i>
19	Registration process	<i>process identification</i>
20	Links in information	<i>posit, key searching</i>
21	Database deficiency	<i>problem identification</i>
22	Current action on deficiency	<i>problem identification, organisational context</i>
23	Problem with accreditation process	<i>problem identification, process identification</i>
24	Extent of problem with accreditation process	<i>problem identification, information identification</i>
25	Volume of courses	<i>information identification, posit, organisational context</i>
26	Problem with generating agendas (double entry)	<i>problem identification, scoping, information identification, process identification</i>
27	Agendas and registration	<i>problem identification</i>
28	Agenda information in database	<i>information identification, process identification</i>
29	Timing of agenda production	<i>process identification</i>
30	Process of agenda production	<i>process identification, imagining, dialoguing, forward reframe</i>
31	Problem with data entry for process	<i>problem identification, information identification</i>
32	Suggested solution for agenda production	<i>problem identification, future action, future solution, mirroring</i>
33, 36	Data entry problem also in letter writing process	<i>problem identification, information identification, process identification</i>
34	Need for notification stage in process	<i>problem identification, process identification, imagining</i>
35	Analyst's understanding of process	<i>reflection, problem identification, mirroring, posit</i>
37	Revised information from letter process input to database	<i>process identification, information identification</i>
38	Information output from database	<i>process identification, information identification, imagining</i>
39	Problem identification	<i>scoping, problem identification</i>
40, 45	Personal disclosure about job stresses	<i>personal disclosure, organisational context</i>
41, 46	Future action	<i>future action, organisational context</i>
42	Future improvements	<i>problem identification, organisational context</i>
43	Problem with single user updates	<i>problem identification, organisational context</i>
44	Organisational pressures	<i>organisational context</i>
47, 49	Organisational roles and links	<i>future action, organisational context</i>
48, 50	Commonalities in organisational information bases	<i>organisational context, key searching, information identification</i>
51	Anomalies in information bases	<i>information identification, key searching</i>
52	Distinction between information commonalities and roles	<i>information identification, organisational context</i>
53	Agreement on information duplication	<i>information identification, organisational context</i>
54	Future action on commonalities	<i>future action, information identification, organisational context</i>
55	Problem of agenda process and database	<i>problem identification, future action</i>
56	Future action	<i>future action</i>

In contrast to Case 1, *organisational context* as a code occurs frequently. This seems to be due to the fact that the analyst is unfamiliar with the client's section and role, and

seems to be trying to place her within the larger organisational context. He could also be using the organisational context to support an overall interaction strategy of building rapport through shared context. This may be the purpose of his early introduction of it in Topic 3.

There is not a great deal of *imagining* and *dialogue*, probably because none of the processes are stepped through in detail. *Mirroring*, where the analyst or client mirrors language and posture, was used as an interaction strategy by the analyst. There is a great deal of *problem identification* on part of both the analyst and the client, probably appropriate in a first meeting where the declared intent of the analyst was to locate problems.

5.2.3 Mapping Topics To Themes

Table 5-10 shows the topics mapped to themes. It can be seen that there were a wide range of themes covered, and this is consistent with topics looping back and a general lack of coherence in the conversation as a whole.

Table 5-10 Mapping of Topics To Themes in Case 3

THEME	TOPIC
1. Issues to be Discussed	T2, T3
2. Scope of System	T39, T42
3. Personal Disclosures (see client's comment on T40)	T1, T40, T45
4. Information Input to System	T6, T28, T37
5. Processes Associated with System	T4, T7, T8, T10, T12, T13, T15, T17, T19, T23, T24, T29, T30, T33, T36
6. Links in Information	T20, T48, T50, T52, T53
7. Future Action	T41, T46, T54, T55, T56
8. Problem Identification	T21, T22, T26, T27, T31, T32, T34, T43
9. Information Output from System	T18, T38
10. Analyst's Understanding of Processes	T25, T35
11. Future Solutions	
12. Organisational Context	T5, T9, T11, T14, T16, T44, T47, T49, T51

As is also reflected in Table 5-9 where codes are seen in topics, the theme of Organisational Context is well represented, and may be due to the fact that this is an initial interaction and a common organisational context needs to be established. The theme of Problem Identification is also well represented, and this can be seen as directly due to the amount of *problem identification* that occurred in this interaction.

5.2.4 Mapping Codes to Themes

Table 5-11 illustrates the dominant grounded theory codes for the themes in the interaction. The codes marked with an asterisk occur more than once, and the most frequent code is put first. The organisation of topics into themes was guided by both the codes and the content of the topics, in the same manner as previous cases.

Table 5-11 Themes and Dominant Codes in Case 3

THEMES	PREDOMINANT GROUNDED THEORY CODES
1. Issues to be Discussed (T2, T3)	<i>agenda setting, conversation topic</i>
2. Scope of System (T39, T42)	<i>scoping, problem identification*, organisational context*</i>
3. Personal Disclosures (T1, T40, T45)	<i>rapport building, personal disclosure, organisational context</i>
4. Information Input to System (T6, T28, T37)	<i>information identification*, process identification*</i>
5. Processes Associated with System (T4, T7, T8, T10, T12, T13, T15, T17, T19, T23, T24, T29, T30, T33, T36)	<i>process identification*, process justification*, information identification*, problem identification*, reflection, forward reframe*, imagining*, dialoguing</i>
6. Links in Information (T20, T48, T50, T51, T52, T53)	<i>posit, key searching*, organisational context*, information identification*</i>
7. Future Action (T41, T46, T54, T55, T56)	<i>future action*, organisational context*, information identification, problem identification</i>
8. Problem Identification (T21, T22, T26, T27, T31, T32, T43)	<i>problem identification*, organisational context*, scoping, information identification*, process identification, future action, future solution, mirroring</i>
9. Information Output from System (T18, T38)	<i>information identification*, process identification, imagining</i>
10. Analyst's Understanding of Processes (T25, T35)	<i>process identification, process justification, reflection*, information identification, posit*, organisational context, reflection, problem identification, mirroring</i>
11. Future Solutions	
12. Organisational Context (T5, T9, T11, T14, T16, T44, T47, T49, T51)	<i>organisational context*, rapport building, posit*, reflection, future action</i>

5.2.5 Considering Themes Across Data Sources in Case 3

This section considers how the themes occurred over all data sources in Case 3, with the aim of discovering how particular themes originated and evolved in relation to particular contexts across the case. Table 5-12 provides a summary of all themes across all data sources in Case 3, and includes additional themes that occurred in the data sources surrounding the interaction.

Table 5-12 Occurrence of Themes Across Data Sources in Case 3

THEME	INTERAC- TION	PARAGRAPH - ANALYST	PARAGRAPH - CLIENT	INTERVIEW - ANALYST	INTERVIEW - CLIENT	REVIEW
Issues to be Discussed	✓	✓	✓	✓	✓	
Scope of System	✓					
Personal Disclosures	✓					✓
Information Input to System	✓			✓		
Processes Associated with System	✓		✓	✓		
Links in Information	✓		✓			✓
Future Action	✓		✓			
Problem Identification	✓		✓	✓		
Information Output from System	✓					
Analyst's Understanding of Processes	✓			✓		✓
Future Solutions			✓			
Organisational Context	✓				✓	✓
Professional Relationships				✓	✓	
Mutual Understanding						✓
Note Taking						✓

5.2.5.1 Paragraphs from analyst and client

The client's paragraph, (Figure 5-3), is shown below.

Dear Cathy and Y,

I work for a committee that meets monthly to assess course accreditation applications and provider registration applications. The agenda is very large. For example last month we processed 330 courses that providers were registering against, and 15 courses listed for accreditation. Every course that is dealt with is keyed into an Access data base. The agenda is done in Word. At the moment, the agenda is typed, repeating information that is keyed into the data base. After the meeting letters are written to all applicants that list the courses (yet again) that have been either registered against or accredited at the meeting.

I would like to address how this duplication of work can be minimised and have Word and Access talk to each other in a form that we require.

For example, if letters could be produced from the data base that included name and address as well as a list of courses, that could be edited to include other information that the letter may require.

Another thing that could be discussed would be bringing a complete list of courses out of the access data base into the Word document that is used as an agenda for each meeting.

I will bring examples of our letters, our agenda, and the access data base printouts that we use at present.

Yours sincerely,

X

Figure 5-3 Client's Paragraph for Case 3

It gives a clear outline of the problem she wishes to discuss and indicates what is desired for the future [identified themes Issues to Be Discussed, Problem Identification and Future Action].

The paragraph submitted by the analyst (Figure 5-4) does not refer to future solutions, and has extracted the basic requirements from the client's letter (1.1, 1.2, 1.3). The focus is on the information that supports the process [identified theme Information Input to System] rather than processes per se.

Here is a brief outline of the proposed meeting I will be having with my client.

1. Meeting to discuss improvement of the process between information maintained in a database (Microsoft Access v2.x) and linking that information into word processed documents created in Microsoft Word v6.x
- - 1.1 Enter data only once
 - 1.2 Letter templates created in word processing package (Microsoft Word v6.x)
 - 1.3 Possible merge facility with some type of query to extract certain data
2. Similarities between the data maintained by the TAREC Support Section and TAFEMIS (TAFE Management Information System) which maintains details of those accredited courses provided by TAFE Institutes

Figure 5-4 Analyst's Paragraph for Case 3

Looking at the paragraphs provided, some clue is given as to why there was little coherence in the interaction. Apart from a large difference in individual style, the analyst has proposed two issues for discussion, and the client only one. Interestingly, the analyst's determination to include the second issue meant that the first issue was not addressed in depth in the interaction, and resulted in the to and froing while analyst and client wrestled for control of the topic. The analyst's decision to include the second issue was not explained by any of the other data sources, although the interviews give some indication of possible reasons. It may be that he felt that establishing duplicated information across the organisation was a priority of his IT Section. Certainly his pursuance of the second issue meant that there was a focus on organisational context and links across databases [identified theme Organisational Context and Links in Information].

5.2.5.2 Analyst and client interviews

When asked as to what is in his mind about the upcoming interview, the analyst says:

The interview itself is basically discussing what the requirements are, I'm going to get an understanding of what they're trying to do, what their current practices are, and see if we can improve them in any way. Looking at their letter, I can tell that they are having problems with double entry and whether that can be automated in some shape or form. It will be interesting to see if that's the only issue or there are other underlying issues as well.

Given that he has signalled in the initial paragraph a second issue, it is interesting that there is only an oblique reference to it at this point [identified theme Issues to be Discussed].

In the second interview, when asked about his goals for the interview, the analyst reiterates:

I still believe my goals were the same as they were at the outset, and they were to actually find out more about the problem, and more about their business processes. It is always our intention to go and find not just the problem, but everything that is surrounding the problem as well.

It is interesting to speculate as to whether he believed then, that the issue of shared information and the client's interactions with others, constituted what 'surrounded' the problem.

Certainly he wanted to place the client's problem in context, as evidenced by his remark when asked if he achieved his goals:

I think I did (hesitantly). Certainly I found out more information about their problem. The other thing that was good about it that I made the client more aware of the bigger picture as well, and I think that's important.

Later in the interview, he indicates that a solution may not be forthcoming due to organisational pressures [identified themes Organisational Context and Professional Relationships].

Its *always*, in the back of my mind, because of the amount of work we do have, that we may not be able to actually provide a solution, a ready solution, in the next week for them, it may be some time down the track. These things are usually discussed a bit further and we'll be raising further discussions and letting her know when we can actually get round to providing a solution. And that's probably one of the worst things as an analyst, depending on the organisation you're working for, if you've only got a weeks workload on your desk, you can go out and get more work, and you can do it, and you can provide a solution for the client virtually within a short time span. It makes you feel really good if you can provide a solution really quickly. But of course, in our work situation, it doesn't come to fruition sometimes.

It is tempting to speculate whether this is the reason for the analyst's concentration on 'surrounding issues', because an immediate solution does not seem to be forthcoming.

When asked about his professional role, his answer is very succinct:

The clients come to us looking for a solution to a problem. The profession that we're involved in, I believe we're there to service the needs of our clients. So I think it is fairly clear cut.. find out about the issues, report on those issues..

He makes a reference to how relationships between analyst and clients used to be:

I think when I came into the industry.. we probably always had been service orientated throughout to our clients. Whereas, probably in the years prior to me entering the industry, it was totally different, they saw themselves as the main thrust behind business and the clients just followed.

Throughout the interview, it is interesting to note the formal language that is used when the analyst talks about the client [identified theme Professional Relationships]. The client is the 'client', not X, and he talks about 'they' and 'we', indicating a definite sense of separateness which is not consistent with the content of what he says. In the remark above, he is clearly disassociating himself from a traditional view of analyst-client relationships, but at the same time does not advocate an alternative view.

The client reveals that, from her perspective, it was a shock to find out that there would be little or no follow up. She goes on:

It's probably been quite good for us that he knows what we need.. there wasn't a real lot of investment as far as getting him to do it.

She says, that in the light of this, she did achieve her goal of passing on information. When asked if there was anything that prevented her goals, she is very complimentary about the analyst:

No. I actually felt that the communication went a lot better than I thought it would, I thought Y did a brilliant job. I really do, he really assessed it all really well, it gave me a bigger picture, and it gave me an opportunity to think in a bigger picture way of the issues I'm dealing with on a daily basis.

She rates the overall interaction at a 4 (well).

5.2.5.3 Background questionnaires

The background questionnaires showed a number of apparent differences between the two individuals. The analyst's education was to HSC level in Science, whereas the client was studying for an Arts degree. The analyst did not reveal a previous occupation, and had been involved in the analysis and design of systems for 12 years. The client was previously a self employed potter and had only been in her current line of work for eighteen months.

5.2.5.4 Videotaped review

This review showed similar patterns to Case 1, in that the themes of Mutual Understanding and Note Taking emerged. There was also some discussion of how issues were discussed, what was and wasn't relevant [identified themes Issues to be Discussed and Organisational Context]. The analyst was quite open about what he was trying to achieve in terms of his communication strategy, and how he had used a strategy of *reflection*. He says at the beginning of the review:

Its really the first five minutes, that's what I was trying to achieve, trying to find out what the group actually does do.. in their day to day business.. and in doing so.. kept on posing back questions.. I tried actually to reword the information she was giving back to me.. basically as a reaffirmation of what I believed you were actually doing (this last addressed to the client).

When asked if he found this a successful strategy, the analyst says:

That not only happened in the first five minutes but I think I have a tendency to do that all the time anyway. Cos' I think that the business we work in, we always need to make sure that we are hearing the correct information from our clients.

Again, the analyst's frequent use of 'we' and 'clients' seems to point to a very clear idea of what his role and profession is, or at least the need to impress on others that this is what his role is.

The client confirms his strategy of reflection by saying:

Because you managed to ask me the same question in different ways.

The analyst goes on to say why he does it:

Cos we need to do that. Cos if we don't do that we get oh, utterly, a misconception, we may get a misconception of what people are asking of us.

Asked if it is something he does consciously, the analyst replies no. Asked if it is something he did when he started out as an analyst, he says:

..well, jeez.. I think its something you develop over time, because working in this industry, what you tend to find out is.. you're always learning from your mistakes. And you always know about your previous mistakes and you are always learning from them.

During the next segment, the analyst notices that he does not maintain eye contact with the client while taking notes [identified theme Note Taking].

I just need to say something, and I've been laughing to myself about this, its actually quite interesting the interaction between us, here I am madly scribing. I'm not actually looking at my client through most of the interview and I've never really thought about it before, but.. all they are doing is just looking at my head and every now and then I pop up..

The client laughed at this point, and the analyst went on to say:

There's something funny about the communication.

There ensues a discussion about the merits of taking notes, as opposed to using a tape recorder. The client offers a different view:

in some ways it's a little less intimidating or something to you if someone is just writing and not looking at you.. it somehow allows me to think more slowly, gives me more time.

Of course it is possible that the client is engaging in polite conversational repair, or she may have genuinely found an advantage to the lack of eye contact.

The client remarks on the competing topics put forward by herself and the analyst in this way when she looks at topics 26-32 [identified theme Issues to Be Discussed].

That's interesting, because I kept wanting to come back, whereas Y wanted..

She also remarks that she was actually quite stressed by the problem itself, resulting in these feelings:

..it might actually be a stage that you do go through, when you're trying to explain.. I mean, to even go to an analyst to try and fix or organise something, there is an issue at hand and I'm sure that's when the client's thinking 'just fix it I don't want to tell you any more, I just want you to fix it!

There are several ways that this remark can be interpreted. She may be expressing her frustration with the analyst at the point, albeit in an indirect way. She may also be indicating that for a client in this organisation to even formulate a problem for solving by the IT Section may be quite an investment. She also uses *dialoguing* to make her point.

The analyst replies to this in a way that justifies his inclusion of other issues [identified theme Issues to Be Discussed].

But, in order for us to fix problems we need to understand the outline.

The client says, laughing:

Of course you do!

The analyst goes on to say:

..the outline. That's why we need to go through the whole scenario finding out what the whole business process is all about..

When reviewing topics 33 – 41, the analyst says:

..the other thing I did do there, actually I touched on an area which X didn't perceive as being a problem.. that was the area about having the database application actually prompting them to do things, rather than relying on their memory to do things...probably as a result of gaining a little bit more of an understanding about what they are trying to do, I was also able to perceive that they may be wanting to do other things as well..

Presumably then this can be seen as a confirmation that the analyst saw himself as engaging in problem *identification*.

He explains how he was thinking at the time:

..as we're going through discussion we're virtually, I am drawing up a picture of everything that they are trying to do.. and whilst we're out there this is the way I tend to open it up.. maybe I shouldn't generalise, but when we are doing our analysis work we are actually building a solution there on the spot. We seem to do that.. if the problem is quite immense, well you haven't got time to think about creating solutions.

There are a number of interesting things about this statement. Firstly, that it may be a further justification of his desire to look at things more broadly. Secondly, he may be defending his inability to provide a solution in this particular case by stating it as a large problem. Thirdly, his declaration that he often builds a solution on the spot is a reflection on his and his sections general practice.

The client feels that it is at this point in the interaction that the analyst started to understand the problem [identified theme Mutual Understanding].

I think I was starting to feel that Y was getting a handle on the picture.. That was different to the time before, to the last five minutes before, where I was involved in the problem, then suddenly I thought, 'God, he understands it!'. And when you

said about the prompting, that's something we need, as we hadn't discussed it. This is something I do know I need but it's not the most important thing, and that's why I hadn't brought it up. But when you brought it up, I thought 'God, he understands, he knows what I'm talking about..(laughs)

So the client is saying that she began to trust the analyst's understanding at this point when he suggested something that demonstrated that he did indeed have insight into the problem. She goes on to say:

..it made me really feel that you were getting the big picture of the whole thing and it was very heartening. So I was starting to feel that the communication was really working.

So, she is saying that, from her point of view, understanding was not really reached until this point of the conversation, approximately 15 minutes into the interaction.

The analyst gives an explanation of his interests in links between systems [identified theme Links in Information]

The first part of the segment was actually posing the question about where they see the application or the database is going on in the future.

(Interestingly, during the interaction, the client was actually very puzzled by this question and asked the analyst to repeat it).

He goes on to say:

..the reason I posed it is that because they know the business area, the business of the agency, and I could see behind the scenes there are some linkages.. between this system and one of our legacy systems the TAFEMIS system.

So here there is an explanation of the second issue proffered in the analyst's paragraph, and a possible reason as to why organisational issues figured so largely in his questions [identified theme Organisational Context].

Interestingly, the analyst thought that organisational issues that the client spoke about were not relevant [identified theme Organisational Context]. In a remark that did not seem to acknowledge the stresses she was under or the relevance of who she worked with and what they did, he said:

..because she has confidence in me, I was getting a lot of information that was actually quite irrelevant, but because I had X's confidence I was hearing all about the problems they had in their area as well. (addressing researcher)

When challenged by the client that these were 'extenuating circumstances' that were indeed relevant, he says:

Well, it certainly gave me that awareness, that there could be a problem, there may well be a problem when we are going to actually talk to people further, because of the conflicts that have already happened.

The review concluded very soon after this point, and the analyst and client were individually interviewed about their views. The individual interviews show some divergence from the review, but overall in both the review and interviews, the analyst and client seemed satisfied about their interaction overall.

5.2.6 Contextual Influences On Themes

Clearly, in this case, the task of determining user requirements was circumscribed by organisational pressures that dictated that this client would not get a solution in the near future. That said, both the analyst and client felt their communication had gone well. This may be a result of the review, where both analyst and client had the opportunity to reflect on the process, and illustrates how people might put a value on a successful interaction, even though the actual problem is not solved.

Given that the theme Organisational Context figured largely in this case, it is interesting to consider the situations that gave rise to its manifestation. Firstly, the two participants did not know each other and they were establishing a joint organisational context. Secondly, as the analyst wished to discover links and commonalities between the client's system and another system [identified theme Links in Information], it was important for him to locate her activities and the system within the organisational context. Thirdly, the client provided lots of organisational context about her job stresses and players in her section, which the analyst thought 'irrelevant information'. Ironically, the same resource constraints which prevented the analyst from providing an immediate solution were evident in the client's overload of work.

There seems to be a very clear instance of *agenda setting* here by the analyst and the section he represents, in that he introduced a second issue which did not really address the client's immediate needs [identified theme Issues to be Discussed]. This also links to the theme of Professional Relationships. In the cases presented thus far, the clients were finding it difficult to negotiate future action or had done so in the past. This raises questions as to what paradigms of ISD (Hirschheim and Klein 1989) the analysts and their sections may be operating from. The analyst in this case had a very clear self definition as to what the role of analyst constituted.

The analyst in this case used interaction tactics such as *mirroring* and *reflection* to enhance understanding [identified theme Mutual Understanding]. Whilst not particularly remarkable as of itself, it is interesting to consider whether these tactics are used regardless of stage of project, or how well the participants know each other, or whether they are drawn upon in specific situations. Certainly in this case the analyst used *mirroring* and *reflection* rather than drawing upon *imagining* and *dialoguing*. Whether this a question of individual differences or a case of fitting strategies and tactics to the task in hand is hard to say.

As with Case 1, Note Taking emerged as a theme in the review. Whereas the analyst in Case 1 was concerned about the completeness of his notes and put the difficulty down to keeping the flow going, the analyst in this case worried that he did not have enough eye contact with the client while taking notes.

5.3 Case 4 – City Council Y

Vignette

The Information Services Programmer from City Council Y has arranged to meet the Waste Management Co-ordinator to discuss amendments to the Property System to enable tracking of bins and crates introduced in the Council's new kerbside recycling scheme. The analyst is in his mid twenties, the client in his forties, and they have worked together several times before. Most of the interaction is devoted to discussion of how the client envisages the tracking of the crates and bins, and this is interwoven with practical issues such as the need to issue bin replacements and how kerbside recycling will work for multiple tenancies [Processes Associated with System]. As the Property System is to be amended, there is some discussion on what can and cannot be achieved within the limits of that system [Scope of System]. As the bins and crates need to be tracked, there is some discussion of how they will be identified in the Property System [Links in Information]. The analyst is very interested in the processes the client describes, and actively seeks exceptions that the system might be called upon to cater for.

5.3.1 Topic Analysis

The table below categorises the types of topic changes that occurred during the interaction in Case 4, using Planalp and Tracy's (1980) typology. From the table it can

be seen that the analyst and client share the topics almost equally, the analyst having 16 topic shifts as opposed to the client's 11 topic shifts.

Table 5-13 Topic Shifts and Initiators of Topic Shifts in Case 4

TOPIC SHIFT	<i>Frequency</i>		
	NEW TOPIC INTRODUCED BY ANALYST	NEW TOPIC INTRODUCED BY CLIENT	TOTAL
Immediate Implicit	2	5	7
Immediate Explicit	9	5	13
Earlier Implicit	2		2
Earlier Explicit	3	1	4
Environmental Implicit			
Environmental Explicit			
Unspecified Implicit			
Unspecified Explicit			
Total	16	11	27

The majority of topic shifts are Immediate Implicit and Immediate Explicit changes, indicating a high level of coherence – each topic tends to be related to the previous one. There are some Earlier Implicit and Earlier Explicit Changes, mainly made by the analyst as he backtracks to topics to clarify understanding or to complete discussion on a topic while acknowledging the next issue the client brings up.

This shows a very different pattern from some of the cases, namely Case 1 and 3, and is not dissimilar in pattern to Case 2. Again, as in Case 2, the client is considerably older than the analyst and is senior in rank. The pair have worked together before, and the analyst is familiar with the system. All these things probably contribute to the sharing of the topics, and the high degree of coherence that is evident.

Table 5-14 gives more information about the interaction topics themselves and the sequence of topic changes. The table shows how the analyst introduces the topic by outlining the main issues, and then the client spending some time elaborating on those issues before they discussion of each aspect in detail. As the interaction progresses, the analyst tends to hold the topic for longer as they work through each aspect of the requirements.

Table 5-14 Topics in Case 4 Listed By Title And Time of Introduction

No	TOPIC	INITIATOR	TIME INTRODUCED
1	Issues to be Discussed	Analyst	0.00
2	Tracking and charging of wheelie bins and crates	Client	0.36
3	Problem of multiple tenancies	Client	2.35
4	Tracking of crate and relationship to property system	Client	4.46
5	Bar coding of crates and bins	Analyst	6.23
6	Charging for bins and tracking	Client	7.41
7	Options for tracking of bins and crates	Analyst	9.54
8	Distinguishing between crates and bins for tracking	Analyst	11.18
9	Inputting details into system	Client	12.22
10	Need to record percentage of bin loss	Client	14.09
11, 13	Information required for crate tracking	Analyst	15.38, 18.12
12	Issue of businesses with bins only	Client	17.47
14	Information required for businesses	Analyst	19.28
15	Businesses with own commercial waste pick up	Client	20.34
16	Need to record frequency of collection	Client	21.14
17	Recording property details	Analyst	22.30
18	Charging fees for crates, bins and collections	Analyst	24.42
19	Options for charging	Analyst	27.02
20	Effect of bin substitution on charging	Analyst	28.48
21	Implications of allowing bin substitution	Client	30.15
22	Implications of resident changes	Analyst	32.14
23	Issues of householder ownership of bins	Analyst	34.05
24	Leasing rather than charging for bins	Analyst	34.37
25	Use of hiring charge to finance future recycling initiatives	Client	36.13
26	Penalty rates for lost bins	Analyst	36.38
27	Future discussion on charges	Analyst	37.18

5.3.2 Relating Codes to the Topics

Table 5-15 illustrates the dominant codes in the interaction topics for Case 4. Table 5-15 shows a great deal of *exemplification*, *imagining*, and *dialoguing*, in most topics from early on in the interaction. Both client and analyst used these tactics frequently to discuss how processes might work and how exceptions or particular situations might be catered for – there was also much *problem identification*.

Table 5-15 Codes As They Appeared in Topics in Case 4

No	TOPIC	DOMINANT CODES
1	Issues to be Discussed	<i>agenda setting, conversation topic</i>
2	Tracking and charging of wheelie bins and crates	<i>process identification, information identification, problem identification</i>
3	Problem of multiple tenancies	<i>issues to be discussed, problem identification, process identification, future action, imagining</i>
4	Tracking of crate and relationship to property system	<i>organisational context, process identification, scoping, exemplification, imagining</i>
5	Bar coding of crates and bins	<i>key searching, problem identification, organisational context, metaphor, imagining</i>
6	Charging for bins and tracking	<i>scoping, process identification, exemplification, imagining</i>
7	Options for tracking of bins and crates	<i>key searching, process definition, process justification, imagining</i>
8	Distinguishing between crates and bins for tracking	<i>process identification, exemplification, information identification, imagining, key searching</i>
9	Inputting details into system	<i>prop, information identification, exemplification, imagining, forward reframe, dialoguing</i>
10	Need to record percentage of bin loss	<i>problem identification, information identification, imagining, exemplification, metaphor</i>
11, 13	Information required for crate tracking	<i>prop, process identification, information identification, key searching, exemplification, dialoguing, imagining, problem identification, metaphor, mirroring</i>
12	Issue of businesses with bins only	<i>problem identification, issues to be discussed, scoping</i>
14	Information required for businesses	<i>problem identification, process identification, information identification, scoping</i>
15	Businesses with own commercial waste pick up	<i>problem identification, information identification, organisational context</i>
16	Need to record frequency of collection	<i>problem identification, information identification, key searching, prop, metaphor</i>
17	Recording property details	<i>prop, process identification, information identification, problem identification, key searching, exemplification</i>
18	Charging fees for crates, bins and collections	<i>information identification, process identification, forward reframe</i>
19	Options for charging	<i>posit, process identification, exemplification, forward reframe</i>
20	Effect of bin substitution on charging	<i>posit, exemplification, imagining, dialoguing, process identification, information identification, mirroring</i>
21	Implications of allowing bin substitution	<i>imagining, exemplification, dialoguing, problem identification, organisational context, mirroring</i>
22	Implications of resident changes	<i>problem identification, posit, exemplification, imagining</i>
23	Issues of householder ownership of bins	<i>problem identification, process identification, organisational context, forward reframe, exemplification, imagining</i>
24	Leasing rather than charging for bins	<i>posit, forward reframe, information identification, imagining</i>
25	Use of hiring charge to finance future recycling initiatives	<i>future action, forward reframe, imagining</i>
26	Penalty rates for lost bins	<i>problem identification, process identification, information identification, exemplification, imagining, dialogue</i>
27	Future discussion on charges	<i>future action, issues to be discussed, process identification</i>

5.3.3 Mapping Topics To Themes

Table 5-16 shows the topics mapped to themes. Only a few themes are evident, probably due to the coherence of the interaction where most topics were tightly related to the previous topic.

Table 5-16 Mapping of Topics to Themes in Case 4

THEME	TOPIC
1. Issues to be Discussed	T1
2. Scope of System	T6, T12, T14
3. Personal Disclosures	
4. Information Input to System	T9, T10, T16, T17, T23
5. Processes Associated with System	T18, T19, T20, T21, T24, T26
6. Links in Information	T5, T7, T8, T11, T13
7. Future Action	T25, T27
8. Problem Identification	T2, T3, T4, T15, T22
9. Information Output from System	
10. Analyst's Understanding of Processes	
11. Future Solutions	
12. Organisational Context	

5.3.4 Mapping Codes to Themes

Table 5-17 illustrates the dominant codes for the themes represented. For each theme, the code on which the decision was based to locate the topic in that theme is given first. Asterisks indicate many instances of the same code.

In the theme of Scope of System, it can be seen that, in this interaction, there tended to be many instances of *problem identification* as a tactic used in the strategy of *scoping*. As the global topic constituted amendments to the property system in light of the new bins and crates being introduced, this would seem to reflect the topic.

The theme of Information Input to System, as well having many instances of *information identification*, also had a number of instances of a *prop* – the analyst used pen and paper to mock up a screen design for each requirement and identified individual fields to be held on the system.

Processes Associated With System has almost as many instances of *information identification* as *process identification*, where the process was identified and then the information required to support it was then identified. The theme of Links in Information has topics where *key searching* was the main feature – the analyst needed to compose a numbering system for the crates and bins that would be acceptable to the property system.

The main feature of the topics in the theme Problem Identification was *problem identification*, where general information deficits were identified – hence the accompanying *information identification* and *process identification*.

Table 5-17 Themes and Dominant Codes in Case 4

THEMES	DOMINANT GROUNDED THEORY CODES
1. Issues to be Discussed (T1)	<i>agenda setting, conversation topic</i>
2. Scope of System (T6, T12, T14)	<i>scoping*, problem identification*, process identification, information identification, exemplification, imagining, issues to be discussed, organisational context</i>
3. Personal Disclosures	
4. Information Input to System (T9, T10, T16, T17)	<i>information identification*, prop*, exemplification*, imagining*, forward reframe, dialoguing, problem identification*, imagining, metaphor*, key searching*, process identification</i>
5. Processes Associated with System (T18, T19, T20, T21, T24, T25, T26)	<i>process identification*, information identification*, problem identification*, forward reframe*, posit*, exemplification*, imagining*, dialoguing*, mirroring*, imagining*, organisational context</i>
6. Links in Information (T5, T7, T8, T11, T13)	<i>key searching*, problem identification*, process identification*, information identification*, process definition, process justification, organisational context, metaphor*, imagining*, exemplification*, prop, dialoguing, mirroring</i>
7. Future Action (T25, T27)	<i>future action*, forward reframe, imagining, issues to be discussed, process identification</i>
8. Problem Identification (T2, T3, T4, T15, T22)	<i>problem identification*, process identification*, information identification*, issues to be discussed, future action, imagining*, organisational context*, scoping, exemplification*, prop, forward reframe, dialoguing</i>
9. Information Output from System	
10. Analyst's Understanding of Processes	
11. Future Solutions	
12. Organisational Context	

5.3.5 Considering Themes Across Data Sources

Table 5-18 shows the occurrence of themes across data sources in Case 4. As with other cases, additional themes emerged in the surrounding data sources. This section considers how the themes occurred over all data sources in Case 4, with the aim of discovering how particular themes originated and evolved in relation to particular contexts across the case.

Table 5-18 Occurrence of Themes Across Data Sources in Case 4

THEME	INTERAC- TION	PARAGRAPH - ANALYST	PARAGRAPH - CLIENT	INTERVIEW - ANALYST	INTERVIEW - CLIENT	REVIEW
Issues to be Discussed	✓	✓	✓	✓	✓	✓
Scope of System	✓	✓				
Personal Disclosures						
Information Input to System				✓		
Processes Associated with System	✓	✓	✓	✓		
Links in Information	✓		✓			✓
Future Action						
Problem Identification	✓			✓		✓
Information Output from System						
Analyst's Understanding of Processes				✓		
Future Solutions						
Organisational Context		✓			✓	
Professional Relationships				✓	✓	
Mutual Understanding						✓
Use of Props						✓

5.3.5.1 Paragraphs from analyst and client

The paragraphs submitted by the analyst and client prior to the interaction have a number of similarities and a few differences. Both give the context of the project and are clear about what new functions are required, the ability to track and charge for recycling crates and bins.

Dear Cathy,

Below is my short (Actually very short...Sorry!) paragraph about tomorrow's interview. Also include in this fax is Y's Paragraph which is the seconded page of this fax.

See you tomorrow out the back at 8.15 am

Regards
X
Information Services – Programmer

The discussion on Wednesday 6th December will be about changes to the council's textual database system (Called BLIS). The changes will be required because of the introduction of charges for Council's new recycling services and new garbage bin wheelie bin service.. The system must also be capable of tracking all recycling bins and wheelie bins which the council will issue to residents and businesses within the City.

Figure 5-5 Analyst's Paragraph for Case 4

The analyst's paragraph (Figure 5-5) refers to the amendments that are to be made to the property database, and gives its name in the first sentence. From his perspective as an information systems professional he has already identified the relevant system to be amended. He then goes on to say briefly why the changes are required, citing the introduction of charges as the main impetus. He then mentions that the property system must be capable of tracking recycling bins and wheelie bins. It is interesting to note that he mentions the issue of charges before tracking, whereas in the client paragraph the order of issues is reversed.

In this paragraph the themes of Issues to be Discussed, Processes Associated with System (required tracking and charging), Scope of System (an amendment to an existing system) and Organisational Context (the introduction of charges for a new recycling and garbage service), are all evident.

The client's paragraph is slightly longer and gives more information on the new service, and the need for the new processes, might be expected from a user perspective [identified theme Organisational Context] He mentions the proposed tracking function before the charging issue [identified themes Issues to be Discussed, Processes Associated with System].

City Council Y currently provides a weekly bag/bin garbage collection service and recycling is limited to drop-off centres and a limited private collection service.

The forthcoming introduction of a weekly kerbside recycling service and fortnightly garbage collection service using wheelie bins will involve development of a property based tracking system of individual unit I.D numbers to protect Council's considerable investment in crates and bins.

The system should also have the capacity to generate differential charging based on the size of the bin used.

Figure 5-6 Client's Paragraph for Case 4

In this paragraph (Figure 5-6), the client also discusses I.D numbers [identified theme Links in Information]. This is intriguing, as clients in other cases seemed almost exclusively processual in focus. This could be due to previous experience – the client mentions a tender document during the interaction. Or it may be that the issue of tracking of physical entities, requiring as it does a code to link it with the computer system, effectively extends the issue of links in information into the user domain.

An alternative explanation is that this has already been discussed with the analyst – however, this is less likely since it is the client who brings up the issue of physical input of crate numbers to the system during the interaction.

5.3.5.2 Analyst and client interviews

At the beginning of the first interview, the client reveals his motivations for joining the study, mainly linked to issues of resourcing in City Council Y [identified themes Organisational Context and Professional Relationships].

I have a vested interest too.. I'm hoping that the process will produce a better result in terms of what I'm looking for, and it will ensure X's commitment to achieving that...he's generally under a lot of pressure to do things for everybody, so I am hoping that this might give a me a means of commitment, this process.

He further elaborates on how he sees participating in the case study as useful for his objectives:

We tend not to go into things.. in sufficient detail, at the start of something like this, and then you end up with a product that's not flexible enough or doesn't meet your needs at the end of the day.. hopefully by going through this sort of process we can find out what's possible.. what is not probably what we're thinking of at this

stage, but could be incorporated in the thing now.. so it'll make up something that's not just rigid and useless, that it can actually do the things I want it to do now, but also can be added to in the future.

He seems to be indicating that, in the past, he has had experiences of inflexible systems due to insufficient attention to requirements [identified themes Organisational Context and Professional Relationships].

Asked what his thoughts are about the upcoming interaction with the analyst, the client says:

..I've jotted a few notes, but I haven't sat down and thought about every possible scenario. I'm hoping that he'll be able to say 'well yes we can work around that' or, 'this is the way we can achieve that sort of a goal'. So, I am not coming in on the basis of 'this is what I want and you deliver it', I want to see what is achievable. So its not structured in that sense, I'm not demanding this that and the other, its more taking a look at what we can do.

This statement seems to reflect a very open, participative approach to working with the analyst [identified theme Professional Relationships]. Although he is seeking commitment, he is aware of constraints in terms of 'what is achievable' [identified theme Organisational Context]. He also uses *dialoguing* in this statement, pointing to his use of this as being part of a personal style, as well as an interaction tactic he might use when discussing systems.

When asked in the second interview about his goals for the interaction, he says:

I wanted to try and lay out as many possibilities as I could, and then get X's response on how easy or difficult it was to provide answers to those. And he's really quite advising in that respect.. he doesn't ..balk and say 'well that's hopelessly difficult, we can't even consider that', he'll work through the issues and he'll try and find a way round it, which I find helpful, particularly as I'm not entirely comfortable with the idea of computers.

It is interesting to note that this client, when asked about his goals and earlier when asked about the upcoming interview, has poses his answers entirely in terms of his relationship with the analyst [identified theme Professional Relationships] and the process adopted, as opposed to actual items for discussion [identified theme Issues to Be Discussed].

He then refers somewhat obliquely to previous experiences with analysts and contrasts this to the positive relationship he has with the this analyst (identified theme Professional Relationships)

..if you run into a brick wall straight away, which I have had the experience of before, you tend to lose impetus.. you end up with what you get rather than what you want, if you get someone who is receptive to what you're talking about, you can go a lot further.

When asked if he achieved those goals, the client replies:

For a preliminary interview, yes I did, and what I expect back from X is a format of what we've talked about, and then with something in front of me to look at, I can play around with it. Which is what I need to really sort of work through things, rather than a vague conceptual statement about how things might interact. If I can look at X's screen and say 'yes, that covers the frequency, the size of the bin, the reissue, the complaints..', although complaints is one of the things we didn't actually talk about.

The client shows again an information focus here [identified theme Information Input to System] which seems characteristic of this client, if not clients generally, given how he was also interested in how the information might be linked in his initial paragraph [identified theme Links in Information]. He is also indicating what he expects to happen next [identified theme Future Action], in the form of output to look at. This need to look at the actual screen has perhaps also been inspired by the analyst's use of props such as a mocked up screen, throughout the interaction.

When asked if he had any social goals, the client puts forward this information about his relationship with the analyst and again gives some indication of how he feels about these relationships generally [identified theme Professional Relationships]. He also again refers to the difficulty of getting things done in the organisation [identified theme Organisational Context]:

he's quite an interesting person (in a tone that suggests he is the exception), the only problem I've ever had with X, is when he gets .. snowed under and I'm asking him for something, which in the scheme of things is not a very high priority, but I've always found him easy to deal with, he's helpful, and he's always courteous.. he doesn't dictate from a position of technical superiority as some people do.

It seems that perhaps this client has experienced analysts who are operating in the 'systems developer as high priest' role as identified by Hirschheim and Newman (1991).

When asked about his professional role, it is clear that the client feels he needs to take a somewhat defensive stance with developers, his good relationship with this particular analyst notwithstanding [identified theme Professional Relationships]:

I think to.. work through issues, probably in terms of decision making, its more of a fishing expedition at this stage, than an attempt to say 'this is what I want, you work it out for me'. Because quite a few issues came up there, that X's thought about, as a consequence of what we're doing which hadn't occurred to me. So it's a.. bouncing off one another, and .. some valuable insights are coming out of it.. I will now go back and research further, so the next time he asks me a question, or he says 'I can't do it because of this', I will say 'yes you can, because Melbourne Council do it like this, or somebody else does it like that'. So, you know, I will prepare myself for the next sort of chapter in this exercise by finding out the things I don't know now..

It is interesting that he is anticipating being told that requirements cannot be achieved, and preparing arguments to refute this. When asked whether he has a reason for believing that this might occur, he says:

Well, I find, I have had experiences of coming up against a brick wall and them saying its too difficult when in actual fact its not too difficult, its not the way they want to do it.

When asked if this occurs in his organisation, he says the following about Professional Relationships:

I think the role of people like X, their job is to provide support to people like me that I need to help me do my job, not tell me I can't do it! So its disappointing when that happens, and you're told 'no its too hard and we don't want to do it because there's some other bloody survey going on somewhere or other that might impact on this', you never get anything done because there is always some sort of other situation happening in the background.. The initial request for information can be a bit of a downer, they say 'ooh that looks a bit hard, ooh there's a lot of work in that' or whatever, without them even taking the next step and seeing if its worth doing.

When asked if he feels at a disadvantage in these situations, he says:

..there is always this big mystery about what goes on in Information Services and you really, in a lot of cases, in a take it or leave sort of situation because you don't have the expertise or the knowledge to argue the position and say 'its not that hard, why don't you just do this, this and this?' You've really got to take it at face value what you're told, and that might be because they simply don't want to do it.

He goes on to describe an organisational background where there is a shortage of resources [identified theme Organisational Context]:

Well, on the other side of the balance sheet there are a lot of competing interests within the Council, everybody wants things done, so whether its a matter of resources more than anything else, it might be significant. Certainly on a number of occasions when we've.. we're still waiting for a program to be written that we asked for about three years ago which is really an essential part of our job in the environmental health office, because it relates to our performance indicators..

The client rated the overall interaction at 4.5 (between good and very good).

The analyst, when asked what is in his mind about the upcoming interaction in the first interview, responds in terms of the issues to be discussed and the context of the project [identified theme Issues to be Discussed]:

.. we're going to be talking about new changes to our rating system to allow for the issuing of recycling crates and wheelie bins. Council has decided to introduce a new policy of recycling, of issuing to residents in the municipality, recycling crates, similar to what Hobart municipality and Clarence municipality are doing. Also the council is investigating the issuing of wheelie bins for garbage collection. Instead of having the plastic bags, two per property, sitting out the front every week, we're going to introduce wheelie bins.

It is interesting to note that he strongly identifies with the organisation he works with ('Council') and gives the full context of the project, whereas in the paragraph he furnished prior to the interview he mentions the database which will be the focus of the proposed amendments. He has perhaps also incorporated the client view by dint of the client's paragraph.

When asked what his goals were, in the second interview, he states them in terms mainly of information and processes [identified themes Information Input to System and Processes Associated With System]:

My goals were to determine the actual requirements for the system, to determine the information that they look at wanting to record, and determine how we were going to umm implement charges'

When asked if he achieved his goals, the analyst says:

I think I understand their requirements, I think we've determined what information we want to record re the issue of recycling crates and bins. The third objective has definitely not been met. Mostly because we are yet to define exactly how we want to charge and what costs we want to recoup, and I think there's still got to be a lot more discussion on how we're going to charge, and, for recycling, for garbage collection and the wheelie bins themselves, and, which is going to involve not only Y and myself and mostly the Finance Section as well.. so there's got to be a lot more discussion with them.

Here again an information focus is evident [identified theme Information Input to System].

When asked how he would describe his professional role in interactions such as the one he has just had, he says:

.. my professional role I think would be umm trying to understand their exact requirements so I can develop the system to meet their wants. In terms of being a systems analyst, I'm ..slowly getting into that role, mostly my role's been as (a) programmer, but I'm just starting to develop skills in to trying to understand what people want. From what I've been watching on the video .. today, I think I've one or two things to learn. Overall, professional wise, what I wanted out of today was to just to get a full understanding of what they required and to come up with a few ideas to satisfy..

So here the analyst is concerned with understanding [identified theme Mutual Understanding]. When asked to rate the interaction his reply underlines the theme of understanding:

I think 4 to 5, I think we went very well actually, because Y was getting his ideas across, and I was umm, getting a few sample solutions across to him, which made things clearer to Y, and how he thought the system might hang together, and he seemed happy with that. If you can walk away from anything like this feeling happy that you've got your ideas across and people are thinking on the same level, I think that's a very good indicator on how well we went.

5.3.5.3 Background questionnaires

The background questionnaires showed very different backgrounds for analyst and client. The analyst had been with the organisation for six years, in the same position, as a programmer, and was mainly involved in development of the Council's textual database, plus assistance with the helpdesk and networking support. The client had also been with the organisation a long time, at least six years and was now in his third (and quite senior) position with the Council, as a Waste Management Coordinator.

The client had a varied background encompassing environmental health and waste management for about ten years, plus a long spell (8 years) of overseas travel where he undertook a wide range of jobs. The client's degree was in Philosophy and History and he also had a Graduate Diploma in Environmental Studies and various Environmental Health qualifications. By contrast, the analyst had a Associate Diploma in Business Computing as his highest qualification, and his only previous post was as a timesheets clerk and computer operator at a local firm.

5.3.5.4 Videotaped review

In this review, as in many others, analyst and client continued to build up some concepts about the project – for instance, the analyst amplified the issue of getting the initial data about issued crates and bins into the system and identified it as a hurdle.

Both discussed how they liked to approach discussions like this [identified theme Issues to be Discussed], and the use of props [identified theme Use of Props]. Also they both felt that they understood each other and communicated well [identified theme Mutual Understanding].

The client, when reviewing the first segment, says that he wished he had structured the problem a little better for the analyst:

I suppose what I noticed, sort of watching that is that I probably wasn't as lucid and precise as I would have like to have been. I was really thinking aloud a lot of the time, not presenting X with some clear direction. At the end of the day that might not make any difference at all, but in the terms of him getting a good grip on it I'm wondering whether I would have been better off not sort of jotting in note form a whole heap of stuff and then just working through it, one by one..

So here there is some reflection on how issues were to be discussed, and the process of doing so [identified theme Issues to be Discussed]. The client reiterates his view when reviewing the second segment:

Yeah X was, as you can see now getting down to business so he's assimilated all the all of my ramblings, and, it obviously has got a message for him, as to what I'm saying. I'm conscious again that I wasn't probably focused enough I tend to jump round a lot in places and it makes it hard you know in this type of situation for X to pick up on all the bits and pieces that I keep throwing in. And, again it gets back to umm my goal I was talking about earlier of being more organised. I can see from watching this process the benefits of being more set up, without losing the the other sort of.. creativity.. I could have provided a much more structured sort of flow of information so that he would be in a better position to start with the development of the computer system.

It is interesting to note that, in a number of cases, people tended to be critical of their communication style and actively looked for ways to improve it, as this client is doing.

The analyst disagreed with the client's self assessment, and shows a preference for an unstructured first session [identified theme Issues to be Discussed].

But umm I don't think Y is rambling (*looks at Y*), I think he is getting his point across very well in in a lot of respects, because I look at this initial session as virtually not quite a brainstorming session, but a session where we can sit down, sort out the initial problem and then just throw a few ideas around, just to get comfortable with the problem and see that yes there are solutions, there might be multiple solutions and there might be a lot more information that we require..

The client still has his doubts:

I suppose the problem though is if we go on from here and I haven't given you everything and we get you know right to the end of the process and I turn round and say 'ohh X I forgot about this', it's going to throw a bit of a monkey wrench in the works.

The client goes on to describe how that the use of *props*, in this instance in the form of a mocked up screen on paper created by the analyst, aided his understanding [identified themes Mutual Understanding and Use of Props].

the next ..section that we'll see, where X actually starts writing things down, and.. putting it on paper and saying 'well this is how this links to that'. , I think that's when I started to feel more comfortable, .. because I could see that .. the thought process has actually been put down on paper.

The analyst picks up on both issues, the unstructured nature of the early stages, and the use of props, in this way:

But normally though we don't just have one meeting, I go away.. Normally we have three or four meetings .. mostly four, where you can start really going into the in depth development I might do a couple of little dummy screens on the computer say 'how's this look?' and then we'll sit down and say 'Ohh yeah'.

The client interjects and adds to the *dialoguing* that is taking place here:

Forgotten such and such.

The analyst resumes:

Forgotten such and such', and before I'd really go in and do the bulk of the programming, I'd still do the cosmetic, just the front screen so people can get used to seeing, 'yes this is what I'm going to see. Is there anything else I want on there?'.

The analyst points to the issue of initial data entry as being problematic when reviewing topics 7 –10.

.. straight away we point at one big issue, and I think it is a big issue and that's the initial recording of all the bins issued. And that's going to be a massive job there's something like eighteen thousand properties and that's a conservative estimate within the city, so you've got eighteen thousand recycling crates with details to record, you've got eighteen thousand wheelie bin details to record and that's not allowing for multiple tenancies, so you are looking at least over twenty thousand, or twenty thousand for each type so about forty five thousand pieces of information that you may have to be recorded and that's **a lot of work**. (*emphatically*)

He also reiterates that they are starting to see things in the same way [identified theme Mutual Understanding]:

..I'm just starting to know what Y wants me to do. And Y is starting to know what I'm thinking and we're just trying to see, both our thinking is coordinated.

As the review progresses, both analyst and client are making extra notes about topic 11 and 12. The analyst states that he realised that multiple tenancies were a concern for the client:

I did notice there that Y was very concerned about multiple tenancies, (*smiles*) I tried to start off with a simple solution straight away, he was jumping about the multiple tenancies. .. which is going to be a big issue for us, some of our system sometimes doesn't really cater for multiple tenancy.

It is interesting that the analyst is very actively using the review to pick out major issues, as is the client who says:

..in that section you made a comment about bin repair and if the bin was damaged by the householder, that's one of the questions we are going to have to look into so that and a couple of other things that came out of it will be useful for me in further researching the issue. The problem with commercial properties came up in that area and that's gonna be a **big** one for us, I don't know quite how we are going to cope with that at the moment. .. that certainly has the potential to complicate the whole issue not only with the tracking but the actual provision of the service to the commercial properties.

He also describes how he found the use of the prop helpful [identified themes Mutual Understanding and Use of Props].

I felt more comfortable once X got something down (gestures) because I don't relate very well to computer systems and the way this information is managed. So if I can see something written down, I can relate it to the screen as it appears before me on the computer. I can see how things fit together so .. I feel better once we get to this stage and I know that we're thinking along similar lines. And that the type of information that I'm after, is actually being umm developed into the system.

As the review proceeded, there was further amplification of some themes, such as Mutual Understanding, but no new themes were identified from this point.

5.3.6 Contextual Influences On Themes

This case showed some interesting amplifications on themes. Firstly, there was the issue of how the client needed to maintain ownership because of prior negative experiences [identified themes Organisational Context and Professional Relationships]. Like the client in Case 1, he made a distinction between his positive perception of his individual relationship with the analyst and relationships with the IT Section as a whole. There was also the issue of actually getting requirements implemented in what seemed to be a tightly resourced organisation, and this has echoes of the situation in Case 3. There is the question of course, of how these resource constraints impact on Professional Relationships at the section and individual level. The analyst and client in this case had a long standing shared organisational context, probably contributing to the coherence of their interaction.

The use of props featured strongly in this interaction, and were used by the analyst early on in the interaction [identified themes Mutual Understanding and Use of Props]. The participants raised some interesting questions about how the task of tackling various issues should be approached [identified theme Issues to be Discussed]. For instance, the client felt if he was more structured in his approach, the analyst might gain more information, whereas the analyst felt that the use of prototyping would ensure all requirements were covered. It is also interesting to note that the client posed his goals initially in terms of a process to achieve certain outcomes, and to speculate that he was considering which processes or approach would work best in this particular situation.

5.4 Case 5 – State Agency B

Vignette

The Information Technology Officer from State Agency B meets a Management Forester who is responsible for managing the Softwoods Program in one of the regional state divisions. The forester is in his mid fifties, the information technology officer in his thirties. The two have met before, but have not worked together on a project as yet. The Softwoods system is about to undergo a substantial overhaul and the objective is to discuss how the Softwoods Program business processes operate at present, with regard to royalties paid to loggers and reporting requirements. Most of the discussion revolves around the detail of those business processes [Processes Associated with the System], the deficits of the current system [Problem Identification] and some information needs based on the new processes [Information Output from System]. The interaction is also noticeable for a great deal of shared context – the analyst is obviously extremely knowledgeable about the forestry industry – the only point of organisational explanation occurs when the client describes the recent problems that have occurred in the sales system, and its impact in the regions.

5.4.1 Topic Analysis

Table 5-19 categorises the types of topic changes that occurred in Case 5, using Planalp and Tracy's (1980) typology. From this we can see that the client made twice as many topic shifts as the analyst, unlike the previous case studies. Certainly in this interaction, the analyst very much adopted a 'listening mode' while the client described his processes in detail.

Table 5-19 Topic Shifts and Initiators of Topic Shifts in Case 5

TOPIC SHIFT	Frequency		
	NEW TOPIC INTRODUCED BY ANALYST	NEW TOPIC INTRODUCED BY CLIENT	TOTAL
Immediate Implicit	1	5	6
Immediate Explicit	4	9	13
Earlier Implicit	2		2
Earlier Explicit	1		1
Environmental Implicit			
Environmental Explicit			
Unspecified Implicit			
Unspecified Explicit			
Total	8	14	22

Table 5-20 gives more information about the interaction topics themselves and the sequence of topic changes in Case 5.

Table 5-20 Topics in Case 5 Listed By Title And Time of Introduction

No	TOPIC	INITIATOR	TIME INTRODUCED
1	Issues to be discussed	Analyst	0.00
2	Royalty calculations on two systems	Client	0.40
3	Problem of negotiating base rates	Client	1.50
4	Responsibilities for negotiation	Analyst	2.29
5	Changing basis for royalty calculation	Client	3.12
6	Information implications for PDAs	Client	4.54
7	Sampling for royalty calculations	Analyst	6.26
8	Alternative methods of assessment	Client	8.11
9	Relationship between allocation and assessment	Analyst	9.22
10	System provision of allocation information	Analyst	11.13
11	Client's use of information from sales system and relationship with districts	Client	12.50
12	Analogies with pine sales system	Client	14.16
13	Tendering process	Analyst	15.10
14	Information lack in sales system – supply components	Client	16.47
15	Need for revised product codes in sales system	Client	18.19
16	System implications of revised product codes	Analyst	19.48
17	Need for road tolls in sales system as component of royalties	Client	21.03
18	Comparing Hardwood and Softwood systems	Client	21.54
19	Change from stumpage to mill door delivery	Client	22.41
20	Details of delivery process and stumpage rates	Client	23.03
21	Future changes in sales process and system	Client	25.56
22	Planned changes to system	Analyst	27.10

5.4.2 Relating Codes to Topics

Table 5-21 illustrates dominant codes in the topics of Case 5. There is an emphasis on *process identification*, accompanied by a number of references to *organisational context*, as the client explains how his business processes work at present and how he would like them to work in the future.

Table 5-21 Codes as They Appeared in Topics in Case 5

NO	TOPIC	DOMINANT CODES
1	Issues to be discussed	<i>agenda setting, conversation topic</i>
2	Royalty calculations on two systems	<i>process identification, process rule</i>
3	Problem of negotiating base rates	<i>problem identification, organisational context</i>
4	Responsibilities for negotiation	<i>scoping, organisational context</i>
5	Changing basis for royalty calculation	<i>future action, organisational context, problem identification, process identification</i>
6	Information implications for PDAs	<i>information identification, process identification, organisational context</i>
7	Sampling for royalty calculations	<i>process identification, process rule, exemplification, rapport building, information identification</i>
8	Alternative methods of assessment	<i>process identification, process rule, problem identification, organisational context</i>
9	Relationship between allocation and assessment	<i>reflection, exemplification, dialoguing, posit, process justification, organisational context, problem identification</i>
10	System provision of allocation information	<i>posit, scoping, information identification,</i>
11	Client's use of information from sales system and relationship with districts	<i>organisational context, process identification, scoping, process justification, information identification</i>
12	Analogies with pine sales system	<i>organisational context, project history, problem identification</i>
13	Tendering process	<i>posit, process identification, process justification, organisational context</i>
14	Information lack in sales system – supply components	<i>problem identification, process identification, information identification, scoping</i>
15	Need for revised product codes in sales system	<i>problem identification, process justification, information identification, exemplification, organisational context, negotiation</i>
16	System implications of revised product codes	<i>key searching, future action, organisational context, imagining, dialoguing, problem identification,</i>
17	Need for road tolls in sales system as component of royalties	<i>information identification, future action, problem identification, process identification, process justification</i>
18	Comparing Hardwood and Softwood systems	<i>key searching, organisational context, future action</i>
19	Change from stumpage to mill door delivery	<i>problem identification, process identification</i>
20	Details of delivery process and stumpage rates	<i>process identification, exemplification, information identification, imagining, organisational context, future action, negotiation</i>
21	Future changes in sales process and system	<i>future action, organisational context</i>
22	Planned changes to system	<i>future action, negotiation, dialoguing</i>

Table 5-21 also shows a distinct lack of interactional strategy and supporting tactics – *imagining, dialoguing* are fairly infrequent and there are no *reframes*. Given that this interaction was a first meeting where the client outlined his processes and current problems, it may be that these strategies were not extensively drawn upon by either analyst or client, as no design, in the form of detailed stepping through of processes, was taking place. Alternatively, it might be that neither analyst or client particularly draw upon these tactics as a matter of course.

Another explanation might be that they have enough of a shared conceptual framework to obviate the need for such tactics – certainly the analyst is very familiar with forestry in general, having worked at the agency for a number of years. There are many references to *organisational context* – these are made mainly by the client as he explains how changes in business conditions are influencing proposed changes in processes. As such then these references can be seen as directly affecting the system design and project conduct, although there is one reference to larger issues within the organisation. Where

the analyst refers to *organisational context*, it is generally associated with identifying commonalities across systems.

5.4.3 Mapping Topics To Themes

Table 5-22 shows the topics mapped to themes.

Table 5-22 Mapping of Topics to Themes in Case 5

THEME	TOPIC
1. Issues to be Discussed	T1
2. Scope of System	T4, T10, T11
3. Personal Disclosures	
4. Information Input to System	T6, T14, T15, T17
5. Processes Associated with System	T2, T5, T7, T8, T9, T13, T20
6. Links in Information	T16, T18
7. Future Action	T21, T22
8. Problem Identification	T3, T19
9. Information Output from System	
10. Analyst's Understanding of Processes	
11. Future Solutions	
12. Organisational Context	T12

There seems to be a fair spread of topics across themes, despite the coherence of the interaction topics, and this is perhaps due to two factors:

Firstly, the client and analyst, being geographically dispersed, had few opportunities for face to face interaction and it was apparent that this was the first time they had conversed face to face for some time. Secondly, the stage of the project – as it was a first meeting, the client effectively provided an overview of the processes associated with the system and speculated on how they might change.

5.4.4 Mapping Codes to Themes

Table 5-23 illustrates the dominant codes for the themes represented in Case 5. For each theme, the code on which the decision was based to locate the topic in that theme is given first. Asterisks indicate many instances of the same code.

As with other cases, *information identification* and *process identification* are seen in both the themes of Information Input to System and Processes Associated With System. Whether a topic was allocated to either theme depended on whether information or process was the overriding feature of that topic.

The reader will also note that there are a number of *organisational context* codes, and yet only one topic is held to represent Organisational Context as a theme. This is because where *organisational context* occurred in conjunction with say, *process identification*, it was judged to be incidental, in that it assisted the topic rather than constituted the primary driver for that topic.

Table 5-23 Themes and Dominant Codes in Case 5

THEMES	DOMINANT CODES
1. Issues to be Discussed (T1)	<i>agenda setting, conversation topic</i>
2. Scope of System (T4, T10, T11)	<i>scoping*, organisational context*, posit, information identification, process identification, process justification, information identification</i>
3. Personal Disclosures	
4. Information Input to System (T6, T14, T15, T17)	<i>information identification*, process identification*, organisational context, problem identification*, scoping, future action, process justification*, exemplification, organisational context, negotiation</i>
5. Processes Associated with System (T2,T5,T7,T8, T9, T13, T20)	<i>process identification*, process rule*, future action*, organisational context*, problem identification*, exemplification*, rapport building, information identification*, organisational context*, reflection, exemplification, dialoguing, posit*, process justification*, imagining, future action, negotiation</i>
6. Links in Information (T16, T18)	<i>key searching*, future action*, organisational context*, imagining, dialoguing, problem identification</i>
7. Future Action (T21, T22)	<i>future action*, organisational context, negotiation, dialoguing</i>
8. Problem Identification (T3, T19)	<i>problem identification*, organisational context, process identification</i>
9. Information Output from System	
10. Analyst's Understanding of Processes	
11. Future Solutions	
12. Organisational Context (T12)	<i>organisational context, project history, problem identification</i>

5.4.5 Considering Themes Across Data Sources

This section considers how the themes occurred over all data sources in Case 5, with the aim of discovering how particular themes originated and evolved in relation to particular contexts across the case. Table 5-24 gives a summary of the occurrence of themes across data sources. As with previous cases, the reader will note some themes associated only with the surrounding data sources, in this case Professional Relationships and Mutual Understanding.

Table 5-24 Occurrence of Themes Across All Data Sources In Case 5

THEME	INTERAC- TION	PARAGRAPH - ANALYST	PARAGRAPH - CLIENT	INTERVIEW - ANALYST	INTERVIEW - CLIENT	REVIEW
Issues to be Discussed	✓	✓	✓	✓	✓	
Scope of System	✓					✓
Personal Disclosures						
Information Input to System	✓			✓	✓	✓
Processes Associated with System	✓	✓	✓	✓	✓	✓
Links in Information	✓					✓
Future Action			✓			✓
Problem Identification	✓	✓				
Information Output from System		✓				
Analyst's Understanding of Processes	✓			✓		✓
Future Solutions						
Organisational Context	✓	✓		✓	✓	✓
Professional Relationships				✓	✓	✓
Mutual Understanding					✓	✓

5.4.5.1 Paragraphs from analyst and client

Both paragraphs from the participants were submitted by email, perhaps indicating a preference by the participants to communicate in this way. As the participants were separated by some distance, it seems likely that this is how they communicated as a matter of course. The chain of email correspondence also allowed the evolution of an agenda before the meeting. The analyst starts the correspondence in his paragraph (Figure 5-7).

It can be seen here that he is interested in Royalties and the process of determining them [identified themes Issues to be Discussed and Processes Associated with System] and also any future requirements for the system [identified themes Problem Identification, Information Output from System, and Organisational Context]. It is interesting to note that the analyst poses his questions in terms of the client's organisational area (the Softwoods Program) and processes, rather than mentioning a computer system per se – this is the only case study where this can be seen. Perhaps this can be attributed to the fact that the analyst has been with the organisation a long time, and identifies with all of its aspects. A similar approach can be seen in Case 4 where the analyst also seems to identify with organisational changes, although that analyst did also mention the system concerned.

Cathy,

I've indicated to Y two broad areas of discussion. We may only have time for on-camera discussion of one of them. The paragraph below is the relevant bit. With regards to tea facilities, just bring the Tim Tams, we have everything else!

Regards

X

On Friday, I thought we might go over two areas

- 1) Royalties – How would the Softwoods Programme like royalties to be determined/set? Is the current sampling method adequate?
- 2) What are the reporting requirements for the Softwoods Programme, both for own use and for other parties (eg reports to executive etc)

Figure 5-7 Analyst's Paragraph for Case 5

Cathy,

Attached is a test para re what I expect to discuss. I will also have examples from our current system as well as output from my PC database.

Looking forward to Friday,

Cheers

Y

Memo to:- Cathy Urquhart

X

Re: Sales Video Session

The two areas you mention are fine, that is Royalties and Reporting

I can imagine this as a preliminary discussion, aiming to fit changes we have in mind with what the Sales System can accommodate, plus what opportunities there may be in the revision. In this context it is valuable in that our more detail planning can take into account any opportunities, and also recognise any limits.

I would imagine that most of the time would be spent on Royalties, as that is where any changes are going to have the greatest effect; also in regard to Reporting, I download the data I need in an electronic file and process it using a PC database (FoxPro).

See you Friday.

Regards,

Y

Figure 5-8 Client's Paragraph for Case 5

The client's paragraph (Figure 5-8) gives some information on how he expects to approach the interaction and its topic [identified themes Issues to be Discussed and Processes Associated With System] and he is possibly engaging in some *agenda setting* in outlining those expectations. For instance, he mentions 'opportunities in the revision' [identified theme Future Action].

It is also interesting to note that he does make some technical references in his paragraph to the software package and how he approaches reporting [identified theme Information Output from System] – this last is probably a response to the analyst's reference to the second issue (Reporting).

5.4.5.2 Analyst and client interviews

The client, when asked what his initial thoughts are about the upcoming conversation with the analyst, says:

Well, basically, we're changing a lot of our directions and the Softwood Program, that we're looking at, is going through a substantial overhaul in terms of our sales. We haven't started on that, other than running a few ideas. I'm talking to X now about the way things are heading with the computer system which they are also changing. This should get us working together, I was hoping that this is actually helping us!

So, here the client is firmly placing the topic of planning changes to the computer system within the context of planned changes to business processes associated with the Softwood Programme [identified themes Issues to be Discussed and Organisational Context]. His remark about 'actually helping us' seems significant here, and can be seen as an augury of how he sees the analyst–client relationship [identified theme Professional Relationships]. In the later interview he expands on this theme by saying:

..because I knew that X would be integral to setting up the system, I wanted him to have an appreciation of some of the important factors that I see. For example, the way we measure logs on the landing, is done as a convenience as to the way operations are carried out, rather than the other way round.. so that what I am saying is we're not going to be driven by the system, we want to have a system that works for us

There are some similarities here with both Case 2 and 4, where a client that is older and has a degree of authority in the organisation takes the view that any information system must serve their needs rather than disrupt their processes [identified theme Professional Relationships]. Again, this attitude is probably determined by previous experience with projects. During the review of the interaction, it emerged that there had been previous technical problems with the system which affected regional operations [identified theme Organisational Context].

However, it is clear that he holds the analyst in high regard, as did most of the clients in the cases [identified theme Professional Relationships]. He says:

X and I have worked together in the past. I had this particular problem a number of years ago and he solved it beautifully. ..I've had a few changes on that since, which he's helped me with. You know, I trust him, I know that he'll try to accommodate me if he can.

Asked how he perceived his role in interactions such as these, the client said:

As a manager out there, looking at our products, product flow, and information that we need, supplying reports to my superiors, I view X as an equal and as a professional in another area, where he's going to design the systems that are going to best give me this information. So, its one of, you know, working hand in hand on a common problem.

So here he is describing the relationship as one of equality between two professionals in different areas [identified theme Professional Relationships]. Also he poses the relationship primarily as one where the analyst can make information available from the system [identified theme Information Output from System] to support various processes.

During the initial interview, the client outlined how future information in the system might be structured [identified themes Links in Information and Future Action]. This case, and Case 6, were the only instances where the client took an active view about how keys might operate. This is probably attributable to some IT expertise from the client side in both cases.

..we have a four digit product code in our sales system. I'm going to be completely revising those, and I am going to be looking at say, an alphanumeric code, for a couple of reasons. First of all, because its easier to remember. Secondly, we're going to be.. using the same numbers but changing the tags on the end of them.. I think people find that a bit difficult. I think if we change the whole way we record to an alphanumeric system, a. they'll learn it easier, and b. they'll know its a new system, because people in the field logging don't really understand..

The client is justifying the proposed new code by explaining how it will be easier to use [identified theme Processes Associated With System]. He goes on to explain why the proposed change has come about:

We're looking at going from say just selling saw logs to customers, to looking at doing the logging ourselves, and segregating our logs into log quality parcels – that's a significant change. Therefore there will be change in the way we record our activities.

So here the client is illustrating perhaps one of the most common reasons for change to information systems – as the processes change, the information required to support the changed process also change [identified themes Information Input to System, Processes Associated With System].

The analyst's view of the upcoming interview is fairly congruent with the client's view, in that the analyst feels he needs to relate his knowledge of the system to changes in business processes [identified themes Issues to be Discussed and Processes Associated With System].

..basically we have a system that is designed to capture data about wood that's taken from the forest, wood that's actually cut. I know quite a bit about what happens on the Native Forest side of things, and Y is involved with the Softwoods Program.. I am.. not as much up to speed on the business side of Softwoods as I am with the Native Forests, so essentially I am hoping to get some information on that side of things.

He goes on to explain the context of the change [identified themes Organisational Context, Issues to Be Discussed].

The whole system is essentially being redeveloped.. so we're not tied to having to fit anything into a particular system, so I don't need to say to X, 'well, no, we can't do that because the system won't allow it', its, 'you tell us what you do, in terms of negotiating with customers, and we will see what we can do in supporting the business side of things'.

It is interesting that he also makes a link here between the task at hand, and how this influences his approach to the client [identified theme Professional Relationships]. He seems to be saying here that he can afford to take a participative approach because there are no constraints on the redevelopment [identified theme Organisational Context].

When asked about his goals for the interaction in the second interview, he introduces an information focus [identified theme Information Input to the System], but again places it squarely in the context of the client's business processes [identified themes Processes Associated With the System, Issues to Be Discussed].

My goals were to basically extract some information as to how the Softwoods Program both currently run, and future directions they are thinking of taking, so we can build some flexibility in their system and cater for those business decisions..

There is an indication here that the client's original agenda, that of maintaining flexibility, as stated in his initial interview, and the client's stated desire to look for opportunities in the revision, as stated in his early paragraph, seem to have been taken fully on board by the analyst. It is not clear from the data sources that the client has

stated the need for flexibility directly to the analyst, but the analyst has picked this up nevertheless.

When asked if he had any social goals for the interaction, the analyst replies in terms of the relationship, as did most participants [identified theme Professional Relationships].

..we've had a pretty good working relationship in the past.. I would consider it more along the lines of continuing the relationship. Certainly, in that regard, it was a good opportunity to catch up with him..

The analyst gave this response when asked about how he saw his professional role [identified theme Professional Relationships].

..I see it as basically, I was going to say guiding, but that's not quite the right word. I guess I want to be able to make the client feel as comfortable as possible, just, just to talk. That way, the information he gives, I can report that, and it doesn't matter if he talks about some extra things, that is quite useful in itself. Essentially, it is to keep him talking (laughs).

There are several things of interest here – apart from stating that he plays a guiding, facilitatory role, he describes his strategy for this interaction and possibly others. The strategy is one of allowing the client to talk as much as possible, so all information is provided. It is interesting to speculate whether this is a strategy born of experience, a result of perhaps having missed information in the past, or simply an individual characteristic of thoroughness. He also confirms an information rather than processual focus, while at the same time conceding that 'extra things' – presumably contextual information that the client gives about processes, may well be useful of themselves.

5.4.5.3 Background questionnaires

The background questionnaires showed that both analyst and client had been with the organisation for some time – the analyst for 11 years, since leaving school, and the client for a total of 14 years. Therefore it is reasonable to assume that they had a fair amount of shared context between them about the organisation they both worked in. Both had science degrees, albeit in different discipline areas – Information Science and Mathematics (the analyst) and Forestry (the client). The client had also undertaken a diploma in Environmental Protection Management.

5.4.5.4 Videotaped review

As in many of the reviews, the participants in Case 5 actively used the review to continue to build up rapport and understanding of the topic [identified themes Mutual Understanding, Professional Relationships and Issues to be Discussed].

Certain issues of project history, and the state of the analyst's knowledge about the system, emerged in an interesting way, and effectively influenced a negotiation about what to do next [identified themes Organisational Context and Analyst's Understanding of Processes].

The client commences the review by explaining his view of the information and processes in the system [identified themes Processes Associated With System and Information Input to System].

I guess we were looking at the fundamentals of how our sales are carried out, and the information we need...certainly what changes we have, and how that's going to affect what information we collect.

So, again, the client seems to be saying that he sees processes as the starting point. It is interesting to contrast this view with the analyst's account of the same first segment:

Basically, I agree with Y there. Looking into what the business side of things are.. I guess in the back of my mind, I'm sort of moving through 'OK, what are we going to need to actually store in the system?', to accommodate the way this is now happening.

The analyst, then, is actively reflecting on the implications of the processes in terms of information that will need to be stored [identified theme Information Input to System]. In common with all the analysts in these cases, he demonstrates an information focus.

The next segment is interesting – it reveals that the client actually expected the analyst to be more knowledgeable about his processes, based on what he assumed was a shared context [identified themes Organisational Context and Analyst Understanding of Processes].

..there's information there that X wasn't sure of, interesting.. because I just assumed that X knew a lot more than he did you see. And when he came up with like a sampling method, because the programmers were involved in setting that up, I just assumed that you people (looking at analyst) knew all about it.. so you sort of caught me a bit there. (analyst and client both laugh)

The analyst explains, in a rather self justifying manner, that nevertheless constituted some honest reflection, what background he brought to the interview [identified theme Analyst Understanding of Processes].

..the interesting.. thing you said that I caught you by surprise because you thought I knew more about it than I tend to indicate.. you said that.. another systems analyst had got information out for you. That's true, he has, because he was probably involved in doing that part of the system, whereas I wasn't involved in that task you see (addressing client and gesturing).

It is interesting that he himself observes that 'you thought I knew more about it than I tend to indicate', showing considerable insight and honest self reflection. He goes on to explain precisely what the state of his knowledge about the system is:

I have done most of my work on the Forestry side, which was what I was particularly interested to talk to you about the Softwood side, and what happens, because of my involvement in the original system. I basically didn't touch the Softwood system, so even as to what is currently going on, I am a bit hazy about some aspects, I needed to find out a little bit about that'

It is also interesting to note that the analyst had declared the state of his knowledge to the researcher in the initial interview, but had this review not occurred, he would not have declared it to the client. The client comments:

It shows you the value of getting together, doesn't it? (smiles ruefully)

He is perhaps commenting here not only on the value of getting together (given that analyst and client are geographically dispersed) but on the value of the review process.

The client uses the next segment to state a negotiating position about the system [identified themes Professional Relationships, Organisational Context]. He says:

I'm trying to get across to X that the way things are happening in the field are, are where we put our priorities, and then we try to fit our computer systems with them. .. I've seen too many .. we have to change because the computer can't allow this.. or not necessarily computers but 'we want our information nice.. and neat this way, so you change your operations to fit it' and it doesn't really happen not all that well. (laughs) So I'm trying to get X a bit of a background into why we do things, what happens on the landing.

This statement was later echoed in the individual interview with the researcher. Here he gives a reason for his view – previous negative experience with other systems [identified themes Organisational Context and Professional Relationships]. He shares this perspective, born from previous experiences, with the clients in Cases 2 and 4. He also uses *dialoguing* to get his point across. He is also trying to ensure that the analyst has an understanding of the processes that are undertaken [identified themes Processes Associated With System, Analyst's Understanding of Processes].

He goes on to emphasise the importance of the analyst's understanding the processes, rather in the manner of the client in Case 1:

So that he gets a bit of an image when he sits down.. to start putting the system together, he **has** this background. He can probably visualise his job a bit better, in the total perspective. I've always thought that's important and that's probably why I've spent a fair bit of time there.

The analyst sees the segment very differently – for him, it is about establishing the *scope* of the system and the responsibilities of the client and the district for information associated with the system [identified themes Scope of System and Information Associated With System].

I think for me this is one of the hardest areas, I was I was really trying to sort out umm, what the term? (addressing client) the delineation was, between your responsibilities and the districts responsibilities. OK. And what you needed to do your job and what the districts need to do their job with.

It is interesting to note that the analyst actively engages the client in discussion, in contrast to the client, who has just discussed the analyst as if he were not present. The client may be trying to establish dominance by not including the analyst in his observations.

They then go on to discuss, together, a problem with district information in the system that the client referred to in the interaction. The client sees it as an issue of responsibility [identified theme Organisational Context], but the analyst offers a different explanation [identified themes Problem Identification and Organisational Context].

That delineation is important but otherwise it seems that that it just never comes out right. Nobody ever sort of accepts responsibility there. .. it took a few quarter review meetings to to finally get the districts to realise when they are saying you know this is information is garbage,(laughs) that they're really sort of criticising themselves. Because that that's the that's where the problem was .. I mean it could be a system problem as well.

The analyst takes this up and offers a different view:

I was just interested in your comment, that it may be a system problem.. but I really think it comes back to training as well. .. maybe we haven't done enough in training, training the people on getting the information input correctly to be able to pull it out. It's not necessarily a system problem, the system is quite adequate..

He elaborates, and it is clear that he is familiar with this particular problem ([identified theme Organisational Context]).

It's actually interesting, from my point of view.. that particular problem you mentioned.. can be sheeted home to an inconsistent interface, in that your sales system (looks at client) works in one manner and all our other systems that are working in a different manner, and that caused the problem cos' what they tried to do is they keep entering the information and they try to hit the escape key to get out, which is what they do in their other systems. Because this escape character gets whacked into the data..

The client responds by saying:

Which is why W went very quiet last time I saw him and asked him if he sorted out the problem! (both laugh)

W is a person in the district. Note how the client still sees it as district problem. He goes on to incorporate both views in this summation of his dialogue with W about the problem:

I said.. 'you have a look at it first because as I see it it's originating from the district and so you start with it and then we'll all get together', I said, 'this isn't a witch hunt. You know we want to get things running properly'. Could very well be a system problem, so we went from there and I think you people became involved and we fixed it.

This discussion, of an organisational problem associated with the system that was subsequently solved [identified theme Organisational Context], seems to serve two purposes in this review. Firstly, it provides a shared organisational context associated with the system that allows the participants to build rapport [identified theme Mutual Understanding]. Secondly, the point of discussion allows both participants to establish

their roles and expertise with regard to such a problem [identified theme Professional Relationships]. What is interesting is that the analyst did not reveal his knowledge of the problem during the interaction itself. The analyst reflects on his own and other's practice during the discussion of this example, when he attributes the problem to training [identified theme Professional Relationships].

The analyst, reviewing the next segment, comments on the difficulty of grasping some elements of the client's domain [identified theme Analyst's Understanding of Processes].

Umm ahh.. first of all I mean talking about short term tenders of up to five years..(laughs and looks at client), I was thinking, 'goodness you throw away computer systems in that time.

The client looks surprised and laughs at this remark.

The analyst continues to address the client and says:

You know and it's just it's just interesting that that is just the business view five years is not aah is not long term. With technical things five years is a hell of a long time(laughs).

The client merely remarks that this is an interesting perspective.

The analyst talks then of how the segment progressed:

So we sort of swung right from the business side of things right down to the nitty gritty stuff quite quickly..

The client responds:

Yes. I agree with that. We cut back quickly to go over the tender system. Subtlety doesn't work, that's why I asked my question, which was good.

He is referring here to a sudden, direct question made by him during this segment, when the need for revised product codes was discussed. Again, this can be seen as one of a number of negotiating moves made by the client [identified theme Future Action]. He said, during the interaction:

Can you do that?

The analyst's response was:

We can do anything you want.

So, from the client's point of view, the lack of subtlety could be said to have worked.

The analyst emphasises the point he made in the interaction, that they will need to consult another person in the organisation about possible changes to product codes [identified theme Links in Information, Organisational Context and Future Action]. Like many participants in the case studies, he is using the review to continue negotiation and come to agreement [identified themes Future Action].

And right at the end, its important that what we were discussing is not just ourselves in isolation, there's other aspects of the organisation has got to all pull together to (gesturing, talking to client. To get the issues sorted out. Because you could head in one direction and Z off in another.

The analyst is making an appeal primarily based on their organisational identity – certainly this organisation was seen to have a strong culture based on the industry [identified theme Organisational Context]. It was noticeable that during the interaction and in the initial interview, the analyst took pride in his knowledge of the industry itself. The client agrees with the appeal and responds in the same vein:

Even though they are two, well, completely separate things in the field, a lot of people are doing the same type of work on either Native Forests or Softwoods. (gesturing with hands two parallel tracks and addressing researcher). Also just in doing up our summary reports etc, its silly to have a totally different system from either Forests or Softwoods when we're doing our computer reports, yeah..

He talks about 'a lot of people doing the same type of work', and in this way explains to the researcher that he can see this is a benefit to the organisation to approach the system in this way.

In the next segment, the issues of understanding the client's domain emerge again [identified themes Mutual Understanding, Analyst's Understanding of Processes].

The client starts off by saying:

Once again I just assumed that X knew what mill door delivery was, which obviously he didn't. And it's an important aspect of where we are heading (gestures), and I wanted to make sure that he did understand why we were going that way, and what it would involve in terms of the extra information we would need.

There are indications here of his prior stance that it is very important that the analyst understand the full background of his processes [identified themes Analyst's Understanding of Processes and Professional Relationships].

The analyst had actually stopped the client in this segment and asked him to clarify his terms, and here gives his justification for doing so, using *dialoguing* to get his point across:

Yes. He's hit me with two terms in the last sentence, mill door delivery and stumpage rate (laughs). Wow! (researcher and client laugh). Oooh, (said in a theatrical way), 'let's get some more background into this'. And that's very useful.

He also uses the review to confirm his understanding of the terms with the client:

.. the customer is charged just for the just the royalty for the wood taken, that's the stumpage rate.

The client says:

That's right yes.

The analyst continues:

As opposed to mill door delivery where not only you've got the cost of getting the wood, you put in the cost of segregating it, cost of sending it to the mill. So you've got all the costs right up to the point where the wood hits the mill, as opposed to just cutting it down.

The client nods to confirm this.

They proceed with reviewing the final segment and the client says:

..basically what I wanted to find out was what changes X had envisaged, in terms of how it would affect the overall thing. And he did explain that. And the changes were not fundamental, and in terms of the information that that we, well or in terms of how we do it now there will certainly be improvements and if we want it, and that was about it. I was happy to hear that. (said seriously)

This could be seen as a reconfirmation of the negotiation about future changes that had taken place in the interaction [identified themes Future Action, Organisational Context].

The analyst responds by checking what the state of the client's knowledge about the context of the system change was to begin with [Organisational Context].

Certainly I hadn't talked to Y before or previously about what we already had gone through. Y, you're involved on the initial steering committee for this weren't you?

The client responds with both an explanation and a reason for his negotiating position [identified themes Organisational Context, Future Action].

Well they had a review. And subsequently they've had something else another sort of quick review, and that's why I wasn't sure what was happening with the sales system here. The one I was on, 'they said OK it seems to be fine the way it is we don't really need to do much'. There were bits we could add in, but by and large it would remain the same. Z was on the other one and I gathered that are they going

to overhaul it completely, 'where will this leave us?' That's that's where my concern was.

The analyst comments that this highlights the need for more communication in the organisation [identified theme Organisational Context and Professional Relationships].

But .. that information, I think highlights .., the set ups or some communication, we need umm to send out some newsletters every now and then, you know to people who are .. involved, to sort of keep them up to date, how it's going.

It is clear from this review that the act of reflection on the part of both the analyst and client has allowed what was largely implicit organisational context to emerge. It is noticeable that what they thought to be shared context is in fact, not shared. The client assumed that the analyst knew more about his processes than he did, and the analyst assumed that the client knew the background to the proposed changes to the system.

5.4.6 Contextual Influences On Themes

This case is characterised by a great deal of shared organisational context and a commonality of aims [identified themes Organisational Context and Issues to Be Discussed]. Paradoxically, because a shared context was assumed, issues of what was driving the project and how much prior knowledge of the system the analyst had, tended to emerge in the review rather than in the interaction itself [identified themes Organisational Context, Analyst's Understanding of Processes and Professional Relationships].

While the organisational context may have been tacitly driving many decisions about the project during the interaction, it was only when the participants felt sufficiently comfortable, during the review, that they relayed to each other useful information about the history of the project. This may be a consequence of how the case study data was gathered, or it may illustrate how the systems analysis task was conceptualised in this case might have mitigated against the consideration of implicit organisational aspects. The analyst did not really declare his lack of knowledge about the system to the client – however, he may not have realised that the client made the assumption that he was familiar with the system itself [identified themes Professional Relationships, Analyst's Understanding of Processes and Mutual Understanding]. As the analyst had knowledge about a number of forestry practices, it was easy for the client to assume he knew about current practices [identified theme Analyst's Understanding of Processes and Mutual Understanding]. So this case could be seen as an example of how shared organisational context might block understanding rather than promote it, as so much is assumed.

This case also underlined an aspect of professional relationships, identified in Cases 2 and 4 – that where clients had a previous unsatisfactory experience with a project, they seemed likely to take a more adversarial stance [identified theme Professional Relationships and Organisational Context]. The unsatisfactory experience in all three cases seemed to be one of having changes imposed by the IT section that were not particularly helpful to day to day processes. All these clients seemed to 'draw a line in the sand' about what they would or would not accept with regard to changes.

5.5 Case 6 – City Council Z

Vignette

At City Council Z, there is a Subdivision register planned that will link to the Property system. The Customer Service Officer is interested in tracking the Subdivision applications more efficiently than at the moment – at the moment she refers to a notice board and paper files. There are also organisational imperatives [Organisational Context] that dictate that the clear up rate on applications should be provided in management reporting. The Computer Systems Officer also states in an individual

interview that she sees management reporting as an important issue in the upcoming discussion. The analyst is in her twenties, the client in her thirties. Both have worked with each other many times before, and seem to enjoy a close, participative working relationship. Theirs is a very focused interaction concentrating primarily on how Subdivision applications are processed, [Processes Associated with the System], how the Subdivision applications will be accessed in the new system [Links in Information] and information that needs to be held in the new system [Information Input to System] and reporting needs [Information Output from System]. The client effectively works as a business analyst in addition to her role as Customer Service Officer – she conveys information needs from her section as a whole.

5.5.1 Topic Analysis

Table 5-25 categorises the types of topic changes that occurred in the interaction in Case 6, using Planalp and Tracy's (1980) typology.

Table 5-25 Topic Shifts and Initiators of Topic Shifts in Case 6

TOPIC SHIFT	Frequency		
	NEW TOPIC INTRODUCED BY ANALYST	NEW TOPIC INTRODUCED BY CLIENT	TOTAL
Immediate Implicit	10	4	14
Immediate Explicit		1	1
Earlier Implicit	1	4	5
Earlier Explicit			
Environmental Implicit			
Environmental Explicit			
Unspecified Implicit			
Unspecified Explicit			
Total	11	9	20

It shows that topic sharing was equal in the interaction, and that nearly all the topic changes were of an implicit nature. This would indicate a great deal of shared context between the two participants, pointing to a very coherent conversation – where topics flowed naturally and there was no need to explicitly signal a topic change. The Earlier Implicit topic changes occurred when the client referred to the next desired change on a list she brought with her – always associated with the same global process under discussion.

Table 5-26 gives more information about the topics themselves and the sequence of topic changes. From this it can be seen that the analyst or client hold the conversational ground for two or three topics, then the other person has the floor.

The client makes a number of Earlier Implicit changes as they work through her list of issues to be discussed. This very equal sharing of the topic, and the fact that the changes are all implicit, may be a consequence of gender differences in conversation. Women tend to use cooperative verbal strategies and have a more egalitarian structure in conversation, rotating the topic (Aries 1976, in Spender 1980) – certainly the topic analysis shows both an egalitarian structure and equal turn taking.

Table 5-26 Topics in Case 6 Listed By Title, Initiator, Topic Shift And Time of Introduction

No	TOPIC	INITIATOR	TOPIC SHIFT TYPE	TIME INTRODUCED
1	Issue to be discussed	Client	Immed. Imp	0.25
2	Numbering of subdivision	Analyst	Immed. Imp	0.40
3	Capacity of proposed numbering	Analyst	Immed. Imp	1.20
4	Prefix for proposed numbering	Analyst	Immed. Imp	2.11
5	Need for date received field	Client	Immed. Exp	4.33
6	Reporting requirements	Analyst	Earlier Imp	4.44
7	Recording of closing dates	Client	Immed. Imp	5.06
8	Using closing dates for inquiries	Client	Immed. Imp	6.13
9	Process of recording objections	Client	Earlier Imp	7.00
10	Time period for objections	Analyst	Immed. Imp	7.38
11	Process for objections in new system	Client	Immed. Imp	10.20
12	Implementing new process	Analyst	Immed. Imp	12.33
13	Stop and start dates	Client	Earlier Imp	13.10
14	Reporting stop and start dates	Analyst	Immed. Imp	13.54
15	Overriding stop dates	Client	Earlier Imp	14.29
16	Procedure for override	Analyst	Immed. Imp	15.51
17	Referral information	Client	Earlier Imp	16.18
18	Process of referrals	Analyst	Immed. Imp	18.08
19	Implementing recording of referrals	Analyst	Immed. Imp	19.01
20	Future action	Analyst	Immed. Imp	21.18

5.5.2 Relating Codes to Topics

Table 5-27 shows the dominant codes in the interaction topics. What is not obvious from the table, but obvious from the transcript, is the extent to which it is the client engaged not only in *problem identification*, but also in *information identification* and *key searching*, normally systems analysis strategies that are the province of the systems analyst. This client also used a *prop* to help her visualise and clarify various solutions put forward by the systems analyst.

One reason for the apparent ease with which the client used such strategies is that there seems to be a very open and participative relationship between the client and analyst. A more compelling reason might be that they are effectively engaged in a design process which has a precedent – they have already added a number of registers to the Property system.

The interaction is also remarkable for the number of *forward reframes* it contains, a consequence perhaps of a familiar design process, or simply because the participants start working on how the new processes will look almost immediately. There is much *exemplification*, *imagining* and *dialogue* used by both participants to support their *problem identification*, *process* and *information identification*. Interestingly, no metaphors were detected. Given that metaphors in these cases often seemed to be used to convey opinions and feelings, it is possible that the participants didn't feel the need to use them, as they already had a close working relationship. There is also a reasonable incidence of *negotiation*, *future action* and *future solutions*, as they worked through several effects on processes and occasionally placed them in a larger *organisational context*.

Table 5-27 Codes as They Appeared in Topics in Case 6

No	TOPIC	DOMINANT GROUNDED THEORY CODES
1	Issue to be discussed	<i>agenda setting, conversation topic, key searching, forward reframe</i>
2	Numbering of subdivision	<i>key searching, information identification, forward reframe, problem identification, reflection, exemplification, information justification</i>
3	Capacity of proposed numbering	<i>information identification, key searching</i>
4	Prefix for proposed numbering	<i>information identification, key searching, prop, exemplification</i>
5	Need for date received field	<i>information identification</i>
6	Reporting requirements	<i>problem identification, organisational context, process identification</i>
7	Recording of closing dates	<i>information identification, process identification, process justification, imagining, exemplification</i>
8	Using closing dates for inquiries	<i>process identification, exemplification, process justification, imagining, forward reframe, information identification, imagining</i>
9	Process of recording objections	<i>process identification, information identification, exemplification, imagining, dialoguing, organisational context, problem identification, forward reframe, process justification</i>
10	Time period for objections	<i>posit, forward reframe, problem identification, process identification, information identification, exemplification, imagining, forward reframe</i>
11	Process for objections in new system	<i>process identification, key searching, organisational context, future solution, imagining, dialoguing, negotiation</i>
12	Implementing new process	<i>reflection, negotiation, future action, process identification</i>
13	Stop and start dates	<i>problem identification, information identification, process identification, exemplification</i>
14	Reporting stop and start dates	<i>process identification, imagining, dialoguing, information identification</i>
15	Overriding stop dates	<i>problem identification, process identification, future action, imagining, prop</i>
16	Procedure for override	<i>problem identification, process identification, negotiation, future action</i>
17	Referral information	<i>problem identification, information identification</i>
18	Process of referrals	<i>posit, exemplification, dialoguing, imagining, process justification</i>
19	Implementing recording of referrals	<i>future solution, prop, forward reframe, negotiation, organisational context, future action.</i>
20	Future action	<i>future action, future solution, information identification</i>

5.5.3 Mapping Topics To Themes

Table 5-29 shows the topics mapped to themes. The interaction spanned a number of themes – Information Input to System, Processes Associated With System, Links in Information, Information Output from System, Future Action and Problem Identification. In many ways, this variety of themes reflects the variety of codes per topic that were seen in Table 5-27. It also indicates perhaps a certain efficiency in the interaction in terms of task achievement, given that not one but three topics fall into the theme of Future Action. The Scope of Systems theme does not appear at all, and this reflects a lack of *scoping* by the analyst – presumably the boundaries of the planned change are already well established, although there was some discussion about how the proposed changes would interface with existing processes.

Table 5-28 Mapping of Topics to Themes in Case 6

THEME	TOPIC
1. Issues to be Discussed	T1
2. Scope of System	
3. Personal Disclosures	
4. Information Input to System	T5, T7, T8, T13
5. Processes Associated with System	T9, T10, T11, T15, T16, T18
6. Links in Information	T2, T3, T4
7. Future Action	T12, T19, T20
8. Problem Identification	T6
9. Information Output from System	T14, T17
10. Analyst's Understanding of Processes	
11. Future Solutions	
12. Organisational Context	

5.5.4 Mapping Codes to Themes

Table 5-29 illustrates the dominant codes for the themes in the interaction. For each theme, the code on which the decision was based to locate the topic in that theme is given first. Asterisks indicate many instances of the same code.

Table 5-29 Themes and Dominant Codes in Case 6

THEMES	PREDOMINANT CODES
1. Issues to be Discussed (T1)	<i>agenda setting, conversation topic, key searching, forward reframe</i>
2. Scope of System	
3. Personal Disclosures	
4. Information Input to System (T5, T7, T8, T13)	<i>information identification*, process identification*, process justification*, imagining*, exemplification*, forward reframe, problem identification, exemplification</i>
5. Processes Associated with System (T9, T10, T11, T15, T16, T18)	<i>process identification*, process justification*, problem identification*, information identification*, negotiation*, future action*, exemplification*, imagining*, dialoguing*, posit*, forward reframe*, organisational context*, key searching, future solution, prop,</i>
6. Links in Information (T2, T3, T4)	<i>key searching*, information identification*, information justification, forward reframe, problem identification, reflection, exemplification, prop, exemplification</i>
7. Future Action (T12, T19, T20)	<i>future action*, future solution*, negotiation*, reflection, process identification, information identification, prop, forward reframe, organisational context</i>
8. Problem Identification (T6)	<i>problem identification, organisational context, process identification</i>
9. Information Output from System (T14, T17)	<i>information identification*, process identification, problem identification, dialoguing</i>
10. Analyst's Understanding of Processes	
11. Future Solutions	
12. Organisational Context	

The majority of codes show a reasonable mapping to the themes – for instance, topics with *key searching* as a dominant code fall into the theme of Links In Information. This mapping is not as clear for the theme of Problem Identification – where the analyst identifies general information deficits, and engages in *problem identification*. The decision to locate topic 6 within this theme was based on the reasoning that this is the only point at which the analyst can be seen to adopt a more system wide view when

considering reporting needs overall. Similarly, topics 19 and 20, although they contain the code *future solutions*, are placed in the theme Future Action, for, as the presence of *negotiation* indicates, there were a number of solutions discussed but not settled upon.

5.5.5 Considering Themes Across Data Sources

This section considers how the themes occurred over all data sources, with the aim of discovering how particular themes originated and evolved in relation to particular contexts across the case. Table 5-31 summarises these themes over all data sources. Again the reader is asked to note the themes that occurred outside the interaction – Organisational Context, Professional Relationships, Mutual Understanding and Use of Props.

Table 5-30 Occurrence of Themes Across Data Sources in Case 6

THEME	INTERACTION	PARAGRAPH – ANALYST AND CLIENT	INTERVIEW – ANALYST	INTERVIEW – CLIENT	REVIEW
Issues to be Discussed	✓	✓	✓	✓	
Scope of System					✓
Personal Disclosures				✓	
Information Input to System	✓	✓	✓		✓
Processes Associated with System	✓	✓	✓	✓	✓
Links in Information	✓				✓
Future Action	✓				
Problem Identification	✓			✓	
Information Output from System	✓				
Analyst's Understanding of Processes			✓		✓
Future Solutions					
Organisational Context		✓	✓	✓	✓
Professional Relationships			✓	✓	✓
Mutual Understanding			✓	✓	✓
Use of Props					✓

5.5.5.1 Paragraphs from analyst and client

The analyst and client chose in this case to put forward only one paragraph. This could be seen as an early indicator of what seems to be a very equal relationship between the participants. Alternatively, one can consider why the analyst felt so confident as to be able to speak for both parties and speculate as to whether this was indeed a form of agenda setting. During the interaction, the analyst took a very participative approach – but at the same time took responsibility for terminating the interaction. Her paragraph (Figure 5-9) then could be seen as a reflective of her overall approach to the client.

This paragraph shows the now familiar analyst focus on information that seems to be prevalent in the cases [identified theme Information Input to System]. What is interesting about the items given here is that the only item that came up in the interaction was file tracking [identified themes Issues to Be Discussed and Processes Associated

With System], which is probably the most 'processual' on the list. During the interaction, the client put forward her reporting and information needs in the context of processes she and others carried out from day to day. The last line gives a clue to some organisational context which was seen to be driving the planned changes – the need for management to have better information on throughput of applications and productivity generally [identified theme Organisational Context]. Although not referred to during the interaction, individual interviews revealed this issue to be an important backdrop to the systems development.

X and I have decided that our discussions will be based on implementing a Subdivision register for the Planning and Development Division.

The purpose of this register is to have up-to-date and accurate information on previous and current subdivision applications, ie:

- whether or not a subdivision has been approved
- no of lots
- name and owner at time of subdivision
- land use prior to subdivision
- file tracking of subdivision files
- etc

This information will also be used for reporting as required by management.

Figure 5-9 Analyst Client Paragraph for Case 6

5.5.5.2 Analyst and client interviews

When asked what is in her mind about the up coming interaction with the analyst, the client gives a great deal of context for the system and its planned changes [identified themes Issues to Be Discussed and Organisational Context]. She first discusses the project and her perspective on current processes [identified theme Processes Associated With System].

What the project is about is that we've got some registers for certain things, and we haven't got registers for other things.. the problem with that is that we can't track anything, we don't know where files are, and we can't ask any questions about applications that have been tabled. In other words, information retrieval is very very difficult .. if somebody comes or rings up and says, 'I've put in a subdivision application, have there been any objections', I have to physically go around and find the file to find out. We put up a manual system on the board, but the manual system is usually three or four days behind.. we just waste a lot of time running around, you know, trying to find things.

She is obviously very engaged with the processes she undertakes from day to day, and the problems associated with them [identified theme Problem Identification]. She also uses *dialoguing* to illustrate the problems.

She goes on to outline what for her is the objective of the interaction:

So to me the most important thing is, and this is from my personal point of view, is that I get information retrieval – instant. And that lets me get out of the manual systems and I can sit at my desk, punch it in and get the answers I want, even if ..some information may go on the computer, but at least I can locate the file.

She talks about the organisational context that they are now operating in, and how this has affected the system development [identified theme Organisational Context].

On top of that we have requirements with regards to management, having to.. justify their jobs now, and our jobs.. so we have to be able to, for them to get data out of here, saying 'well this how many applications we do,.. this is how long they take, this is how much time was taken by the person doing the job', and all that sort of thing. ..and then there is information with regard to planning the city, we need to know how quickly the city is growing, whether there's particular areas where we're growing faster, we need to see whether the planning scheme is effective.. all those sorts of issues. And again that sort of information, a lot of it is

number punching, ..is non retrievable, because its all manual books, and you'd have to go through each file to get the information out of it.

So here she explains that management need information on throughput of applications [identified theme Organisational Context] and restates the major problem for her which is information retrieval and tracking of applications.

She then explains how this project is one of a sequence of register projects [identified theme Organisational Context], and how they have a successful template for the registers.

Now, we've already started this with building registers, ..X and I have really sorted out the building register to quite an extent and that's just about running well now. .. we're in the process of doing the septic tank register, which is past the point of what we're starting with the subdivision one today.

In the second interview, when asked what her goals were for the interaction, she restates them succinctly:

The goal is to set up a register that will answer our questions.

'Our' in this case presumably refers to the needs of her section. When asked if she achieved the goal, her answer is posed in terms of her relationship with the analyst, and her enjoyment of that relationship [identified theme Professional Relationships].

Oh I think so. I mean, obviously there is a really long way to go, but what we did was positive all the way through. .. when I come out of a session with X like this, I come out and I'm really excited, because I know we've resolved something.

Asked when if anything prevented the achievement of those goals, her answer is posed within her self defined role as a representative of her section, to some extent performing as a business analyst [identified theme Professional Relationships].

Not having quite enough information from ..let's say I'm a client of X, but then I have clients who I have to get information from. And some information I didn't have, like how many, which people can distinctly be referred to and can it be referred twice? So there is a lack of information which I have, but then I can go and get it for X ... Whereas if X had to go and get it, it would be a lot harder because she doesn't understand the system to start with.

She expands on this role later, when asked as to how she sees her role in interactions such as these [identified theme Professional Relationships]:

I'm a client. No, I'm not actually.. a client. I'm asking X to perform a specific service for me.. how do I say.. I'm employing her, but then I am employed by my department, so I'm a messenger that analyses what is happening in the department, and then employs someone to put it on to the computer. I am not saying X is below me or above me.. She is servicing me, and I am servicing my department.

She also explains how a client culture operates in the organisation as a whole [identified theme Organisational Context]:

We are told, that our people inside are as much clients as outside and I believe that, I agree with that. Having said that our outdoor clients come first! You can't do it any other way, but you have your outside client first and your inside client, and then you have your own work, that's to me how the hierarchy works.

She goes on to reflect what she has learnt from the exercise of the case study [identified theme Professional Relationships].

..today's session, is the first session, where we've ever ..not been interrupted. And it was far more productive. What came out of that for me today, was, I think I need to say to X at some point, 'look when we're working together, I really want to have time *together*'. .. I've always.. thought well she's giving me her time and its really good of her to give it to me, and therefore I have to accept whatever she gives me, and if some of that is .. her sitting on the phone, and me sitting there .. twiddling my fingers, well so be it. But I think we can probably actually talk about this and say look we're going to change this, so it can work for me.

So she is now reflecting actively as to how the relationship can be more productive and efficient, given her busy workload and competing demands on her time. It is interesting to note that she judges the relationship as sufficiently communicative and friendly for her to be able to broach the subject with the analyst. Certainly she has a value of maintaining a friendly relationship [identified theme Professional Relationships]. When asked when she had any social goals, she says:

My goal is certainly to make sure that we are happy to work together, because I am very much of the feeling that if I don't appreciate her, and she doesn't appreciate me, then we won't continue to be good working relationship, so if we want to get this work done, you have to get on. So yes it is certainly part of the goal.

The interview with the analyst commences with her description of what is coming up in the interaction [identified theme Issues to Be Discussed]. In contrast to the client, her focus is on information needs of the system [identified theme Information Input to System]. She too mentions management reporting needs as an issue [identified theme Organisational Context].

What we'll be doing is discussing a process that we have to put in place, to meet.. management reporting that they're going to require, and also to set up a register so that can be linked to our Property system that can identify sub divisions, and the history they go through, the sub divisions, and also file tracking of actual sub division files. And my idea would be to set the system up based on the requirements that Y and Z need, and keeping in mind the management reports that are going to have to come out. So I think we'll have to keep a track on how long it takes for a sub division to be processed, an application to be processed, and that type of thing. I don't so much know whether its an application as such, but we have to keep a fair bit of history on it.

So here she outlines what she thinks the main functions in the register will be – management reporting, linking to the property system [identified theme Links in Information], and file tracking. In the interaction itself, the issue of the key that would link the new register was dealt with first, and it was brought up by the client as part of the design process they jointly went through to establish these registers. The rest of the interaction was dedicated to file tracking, also mentioned as a prime concern of the client [identified theme Issues To Be Discussed]. So, it can be seen that, although the analyst and client might frame the issues differently (the analyst primarily in terms of information, the client in terms of processes and the context of those processes), there is actually strong consensus on the issues themselves.

When asked in the second interview about her goals for the interaction, the analyst's information focus is more apparent [identified theme Information Input to System]:

My goals were to determine what she wanted out of the system. So I wanted to know all the, the outputs that she wanted, basically, because from that then I could determine, and ask questions on some of the things she's going to have to maintain in her system. Some of those things she's going to have to maintain will be obviously set up in fields. So I was thinking all the time.. reasons we should be setting up fields and the data that goes into it, ..whether or not it will be a waste of time having information in it, what is she going to be doing with it. So I was asking all those questions, whether or not we could report on it, and even the structure of how this database would be set up with multiple fields that really mean.. do the same thing. I was worried about how we could actually report on that.

So her main concern was how the database was to be structured, a not unreasonable concern for an analyst. It is also interesting to note that she was also interested in what the client used the information for ('what is she going to be doing with it'), indicating that she located these needs within processes [identified theme Processes Associated With System].

She goes on to describe her ongoing interaction with the client about these goals [identified theme Professional Relationships]. Interestingly, she was the only analyst to discuss her goals in this way. This may be because, in this case, the relationship between analyst and client seemed very equal and participative.

..at the end of the day, I guess, I could probably put together a database for her, and then we'd review it, and say 'this is the interpretation I have is, this what you want' and she'd say 'Nat – definitely not!',(laughs) so I don't think we got to that stage. Because .. together we are creating it, she names the fields herself, to her own way of expression rather than my probably my way of being too technical (laughs) sometimes. But I'm more interested in setting up things that are going to be friendly for them to use, not for me, because I don't have to use it.

So here she describes a philosophy of the client using her own language in the design, in order for it to be user friendly. She also indicates that the client might well reject what she puts forward, and that this is more than acceptable in the context of their equal relationship [identified theme Professional Relationships].

When asked if she had any social goals for the interaction, her reply is interesting:

I wanted to make sure that the communication path was clear, but I'm more interested in getting the information out of her rather than joking about things as we go along. Of course to make her feel comfortable, I suppose the only social thing that came into it was, asking her questions in a nice way, and making her feel comfortable and assuring her that I understood what she was saying, and not being overpowering or demanding in saying these are the things I think you should have..

So her social goals are couched within the aim of promoting understanding, in contrast to the client who sees it more as a case of mutual respect. That said, the analyst seems to have no wish to dictate to her client in any way [identified theme Professional Relationships].

When asked on how she sees her professional role, the answer is illuminating from the point of view that she takes an historical view of how the role of analysts have changed. It is almost as if she sees herself as a new breed of 'modern' analyst, whilst retaining her technical expertise [identified theme Professional Relationships].

I'm not a techo, I don't consider myself as a techo, I don't consider myself as somebody who has all the answers. I'm somebody who provides tools, and if I can help implement those tools, start them off and develop them, and nurture the way a system or process is going to happen, then I feel really good about that. So I'm more of an end user support of hardware or software.. I'm trying to break barriers down here. Once upon a time, the IT section was considered sacrilegious, scary, you never approached an IT person (laughs).

So, she sees her role as breaking down barriers, as a nurturer of systems, and she doesn't consider herself a 'techo'. At the same time, she does acknowledge that communication gulfs can exist with regard to technical expertise.

So the only problem with that is that I tend to pass on too much information, and I think sometimes I bamboozle them, and if I get periodicals in that say 'this can be attached to your PC', and I say 'yeah I reckon I can see an application where we could use that'.. I probably feel that my role is to supply information, and my only problem is when to stop supply!

She goes on to describe a certain rigour or professional standard she sees as part of her role, which may also have its root in a particular organisational context or previous experiences [identified themes Professional Relationships and Organisational Context]):

I want to help implement these systems, and making sure they're tight, because in the past its always come back to the IT section to do validation of reports, or validity checking, or making sure that reports are done so you can check if all the data has slipped through or not and that type of thing. I want to develop tools for them to do that in the end, and I'll be there to support them if they need it. But its a very tricky area, that's my interpretation on the ground. I'm also aware that's not their job, their job is Customer Service..

She may also be commenting here on the shifting boundary between analysts and clients in terms of who takes responsibility for the system, which can be seen as a natural consequence of adopting a more participative model.

5.5.5.3 Background questionnaires

The background questionnaire completed by the analyst revealed her to be someone who had entered systems analysis via an unusual path – she originally started on the user side, as a data entry clerk, and had then moved into user training and software testing before taking up her current post. This might offer one explanation for her participative model of analyst–client relationships – not only is she a relative newcomer to systems analysis, she is likely to be client centred as she has experience in a ‘user’s shoes’ [identified theme Professional Relationships]. As she spent time in another job processing health claims, this might account for her interest in helping the client design manual procedures as well as computer processes. Unlike the analysts in the other cases, her background is in Arts rather than Science. Within her Arts degree, she is studying Information Technology – this too is different from the other analysts who have studied more traditional areas of computing and computer science. For all these reasons, it is not unreasonable to assume that she would have a more ‘current’ or best practice view of analyst–client relationships, as her comments in the individual interviews tend to indicate.

The client’s questionnaire showed a varied background covering photography, conservation work and management. She was the possessor of both an Arts degree and a degree in Architecture. This last qualification might have contributed to her ease with the design process, given the parallels that have been made between architecture and IS as a profession (Lee 1991). She was also undertaking a Masters degree in town planning at the questionnaire was administered. It is interesting to note that, while her current post is designated a Customer Service Officer, she cites as one of her tasks ‘coordinate systems’, an indicator of her informal ‘business analyst’ role.

5.5.5.4 Videotaped review

Given the close and equal relationship between analyst and client, one might expect the review of their interaction to be an interesting and profitable experience, and this proved to be the case, with the participants covering a wide range of themes. Further organisational issues came through, that of a joint strategy to popularise information system use [identified theme Organisational Context]. They also discussed their communication practices in particular the use of ‘pictures’ or *props* to help them visualise the system [identified theme of Use of Props], and the analyst’s use of *reflection* as a communication device. The analyst placed emphasis on ‘tight’ procedures [Processes Associated With System]. They also discussed why the setting up of a key for the register was important to the design process [identified theme Links in Information]. As with many of the reviews in the cases, the participants also use the opportunity to clarify and sometimes alter decisions made during the original interaction.

At the beginning of the review, the analyst gives an explanation of the importance of the key for the register to help reporting [identified theme Links in Information].

What we were doing was discussing the key into the file, or the key into the record. And that’s pretty important to us, because what we want to do is eventually find out when an application whether it’s for a sub division or any other one of our registers, go through a certain year and a month we want to know when, and it also helps us for when we do reporting to we’re not relying on a date that somebody has to enter in, because it doesn’t always happen. .. but if there’s a record already set up into the data base we know that it’s there, it may not have much information in it, but we know the key has been set up and the key would be the sub division number, based on the year and the month and a sequential number, (*gesturing*) so then all we have to do is report on the key to the file.

What is interesting is that she reveals this to be part of a strategy to aid the ease of computerisation – in the statement above she says that they can’t always rely on data being input, but the key to the record ensures a basic level of reporting. She goes on to explain the context of their strategy, and why they do it this way [identified theme

Organisational Context] – she also uses ‘we’ frequently, indicating that it is indeed a joint strategy. She goes on to say:

I think it's probably been an emphasis of what we've been doing.. what we're trying to do I guess is change the way things used to be done, because things were done in a book basically, and people want a copy of or duplicate what was in a book, into a computer and it's not the idea of having the computer having a sophisticated filing system, you really want to get some proper information out. So what we're trying to do is talk people into using this type of system. It suits most of our systems, it doesn't suit all of our systems but it suits most, particularly for reporting. And I guess it's been the emphasis ..and it was the first thing we reached at first as well I think.

The client gives her view on the first segment, amplifying the importance of the key construction [identified theme Links in Information] and the statements of the analyst:

And it is an important thing because at the moment, it is very difficult for us when we look up an old sub division which is say twenty one ninety five, you've got no idea when it was. You've got no idea in terms of the hard copy files, .. up to a certain date they are at Archives, and then from that date to a certain date they are downstairs, and then from a certain date to now they are upstairs. So if you know the dates it will make it easier to know where you can find the files.

When asked if she wishes to add anything more to the analyst's account, she says:

Well it's basically the same thing I mean we just reinforced for each other, that that's the way we want to get the other people to link in with us. I think we both of us knew that this is how we wanted to do it, before we even really started probably.

So they have virtually identical frames of reference [identified theme Mutual Understanding]. The analyst confirms this by adding:

Yes, we fairly much think along the same lines, for most of these and that's why we tend to talk together quite a lot in setting up these new registers.. Y does the pushing, and she says 'along we've got to set some time', and I don't mind at all ..

She is also commenting here on the client's very active role in this relationship, one of an informal business analyst and advocate for the system [identified theme Organisational Context].

The next segment covers topics 6,7,8 and 9, where the client commences outlining her information needs. The client view of this segment is:

Basically trying to explain what the limit, what the problems are, at the moment. And trying to find a way ..I we didn't really get to how to solve it but, explaining really at the moment what the problems are and seeing whether or not I will get a response back from X saying 'well we can do this this way'.

Her comment about the 'limit' is interesting – she one of the few clients to engage in a preliminary form of *scoping*, in terms of finding out how far computerisation can extend. She is actively looking for solutions from the analyst. It is interesting too, that her comments about this segment are embedded in terms of her relationship with the analyst [identified theme Professional Relationships].

The analyst poses her view of this segment in terms of how she is processing information and her communication practices [identified theme Analyst's Understanding of Processes].

I'm absorbing the problem, while she is talking to me I'm trying to re interpret in a language that I can also interpret, or not interpret but how the computer would actually fit her requirements.

It is interesting here that she talks about the need to 'interpret in a language', presumably referring to the fact she effectively operates in two domains, her own and the client's, with different 'languages'.

She also gives a good explanation of how she uses *reflection*, an interaction tactic used by many analysts in the cases, and how she sees it as an ongoing negotiation:

So that's why I keep repeating everything that she said. .. I guess it's just reinforcing again the things that she's asking. I'm also saying 'is this the way you want to do it', and if it is I can definitely say 'yes we can do or it no we can't do it', .. because I know the system fairly well I can say yes or no.

The client comments on the value of this *reflection* tactic from her perspective:

This is where it's good that Y does repeat it, because by her repeating, I know whether or not she has understood.

The client pointed out that this time, they hadn't drawn any 'pictures' [identified theme Use of Props]. Interestingly, she had used her notepad during the interaction to help structure the key and identify information, the only client in these cases to have done so. She says:

What was actually interesting this time round is, quite often we actually draw pictures and we didn't draw any pictures this time round.

The analyst reiterates this:

No, we always draw pictures. We are picture people.

The client says:

I thought why haven't I drawn the forty two day span because I didn't every say in that session there, that the total period that we've got the statutory period is forty two days.

So she is saying her normal response to a problem like this is to draw it – the analyst points out that she did in fact draw this:

Not in that section, but the next section you did.

They discuss with the researcher how this is a mode of working, using 'pictures' and how in their view it is efficient – the analyst says:

When time's really tight and we want to get things done and explain quickly. don't we..?

The client responds:

Yeah we just use paper. Just like this one here. (indicating prop)

The analyst and client use the next segment, a review of topics 10, 11 and 12, to effectively extend their discussion and negotiate about solutions. They begin by reaffirming how their discussions work within the framework of the relationship [identified themes Mutual Understanding, Professional Relationships]. The analyst begins reviewing the segment by saying:

Just a reiteration of what was required by X. We had a problem there, with objections weren't being handled within a certain time frame, we want to be tighter on the time frames.. so X said these are the things we wanted to do, including objections . and identified the problem ..and I tried to provide a solution to that problem I think. And then I said 'X is that OK, and she said Fantastic and I said 'Well would you mind somebody else updating the information for the sub division file' and she said she'd love it. (laughing, looking at client)

The client comments on her view of the segment [identified themes Mutual Understanding and Professional Relationships].

Very much the same. I think we are at a point now where I put in suggestions of how we can solve it as well. I don't necessarily wait for Y to say 'well we could do it this way or that way', and this is I guess where you see us having worked together for a while.. as opposed to being totally brand new because to start with I had no idea I mean yeah I came with some ideas..

The analyst responds with obvious admiration:

You caught on quick. That was amazing, you caught on quick. (admiringly)

It is clear that a lot of mutual respect for each others abilities exists in the relationship [identified theme Professional Relationships].

The client takes the opportunity to extend the negotiation about the solutions the analyst had put forward. It is worth repeating the negotiation here to illustrate the very equal nature of the relationship. The client says:

I'm still worried about one thing though. I don't like this idea of of the people out there having to enter it twice, they have to enter it into their normal mail in system as well as into ours .. And I am just always concerned with that if they have to do something twice, they'll miss one step.

The analyst replies with:

That's why I need to check whether or not Records can link directly into the umm sub division file.

The client repeats her concern:

I can't see how it will work.

The analyst interrupts, proposing yet another solution:

Alternatively I guess they'll have to write it down on a piece of paper, if you don't trust them, we'll just draw up a form a template or something and they just fill out the sub division number and the date ahh when it came in for objection, and they give it to you or somebody and they enter it in the computer.

The client evaluates the solution proffered in this way:

I'm still worried about that too... Like that would create a triple handling if they put it on a piece of paper, then hand it to someone else and then that person has to put it in. So the best system is to have it if it can link directly, second best is for them to enter it in to a septic tank register, third best and I think that's very low down is if they have to write it down and then pass it on.

She is giving the analyst a prioritised list of solutions. The analyst retreats somewhat at this point, saying:

Yeah I don't like that idea either.

The client justifies her position thus:

It's just, we are always trying to eliminate the amount of steps and make the whole system as foolproof as possible. (addressing researcher). Cos' like Y says quite often people don't put information in, or they don't know why they are putting it in. .. staff changes, or someone is away and someone else is in someone else's job and things are done incorrectly. So the fewer mistakes, room for error there is.. (addressing analyst)

The analyst agrees with this philosophy wholeheartedly:

Definitely, definitely

In the next segment and beyond, they explain to the researcher how they see their role as system designers in a context where other people in the organisation might not necessarily see the benefits [identified theme Organisational Context]. The analyst explains their philosophy when they jointly design systems:

..we do what we want to do anyway, and as long as they are going to get the information they want out of it, and that's OK, but for them having someone that's double crossing and checking, and all the rubbish that goes with that, that they want information in the computer system, we try to hide that if we can.

She seems to be saying here that there is very much a manual processing culture which they are trying to shift. She goes on to comment that managers rarely understand what is happening on the ground [identified theme Organisational Context]:

We say 'well this is what we, think this particular manager wants, so why don't we just go away and do what we think is best', because they don't always understand the system we're working with and it's interesting too how managers dictate .. the way a system should be when they have no understanding about the workings that X does, or the system day in and day out, all the things that she needs for it, they've got no idea. No idea at all.

The client comments that, unfortunately, this lack of understanding is not always restricted to managers:

..W is not a manager, she's she's a training officer.. But I went to her yesterday and I said we're going to look at the Sub Division Register what do you want to get out of it, and her first reaction was 'who's going to input it all and why do we need it?' Now she's an educated person. As far as I'm concerned, she's .. not one of the old guard who doesn't understand what computers are all about.

It is interesting that the client refers to an 'old guard' who do not understand computerisation [identified theme Organisational Context]. She comments that there is a difficulty in selling the benefits of computerisation, thus underlining her informal role as business analyst [identified themes Professional Relationships and Organisational Context].

..I think she has got actually no idea yet of what a bonus this system can be for her. So that's where it's really hard to get the information from them, as to what do you want out of the system, because they have no idea what the capabilities of the system are..

The analyst comments that, very often, once the system is implemented, the reaction is positive [identified theme Organisational Context].

The interesting part too is that .. the system will be implemented and then a memo will come round and say thank you very much for doing it, it's fantastic, it's doing what we want it to do. So we don't take the negative aspect of it, we.. go ahead and do it. But we're just providing something that's best for them..

The researcher comments that, presumably, the client's role is integral to all this. The reply from the analyst is illuminating:

..it's X's personality that anchors them down I think too. She turns up to meetings with hundreds of pieces of paper with all these things that she wants done and they're frightened of her!

The client laughs at this remark, but does not disagree. The analyst later reiterates the role she sees the client playing with regard to system development:

I think I'm fortunate too in .. X having the kind of personality that she has. She will go away, and ask, and come back, with not just her ideas but other people's ideas like this Z person and we'll try and implement them. .. if she was a kind of person that still understood the system but too scared to ask questions I don't know how far the system would go. .. I probably would I'd have to go and ask other people what they really wanted out of it, and the process would just take so much longer.

So clearly the client does play a valuable linking role as a business analyst for her section [identified themes Organisational Context and Professional Relationships].

The review culminates in the client describing the creative process of working with the analyst, and emphasising the need for reporting in the current organisational climate [identified themes Organisational Context, and Professional Relationships].

.. I keep getting these lights flashing in my mind and thinking, you know as soon as Y says the word report I think 'great, V can have a report every week on his desk saying this is where it's at'. And that's what we've got to have, because again we are getting these business units, .. we have to justify our jobs, but the managers have to justify our units jobs, and they have to show how much work they do, what the work is we do, why .. certain things take a long time. All that justification that at the moment you just simply cannot do, because we have nothing that can track it, and you know every time a solution comes forward I sort of think, yeah that's another one.

5.5.6 Contextual Influences On Themes

This case differed from other cases in a number of important respects. Firstly, the relationship between analyst and client was very equal and participative [identified theme Professional Relationships]. Looking at the models of developer-user relationships advanced by Hirschheim and Klein (1989), the analyst is almost certainly

playing the role of 'Facilitator' and is rooted in the client's perspective. Indeed, she can be seen to partially take on the 'Emancipator' role, also described by Hirschheim and Klein (1989). This may be a product of her own individual philosophy, or influenced by her current studies, making this analyst the only analyst in the case studies who seems to wholly fit a 'new generation' model of analyst. The nature and tenor of this relationship is also strongly influenced by the client and the individual qualities she brings to the relationship – during the case study it became clear that she was a de facto business analyst for her section. It might be that the analyst would adopt different models of professional relationships when relating in different contexts. Another important factor to consider here is that a 'client focus' seemed to have strongly suffused the organisational context in which both worked.

Secondly, the relationship had an explicit aim of popularising system use in an organisation where **many** people were still unconvinced of the benefits – thus it could be said that shared values and aims contributed to the strong relationship shared between the two participants [identified themes Professional Relationships and Organisational Context].

Thirdly, the issue of the system development, and the reasons for it occurring, are strongly situated in a context of a need for management to have information that justifies current staff establishments [identified theme Organisational Context]. Perhaps precisely because this was such a strong organisational imperative that influenced prospective individual job security, it emerged strongly in interviews and the review.

There were other interesting differences in this case – for instance, although the analyst had a concern and focus on information and the structuring of information, as noted with analysts in other cases, she also paid close attention to processes [identified theme Processes Associated With System]. This may be because of her 'emancipatory' stance – for instance she is heard to remark in the review that managers have no idea of the daily tasks her client undergoes, or her previous experience as a user, or both.

Lastly, it is worth considering whether the equal relationship between participants, both women, could be achieved by two men in the same situation – it may be that the existing social norms of relationships amongst women, allowing for more intimacy and sharing, contributed to the elemental 'Emancipatory' model (Hirschheim & Klein 1989) observed in this case.

5.6 Examining the Themes Across the Cases

Table 5-31 gives an overall view of all the themes as they emerged across all the data sources in all cases.

Overall, Cases 2 and 4 exhibited fewer themes. The reasons for this seem to be related to how the topic was discussed and situational influences. Unsurprisingly, the topic analysis for both cases showed a high degree of coherence – the extent to which topics are related. Both of these cases consisted of a highly focused discussion around a few issues, whereas both Cases 1 and 3 were also concerned with the use of information output from the system and the analyst had a greater focus on understanding the processes in detail, giving a correspondingly wider range of topics and themes.

The topic analysis of the cases also revealed some themes to be closely associated – for instance the Scope of the System and Processes Associated with the System. Topics associated with these themes tended to cluster together. Similarly, Information Input to the System was quite often linked with Processes Associated with the System, in topic terms.

Table 5-31 Themes in All Cases Across All Data Sources

THEME	INTERAC- TION	PARAGRAPH -ANALYST	PARAGRAPH - CLIENT	INTERVIEW - ANALYST	INTERVIEW - CLIENT	REVIEW
Issues to be Discussed	C1, C2, C3, C4, C5, C6	C1, C2, C3, C4, C5, C6*	C1, C2, C3, C4, C5	C1, C2, C3, C4, C5, C6	C1, C2, C3, C4, C5, C6	C1, C4
Scope of System	C1, C2, C3, C4, C5	C1, C2, C4			C1, C2	C2, C5, C6
Personal Disclosures	C1, C3				C6	
Information Input to System	C1, C2, C3, C5, C6	C6*		C1, C2, C3, C4, C5, C6	C5	C2, C5, C6
Processes Associated with System	C1, C2, C3, C4, C5, C6	C4, C5, C6*	C1, C2, C3, C4, C5	C2, C3, C4, C5, C6	C5, C6	C5, C6
Links in Information	C1, C3, C4, C5, C6	C3	C3, C4	C3		C3, C4, C5, C6
Future Action	C1, C3, C6		C1, C2, C3, C5			C1, C2, C5
Problem Identification	C1, C4, C5, C6	C5		C2, C4	C6	C4
Information Output from System	C1, C3, C6	C5				
Analyst's Understanding of Processes	C3, C5	C1, C2		C1, C2, C3, C4, C5, C6		C1, C2, C3, C5, C6
Future Solutions	C1, C3		C3			C2
Organisational Context	C3, C5	C1, C2, C4, C5, C6*	C1	C5, C6	C1, C2, C3, C4, C5, C6	C1, C2, C3, C5, C6
Professional Relationships				C1, C2, C3, C4, C5, C6	C1, C2, C3, C4, C5, C6	C1, C5, C6
Mutual Understanding				C1, C2, C6	C1, C2, C5, C6	C1, C2, C3, C4, C5, C6
Note Taking						C1, C3
Use of Props						C1, C4, C6

*The paragraph submitted in Case 6 was a joint paragraph.

5.7 Situational Influences on Themes

Table 5-32 gives a summary of situational influences that appeared to be operating behind each theme in the cases discussed in chapters 4 and 5.

Table 5-32 Situational Influences On Themes

THEME	SITUATIONAL ASPECTS IDENTIFIED IN CASES
Issues to be Discussed	Limits on possible solutions imposed by other systems. Pre meeting discussions. Disparities between analyst's aims and client aims for discussion. Commonalities in analyst and client perceptions of issues. Use of a document to focus and possibly limit discussion. Agreeing a process by which the issues will be discussed. Who sets the agenda for discussion, analyst or client
Scope of System	Extending the scope of a system through amendment Establishing the current scope of the system by distinguishing between manual and computer records Deciding how manual processes interface with a proposed system
Personal Disclosures	Attempting to build rapport through personal disclosures Analyst as confidante when confronted with client's job stresses.
Information Input to System - data currently input - data currently held - data that needs to be held	Nature of information – manual or computer Information required for changing processes Using props or examples of current documents
Processes Associated with System - current processes - new processes required	How information received influences a process How a process might work using new information
Links in Information	Finding a key for information retrieval Tracking progress through a system Linking systems in order to meet client needs Identifying common information required by more than one section of the organisation. Using keys to provide reporting information Identifying impacts of changes to information for other systems
Future Action - on individual elements - associated with project - general	Constraints on future solutions due to limits imposed by other systems, or capacity of existing system. Policies that need to be determined before processes can be decided. Need to interview others to for further information.
Problem Identification	Problems in carrying out processes due to lack of information. Duplicated effort due to incompatible systems. Information deficits in current system due to significant changes.
Information Output from System - data currently output - data required to be output	Examples of current documents
Analyst's Understanding of Processes	Analyst's use of reflection to communicate with client
Future Solutions	Analyst's need for more information Limits and feasibility of solutions
Organisational Context - affecting system design and project conduct - general	Shared organisational context System history Previous design decisions Personnel changes Previously failed projects Relationship with IT Section Lack of IT resources Changing customer service ethos in organisation Management monitoring of productivity
Professional Relationships	Age and power differentials. Gender. Perceived roles of analyst and client. Client as strong advocate for section. Organisational pressures (strong link to Organisational Context)
Mutual Understanding	Use of interactional tactics to promote understanding Use of props to aid understanding
Note Taking	Maintenance of eye contact and response of client
Use of Props	Stage at which props are used

Consideration of these situational influences, which effectively vary the themes in each case, also contribute to the development of each theme and the development of the

substantive theory. Strauss and Corbin (1990) state that, for a theory to be appropriately grounded, more than a few variations have to be specified. Schön (1983) also recommends that themes be developed from situations which can then be considered and extended by practitioners. They are further considered in Chapter 6, which develops the analytical standpoint of each theme and sets it within the framework and literature advanced in Chapter 1.

5.8 Summary

This chapter has described how coded, topic and themed analyses were applied to Cases 2 to 6 by way of completing the analytical journey commenced in Chapter 4 where the analysis of Case 1 was developed. This chapter represents a rich description and analysis of Cases 2 to 6, and also allows an extending of the substantive theory by considering how the themes and codes operated in each case. Finally, the themes and situations associated with those themes as they occurred across cases are summarised. As such, this chapter constitutes an integral building block in the analysis, and forms a foundation for Chapter 6 which reflects on the themes identified in Chapters 4 and 5 and develops their analytic standpoint. Its aim then was to provide the starting point of an eventual consensus construction presented in later chapters that is more informed and sophisticated than the proceeding constructions (Guba & Lincoln 1994).

6. THEMES IN EARLY REQUIREMENTS GATHERING

'Understanding is a basically referential operation; we understand something by comparing it to something we already know. What we understand forms itself into systematic unities, or circles made up of parts...We understand the meaning of an individual word by seeing it in reference to the whole of the sentence; and reciprocally, the sentence's meaning as a whole is dependent on the meaning of individual words. By extension, an individual concept derives its meaning from a context or horizon within which it stands; yet the horizon is made up of the very elements which give it meaning. By dialectical interaction between the whole and the part, each gives the other meaning; understanding is circular, then...we call this the "hermeneutical circle".'

Richard E. Palmer, Hermeneutics

This chapter reflects on the themes identified in chapters 4 and 5, developing their analytical standpoint. The chapter also discusses how the themes are related to contexts or situations in the case studies previously described, with the aim of grounding the theory (Strauss & Corbin 1990) by considering variations. The relationship between the themes, and the grounded theory analysis in Chapter 4, is also amplified upon here. The theoretical framework advanced in Chapter 1 is also drawn upon, so the themes are placed in the context of current literature. This chapter can also be seen to start to distil the constructions of the various case studies, with the aim of producing an eventual consensus construction that is more informed than the preceding constructions (Guba & Lincoln 1994) presented in Chapters 3, 4 and 5.

6.1 Relating the Grounded Theory Concepts to the Themes

The chain of analysis in this study is represented in Figure 6-1 and is explained in detail in Chapter 4. The analysis commenced by applying grounded theory techniques to the interaction of Case 1, and then proceeded to a themed analysis using topics as an intermediate unit of analysis. This chain of analysis was then adopted for succeeding cases and has been presented in Chapter 5.

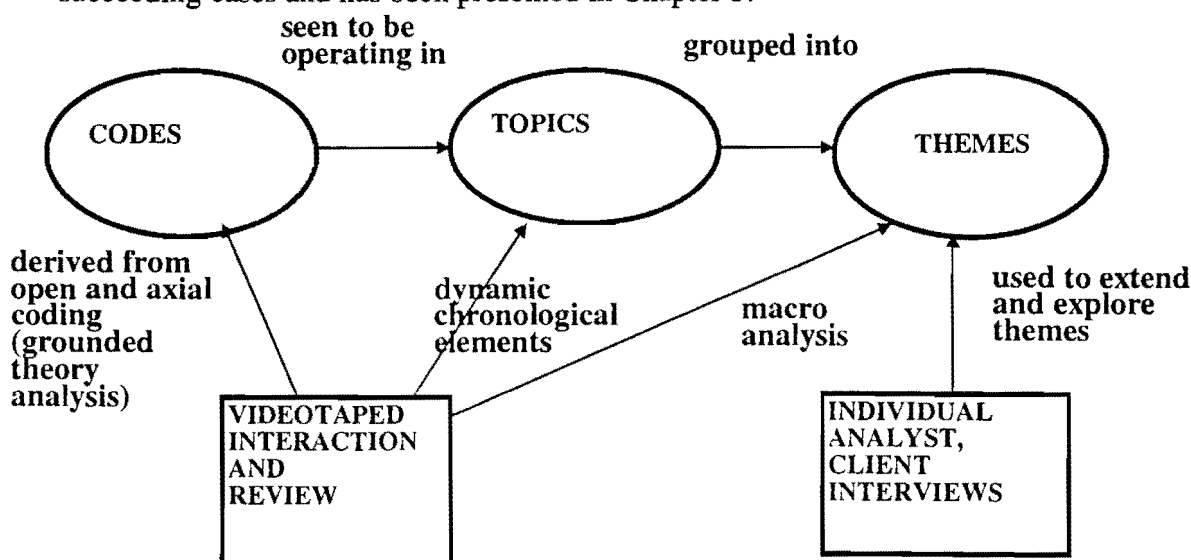


Figure 6-1 Chain of Analysis Adopted In The Case Studies

It is also possible to see how the two broad sub categories of the coded analysis, Systems Analysis Strategies and Conversational Strategies, presented in Chapter 4, assisted the foundation for future themes. The themes derived from the interactions can be seen to fall either into the category of Systems Analysis strategies or Conversational strategies. Table 6-1 shows which categories relate to which major themes, and codes that are representative of those categories.

Whilst a strategy, referring as it does for these categories to a battery of tactics and declared intentions on the parts of the analyst and client at the conversational level, is not the same as a theme, which essentially enables an overarching view of the cases – the connections are clear.

It is possible to delineate between *conceptual* or systems analysis strategies, and those which are part of the *social context* of interaction, or conversational strategies. In the same way, we can see that the themes that emerge from the cases are either substantially situated in a either a social context, or a definitional or conceptual one.

Table 6-1 Relating Themes and Categories

CATEGORIES AND CODES	CORRESPONDING THEMES
<p>SYSTEMS ANALYSIS STRATEGIES AND TACTICS</p> <ul style="list-style-type: none"> • <i>scoping</i> • <i>information identification</i> • <i>process identification, process rule</i> • <i>key searching</i> • <i>problem identification</i> 	<ul style="list-style-type: none"> • Issues to be Discussed • Scope of System • Information Input to System • Processes Associated With System • Links in Information • Problem Identification • Information Output from System
<p>CONVERSATIONAL STRATEGIES AND TACTICS</p> <ul style="list-style-type: none"> • <i>agenda setting</i> • <i>personal disclosure</i> • <i>reflection</i> • <i>future action</i> • <i>future solution</i> • <i>organisational context*</i> <p>* strictly speaking, organisational context is neither a strategy nor tactic, rather it is a code used to identify organisational issues in the transcripts</p>	<ul style="list-style-type: none"> • Personal Disclosures • Future Action • Analyst's Understanding of Processes • Future Solutions • Organisational Context

The word ‘substantially’ is used deliberately here. For instance, it could be argued that the theme of Issues to be Discussed exists in a social space rather than a conceptual one, but to say this would be to ignore how much the initial framing of requirements influences subsequent conceptualisation of those requirements. How the Issues to be Discussed were framed by both analyst and client in the cases revealed their conceptual biases – that said, these were always set within a larger social context. It is also true to say that, how those issues are framed for discussion is a *process* of agenda setting, circumscribed by organisational context and social relationships between analyst and client, and embedded in social interaction.

Therefore it can be seen that, in the process of ‘scaling up’ the analysis, some finer aspects of the analysis at a lower level might be lost – however, this is compensated for by the examination of themes in individual situations, illustrating how they operate in varying contexts.

6.2 Exploring the Themes Further

In this section, each of the themes will be discussed further, in order to develop their analytical standpoint. Figure 6-2 illustrates how the two products of the analyses carried out in this thesis, themes, systems analysis and conversational strategies, might usefully be organised into the conceptual framework advanced in Chapter 1, that of Definitional, Individual, Environmental and Social Issues. The strategies are placed in the centre of this figure to convey both their micro analytic role and their role in enacting all of the themes described.

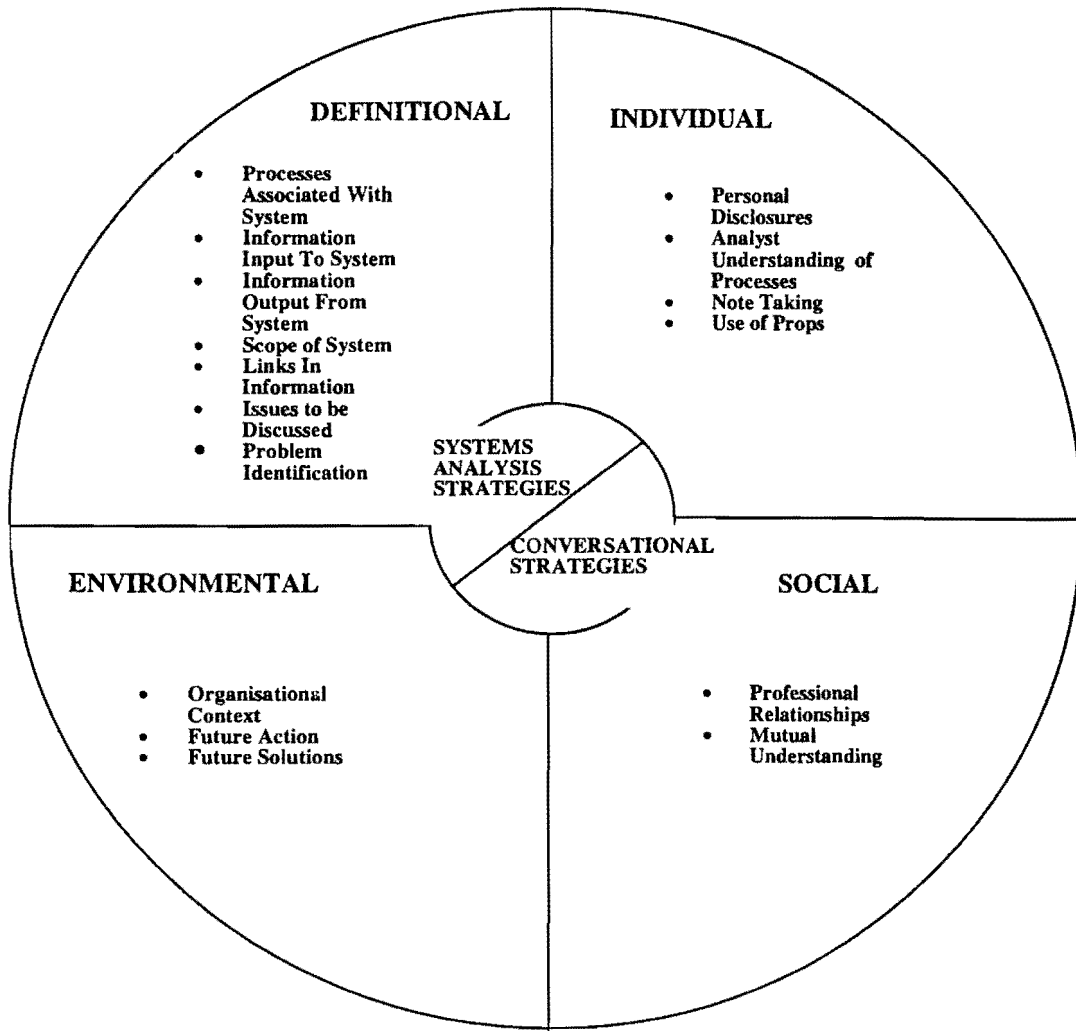


Figure 6-2 Relating the Analysis to the Theoretical Framework

The discussion of the themes that follows is organised as follows. Firstly, the themes are discussed under their respective headings of Definitional, Environmental, Social and Individual as a mechanism for further developing the theory and relating it to current literature. Secondly, the situational influences on themes identified in the previous chapter are discussed from a cross-case perspective. Where appropriate, attention is drawn to the systems analysis and conversational strategies employed in the themes. Finally, the interrelationships between themes are discussed.

6.3 Definitional Issues

In this section, all those themes identified that relate to definitional aspects of early requirements are discussed. In Chapter 1, definitional aspects were characterised as those which affected how the problem under discussion is framed and conceptualised, and literature was introduced describing framing, problem setting, and levels of meanings. How systems developers might view knowledge and information when defining information systems was also considered. These aspects are used in this section to assist development of the themes. A careful examination of situational aspects surrounding definitional themes in the cases is also presented.

6.3.1 Issues To Be Discussed

In all the case studies, one can see clearly that there is some negotiation on what is to be discussed, and this can be seen as occurring at a number of levels and contexts (Strauss 1978), but primarily occurs at the interactional level. In many of the cases, some negotiation also takes place as to *how* to discuss the issue at hand. In any professional discourse one would expect a focus on the task to be executed through conversation – this equates to a global topic of the conversation in discourse analysis terms. More importantly, *how* the issues are framed are of crucial importance at the outset and give insight into how the early requirements are being perceived by both the analyst and the client. Subsequent discussion of that global topic very often consists of a bringing together of two perceptions to a joint perception of early requirements.

So, how the early requirements are framed in the beginning of the conversation in the form of a global topic or issues to be discussed has a profound impact from two perspectives.

Firstly, whoever sets the parameters or agenda for the discussion has power over the outcome as it manifests as a new system. Very often there are resource issues in organisations attached to the implementation of system requirements – the IT section involved may have limited resources for subsequent amendments, for instance.

Secondly, how the issues are framed determines how they are perceived – if they are perceived from a certain perspective, then the problem solving applied to them will also be from that perspective. For example, if the analyst sees the problem that the client presents as a purely technical problem to do with the printing out of reports, he or she may work on solving this particular problem without locating this particular problem within a larger context. That larger context might include the process that the report is associated with, the reasons why the client prints this report out at a particular time within that process, how that process relates to other processes carried out by the client, and so on. This example is of course fictitious and represents somewhat of a caricature of an analyst's position, but at the same time one can see that a purely technical focus brought to early requirements gathering might have an effect of ignoring the larger picture. Any individual is hardly likely, when in the role of a technical expert, to frame an issue in such a way as to indicate that they do not have an answer to the problem. These sort of observations echo the social context in which early requirements gathering take place and serve as a reminder that early requirements gathering is above all a social process, to which the systems analyst may bring all sorts of assumptions – that he or she is the best person to make decisions about the system, that organisational dysfunctions are not the province of the systems designer, and so on (Hirschheim & Newman 1991).

These arguments are explored more fully in Section 1.4 which outlines the theoretical framework which guided the study. They are reiterated here in order to emphasise that the theme of Issues to be Discussed, and the way in which this particular theme emerges in the case studies, is central to the research problem; much can be gained by

a close examination of how this theme is dealt with by the participants in the case studies. It represents the starting point of early requirements, from which the evolution of requirements will either grow, flow, or be challenged or altered through discussion.

6.3.1.1 Examining the frames that operated in the cases

Orlikowski and Gash (1994) describe a *technological frame* as an interpretive scheme applied to ISD. Davidson (1996) demonstrates how technological frames change over the lifetime of a project in her study of information systems requirements. Guinan (1988) posited that analysts and clients reach 'perceptual correspondence' through problem framing and reframing. This is not dissimilar to Schön's (1983) description of *problem setting*, where the professional frames the problem in a such a way that it can be solved by successive reframes and 'on-the-spot-experiments'. This can be seen in all the cases most clearly from the topic analysis, where *reframing* is used at a micro level to redefine critical terms and definitions pertaining to early requirements.

The theme of Issues to Be Discussed, identified in individual and joint data sources, can be seen as representing a number of local, individual and global frames which influence problem conceptualisation. The frames presented in this analysis derive from two sources, the topic analyses of the transcripts and the themed analyses of the surrounding data sources.

For the purposes of the analysis presented here, the *problem frame* can be seen as a bounding of the problem and a definition of that problem. The analyst and client each bring to the interaction an *initial problem frame* which is modified and *extended* through mutual interaction. Through successive *reframing* of the problem, where the 'the problem space' is successively redefined, the analyst and client move towards perceptual correspondence (or not) with regard to their *individual* problem frames which may or may not become *joint* or shared problem frames. Analysts and clients can also be seen to apply some *generic frames* of reference with regard to analyst-client relationships and other organisational issues, and these are also included in the analysis as they could be seen to influence problem framing. The analysis presented here demonstrates that the initial problem frame is clearly influential, as the limits of the problem space tended to be modified more often than extended or replaced entirely in the interactions. Thus the initial problem frame, and who is responsible for the initial problem frame assumes critical importance – as Schön (1983) remarks, there may be a tendency for a professional to narrowly set a problem.

In Case 1, the frames applied to Issues to Be Discussed showed some interesting commonalities and differences, as illustrated in Figure 6-3. Repeated frames, or instances of frames that seem to build on the other persons frame, are shown in grey. Shared and individual frames are indicated as such in the interaction and review.

In the frames identified in Case 1, the genesis of many other themes that occurred in the case study can also be seen. If Issues To Be Discussed represents the various frames of reference that are used to initially conceptualise the problem, it is not hard to see why. For instance, the analyst's initial framing of the problem was in terms of information used by the system and the fact that approval codes were not held in the database [corresponding themes Information Input to the System and Links in Information]. During the review, a number of frames emerged that echoed themes – for instance, the need for the analyst to understand the processes [identified themes Analyst's Understanding of Processes and Mutual Understanding]. So, the themes themselves can be seen as *global* frames applied by analysts and clients in a number of case studies – illustrating the efficacy of themes as illustrative of the approach analysts and clients bring to early requirements gathering, and indicating issues which are significant to most of the analyst-client conversations studied here.

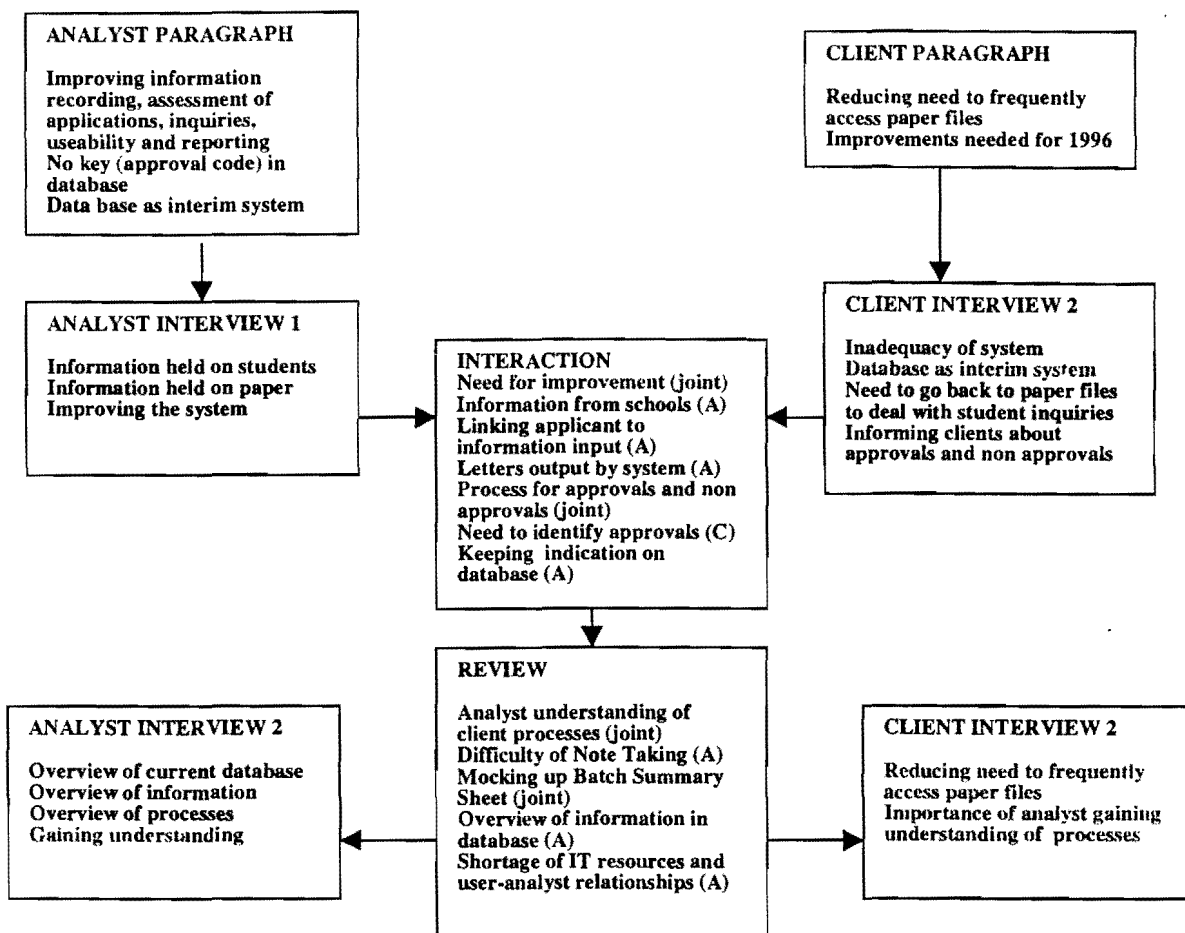


Figure 6-3 Frames in Case 1

It is also interesting to see whose problem frames prevailed in Case 1, tracing through the various data sources. For instance, in the initial paragraph, the analyst put forward a frame of an interim solution, which has been accepted by the client by the time she speaks to the researcher. The information based frames of the analyst, and his concern about the lack of a key in the database, were well represented in the interaction. The analyst also adopted some of the problem frames of the client – echoing her concerns about gaining a full understanding of processes, first expressed in the review and then by the analyst in the second individual interview. So some perceptual correspondence (Guinan 1988) or congruent frames exist by the time the interaction is completed. This is in stark contrast to Case 3, where there were very few joint problem or generic frames, as illustrated by Figure 6-4. Again, repeated or extended frames are shown in grey and frames in the interaction and interview are indicated as client, analyst or joint frames.

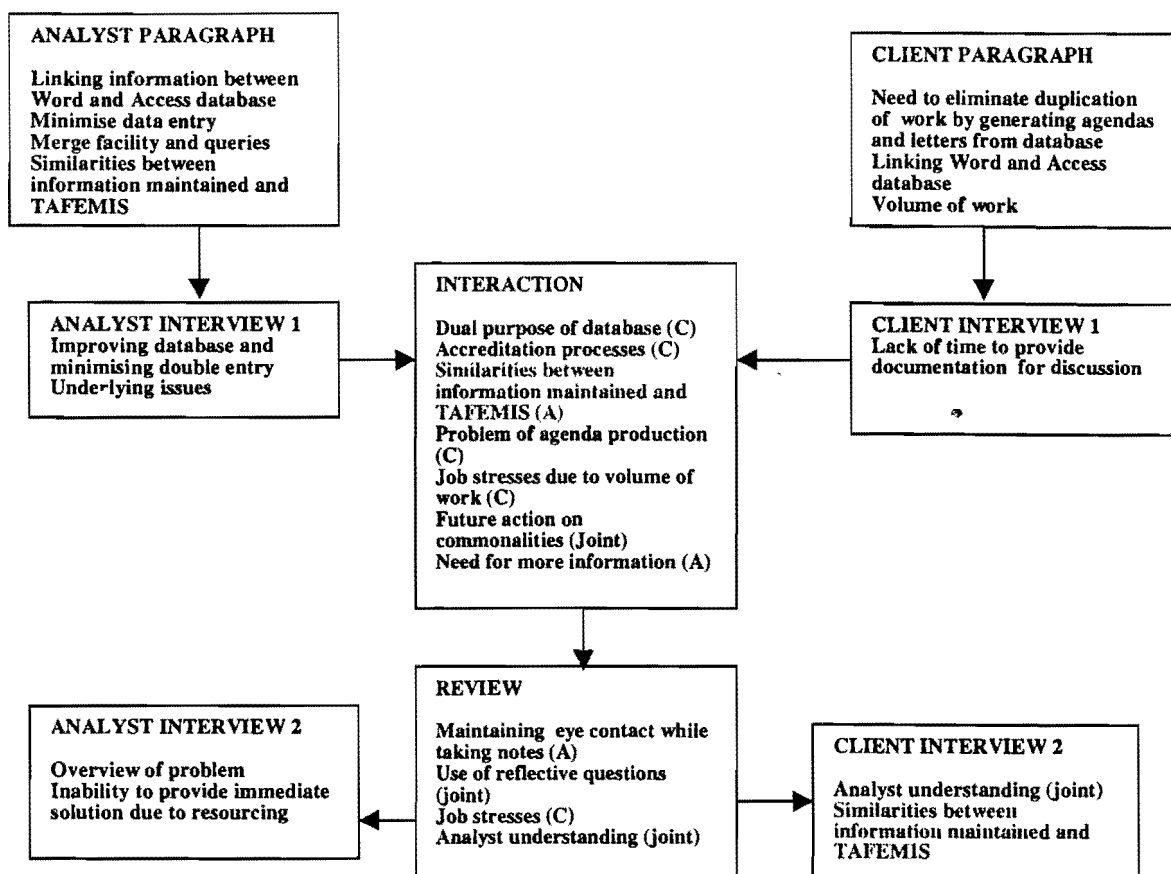


Figure 6-4 Frames in Case 3

In this case, a solution was not proffered and the analyst chose to spend time on the issue of commonalities in information held by the client and elsewhere in the organisation. There were very many topics in the interaction, and this can be seen to be due to the competing problem frames that existed. The client adopted one problem frame only of the analyst, that of the commonalities in information across the organisation. It is possible that this was the one useful issue that she could adopt from the interaction, given the marked difference in frames and wide range of topics. It is also interesting to note that in this case, frames in the review tended to be generic frames applied to communication issues rather than problem frames associated with the project itself. As the participants had not met each other before, and the client was new to the organisation, it may be also that it was hard for them to establish common problem frames about the project without first establishing generic frames about the organisation.

By contrast, Case 6 showed much commonality of problem frames, for a number of reasons. Firstly, the analyst and client had been working regularly together and shared very similar frames as to the role of the project in the organisation. Secondly, they were able to apply the same general problem frame, as the project comprised another set of manual registers to be added to the councils database using a suitable key to identify them. The analyst submitted one paragraph on behalf of both herself and the client, rather than individual paragraphs, as requested – it is interesting that they chose to respond to this request in this way, given that all other case study participants had complied with this request. This response could be seen as a logical one in the light of their joint approach, where clearly their problem frames on the project were all but identical. All this resulted in a very marked commonality of problem frames, as illustrated by Figure 6-5.

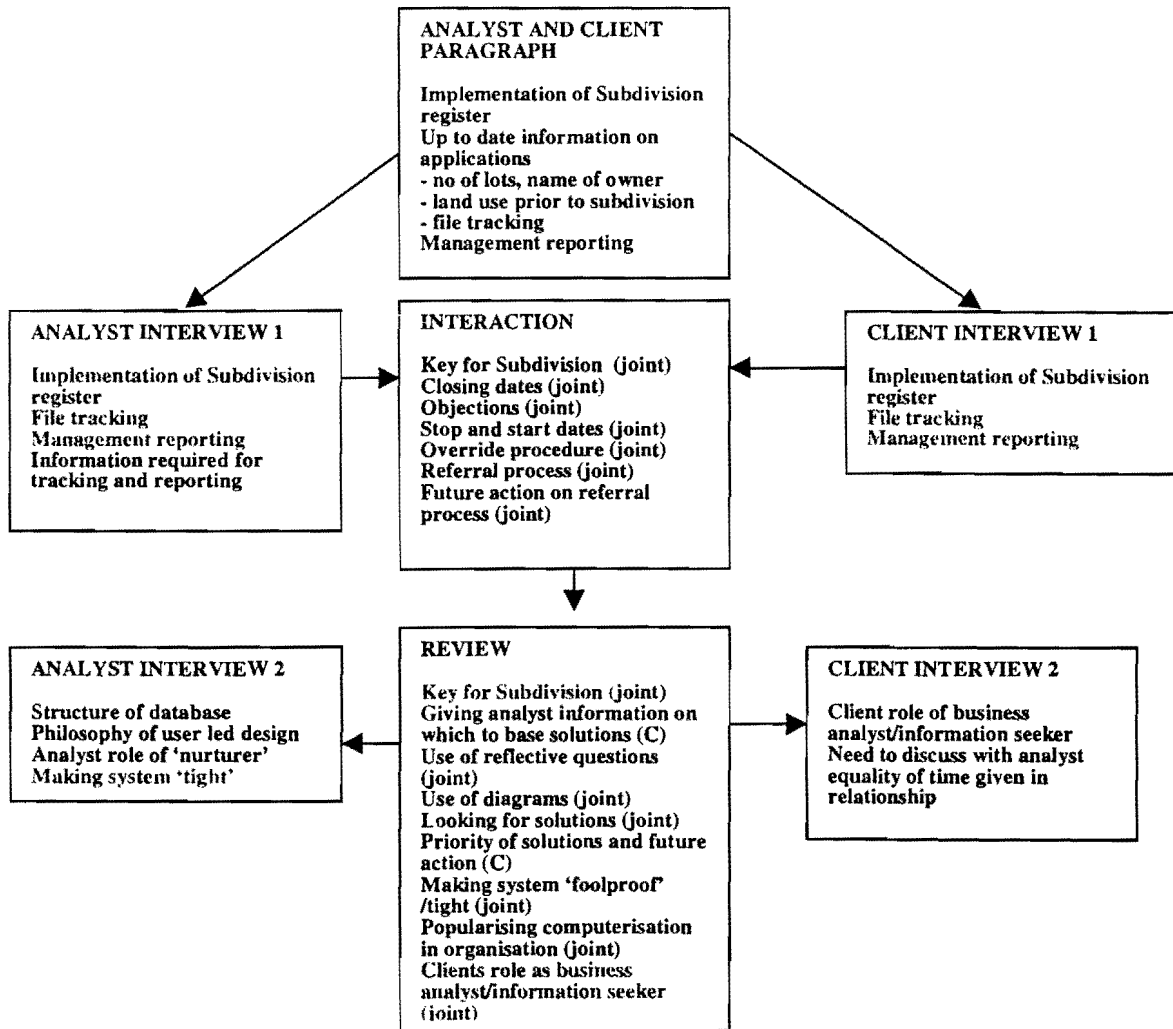


Figure 6-5 Frames in Case 6

From Figure 6-5 it can be seen that that not only did the client and analyst have very similar frames on the actual issues to be discussed, but also that they both had a number of generic frames which encompassed very similar views on their respective roles and philosophies for system design. This is very different from Case 3 where the analyst and client met each other for the first time, and very few joint problem frames emerged. So it might be reasonable to assume that, with a harmonious working relationship, over time, more and more congruent frames may occur. Of course, the generic and problem frames that each person brings to an interaction may also be a product of organisational context and individual differences.

In Case 2 (Figure 6-6), it can be seen that how the client's generic frame of analyst–client relationships at the outset (due to his experience in the organisational and project context), subsequently influenced the problem frames he applied to the issues to be discussed. The client had previous negative experiences with an earlier incarnation of the project, which led him to believe that he should not meld his sections processes to the requirements of any system brought in. The client was also responsible for the joint problem frames that were adopted in the interaction.

Therefore, he was successful in getting the analyst to use his problem frame, which was essentially that the system should fit with existing manual processes. A reflection of this can be seen in the analyst's subsequent problem frames, firstly in the review,

where he applies a problem frame of understanding how the client's *manual* processes work, and secondly in the interview where he has an expanded problem frame of new definitions, these stemming from the interaction where the client raised issues of backlog and allocation. So this case gives a good example of how a client's problem frames might prevail with some effect on the issues to be discussed. It also illustrates their potentially dynamic nature, given how different the problem frames were by the end of the case study.

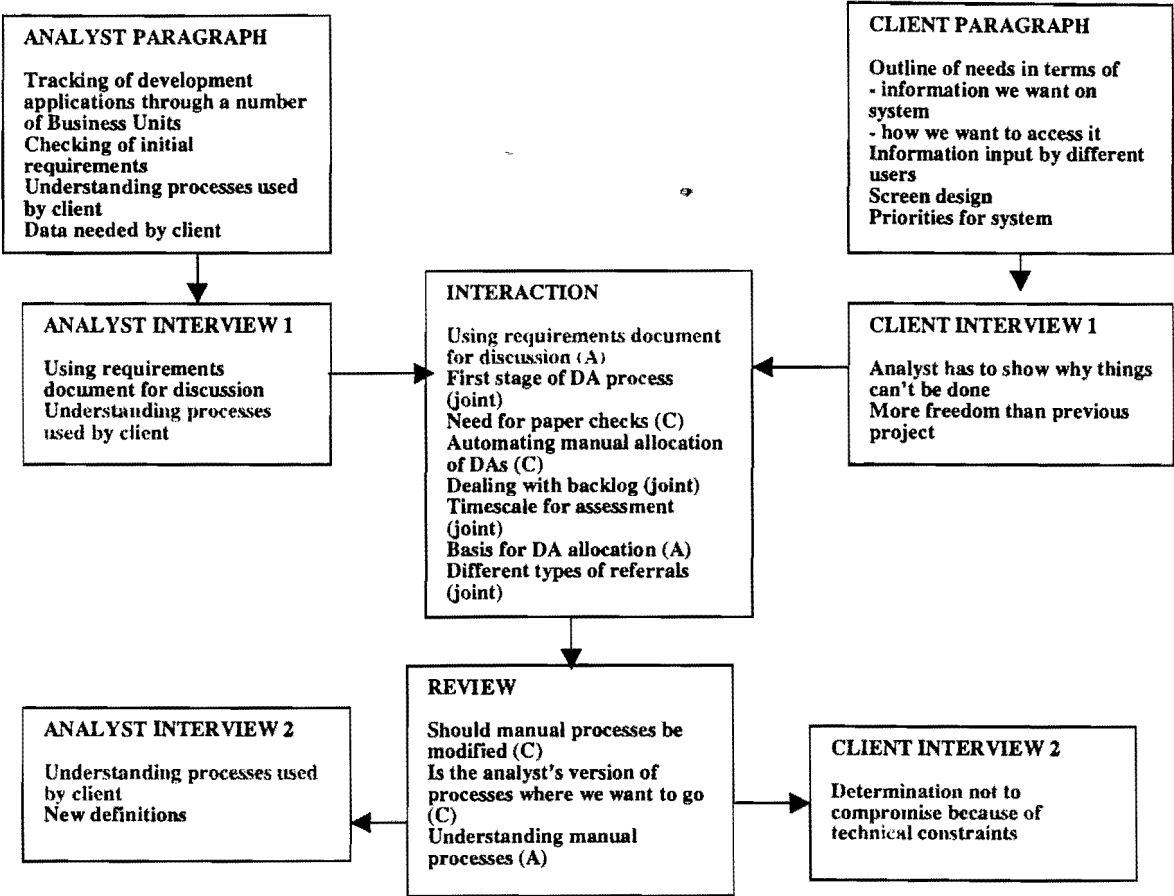


Figure 6-6 Frames in Case 2

Case 5 (Figure 6-7) shows a pattern of problem frames which have echoes of Case 2 in some respects, but not in others. Here the two participants shared some joint generic frames regarding the forestry industry and the way their particular State agency chooses to operate. As in Case 2, the client saw the upcoming interaction as essentially a negotiation, in this case about the overhaul of a current system. In common with Case 2 again, the client was working from a frame of the proposed change fitting in with current processes. However, there was more interchange of problem frames in this case, for instance the client accepting that the analyst's problem frame that commonalities of information across systems should be addressed. Both participants, via a pre-agreed agenda, agreed that that the focus of the discussion should be royalties and reporting, so there was some congruency in the frames from the beginning. The client was persistent in his generic frame that the updated system should work for them, and was happy to discover that, as the system was to be completely overhauled, that this indeed should be the case. Both participants had worked in the agency for some time, and this common generic frame seemed to facilitate the swapping of problem frames, as did the prior negotiation on the agenda – by contrast, both of these factors seemed not to be operating in Case 2.

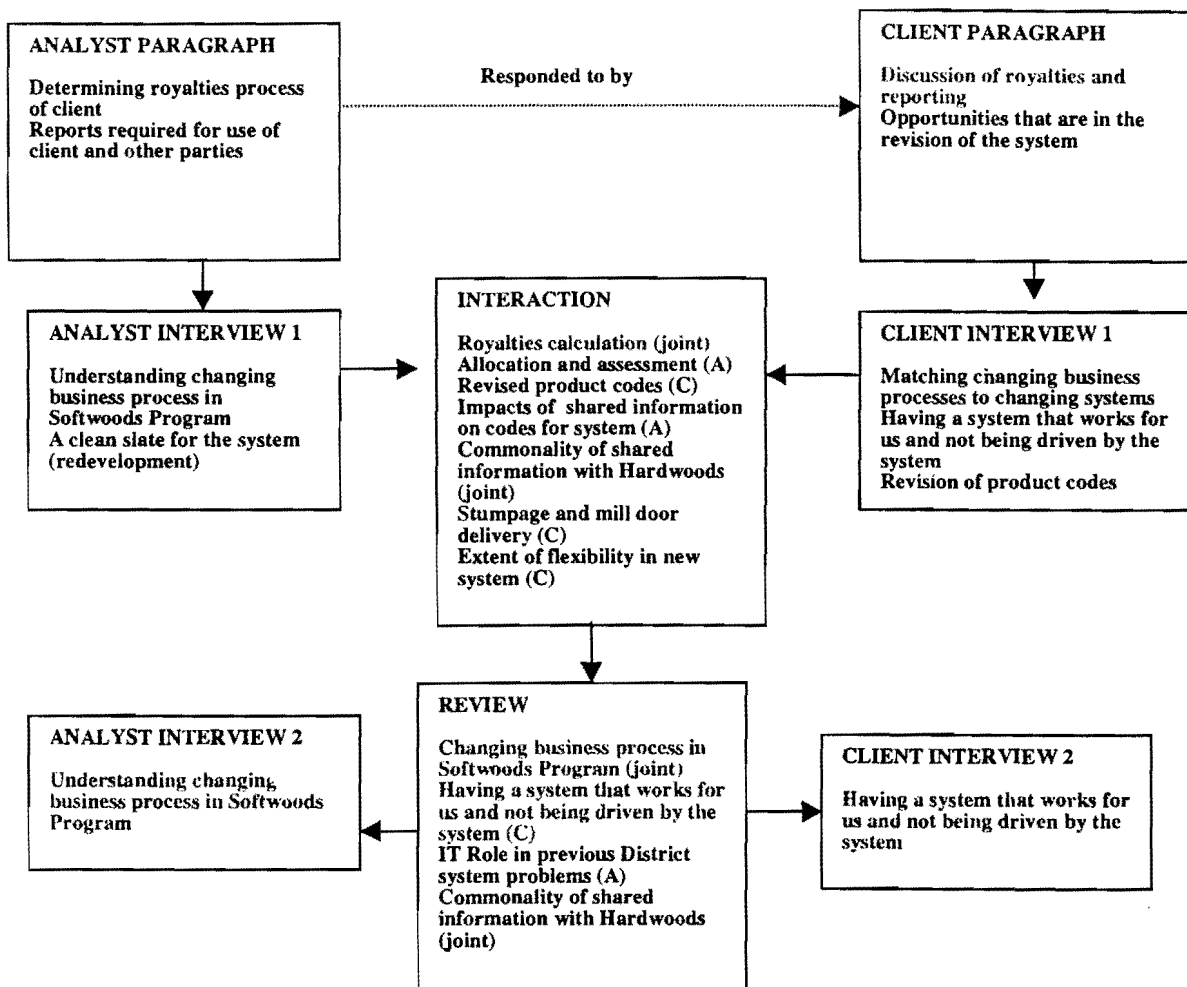


Figure 6-7 Frames in Case 5

In Case 4 (Figure 6-8), the analyst and client started out with almost identical problem frames with regard to the issues to be discussed. In the first interview, the client brought an individual generic frame to the interaction – that he saw this case study as a mechanism for gaining commitment from the analyst in an organisational backdrop of limited resources. He also framed the interaction as a negotiation as evidenced by his declaration for the need for flexibility in the system and exploring what was achievable. Turning to the interaction, the original commonality of problem frames about the global issue represented a starting point. The client also had specific problem frames, some of which were picked up by the analyst in the review – for instance his concern about multiple tenancies.

What is interesting about Case 4 is the rapidity of the movement to joint problem frames. For instance, the frames of charging and future action about that charging occurred in both the interaction and review. The analyst also identified to his satisfaction the information that would be required for tracking, and this was evident in the interaction and his second interview as a repeated problem frame. It seems that the analyst was not only concerned with his technical role of gaining information so he could amend the system appropriately, but actively entered the client's processes, to the extent of identifying problems with charging that had not occurred to the client

with his frames on lost bins and jointly framing with the client various options for charging. This analyst also identified an issue of concern about implementation from his perspective – the problem frame of a sizeable data entry issue.

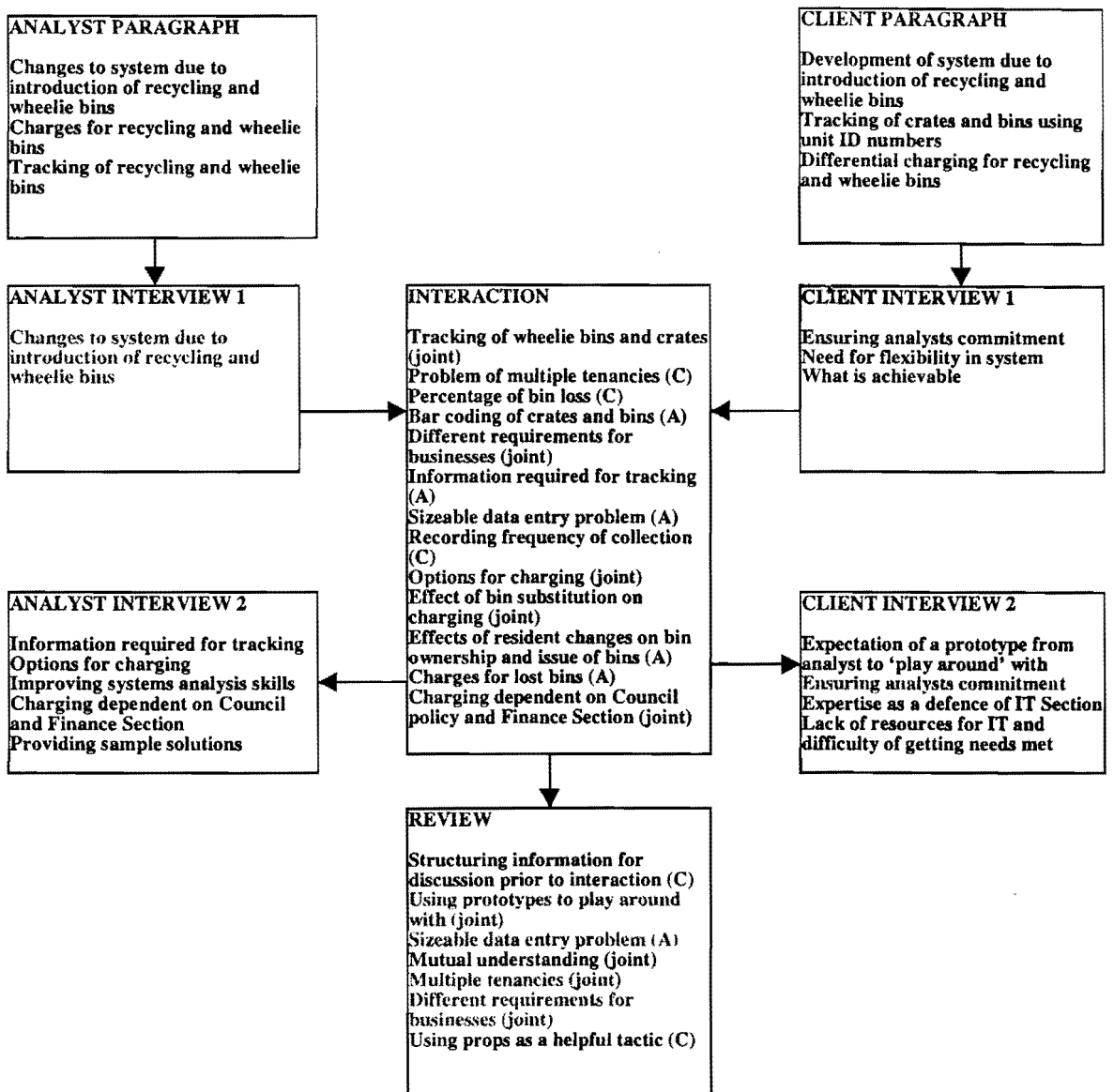


Figure 6-8 Frames in Case 4

So it seems that this analyst advanced many frames on the problem, some of which can be likened to 'on the spot experiments' as identified by Schön (1983), where a practitioner moves through a succession of problem frames to test their conceptualisation of the problem. This was most evident in the discussion on charging. It was also interesting to see that, in the review and the client interview, there was a frame on the problem that consisted of the expectation that understanding would be further clarified by the use of prototyping, and that the client also viewed the use of props by the analyst as a way of clarifying understanding. It seems that, although the client had certain misgivings about interactions between analysts and clients in general in his organisation, as evidenced by his 'private' generic frames in the interviews, the analyst and client were able to achieve congruence in two areas – the nature of the issues and their methods for gaining joint understanding about those issues.

In Case 4, some similarities existed with Cases 2 and 5, in terms of the client having a stance that, in general, any system proposed should be useful to them and their everyday operations. In at least two of the cases, this seemed to be a product of previous experience. In all three of the cases, the clients were senior managers. In Case 4, however, the negotiative stance of the client was less evident in the interaction in terms of frames that influenced the interaction.

6.3.1.2 Reflecting on the frames in the cases

The purpose of this discussion on frames in the cases is to demonstrate that how issues are framed at the outset do indeed have a profound influence on what is subsequently discussed – the starting point is critical. In cases where the problem and generic frames were close at the outset, many more joint frames emerged.

In Cases 2 and 4, where the problem frames were not particularly close at the beginning, it was up to the client to actively redefine the problem and negotiate frames to be adopted by the analyst. In Case 4, the client succeeded in doing this, probably because of his rank and experience. In Case 2, the client did not, possibly due to her lack of power in what was a new organisation to her. Case 2 also demonstrates how an organisational context, in this case lack of resources, can influence the issues to be discussed. IS professionals have to deal with value conflicts and shifting situations, such as lack of resources, and it is probably tempting then to frame the problem in a way that one can get a result, rather than being unable to deliver as a professional.

There was a strong element of negotiation in Cases 2 and 5, and it is interesting to note that, in both cases, there were more individual frames than joint frames. Both clients in these cases were senior managers, and this may have affected the negotiation context (Strauss 1978) from the perspective of the relative balance of power between the parties. The stage of the project may also have a bearing on this – Cases 2 and 5 seemed to be at a slightly earlier stage, whereas with Cases 1 and 4, pre-meeting discussions had taken place. In Case 6, many joint problem and generic frames had been established on a prior, similar project. Summarising what might influence Issues to Be Discussed, the following influences in the cases can be identified.

- Stage of project – the earlier the stage of the project, the more likely that the generic and problem frames that the analyst and client bring to the interaction are incongruent.
- Project history – previous experience may lead participants to conceptualise a problem a certain way, or adopt a negotiating stance that ensures that certain issues of client autonomy are included in the agenda.
- Pre meeting discussions – informal discussions prior to a formal meeting may bring problem and generic frames closer together.
- Lack of resources or an unwillingness to expend resources. In Cases 1 and 3, organisational issues, lack of resources and in Case 1 an upcoming new system, influenced how the analysts framed the problem.

How something is ‘named’ has profound influence on how it is conceptualised – we only have to look at the field of politics to see many instances of definitions and redefinitions of concepts. At the time of writing, the Australian General Election of 1998, the goods and services tax (GST) proposed by the Coalition government is either a vital reform to carry Australia into the new millennium, or a regressive tax, depending on ones point of view. In the same way, ones view of a new system – the ‘objective facts’ of the matter, may be influenced by political considerations of power

and benefit. What is sometimes ignored is that, by reframing facts in a certain way, the meaning is changed. This has large implications in information systems development as those problem frames are encoded into a system, quite literally, via a programming language, and henceforth large numbers of users are exposed to those frames. A particular phrase issued from an analysts lips in 1996 about 'users find it easy to use the X interface' may result in user dissatisfaction in 1997. It is easy to see the language we use with regard to systems as neutral, but as meanings are attributed to IT as an artefact (Azevedo & Robey 1994), this is clearly not the case.

It is also worth considering here the notion of organisational agendas as defined by Boden (1994) as layered and successively elaborated on through a succession of local interactions, enacted through frames. Boden points out that 'verbal agendas are in turn the departmental and organisational plans, policies and strategies that locate this talk and this activity in that stream of organisational life' (Boden 1994, p.156). She further states that their initial appearance is primarily verbal and interactional. Viewing early requirements gathering from this perspective underlines the importance of the initial view of issues to be discussed, as it indicates that the situation that the analyst and client find themselves in, and their successive negotiation over shifting frames, is the primary force in determining early requirements.

6.3.2 Scope of the System

Both the initiation of a new system or the improvement of a current one generally necessitate some discussion of scope. From the client perspective, the boundary of a system, the exact point at which it interlocks with manual processes at an *operational* level, is an issue of some importance.

A survey of undergraduate systems analysis texts past and present (Hoffer, George, & Valacich 1999, Kendall & Kendall 1995, Harris 1995, Whitten, Bentley and Barlow 1994, Martin 1991, Jordan & Machesky 1990, Powers, Cheney & Crow 1990) reveal very little in the way of discussion of boundaries and how they are established in the process of early requirements gathering. Boundaries are sometimes discussed at a general systems theory level, but not at a specific level. This may be because it is assumed that, in a textbook world, the scope of the system has already been determined. One textbook (Hawryszkiewicz 1998), does discuss the establishment of 'automation boundaries' on data flow diagrams where a decision is made as to what to leave manual. Hawryszkiewicz (1998) also discusses the need to identify a 'domain of change' with regard to system design objectives that encompass job design objectives.

However, none of the systems analysis texts surveyed seem to discuss how procedures surrounding that automation boundary might be designed. Many of the texts give information on how to design output for the user and useability issues, but pay less regard to establishing which manual tasks which those outputs are designed to support. This may of course simply reflect the design focus of IS undergraduate education – there is a need for those undergraduates to acquire many technical skills in a short time. It is as if the textbooks themselves draw a boundary and decide that the manual procedures that the client undergoes are not a concern of the systems analyst.

Yet the quality of the manual processes, and how they interface with computer processes, can be assumed to have a large impact on the useability of that system and its acceptance, and it was an issue that emerged in many of the cases. It is perhaps not surprising that clients would be concerned about the scope of a system, even if they would not consciously think of it as such, given the impact of a computer system on their day to day processes.

For instance, in Case 2, the client was very concerned as to the impact of the system on his section in terms of their current work procedures, as mentioned in individual interviews. Here is his view of the first five minutes of the interaction as stated in the videotaped review:

..from my point of view, I was trying to come to grips with... how the computer process interfaced with what we actually did. ..as soon as you start talking about computer processes, it really asks the question, as to what your procedures are and whether they might change.. I was starting to question in fact whether the way we did things currently ought to be modified, or whether (the analyst's) reflection of what he thought we were doing was in fact the way we wanted to go at all.

The analyst and client then went on to discuss, in the review, the allocation of the building applications:

Client: ..for instance, when a building surveyor gets his application, does he receive it through the screen or does he really get a hard copy in his hand and then says 'ohh but look at the screen and see what that does'?

Analyst: Yeah, I didn't even consider the fact that its going to appear in their in tray and that's when they are going to start work on it. I just assumed that the system would allocate it to them because that's how I was thinking.

The analyst's last comment, about how he didn't consider the application as a physical entity in an in-tray, is quite revealing, and perhaps says something about analyst training with regard to manual processes. In most undergraduate training, the focus is on acquiring the technical skills to build a system, and the interface between computerised processes and manual procedures receives little attention.

This concern with the drawing of boundaries and impact of proposed computerisation on manual processes was also echoed in Case 5:

I'm trying to get across to (the analyst) that the way things are happening in the field are where we put our priorities, and then we try to fit our computer systems with them.. I've seen too many, like we have to change because the computer won't allow this, or you know, not necessarily computers, but we want our information nice and neat this way, so you change your operation to fit it and it doesn't really happen all that well (laughs). So I'm trying to give (the analyst) a bit of background into why we do things..

In Case 6, the client used the review as an opportunity to continue debate on a manual procedure that had been suggested in the interaction, as a result of the design proposed in the discussion. She said:

I'm still worried about one thing though. I don't like this idea of of the people out there having to enter it twice, they have to enter it into their normal mail in system as well as into ours .. And I am just always concerned with that if they have to do something twice, they'll miss one step.

In this case though, the analyst actively entered into the debate and showed a real appreciation of the manual procedures:

Alternatively I guess they'll have to write it down on a piece of paper, if you don't trust them, we'll just draw up a form a template or something and they just fill out the sub division number and the date ahh when it came in for objection, and they give it to you or somebody and they enter it in the computer.

Interestingly, the analyst in this case may have derived her approach to manual procedures through two previous experiences: firstly, she was familiar with the client's domain through work on other registers connected to the system; secondly, she had experience of processing insurance claims in a previous post.

So, what can be learned from these discussion of scope in these cases? Firstly, the view of scope from an analyst's perspective seemed to be different from the client's perception of the same issue. Both analysts *and* clients used an identifiable strategy

of *scoping* in the interactions, in the sense that the boundary between computer processes and manual procedures needed to be established. Yet the view of that boundary, or scope of the system, seemed quite different. The analyst view of scope, as exemplified by Case 1, seemed to consist of working out the *extent* of computerisation. The analyst in this case used a strategy of distinguishing between different types of system information, either held in clerical or computerised form, and in the micro analysis was said to be using *information identification* as part of a *scoping* strategy. In Case 3, the analyst used *problem identification* – he identified that the current scope of the system was problematic for the client. In Case 5, the analyst established current organisational responsibilities with regard to the system as a way of assessing its current scope.

The client view of scope could be said to be more active, in that they were concerned with the *consequences* of the extent of the boundary at an operational level. In the micro analysis of interactions, they used *dialoguing*, *imagining* and *process identification* to assess the consequences of the proposed computer processes. Clients also used *exemplification* to illustrate to analysts why a particular process needed to be included within that particular boundary.

Clients were also concerned with scope at a broader, negotiative level. They understood that the precise location of the boundary would affect their daily processes. For some clients, this was an issue of power – they did not wish to have a computer system implemented that affected their manual procedures in a negative fashion.

Analysts in these case studies, for the most part, did not appreciate the impact proposed computer processes might have on a client's daily operations, far less the issues of power that underlie such impacts. This may simply be because that it is difficult for an analyst to fully grasp domain knowledge (Jones & Walsham 1992). This in turn is probably due to the fact that the emphasis of an IS professional's training is on technical issues rather than soft issues, in what is already an overcrowded undergraduate curriculum. This is reflected in the survey of undergraduate textbooks that shows that the issue of *where* new computerised processes interlock with manual procedures is not considered. Yet this issue can have a large effect on the impact of the system for the user and, in turn, its useability and acceptability. The adoption of Business Process Re-engineering (BPR) by some organisations has encouraged a focus on processes. However, BPR exercises tend to be undertaken at an organisational level, with a view to radical change.

The issues of scope raised by the clients in these case studies were overwhelmingly at an operational, micro level and would seem to indicate that more attention might be paid to subsequent redesign of manual procedures that occur as a consequence of new computer processes.

6.3.3 Processes Associated with the System and Information Input to the System

Processes, and the information that use them, can be seen as two sides of the same coin of early requirements gathering. As such they echo the data/process paradigm, and the extent to which an analyst concentrates on one aspect or the other may have all sorts of interesting consequences, as well as a reflection on the conceptual framework they are bringing to bear on the situation. For instance, it could be argued that the proper approach to a client's needs would be a concentration on processes that the client uses to carry out their day to day tasks, followed by the information required for those processes. In this way, the information required by the client is seen in the context of the processes they use – the systems analyst may be able to suggest improvements to processes, and will have an appreciation of why this need exists. This latter point may be very important in terms of the analyst meeting that particular

need – the greater the insight that the analyst has, the more likely they are to attempt to meet that need.

However, what of approaching the problem from the other direction, by examining the information needed and then discovering how they are embedded in processes? One could argue, as many people have, that the information set required by an organisation does not change as quickly as the processes that use it. One could also assume that clients seek advice from analysts when they need extra information provided by the system, and that they themselves are competent to manage their processes. It may be that what the analyst can provide at this point is an overview of the information that may be available in the organisation, via associated or integrated systems. In particular, when discussing an amendment to a system, one is by implication discussing an extension of scope, and an extension of the information provided.

From this discussion, it becomes obvious that both aspects are interdependent and equally important – a knowledge of processes is needed to fully appreciate information needs, and vice versa. What is of interest is whether a primary focus on processes or information by an analyst affects the requirements, and whether this primary focus is influenced by the task in hand.

In Case 1, the analyst's strategy of establishing the scope of the current system seemed to result in a focus on the information input to the system as a way of establishing what processes were actually served by that database. This contrasted with the highly contextual, process orientated approach indicated by the client when she was asked before the interview what was in her mind about the upcoming interview. After talking about the processes associated with the administering of the Student Assistance Scheme and the national and state contexts of the scheme, she says she sees the upcoming discussion as being about:

..collecting statistics by school, hopefully, and being able to access complete student information and being able to say 'yes, this person has student assistance', and a history of that student, and movement between schools..

Her process orientated view is evident here – the information she requires is embedded in her description of the process. At the beginning of the interaction, the dichotomy between the client's process orientation and the analyst's information focus starts to emerge, and it is only much later in the interaction that more attention is paid to the processes associated with the information. This was an indirect consequence of the scoping strategy adopted by the analyst, where it was important to delineate which information was held where. The analyst in this case was also most concerned to identify a key by which he identify the student, again showing an information focus.

A process/information dichotomy was most evident in Case 3. Looking at the paragraphs put forward by the analyst and client, it was clear that the analyst took an overwhelmingly information focused view of the problem, whereas the client took some care to explain her processes and the information she required to support those processes. The analyst in Case 3 was also concerned with possible duplication of information across systems in the organisation. Their interaction also reflected this initial dichotomy, and can be seen as a lack of bringing together of their respective frames on the problem.

The other interactions in the cases showed a much less marked dichotomy, and a to-ing and fro-ing between the processes and defining the information required to support them. In Case 4, the analyst routinely identified information that would be required by the new processes for bin and crate tracking, but was very engaged with how the processes would work, and used as much *process identification* as *information identification* in the interaction. In Case 2, the analyst needed to check

whether his understanding of the processes was correct, and much debate ensued not only about the extent of those processes but also the information the client needed for those processes. There was a similar use of *process identification* and *information identification*, in that one tended to follow the other in sequence. In this case, the client also engaged in *information identification* for the support of various processes. In Case 5, the analyst was actively seeking to establish the new business processes the client planned to undertake in order to incorporate these into an upgraded information system. The client obliged with many explanations of current and planned processes, very often engaging in *process identification* followed by *information identification*, but also occasionally using *problem identification* followed by *information identification*. In Case 6, there was a similar use of *process identification* followed by *information identification* by the client, and a greater use of *problem identification* followed by *information identification* than in the previous case.

What inferences can be drawn from the use of *information identification* and *process identification* as used in the cases? Firstly, the analysts' use of process identification followed by information identification at a systems analyst strategy level seems to depend on how they conceptualise the problem in the first place. Secondly, the analysts seemed more interested in information overall, as evidenced by other data sources.

For instance, the analyst in Case 1 adopted a strategy of *key searching* to fracture apart the problem, and a natural consequence of this was a focus on information. In Case 3, the analyst, for 'political' reasons (lack of resources) chose to concentrate on commonalities in information at an organisational level. In the other cases, there was more of a focus on processes due to the nature of the task at hand. In Case 2, a checking of client processes. In Case 4, the formulation of new processes (and policies) for wheelie bin and crate tracking that needed to be established before information requirements could be ascertained. Similarly, in Case 5, the need to establish the direction of future business processes so the new system could hold the appropriate information. In Case 6, whilst the general method of linking information to registers had been established, this had to be considered in the light of the client's current processes.

From the client perspective, *process identification* in the cases tended to precede *information identification*. It is also interesting to note here that *problem identification* tended to be a crystallisation of a problem with a particular process that was then followed up by *information identification*.

To some extent, the analyst focus on information seems to be the natural outcome of analyst training combined with the dictates of the task in hand. Generally, analysts are involved in 'building' systems and as such have to concern themselves with how information is to be structured. The issue seems to be whether, by focusing heavily on information, analysts may miss important aspects of the processes that use that information. In the cases studied here, this happened twice and seemed to be a result of the analyst's formulation of the problem. Of course, a client can challenge that formulation of the problem, as occurred most noticeably in Case 2. If the client had not been so protective of his processes and concerned with boundary setting, it is possible that this interaction too would have had an information focus.

To conclude then, analysts have a natural focus on information due to training and how information systems are conceptualised generally in the IS profession. Occasionally, this might lead to issues of processes and context being neglected, and this might have consequences both in the area of the analyst's understanding of the problem, and issues of scope, as previously discussed.

6.3.4 Links in Information

An analyst might look for links in information for a number of reasons. During the preceding discussion of the theme of Information Input to the System, it was suggested that the information input (and held) might be important to the analyst if what was under consideration was an extension of scope. Similarly, Links in Information may be sought by the analyst if they looking for a way to computerise previously manual information. Finding an appropriate key, as occurred in a number of the cases, was important in terms of providing a solution. If a key, a route for accessing information, can be found, then the analyst has a possible implementation and therefore a possible solution.

This phenomenon can be viewed this from the perspective of Schön's (1983) characterisation of *problem setting* as practised by a variety of professionals. As such, it can be seen as a *systems analysis strategy* used by systems analysts in the cases, and was shown by analysts' use of *key searching* during the interactions. Finding a key amongst the information that the client requires to access might then reassure the analyst of the feasibility of the solution, and constitute a quick check or proof that this is so. This can be likened to Schön's (1983) concept of 'on-the-spot-experiments', where the professional frames the problem in a certain way, and check that their conceptualisation fits. Depending on the outcome of that reconceptualisation, the framing of the problem can be extended or reframed differently. A good illustration of this occurs in Case 1, where, through a series of *posits*, the analyst attempted to discover if the data held on students in the system included a unique reference number for that student.

The analyst's first posit was as follows:

OK, so when you put in the summary information you put in, you put in the number, ..does each number.. apply to each application?

The client replies:

Yes it does.

The 'on-the-spot-experiment' having succeeded, the analyst proceeds to clarify the precise nature of the link.

..so you sort of have another code number or something for each applicant that gets put into the database?

The client realises where his conclusion might be heading and says:

It's not, its not a reference to the stu(dent), the moment it can't be referenced to any individual student..

Later, the analyst resumes *key searching*, as seen by the following sequence of successive posits or *frames*:

Analyst: So like each of these applicants have like a numerical or reference number?

Client: Yes.

Analyst: Does that get recorded on their application form or something?"

Client: Yes it does.

Analyst: So you can then go back to the paper files and find out which one it talked about?

Client: So that's vital.. that number.. otherwise you would be powering through a host of forms looking for particular applicants.

In Case 1, the issue of whether a key was used to access an individual student recurred until the analyst used a mock up of the form in question – once this *prop* had been

used, it was possible to establish exactly what the key in question consisted of. The fact that it took so long to resolve was probably in equal proportion to the difficulty of discussing the status of one piece of data embedded within a larger process, and raises some interesting questions as to when details of information should be discussed vis a vis client processes. From this perspective, it might be that analyst's framing of the problem, using a strategy of *key searching*, could have become an overwhelming conceptualisation of the problem, to the possible detriment of the problem as a whole. Schön (1983) points out that professionals tend to set problems in such a way as to make them solvable, and that this can sometimes result in a narrow conceptualisation of the problem.

However, the strategy of *key searching* can perhaps be seen more broadly, that of one of a repertoire of strategies that IS professionals use to fracture apart a problem and find a solution. Given that the IS professional is generally concerned with **building** information systems, the establishment and formation of a key, the means of retrieving information, is an important mechanism by which information can be provided to the client. This is perhaps best illustrated by Case 6, where a key needed to be established for a register of subdivision information. This was, incidentally, not only recognised as an important strategy by the analyst, but also by the client who effectively played the role of business analyst for her section. The analyst's view of *key searching*, as expressed by her in the interaction review, was as follows:

What we were doing was discussing the key to the file, or the key to the record. And that's pretty important to us, because what we want to do is eventually find out when an application.. go through a certain year and month we want to know when, and it also helps us for reporting.

A similar situation occurred in Case 4 where a means for tracking wheelie bins and recycling crates using the existing property information system had to be found. Again, the formation of a key was important, as it identified which bins and crates had been issued to which property. The analyst described it in this way:

..you know how this system hangs together, we've got ..a unique property number. Now, a basic unique property number has got '123456' (writing on pad and showing client), recorded for this property, which has got an assessment which we used for our rates space '1234', we can record that they have crate number 'abc'..

Apart from constructing a key for retrieval for information, there may be other reasons that the analyst seeks to find links in information; for instance, they may see commonalities with information held on other systems or they may be trying to incorporate client needs for information with an existing system. As IS professionals who work on information systems across the organisation, it would be surprising if they did not, given both their training, and the established trend towards organisational databases and data warehousing in current practice. This view on the part of the analysts' is also consistent with a view of 'organisation as information', the notion that organisations are guided and controlled by structured data (Boland 1987).

In Case 5, the analyst used the review to reiterate the point that he and the client ought to meet with a client from another sections to discuss commonalties in their systems. He said:

..its important that what we're discussing is not just ourselves in isolation, there's other aspects of the organisation that have to pull together.. to get the issues sorted out. Because you could head in one direction and (the other client) in another.

The client confirmed his understanding of this by saying:

Whereas that probably wouldn't be too big a problem, except that it wouldn't be advantageous to us because things are very similar, they run along parallel courses even though they are two, well completely separate things in the field, a lot of people are doing the same type of work on either Native Forests or

Softwood...its silly to have a totally different system ..when we're doing our reports.

In Case 3, the analyst was also interested in possible commonalties between the client's system and others in the organisation. The analyst said:

..I could see behind the scenes that there are some linkages.. between this system and one of our legacy systems, the TAFEMIS system.

This theme then gives a picture of analysts as information focused, due to the demands of their professional practice, in terms of providing a means of retrieval of information and the consideration of organisation wide systems. In the cases presented, the interpretative schemes used by analysts sometimes result in the strategy of *key searching* with a view to applying a particular frame on a problem which can provide a solution in that situation. The theme of Links of Information can be seen to incorporate two elements. Firstly, the *key searching* that an analyst might perform in a specific situation where information retrieval is required, and secondly, as a more general concern on the part of the analyst about links in information at an organisational level. This second element can be seen as *key searching* at a higher level of abstraction.

6.3.5 Problem Identification

In the cases studied, clients and analysts both engaged in *problem identification* from their perspectives. Problem identification here can be seen as different from Schön's (1983) characterisation of problem setting, where the problem is conceptualised in terms that aid its solution. Problem identification occurred at a much more general level, when the participants effectively 'labelled' those issues that needed to be solved. Interestingly, a recent systems analysis textbook (Hoffer, George, & Valacich 1999), name both problem identification, and problem analysing and solving, as skills required for systems analysis.

In most of the cases, clients identified what they perceived to be problems from a processual perspective – new information might be required to carry out a new process or meet new reporting requirements. For instance, in Case 1, the client reiterated what she saw as the main problem, and the analyst showed he understood how that problem impacted on her processes:

Client: Yes, and twos and fours, that's the problem area actually.

Analyst: Which means, they, which makes it harder if someone phones up..

Client: That's right

Analyst: And that's the reason you have to go to the paper file.

In Case 2, the client identified a number of problems with regard to how the proposed system would impact on current procedures. One such instance is given below:

Client: Now, there's something I just thought of, a little bit of a problem.. it's measuring backlog. Would it be possible, if somebody had ten applications in their in tray.. Some had been there for a day, some had been there for three days, some had been there for ten days. Can we have a system which adds all those numbers up? To give a measurement of who's furthest behind?

Analyst: We can

We can see here that, when the client raised the problem, he also coupled it with a request for a solution, and it was generally in this spirit that 'problems' were raised. In Case 3, the client couples the problem with a request for a solution in a similar way:

Client: What my problem is that we put all this information into the database, then Z does the agenda for the meeting, which she types in Word.

Analyst: Right.

Client: And which meant of course that she had to type in... its mainly all to type in, you know, business arising, who's not there, policy issues we are going to discuss. It's **not** manageable to type in 400 courses (stated strongly).

Analyst: Yeah

Client: ..its just a stupid thing, and surely from the database you could just create your agenda, because the database is linked, at the bottom of each entry there is the agenda number, so we actually put the agenda number into the database.

Analyst: For the courses, you're saying?

Quite often, problem identification on the part of the client, especially when coupled with a suggested solution, was a precursor to some negotiation about the requirements. This is dealt with in a later discussion about the themes of Future Action and Future Solutions.

Where analysts identified problems, it was generally in terms of information deficits – information that the system currently failed to provide. For instance, in Case 6:

Analyst: ..what information do you want to get out of this system? Do you have to do reports and things like that?

Client: Yes. So we need to have (flipping through notepad) ..I'm just thinking about which reports you want to get started with.

Analyst: Well, it depends on what you want to get out of the system and whether you want to do it from your own means or whether you want to do it from A..

Client: Yeah

Analyst: And whether you have some statute requirements that they have to be done within a certain time frame

Again, this sort of dialogue can be seen to reflect an information focus on the part of the analyst, and can be seen to be consistent with the task (albeit self defined) of an IS professional to structure information in a way that is satisfactory to a client. Here is another example of an analyst identifying a problem related to information, in Case 4, where there is a discussion about how information is to be entered into the system. Note though, that the discussion is initiated by the client who can also be said to be engaging in problem identification.

Client: And how would you put all these bin numbers (in)..?

Analyst: By hand!

Client: Just manually?

Analyst: Yes, the only way we can put them in is manually, because how do we know who is getting what bin?.. Joe Bloggs might drop off forty crates at a hundred and thirteen Chapel Street, where there are forty units. But we don't know if he's going to get them from the back or the front of the truck, so we're going to have to sit down and work out how we are going to initially.. record the issuing of those numbers. Now we could maybe record them in a little portable computer and download it into the system, or we might just manually record on a piece of paper and type it out when they come back.

Client: Why couldn't they just have.. a street list..?

Analyst: ..well that's right we can do it, a listing of the street numbers, we do currently record on the property system, if there's forty units, or six units, so we can put that in too, and the scanner can write down the numbers...we could say 'right, we're here to issue crate 123456 to 111 Chapel Street, but it might actually be 123457. You've no guarantee then, if you predetermine the numbering.

Client: Right (nods).

Analyst: That's just a problem I see.

From the examples given, it can be seen that problem identification occurred throughout the interactions and that analysts and clients used it differently. The analysts identified generally information based issues associated with the task, whereas the clients tended to use problem identification as a precursor to negotiation.

6.3.6 Information Output

Information Output as a theme emerged in three of the six cases, and in many ways can be seen as a natural outgrowth of the Information Input theme. Analysts tended to engage in a tactic of *information identification* not only for information input and information required by the system, but also applied this to information output by the system. As with the Information Input theme, this was often also accompanied by *process identification*.

In Case 1, identification of the information output by the existing system was an adjunct to the analyst's strategy of *scoping* – by identifying the information output by the system, the analyst could get some idea of its current functions. The analyst makes this enquiry about information output by the system in this manner:

Analyst: So, when you do the mail merge letter runs from Word, when you want to send the letter to them, you must have to enter in their names?

Client: Yes.

Analyst: You know, to get the addresses?

So here the analyst is identifying the information sent out from the system, and by so doing is identifying what is currently held in the form of data – thus understanding the current scope or extent of the system. By focusing on the information output from the system he also gains an insight into the processes that generate that information (*process identification*).

In Case 3, it was the client who engaged in *information identification* whilst discussing information output. She seemed to be doing this in order to encourage the analyst to address her problem:

Client: Do you need to see the documentation that...it spews out? ..I was going to bring you all the bits of paper, and I just realised now that I haven't..

Analyst: No that's all right, we can actually look at that at another stage anyway..

And later:

Analyst: Can you say that again, sorry..

Client: Well, the schedule, the database spews out a schedule..

Analyst: Right.

Client: ..that has all these columns.

Analyst: Yes.

Client: And after the meeting I fill in the final column which is the outcome.

Analyst: Yes.

Given that this was the only case study where the client was not provided with a solution of sorts, we can perhaps see the above as an example of how a client might attempt to bring some analysis to bear on a problem. Again, using *information identification* to discuss information output results in some insight into processes. For both analyst and client, the tactic of *information identification*, particularly when discussing information output, seems to represent a concrete, tangible route to discussing processes and *process identification*. It is interesting to speculate on why this might be so. Clients seem to view information output from the perspective of how it supports their processes, whereas the analysts in these cases viewed information output as not only a clue to processes but also scope.

In Case 6, there is another manifestation of this theme – that of the analyst using *process identification* when determining reporting requirements, or information required to be output:

Analyst: How are you going to keep track of those, do you want a report periodically like daily, or something to say 'this one hasn't been restarted', so the stop date was seven days ago but there's no start date again, do you want to know about that...?

Client: Probably, yes.

Analyst: Because I can imagine if you're handling lots of them they might get lost.

Client: Yes they will too. So we should do say a weekly report and find out how many of them have got a stop date on them, that's probably all you need.

Later, the client also focussed on information that needed to be output in the following manner:

Client: Sometimes a file has to be referred to other bodies, like (the) National Trust. And a), we should know whether something is being referred at the moment. And b), P would want to know at the end of the year how many of these things have been referred and to which bodies have they been referred (to)...

Analyst: Can it be referred to more than one body?

Client: Yes, and it can be referred to more than one body at a time.

Analyst: How many?

Client: I'd say three.

Again, discussion of the information output resulted in *information identification*, followed swiftly by *process identification* on the part of the analyst.

To conclude, as can be seen from the above examples, when discussing information output, both analysts and clients used the existing or required information output as a starting point for both *process identification* and *information identification*. This theme can be seen as similar to the Information Input theme in terms of systems analysis strategies that supported it in these interactions. The close relationship between processes, and the information that supports them, also seems to be well illustrated here. As discussion of Information Output tended to occur later in the interactions than Information Input, there seems to be a greater focus on the part of the client toward information – presumably because, at this stage in the interaction,

they would have covered most of the processes they undergo and would be moving toward the outputs they require to support those processes.

6.4 Environmental Issues

In all the cases, the environmental backdrop of the interaction could be seen to be have either an explicit or implicit effect on the discussion of early requirements. The organisational context, for instance, could be seen to influence how the analyst and client interacted and constructed the requirements between them. Project history, and current conditions, seemed to loom large in how the current problem was defined. Constraints such as future planned systems and resource shortages also affected the framing of the problem. Given that the environment affected the framing of the problem, it also affected how solutions were arrived at and negotiated. This is in itself not surprising, given Schön's (1983) observation that professionals will frame the problem in ways that make it solvable – and also that professionals are confronted with 'complexity, uncertainty, instability, uniqueness and value conflicts which are increasingly perceived as central to the world of professional practice' (Schön 1983, p.14).

The reviews in the case studies, seemed to be the forum where implicit organisational context seemed to be made explicit. Whether this was due to the presence of the researcher as 'audience' or the structure of the case study, requiring reflection on the part of the participants, is a moot point. What is interesting is that, once the largely implicit organisational context had been discussed, the reasons for framing the requirements in a certain way seemed related to that context, resulting in a much greater understanding between the participants of the project and its ramifications.

6.4.1 Organisational Context

The organisational context in the cases varied considerably as might be expected – what was interesting was how much influence that context appeared to have on how the issue was discussed and future action. As such, this theme can be seen to be strongly related to a number of others, namely, Issues to Be Discussed, Future Action and Future Solutions. This theme is also related to the theme of Professional Relationships, in that how analysts and clients perceived each other was influenced by relationships between the IT Section and users at an organisational level.

Lack of resources, and their ramifications in terms of organisational relationships, emerged in three cases. In Case 1, the client and analyst discussed how relationships between the IT section and other parts of the organisation were affected by lack of resources. The client said:

..just from experience, often analysts said, we're told to get the project up and running and they didn't even communicate.. you gave specifications and things like that, but they didn't actually communicate until you're actually given the program, you know, 'here it is', and that was it.. I know that happened with the database we now have..

The analyst's response was interesting:

..that's often a problem with resources in IT branches.. it takes a lot of time to go through this sort of thing, but its worth it, that's the only way you're going to get a successful project really, but they just try and fast track everything..

So, here, the analyst was acknowledging that organisational pressures did affect communication and relationships between the IT Section and users, even though this could be detrimental to the quality of the implementation.

The analyst in Case 3 expressed his view of resource shortages in this way:

Its always in the back of my mind, because of the amount of work we do have, that we may not be able to actually provide a solution, a ready solution, in the next week for them, it may be some time down the track. ..And that's probably one of the worst things as an analyst, depending on the organisation you're working for, if you've only got a weeks workload on your desk, you can go out and get more work, and you can do it, and you can provide a solution for the client virtually within a short time span. It makes you feel really good if you can provide a solution really quickly. But of course, in our work situation, it doesn't come to fruition sometimes.

Case 3 was the only case studied where there seemed little forthcoming from the analyst in terms of future action and solutions, and here we have a hint of why this might be. It is interesting how this seemed to impact on his identity as a professional – if he was unable to provide a solution he saw this as one of the 'worst' aspects of his job.

In Case 4, the client referred to resourcing problems in this way during an individual interview:

I'm hoping that the process (the case study) will produce a better result in terms of what I'm looking for, and it will ensure (the analyst's) commitment in achieving that. ..he's generally under a lot of pressure to things for everybody, so I hope that this might give me a means of commitment.

And later:

..there are a lot of competing interests within the council, everybody wants things done, so whether it is a matter of resources.. we're still waiting for a program that we asked for about three years ago which is an essential part of our job in the environmental health office..

So here the client was attempting to circumvent or alleviate resource pressures by gaining individual commitment of the analyst through the relationship. A similar phenomenon was observed in Case 6, where the analyst and client jointly worked together in circumstances that were not perhaps very favourable to computerisation. The analyst had this comment about how she and the client undertook their work in the organisation:

..the interesting part is that the system will be implemented and then a memo will come round and say, thank you very much for doing it, its fantastic, its doing what we want it to do. So, we don't take the negative aspect of it.. we just go ahead and do it.

In individual interviews, relationships between the client and the analyst, and how the IT Section related to the organisation, seemed to be a concern of many clients (this is addressed further in the theme of Professional Relationships). Generally, in these cases, the quality of the relationship at an individual level, between analyst and client, was seen as compensating for organisational deficiencies.

The organisational context could also be seen to be influencing how requirements were constructed in a number of ways, and as such is worth examining in detail.

For instance, in Case 1, plans for a new departmental system effectively constrained the scale and type of solution, which was characterised as an 'interim solution'. The client put it this way:

We currently have a database for monitoring statistics for the Student Assistance Scheme, we find it inadequate. We need an interim database before a rather broader one, SACS, which is a total departmental database, which would be used by all schools, providing its approved by the Minister.. so this is an interim measure to monitor Student Assistance numbers for every school in Tasmania.

In Case 2, previous (rather negative) experience with the project in an earlier incarnation led the client to take a tougher stance when discussing the new system. The client said:

I have had a lot more freedom to to express my own needs, rather than be compromised by what has been imposed, parts of which I might be talked into accepting.. I can now say these I are the things I want to achieve.. Y has to show me reasons why things can't be done. In comparison with the other system, I never had the opportunity to put those views through, the design occurred first without having the opportunity to explain things.

It seems that this previous experience, and the client's resulting attitude, did indeed influence the formulation of requirements – a great deal of time was spent discussing the effect of the new system on existing procedures, and the automation boundary of the proposed system. The organisational context in this case can be seen to interrelate with at several other themes – Scope of the System, Future Action, Future Solutions and Professional Relationships. The influence of the context on the first, Scope of the System, shows how the definition of the requirements might indeed be affected by an organisational context, in this case project history.

In Case 5, further history pertaining to the planned system changes emerged, and it could be seen, again, that this was influencing definition. In the review, the client explained:

..basically what I wanted to find out was what changes X had envisaged, in terms of how it would affect the overall thing. And he did explain that. And the changes were not fundamental, and in terms of the information that that we, well, or in terms of how we do it now there will certainly be improvements and if we want it, and that was about it. I was happy to hear that. (said seriously)

The analyst said something interesting at this point, revealing that, from his point of view, he hadn't felt that it was necessary to talk to the client about the background of the project, he had assumed that the client knew already:

Certainly I hadn't talked to Y before or previously about what we already had gone through. Y, you're involved on the initial steering committee for this weren't you?

The client responded by saying what he did know about the context of the change:

Well they had a review. And subsequently they've had something else another sort of quick review, and that's why I wasn't sure what was happening with the sales system here. The one I was on, 'they said OK it seems to be fine the way it is we don't really need to do much'. There were bits we could add in, but by and large it would remain the same. Z was on the other one and I gathered that are they going to overhaul it completely, 'where will this leave us?' That's that's where my concern was.

So here there is a situation where the broad limits of the new system have been defined by a committee, but the client is unsure what those limits might be. It as if the client is having to negotiate on those requirements blind, not knowing whether his position is reasonable or unreasonable within the context of the project. This example also well illustrates how, very often, the organisational context dictates future action and solutions and this is discussed further in the section on Future Action and Solutions.

In Case 6, management requirements to justify establishment had a strong influence on reporting requirements, and to some extent took precedence over other requirements. The analyst said:

Well, I guess what we'll be doing is discussing a process that we have to put in place to meet management reporting that they're going to require, and also to set up a register..

The client, after discussing her difficulties with current processes, said:

..on top of that we have requirements with regard to management, having to, justify their jobs, and our jobs.. so we have to be able to, for them to get the data out of here, saying, 'well this is how many applications we do, this is how long they take, this is how much time was taken by the person doing the job', all that sort of thing.

Again, this short excerpt illustrates how the organisational context impacted on requirements – indeed, the analyst mentioned it as a requirement of the project before that of assisting the client with her processes.

It was noticeable in all of the cases that largely implicit organisational context emerged much more strongly in the reviews than in the interactions themselves; in reviewing the interaction, analysts and clients exchanged contextual information that explained their actions. In the interaction, organisational context was not so often referred to. This is probably due to a concentration on the ‘task’ during the interaction, this being explicit in nature. The relative informality of the reviews and individual interviews seemed to allow for the exploration of these implicit issues. What of course is impossible to assess is how whether the interaction would have proceeded differently had the researcher not been there. Given that most participants seemed to forget the presence of the camera within the first five minutes, one has to assume that this is not the case, especially as the review was also videotaped. It would seem that the researcher’s request to explain the interaction five minute frame by five minute frame enabled reflection on these more ‘implicit’ issues.

Given how useful the review appeared to be to the participants, it can be asked why people don’t use this method more often. The review can be seen as a broader version of a structured walkthrough of requirements. As stated earlier, its value resided in the participants giving each other explanations and to the researcher of what had transpired during the interaction, and in so doing many implicit assumptions were drawn out.

It was notable however, that analysts on the whole were less interested in the organisational implications of the requirements being discussed. They were more concerned with what they saw as their professional task – that of establishing the information required for the new system. As has been indicated earlier, it is probable that professionals will frame the problem in a way that will make it solvable, especially when confronted with complexity and instability in professional practice (Schön 1983). This must be especially true for information systems professionals, given that information systems are embedded in organisational practices.

Given the lack of focus on organisational issues in IS undergraduate education and its primary focus on technical issues, it is not surprising that the IS professionals in these cases were less concerned with the complexities of the organisation as it related to requirements. Jones and Walsham (1992) have observed that, firstly, domain knowledge is not highly valued by developers, and secondly, it may be difficult for them to gain organisational knowledge, due to limited interactions. To this the point can be added that the implicit nature of organisational knowledge or context makes it hard for the analyst to grasp, and perhaps is not seen as a priority when formulating requirements. Organisational context is perhaps seen as incidental. However, as the cases illustrate, organisational context does exert a powerful influence on the formulation of requirements, as it represents the structure within which requirements gathering takes place. Taking the perspective of structuration theory as applied to information systems (Orlikowski & Robey 1991, Orlikowski 1992), the organisational context (institutional realm) can be viewed as working through the participants technological frames or interpretative schemes, to produce communication of meaning and action in the real world.

6.4.2 Future Action and Future Solutions

It has been pointed out that the activity of systems analysis can itself be seen as a negotiation (Hocking 1998). This negotiation is not only about meaning, but also about the accommodation of interests in a political sense (Strauss 1978, Kling 1987).

The question of future action, what is to be done about the requirements of the client, represents a crucial part of analyst–client interaction. Very often future action may be constrained by organisational resources or technical feasibility. Whether they acknowledge it or not, the analyst is in a position of power at the particular moment they are asked as to what will be done next. The answer given at this point will probably owe as much to organisational and social issues as to technical issues.

In the videotaped reviews, there were many instances of clients using the opportunity of the review to continue to negotiate future action. As has been discussed earlier, in Case 5 there was a situation where the client was not entirely sure whether any constraints would be applied to the new system. He used the review rather artfully to continue to get agreement from the analyst that changes would not substantially affect business processes, and at the same time offer some latitude. His account of what he said in the interaction, stated in the review, ran thus:

..basically what I wanted to find out was what changes (the analyst) envisaged in terms of how it would affect the overall thing, and he did explain that. And the changes were not fundamental, and in terms of...how we do it now there will certainly be improvements.. if we want it.. I was happy to hear that.

During the interaction, while the need for revised product codes was being discussed, he asked a sudden, direct question.

Can you do that?

The analyst's response was:

We can do anything you want.

The analyst also used the review to reinforce a point and continue negotiation about future action. He said this about the need to consult with another section on the new system:

And right at the end (of the segment), its important that what we were discussing is not just ourselves in isolation, there's other aspects of the organisation has got to all pull together to (gesturing, talking to client. To get the issues sorted out. Because you could head in one direction and Z off in another.

The rather complex negotiations in Case 5 can be helpfully viewed from the perspective of Strauss's (1978) paradigm of social order. Firstly, there seem to be various strategies used by the client as part of the negotiations themselves, such as asking the sudden direct question described above. In the same way, the analyst's use of the review to reinforce an agreement to consult another section about common aspects could also be seen as a strategy. In terms of the negotiation context, the relative balance of power between parties could be seen as skewed in the client's favour due to his seniority in the organisation and his greater years. If one looks at the respective stakes of parties in the organisation, then it could be said that the client has more to lose from the perspective of the possible impact on business processes. The client is also having to deal with the 'clarity of legitimacy boundaries' (Strauss 1978) in that he is not clear what the context of the proposed change or what can be legitimately negotiated for within that context.

During the review of Case 4, the client raised the possibility of using an entirely different package for the proposed system:

Just while you're on this, I'll raise a question, we've got BC Ada, which is the electronic assessment program. We don't use it at the moment, but if we did use it to assess everything.. it might have got to the point where we can say well we'll use BC Ada that will produce the permit and produce the whole bit..

It is interesting to note that both the clients discussed here were older than their analyst counterparts and had considerable responsibilities in their respective organisations – also perhaps previous experience led them to the importance of negotiating on future action. As has been previously stated, the respective balance of power is probably in the client's favour due to age and seniority.

Negotiation did also occur in Case 6, where a very different relative balance of power could be observed, with client and analyst having common interests in computerisation of manual records. This negotiation has already been described in the case description in Chapter 5. It bears repeating here to illustrate how needs of the client were accommodated within what is an equal and participative relationship:

The client takes the opportunity to extend the negotiation about the solutions the analyst had put forward. The client says:

I'm still worried about one thing though. I don't like this idea of of the people out there having to enter it twice, they have to enter it into their normal mail in system as well as into ours .. And I am just always concerned with that if they have to do something twice, they'll miss one step.

The analyst replies with:

That's why I need to check whether or not Records can link directly into the umm sub division file.

The client repeats her concern:

I can't see how it will work.

The analyst interrupts, proposing yet another solution:

Alternatively I guess they'll have to write it down on a piece of paper, if you don't trust them, we'll just draw up a form a template or something and they just fill out the sub division number and the date ahh when it came in for objection, and they give it to you or somebody and they enter it in the computer.

The client evaluates the solution proffered in this way:

I'm still worried about that too... Like that would create a triple handling if they put it on a piece of paper, then hand it to someone else and then that person has to put it in. So the best system is to have it if it can link directly, second best is for them to enter it in to a septic tank register, third best and I think that's very low down is if they have to write it down and then pass it on.

She is giving the analyst a prioritised list of solutions. The analyst retreats somewhat at this point, saying:

Yeah I don't like that idea either.

The client justifies her position thus:

It's just, we are always trying to eliminate the amount of steps and make the whole system as foolproof as possible. (addressing researcher). Cos' like Y says quite often people don't put information in, or they don't know why they are putting it in. .. staff changes, or someone is away and someone else is in someone else's job and things are done incorrectly. So the fewer mistakes, room for error there is.. (addressing analyst)

The analyst agrees with this philosophy wholeheartedly:

Definitely, definitely.

So here is an illustration of cooperative progress towards a solution. The client makes it clear what her needs are, and it is also interesting to see how she relates it to a joint frame of reference, the idea of few mistakes and procedures being 'tight', reflected in other parts of the data sources in Case 6.

There seems to be very little literature on the subject of negotiation in early requirements gathering – it is not widely discussed, and yet it is acknowledged that information systems development is a social and political process (Kling 1987, Hirschheim & Klein 1989, Hirschheim & Newman 1991). Certainly, the body of IS undergraduate and professional knowledge does not address this issue of negotiation which is surely at the core of IS practice. This could also be an example of how the model of Technical Rationality on which professions are based (Schön 1983) might

serve the IS profession particularly badly, given how information systems are so tightly embedded in the social and political processes of an organisation.

6.5 Individual Issues

One issue that seems to have been largely ignored in the literature of early requirements gathering is that of the impact of the individual on a communication situation, and in turn how this might impact on the process of requirements gathering. In their work on user-developer relationships, Jones and Nandhakumar (1997), drawing on structuration theory, use the notion of individual constraints – ‘limits arising from the individuals sense of identity and experience, biographical experience, social skills, and perception of the social world’ (Jones & Nandhakumar 1997), as an analytical device to discuss the impact of individuals on user-developer relationships. Similarly, this section attempts to assess how individual characteristics might have impacted on the cases studied.

Individuals bring with them a wide variety of communication styles, background, education, attitudes and beliefs to early requirements gathering. One reason for this lack of attention may simply be that in traditional research as opposed to qualitative research, there is less opportunity to focus on individuals and their characteristics. The case studies yielded a number of themes that seemed to be very much the product of individual attitudes towards early requirements gathering. Educational and professional background, and gender, also seemed to affect how the requirements were defined and the communication proceeded, and these are also explored in this section.

6.5.1 Personal Disclosures

In two of the cases, personal disclosures seemed to have the effect of *rapport building*, and can be seen as part of conversational strategy. Interestingly, both these disclosures came from female clients. In general, females tend to play the role of facilitators in conversation (Spender 1980), and it is interesting how in both cases the clients used a tactic of personal disclosure.

In Case 1, the client mentioned how she had not yet done her tax return. The sudden departure from impersonal to the personal was quite marked, and occurred early on in the interaction. She used the topic of proof of income required for student assistance to neatly segway into a joking disclosure about her own tax return. The client’s attempt to build rapport was rewarded by an increased flow of information and understanding – the interaction was notably smoother from that point.

In Case 3, unlike Case 1, the client and analyst had not met or worked together before. As might be expected, the first part of the interaction was as much concerned with establishing common frames of reference as it was about discussing the client’s problem. For instance, the analyst enquired as to who had set up the original system and they discovered that they knew some of the same people in the organisation. There were also many different topics in this interaction, perhaps a result of the analyst and client having different objectives – the client wanted her problem regarding the generation of accreditation agendas solved, whereas the analyst chose to focus on commonalities of information held in information systems across the organisation.

Approximately twenty minutes into the interaction, the client became visibly upset while discussing current procedures, as she described how the work was now far too much for three people. The analyst’s reaction was to adopt an upbeat tone and to put forward, if not a solution, a framework for moving forward. Whether she used her personal disclosure as a deliberate conversational strategy for gaining help or it was

unconscious is not clear, certainly she was under visible stress while discussing her work. The net effect however, was to build rapport. In the review, the client remarked that it was at this point that she felt that the communication started to 'work' from her point of view. In both cases, the personal disclosure seemed to facilitate a flow of information, as evidenced by more time spent on topics subsequently and a positive feeling about the interaction.

6.5.2 Analyst's Understanding of Requirements

In two of the cases, Cases 1 and 5, the analyst explicitly sought confirmation from the client that their understanding of the processes was correct. Both these analysts also used the tactic of *reflection* as a deliberate strategy, where they deliberately reflected back their interpretation of what the client had just said. In Case 6, the analyst also used a great deal of reflection, but did not seek confirmation of her understanding – probably because that interaction represented one of many similar interactions on similar topics. The analysts in the other cases still used *reflection*, but not to the same extent, but did use other strategies such as *imagining* to aid understanding. It is interesting to note that the analysts in Cases 1 and 5 both raised the issue of their understanding in individual interviews, and also used the tactic of *reflection* very explicitly in their interactions.

The best explanation of how an analyst might view reflection came from the analyst in Case 6, as she described her thought processes during the review of the interaction:

I'm absorbing the problem, while she is talking to me, I'm trying to re interpret.. how the computer would actually fit her requirements. So that's why I keep repeating everything she said...I guess its just reinforcing the things she's asking, I'm also saying is this the way you want to do it..

The client's view of the same segment illustrates why this sort of reflection is so useful:

This is where its very good that (the analyst) does repeat it, because by her repeating, I know she has understood.

The analyst in Case 5 showed that gaining mastery over the client's domain, in terms of understanding the terms used, was an important issue to him by saying:

He's hit me with two terms in the last sentence, mill door delivery and stumpage rate.. lets get some more background into this!

and:

First of all, I mean talking about short term tenders of up to five years, I was thinking, goodness, you throw away computer systems in that time!

The fact that the analysts who explicitly used *reflection* were also those who raised it as a theme both in their interviews and the interaction is an interesting one. This underlines the need to discuss such communication tactics *explicitly* with information systems professionals – the desire to understand as stated by these analysts led to the use of a tactic to aid that understanding.

6.5.3 Note Taking

One theme that emerged from the reviews of the interactions, associated with communication practices, was that of note taking. Checkland and Holwell (1998) remark that one good way to find out the conventional wisdom in any field is to survey student textbooks, as they provide an account of the field in a straightforward way, rather than the ambiguities and problems of the field. However, a review of the 'conventional wisdom' on note taking and interviewing in student texts reveals a host of ambiguities and contradictions, perhaps indicating that these issues are not thought to be important to the task of systems analysis as a whole. A survey of systems analysis textbooks to hand reveals the following:

- Hoffer, George and Valacich (1999) – a total of 5 pages out of 825 on the subject of interviewing. This textbook advises either taking extensive notes or tape recording the session, and verifying notes with the client subsequently. The impact of note taking on flow of the conversation or dynamics is not considered.
- Whitten, Bentley and Barlow (1994) – a total of 2 pages out of 855 which give an example of a discussion of requirements. No discussion on note taking or how to interview.
- Jordan and Machesky (1990) – a total of 3 pages out of 597 on interviewing. No discussion on note taking.
- Powers, Cheney and Crow (1990) – a total of 13 pages out of 855 on interviewing. The advice is to keep note taking to a minimum, as it distracts the interviewee. It is suggested that outline notes be taken and these expanded on very soon after interview.
- Martin (1994) – a total of 5 pages out of 743 on interviewing. Again, the advice is to keep note taking to a minimum, and take outline notes. The disadvantages of note taking are stated to be a distraction away from what the interviewee is saying, that it may discourage the interviewee from being open, and that it prevents the analyst from noticing body language. The interviewer is advised to write up the notes in full afterwards. Tape recording is advised against. Interestingly, the interviewer is also advised to keep the interview short so they do not overtax their memory. The consequences of limiting an interview in this way is not discussed.

By contrast, Kendall and Kendall (1995) devote a whole chapter to interviewing and discuss at length the advantages and disadvantages of both note taking and tape recording. In particular, the effect of note taking on conversational dynamics and rapport is discussed. As the brief survey above indicates, most systems analysis textbooks do not give a detailed treatment of interviewing or note taking, and yet the interview is generally the starting point for all requirements.

Note Taking as a theme emerged in two cases, and it is interesting to record that the first analyst had a background in software engineering, and that the second had no formal training. Therefore it is probable that neither analyst had been exposed to or considered the issue in a formal sense.

The analyst in Case 1 said this about his note taking:

Because I think the documenting of what you are actually talking about that is really important.. if we were to meet again in a few days time, I would have lost all that information, there was no way I was going to remember exactly what was happening at each stage. I'd have a pretty good idea of a few points, but.. we would have had to go through it all again.

He went on to describe the 'note takers dilemma', best described in Kendall and Kendall (1995) – the need to maintain the flow of the interview, balanced against the need to absorb and record the information received.

I think what happens is that you try and keep it going... And it would probably be worthwhile to just to take a few minutes out and write what's been happening.

The client suggested:

Or maybe, another day.. to go through it, so you've got a complete grasp of it, and then you could say, come back, and say 'well, this is how I perceive it'..

The client is actually suggesting what is suggested in the majority of systems analysis textbooks surveyed – producing a summary of the interview and checking it with the client.

The analyst in Case 3 also had problems with note taking, and acknowledged that it meant that he did not have eye contact with the client. This particular disadvantage is only discussed in Kendall and Kendall (1995).

I just need to say something, and I've been laughing to myself about this, its actually quite interesting the interaction between us, here I am madly scribing. I'm not actually looking at my client through most of the interview and I've never really thought about it before, but.. all they are doing is just looking at my head and every now and then then I pop up..

It is interesting that both analysts seemed to be unaware of what are fairly fundamental issues about note taking, and does raise some interesting questions about their training. That said, the guidance of most received wisdom from systems analysis textbooks is not clear on the points they raised. It also points to the value of professionals undertaking some 'reflection-in-action', as outlined by Schön (1983), and the practical value of the review process to analysts in this study.

6.5.4 Use of Props

A communication practice that was observed in some cases, and commented on during reviews, was the use of *props* in the form of paper prototypes, diagrams or writing down of examples to aid discussion. The use of *props* as aids to support the interviewing process is not discussed in systems analysis texts, or in any other IS literature, and yet half of the cases in the study used a prop of some kind. Similarly, the use of paper prototypes as an aid in the early stages is not discussed, and yet they seemed to be used fairly often in these cases.

In Case 4, the analyst started to draw mock ups of new screens that might be incorporated in the existing system. The client commented that:

.. where X actually starts writing things down, and.. putting it on paper and saying 'well this is how this links to that'. , I think that's when I started to feel more comfortable, .. because I could see that .. the thought process has actually been put down on paper.

The analyst in the case characterised his approach in this way:

where you can start really going into the in depth development I might do a couple of little dummy screens on the computer say 'how's this look?.. and before I'd really go in and do the bulk of the programming, I'd still do the cosmetic, just the front screen so people can get used to seeing, 'yes this is what I'm going to see. Is there anything else I want on there?'

In Case 1, the analyst mocked up a 'batch summary sheet', a key document in the discussion. As soon as he did this, a problem of understanding, that of the precise data that this document carried and whether it held a key to an individual student, was resolved. So in this case, the analyst used a prop to facilitate his understanding rather than the client's.

In Case 6, the analyst used a mocked up screen on a notepad to explain to the client how the new key for the system would be constructed. The analyst and client saw the use of props as a natural extension to the way they communicated, and discussed this in the review. The analyst said:

.. we always draw pictures. We are picture people.

Later she says to the client:

When time's really tight and we want to get things done and explain quickly. don't we..?

The client responds:

Yeah we just use paper. Just like this one here. (indicating prop)

In retrospect, using a prop of some kind seems to be the most natural thing to do when explaining and clarifying concepts associated with requirements. What is surprising is that, in three of the cases, this did not occur. People conceptualise ideas in very different ways, and the use of props can be seen as an attempt to break out of the constraints of language. Again, it is surprising that undergraduate systems analysis texts do not discuss such aids to communication in early requirements gathering, given the importance of this phase.

6.5.5 Individual Background

The analysts and their clients came from varying educational and professional backgrounds and it is interesting to consider how these individual backgrounds may have affected their interactions and subsequent conceptualisations they made of requirements in these case studies. Certainly, communication difficulties may arise due to 'the fact that the various stakeholders speak different disciplinary languages, are motivated by different values, see different issues when looking at the same design problem, and have different interests' (Moran and Carroll 1996, p.5). As the reflection on the interaction was carried out jointly rather than individually, it is impossible to say with any certainty how exactly individual background might impact, but, as has already been discussed, analysts were far more information focused and this can be seen as a consequence of both their training and professional role. The individual backgrounds of clients were many and varied, as might be expected, and how close their background was to the analyst may have had an impact.

Table 6-2 gives a summary of job title, previous job, age, and educational background of the participants garnered from the individual questionnaire.

As has already been discussed, the two analysts who raised the issue of note taking had no training in Information Systems, but came from a software engineering and science background respectively. It is not unreasonable to suppose that they had never been exposed to any advice on note taking. In Case 6, it is interesting to note that the client, who took an active part in the design, had some design training in the form of degrees in environmental design and architecture respectively. It is quite possible then, that she was used to 'design as a reflective conversation with the situation', as described by Schön (1983) when discussing architectural teaching practice. This particular client took the role of business analyst in her section, and was notably more information focused than the other clients.

It is also instructive to view these individual backgrounds as pairs; for instance, could we expect an interaction between an analyst and a client with a 'science' background to flow differently to one between an analyst and a client with an 'arts' background?

In Case 1, the client had no education beyond leaving school, and in this interaction the information/process dichotomy was most marked, with the analyst focusing on information whilst the client took an overwhelmingly processual view. In Case 2, we again have a client with a background in architecture – this time as a professional architect. This client was very active in putting forward his requirements and controlling the topic flow. While the latter might be seen as a consequence of age and authority differentials, the former might be attributed to his background as an architect, especially with regard to his use of tactics such as *exemplification* and *imagining*. However, this interaction showed no such meeting of minds such as in Case 6, where various problem frames were jointly adopted from inception. That said, the client in Case 2 was successful in having *his* problem frames adopted by the analyst. This lack of congruence of problem frames in Case 2 could be attributed to the age power differentials referred to earlier, and the context of a previously aborted project. In short, the contribution of the individual background of the analyst seemed subsumed by that of the client and other factors.

Table 6-2 Summary of Individual Background

		JOB TITLE	PREVIOUS JOBS	AGE RANGE	EDUCATIONAL BACKGROUND
Case 1	Analyst	Senior Information Technologist	Computer Systems Officer	20 - 29	Computer Science and Mathematics
	Client	Executive Officer (Student Assistance)	District Executive Officer	50 - 59	Arts & Humanities
Case 2	Analyst	Information Technology Projects Officer	Structural Engineer	30 - 39	Engineering Computer Science
	Client	Manager of Building Surveying	Development Co-ordinator	50 - 59	Architecture
Case 3	Analyst	Senior Systems Consultant	Systems Consultant	30 - 39	Science
	Client	Accreditation Officer	Project Officer	30 - 39	Arts & Humanities
Case 4	Analyst	Information Services Programmer	Computer Operator	20 - 29	Business Computing, Mathematics
	Client	Waste Management Co-ordinator	Senior Environmental Health Officer	40 - 49	Environmental Health Environmental Studies
Case 5	Analyst	Information Technology Officer (3)	Information Technology Officer (2)	30 - 39	Information Science and Mathematics
	Client	Forester Softwoods	Forester Hardwoods	50 - 59	Forestry, Management
Case 6	Analyst	Computer Systems Officer	Training consultant	20 - 29	Information Technology, Library Studies
	Client	Customer Service Officer	Assistant fitness centre manager	30 - 39	Environmental Design, Architecture and Town Planning

In Case 3, there seemed to be again very little congruity in problem and generic frames between analyst and client. In addition, there was very little coherence in the topics of this interaction. This can be in part explained by the context of the project – a situation where the analyst did not have the resources to provide a solution, but could also perhaps be seen as a consequence of differing backgrounds in Arts and Science. On the surface, their educational backgrounds could be seen as similar, both having left school with a High School Certificate within a year of each other. Here the similarities seemed to end – the client's certificate was in arts, whereas the analyst completed his in Science. Moreover, the client had engaged in a wide variety of jobs, one of which was a wholly artistic occupation (a potter), and was also studying philosophy and political science at university. By contrast, the analyst had worked in information systems since leaving school, and had attempted university study in psychology, but had abandoned it. The difference between these two individuals can perhaps best be summed up by a remark from the client, who remarked in a tone that can only be described as wry, that the prior communications that she had with the analyst had been 'brief', and that she would be interested to see what happened on the day.

Given this starting point, it is easy to see how individual constraints – limits arising from the individuals sense of identity and personality, biographical experience, social skills and perception of the social world (Nandhakumar & Jones 1997, following

Giddens 1984) might have adversely affected the interaction between the analyst and client in Case 3. In their study of user-developer relationships (Nandhakumar & Jones 1997), the lack of social skills on the part of the developers, and lack of knowledge about the user (senior executives in the organisation), were identified as individual constraints.

Case 4 presents an interesting picture of contrast in individual backgrounds. The client had a Bachelor of Arts degree in philosophy and history, and a number of post graduate qualifications in environmental health studies. By contrast, the analyst had completed his High School Certificate in mainly 'scientific' subjects, including computer studies, and had gone on to do a further education diploma in business computing. The client had travelled widely, undertaken a number of different jobs, and then pursued a career in environmental health. The analyst was in his second post in information systems, and had been in employment with the Council for 6 years. Given these wide differences, one might expect communication to be difficult. Yet their interaction showed many joint problem frames adopted between the two, an approximately equal amount of topic sharing, and a reasonable amount of coherence in the interaction. There was clearly a lot of liking and respect between these two individuals. The theme of Mutual Understanding, and the Analyst's Understanding of Processes, featured far more strongly in this case than in Case 3. They had also been acquainted with each other much longer than the individuals in Case 3. Perhaps individual differences were subsumed by a shared organisational context.

In Case 5, there were some interesting individual differences, that again seemed to be subsumed in greater commonalities. The analyst had a degree in Information Science and Maths, and had joined the agency as a programmer on leaving university. The client had a degree in Forestry and a post graduate qualification in management. In terms of frames adopted in the interaction, there was a reasonable adoption of joint problem frames and also some distinct individual generic frames, mainly a product of project context and role. More topics were introduced by the client and the interaction showed a reasonable amount of coherence. What these individuals did have in common was a long term commitment to the agency and its culture – the client having spent 14 years with the agency, the analyst having been there since leaving university, for 11 years.

This necessarily brief survey of individual backgrounds here seems to indicate a number of things. Firstly, differences in level of education or discipline may not necessarily impede interaction if other commonalities, such as a commitment to the organisation and familiarity with it, exist. All the analysts and clients in this study professed respect for each other's professional roles, and many of the analysts were actively concerned to understand their client – again attitudes such as this might bridge individual differences. Secondly, where the client has some insight into the design process – exemplified by the clients here with a background in architecture, there seemed to be more equal participation in the design of requirements, presumably because the clients themselves were familiar with the process of design.

6.5.6 Gender

This study did not set out to look at gender per se, yet there is a gendered aspect to communication (Spender 1980, Tannen 1987, Henley & Kramarae 1991), similar to patterns of communication between ethnic, racial, religious, age and class groups (Henley & Kramarae 1991). It would be reasonable to expect such patterns to emerge in communication in early requirements gathering. In the cases studied, one was a female-female interaction, and two cases involved a male analyst and female client.

Certainly the female-female case (Case 6) appeared to show a 'more egalitarian structure for talk' (Spender 1980) where cooperative verbal strategies were used. Nearly all of the topic changes were of the immediate implicit variety, demonstrating

a great deal of shared context between the two. Of course, this may be the consequence of an established working relationship rather than gender, but the cooperation in this verbal exchange was marked, and the individual interviews and review were peppered with words like 'we' and 'us', including statements on how work was carried out within the relationship, contrasting markedly with the other cases. Given the cooperative and clearly successful nature of their interaction and working relationship, it is not unreasonable to ask if gender did indeed play a part, as what seemed to aid the working relationship was a fairly explicit acknowledgment of their roles and values within the organisation.

For instance, they had an explicit aim of popularising computerisation within the organisation, and a very good grasp of the 'politics' therein. Spender (1980) theorises that one reason that women understand nuances and politics so well might be simply because that, in normal mixed sex conversations, they spend more time listening as an enforced consequence of less than equal participation. This might provide an explanation of why, in this case, the women involved gave many insights into their working environment and aims. This comprised a much larger context, way beyond the immediate demands of the task demanded of them, discussing the requirements together and reviewing with the researcher, on that particular day.

It is also useful here to examine the two cases of male-female communication in the study (Cases 1 and 3), to see if there are any patterns of differential evaluation, denial, and reinterpretation in particular. For instance, is there anything to support Henley and Kramarae's (1991) notion that one version of the communication might prevail between ostensibly unequal groups? Certainly, in Case 1, the vast majority of the topics were introduced by the analyst, so in that sense, he was actively directing what might be discussed. His concerns also actively dominated the conversation, for instance, the issue of a key to student information was not resolved until two thirds through a 35 minute interaction. At the end of the conversation, the client identified and reintroduced a problem which she had brought up early on. She also actively facilitated the conversation by rapport building, something that is consistent with observations of women as supporters of conversation but not controllers of it (Spender 1980).

All this might point to one version of the communication prevailing, this despite the analyst's evident concern with understanding what the client wanted. It is possible that, in this instance, the gendered nature of communication where males 'hold the floor' and women facilitate conversation, may have actively mitigated against the outcome that both participants wanted, namely, a full understanding and resolution of the problem at hand.

In Case 3, there were many topics, and very few joint problem and generic frames. This can be interpreted as a partial consequence of two people vying for the conversational floor. This contention is further backed by their very different objectives for the interaction, the analyst having already decided that the interaction look at commonalities in organisational information, whereas the client wanted a solution to a specific problem. It was she that conceded, during the interaction, that these organisational commonalities were important. In that sense, and possibly only in that sense, the analyst's version of the communication prevailed.

Certainly the client did not conform to a pattern of 'female' communication, in that she interrupted frequently and gained the conversational floor at least as often as the analyst. The outcome of this interaction, where no solution was proffered, probably owes much to the expert power of the professional (Markus & Bjorn-Anderson 1987) to define what is discussed, when adopting particular models of developer-client relations (Hirschheim & Newman 1991). This is explored more fully in the following section on Social Issues.

6.6 Social Issues

All early requirements gathering is carried out within a social context. The design of information systems takes place in a socially-constituted organisational culture (Gasson 1998), and within a social constitution of an information systems profession. As such, the relationships between analysts and their clients in this study, both at organisational and individual levels, showed many complexities derived from varying social contexts. Clients in this study were also concerned with mutual understanding, which can be seen as their awareness of the problem of how to jointly create meaning between different disciplines, described by Jonsson and Solli (1993) as 'specific communication problems between discourses'. Presumably this was one motivation for their joining the study in the first place. This section discusses the themes of Professional Relationships and Mutual Understanding that emerged in the study, and sets them in the larger context of relevant literature.

6.6.1 Professional Relationships

The IS profession is best characterised as a 'minor' profession (Schön 1983, quoting Glazer 1974), remarks that 'minor professions suffer from shifting ambiguous ends and unstable institutional contexts of practice'. The IS profession could be said to suffer from an extreme case of shifting ends, given the rate of change in IT and its applications. IS as a field is characterised by weak barriers to entry, standards which can be affected by amateurs, 'common-sense' language rather than well defined terms, fluid reputations often based on narrowly specific work, and personal research agendas (Banville & Landry 1989, in Checkland & Holwell 1998). As such, several different paradigms of analyst-client relationships have been identified in information systems development (ISD), ranging from the 'Analyst as Systems Expert' to 'Analyst as Emancipator' (Hirschheim & Klein 1989). Hirschheim and Newman (1991), using the language of symbolism, identified aspects of myths, metaphors and magic inherent in the process of ISD – for instance, the myth that politics should not be the concern of the systems developer. This formulation constitutes a challenge to the conventional technical focus of the process of ISD. It also underlines Schön's (1983) contention that professions are based on a premise of 'Technical Rationality' that ill equips practitioners for professional situations of shifting ends and value conflicts that face them in day to day practice.

This social aspect of ISD is well demonstrated in the study, in the remarks made by clients in individual interviews, about their perception of analysts and IT Sections at an organisational level. These remarks were largely unprompted, stemming from a question about *their* professional role in interactions such as these. For instance, the client in Case 1 said this about how analysts and programmers were perceived by her section:

..there is a perception in the area I work in that they are almost not human (laughs) because they really don't understand what we want and they talk in such a manner that we don't understand what they're getting at.

This echoes a heading in a paper by Bashein and Markus (1997) on the subject of credibility of IT specialists – 'IT Units Are From Mars'.

The client in Case 4 was more fulsome in his remarks about the difficulty of relating to information systems staff and getting work done at an organisational level:

..their job is to provide support to people like me that I need to do my job, not tell me I can't do it! So its disappointing when that happens, you're told no its too hard and we don't want to do it because there is some other bloody survey going on somewhere.. you never get anything done because there is always some sort of other situation happening in the background.

The client seems to be pointing here to the idea of technical expertise as a defence, similar to using a particular systems development methodology as a social defence

(Wastell 1996). In this case, technical expertise is used as a defence for inaction. It provides a good illustration of how analysts have the power to reject a request on technical grounds. This client amplified the problem when he went on to say:

..there is always this big mystery about what goes on in Information Services and you really are in a lot of cases, in a take or leave it situation because you don't have the expertise or knowledge to argue the position.

This can be seen also as both an exercise of structural and technical power (Markus & Bjorn-Anderson 1987) by Information Services, whereby the organisational structure gives formal authority to the IS section over the user (ie the process of making a request can be granted or rejected) and the recommendation of a particular course of action on technical grounds 'without providing users with the data by which they can make their own evaluations' (Markus & Bjorn-Anderson 1987).

Analysts, by contrast, were far more ready to comment on their own professional role during individual interviews. Their views seemed to coincide with the various models of analyst-client relationships put forward by Hirschheim and Klein (1989).

In Case 1 the analyst said his role was:

..a bit like a facilitator, to help the client what you need to know, its pretty hard because they, you both have different ideas about what's going on and different areas of knowledge, and you've really got to ask them questions so they can give you the right answers. Sounds a bit contrived..

So here the analyst subscribed to the 'Analyst as Facilitator' paradigm (Hirschheim & Klein 1989). He clearly felt that this was the best way to approach a situation where people had very different knowledge bases. He also shows an interesting awareness of the issue that he might, indeed be shaping the dialogue that he has with his client, and wonders whether this might be a little 'contrived'. He is also engaging in reflection-in-action, as described by Schön (1983) where he is actively reflecting on his professional practice.

The analyst in Case 5 seemed also to fall into this model of facilitator, and had this to say about how he perceived his role:

I think I see it as basically, I was going to say guiding, but that's not quite the right word, I guess I want to be able to make the client feel as comfortable as possible, just, just to talk. That way, the information he gives, I can report that, and it doesn't matter if he talks about some extra things, that is quite useful in itself..

Here, the analyst, when reflecting on his practice, does two things. Firstly, he puts forward a professional strategy or heuristic – 'make the client as comfortable as possible, just to talk'. Secondly, he acknowledges that the if the client provides greater contextual information than he himself requires, then this may be in fact useful. In this way he describes the double-bind of a professional, who bases his techniques on the Technical Rationality of his profession, and yet finds there is a place for wider consideration or framing of the situation. Schön (1983) describes this dilemma as either the professional opting for the high ground of narrowly technical practice, or choosing the swampy lowlands of messy but crucial problems. This analyst seems to be reflecting that there is room for both.

By contrast, the analyst in Case 2 seemed to subscribe to the 'Analyst as Systems Expert' paradigm (Hirschheim & Klein 1989), offering limited participation to the client, and to some extent trying to define the area of participation.

Its really to write down what I believe their requirements are, I like to let the clients read what I've written, so its no secret..

This statement, with its remark about 'so its no secret', also seems to conform to the image of systems developer as high priest (Hirschheim & Newman 1991), allied to arcane and secret rituals, such as walkthroughs.

The analyst in Case 6 seemed to be journeying towards Hirschheim and Klein's (1989) fourth and most visionary paradigm of analyst-user relations, that of Analyst as Emancipator or Social Therapist:

..I don't consider myself as somebody who has all the answers. I'm somebody who provides tools, and if I can help implement those tools, start them off and develop them, and nurture the way a system or process can happen, then I feel very good about that.

She contrasts this to how things used to be:

Once upon a time, the IT section was considered sacrilegious, scary, you never approached an IT person!

It is interesting that she uses the word 'sacrilegious' in relation to the past perception of the IT Section, given Hirschheim and Newman's (1991) symbolism of the 'Developer as High Priest'.

Finally, it is interesting to note that those clients who did have reservations about their IT section at an organisational level tended to disassociate those criticisms from 'their' analyst. For example, the client in Case 1 said:

Working with X, this is a really positive thing, the last year is something that should have happened a long time ago.. there have been lots of improvements or modifications in two years, but we didn't actually ever talk (said with some emphasis) to the analyst or the programmer, until, just prior to X working on the project with us, and that's been ideal because he actually learns what the client needs, and understands the system..

The client in Case 4 said, about the analyst:

..he doesn't dictate from a position of technical superiority like some people do.

This might indicate that, in difficult organisational circumstances, or negative cultures of IT-user relations, people place importance on relationships at the *individual* level as a way of getting things done or circumventing obstacles. A good example of this occurred in Case 6, where the analyst and client acted as advocates for computerisation in their organisation in the face of apparent disinterest and occasional obstruction:

..we do what we want to do anyway, and as long as they are going to get the information they want out of it, and that's OK, but for them having someone that's double crossing and checking, and all the rubbish that goes with that, that they want information in the computer system, we try to hide that if we can.

She further commented on management attitudes in this way:

We say 'well this is what we, think this particular manager wants, so why don't we just go away and do what we think is best', because they don't always understand the system we're working with and it's interesting too how managers dictate .. the way a system should be when they have no understanding about the workings that X (the client) does, or the system day in and day out, all the things that she needs for it, they've got no idea. No idea at all.

Interestingly, there were organisational rewards for operating in this way:

The interesting part too is that .. the system will be implemented and then a memo will come round and say thank you very much for doing it, it's fantastic, it's doing what we want it to do. So we don't take the negative aspect of it, we.. go ahead and do it. But we're just providing something that's best for them..

These perspectives on analyst-client relationships, offered by the participants, seem to point at the intertwined nature and ongoing reproduction of relations at the individual and social level. As such, this would seem to illustrate the utility of the notion of physical, individual and social constraints (Giddens 1984, in Jones & Nandhakumar 1997) interacting in such a way as to simultaneously offering opportunities and hindering action in the area of analyst-client relationships.

6.6.2 Mutual Understanding

One theme advanced by clients was the need for *mutual* understanding. The analysts raised the issue of understanding [identified theme Analyst's Understanding of Processes] as a primarily individual issue, connected to strategies for gaining information. By contrast, the clients raised it as a problem of social relations. In this, they were probably conscious that they were not only negotiating meanings but making social and political choices about computerisation (Kling 1987). Guinan (1988), suggested that rapport was important as it facilitated the elicitation of difficult and controversial issues. As such, this theme represents semantic, pragmatic *and* social world aspects, as portrayed by Stampers semiological ladder (Stamper 1995).

The client in Case 2 took this view of mutual understanding:

..there are two professionals, who probably don't in all honesty, understand each others role, and the aim of the process is to develop that, and to continue to develop a closer understanding, and to reduce the amount of misunderstanding.

There are elements of negotiation here, in his use of the words 'the aim of the process is to develop that'. It is interesting that he refers to professionals not understanding each others roles, and this relates again to Schön's (1983) point about 'minor' professions being characterised by shifting ends, and presumably, shifting roles.

The client in Case 1 made a straightforward point about the gulf of understanding between an IS professional and their client:

..it's perceived that the programmer and client have different ways of thinking, with probably a lot of technological jargon and things that to the user don't make sense.

The client in Case 5 described how he realised at one point the difficulty of bridging the gap, but from the standpoint of his professional domain:

There were a few sidetracks as I say, when it suddenly dawned on me that (the analyst) really didn't know some of the finer aspects of what we do out there. I suppose because I'm familiar with it, I expect everyone else to be.

This last comment emerged during the videotaped review – as such, it indicates the value of *context* to both parties. The videotaped reviews seemed to increase understanding of issues on both sides, especially when implicit organisational contexts emerged. It is possible that, in some of the cases, the task had been narrowly defined according to technical rationalist values. This has further ramifications when context can be seen as justifying and influencing processes and information that are conceptualised as requirements. This seems to underline the importance of reviews of all kinds, such as walkthroughs, in achieving mutual understanding, and, additionally, the importance of 'reflection-in-action' (Schön 1983)

6.7 Summary

This chapter has concentrated on developing the analytical standpoint of the themes discussed in Chapters 4 and 5. As such, it comprises a substantive theory of how analysts and their clients might approach early requirements gathering in given situations. A clear chain of analysis, from concepts to topics to themes, is also demonstrated here. The themes are related back to the general conceptual framework of individual, conceptual, social and environmental aspects of early requirements gathering advanced in Chapter 1. In addition, the systems analysis strategies and conversational strategies identified in Chapters 4 and 5 are related to themes. The reader is given a further insight into the cases as whole by the examination of frames of reference (Orlikowski & Gash 1994, Davidson 1996), that operated in the cases. This also serves as a mechanism for understanding how Issues To Be Discussed were framed in the various cases. The themes in the chapter are related back to relevant

literature to further build and strengthen the theory. Thus the function of this chapter is not only to build theory, but compare and relate it to technical literature for the purposes of generating a substantive theory (Strauss 1987) of early requirements gathering.

7. EVALUATION AND DISCUSSION

'The creative negativity of true questioning, which is essentially the negativity in experience which teaches and transforms, is the heart of the hermeneutical experience.'

Richard E. Palmer, Hermeneutics

This thesis has discussed early requirements gathering from two perspectives; those strategies and tactics employed by analysts and clients, and overarching themes that emerged from the interactions. These concepts and the themes presented both make explicit certain issues that generally remain *implicit* in early requirements gathering, and this has been achieved by detailed examination of a typical analyst–client interaction. The themes enable a larger scale consideration of the issues and also represent a vehicle for possible dissemination into IS practice. The themes were built on a sound foundation of concepts, from the ground up, using grounded theory techniques. From this perspective, this thesis can be seen as well grounded in its data and the chains of analysis are clear for those who wish to follow them.

The thesis can be properly evaluated from two angles.

- Firstly, the study itself will be evaluated using various criteria for judging interpretive research (Strauss & Corbin 1990, Klein & Myers 1999). One reason for doing this is that the study makes a unique methodological contribution with regard to how the analysis of the data has been carried out.
- Secondly, the findings from the study will be summarised and their implications discussed in detail with reference to the original research questions.

7.1 Evaluating the Study

The idea of having criteria for interpretive research is an interesting one; if interpretative research is necessarily from the standpoint of many interpretations or constructions, how can a study be evaluated with another set of constructions? The issue then lies with the *appropriateness* of those other constructions for evaluating the former, and whether there is widespread agreement in the field about such criteria. Guba and Lincoln (1994), when discussing criteria for constructivism, contend that their earlier criteria of credibility (equivalent to internal validity), transferability (equivalent to external validity), dependability (equivalent to reliability) and confirmability (equivalent to objectivity) (Guba 1981, Lincoln & Guba 1985) are suspect because of their parallelism to positivist criteria. A similar charge can be levelled at the criteria produced by Strauss and Corbin (1990) for the purposes of evaluating grounded theory studies.

So, why proceed with such an evaluation in this thesis? Firstly, as a way of assessing its quality – an interpretative paradigm should not constitute an excuse for lack of rigour or scholarship. It seems particularly appropriate to do this in a thesis where it will be also judged by others in the field for precisely these attributes. Secondly, as an interpretative researcher, I feel it is important to take a reflective stance on one's work. Thirdly, the criteria advanced by Klein and Myers (1999), whilst certain to be the subject of much debate amongst interpretative researchers in the field, represents an important juncture in the development of the quest for standards by which interpretative work can be judged. Klein and Myers (1999) remark that while they agree that interpretative research does not subscribe to criteria applied in a

mechanistic way, it does not follow there are no standards by which interpretative research can be judged.

Returning for a moment to the methodology used in this thesis, it well demonstrates the need to tailor the research method to the object of investigation, and how the data and analytic concepts interact in an iterative fashion. To some extent, the methodology used here represents an analytical journey and demonstrates how certain problems in data analysis might be overcome. During the course of the study, it became clear that the grounded theory techniques used, while providing an excellent foundation for the research, presented very much a *micro-analysis*, and a way of effectively scaling up the analysis had to be found. Using topics as an intermediate unit of analysis enabled a grouping of various concepts into larger themes. The grouping of those topics into themes was dependent on which concepts or codes predominated in that topic, thus providing a coherent chain of analysis. The themes also represent a tool for discussing early requirements gathering with practitioners, in much the same way Schön (1983) recommends the development of themes from situations for the purpose of practitioners building their own theories. The chain of analysis is reproduced in Figure 7-1:

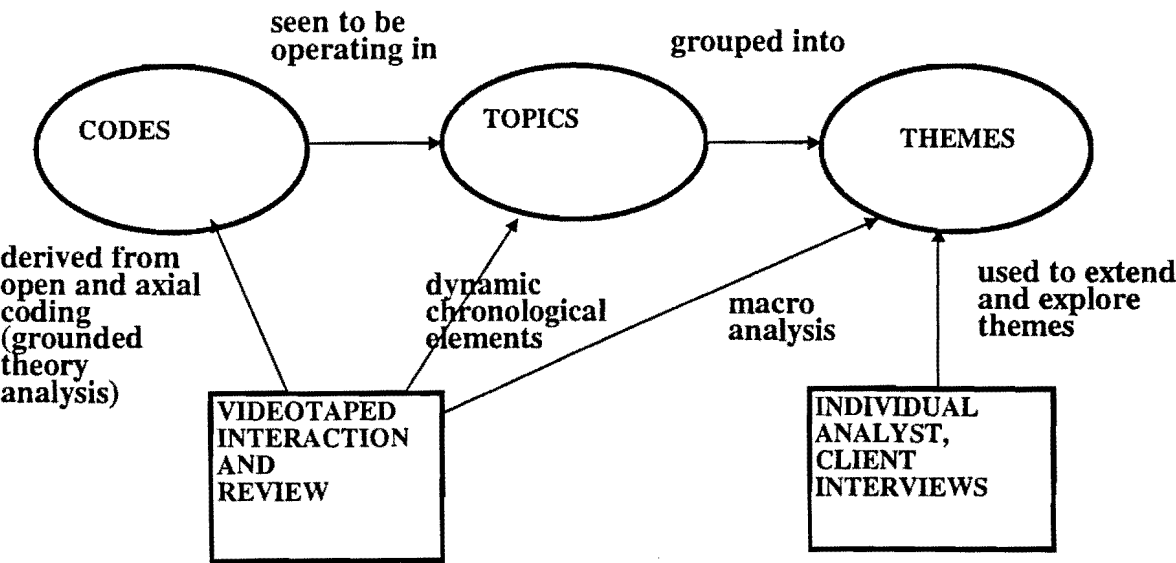


Figure 7-1 Chain of Analysis in the Study

The following sections evaluate firstly the process of deriving concepts from the use of coding using grounded theory techniques – the analytical foundation of the thesis. Secondly, the study as a whole is evaluated using Klein and Myers (1999) criteria.

Incidentally, the reader will note a change of voice in this section, where there is an alternation between the impersonal third person and the more personal ‘I’. I judged this as appropriate in this section as issues of personal values and conduct when doing research come into this evaluation, and in a section that also includes issues of debate in research. In the rest of the thesis, however, I prefer to use the third person as I do not wish my own ‘personal’ voice to drown out the voices of the participants or to personalise what is after all a piece of academic work which distils many voices.

7.1.1 Evaluating the Grounded Theory Component

The study proceeded with the application of grounded theory techniques to one case that produced a number of significant concepts. These concepts were then subsequently used as the analytical building blocks for the development of themes. The purpose of this section is to evaluate the first part of this process, the development of concepts using grounded theory techniques. Strauss and Corbin (1990) recommend that special procedures be explained in order to enable to help readers judge the overall adequacy of the research. Wolcott (1990) claims that qualitative researchers no longer have to justify their methods, but they can and should give insights into how the data gathering was conducted and ensure that generalisations made are made with care.

When evaluating the use of grounded theory techniques in this study, it could be asked whether this is truly a grounded theory study or a study that borrows from these methods to structure qualitative analysis. To some extent, this evaluation depends on whether one regards slavish following of published procedures as a hallmark of a grounded theory study, and indeed whether one regards these procedures as the only way to do a grounded theory study. Certainly the use of grounded theory techniques in this study enabled an extremely rich foundation for the development of themes, not least because of the author's consciousness of the notion of a theory truly grounded in the data, with close ties to that data, combined with an awareness of the issues surrounding theoretical sensitivity (Glaser 1978). I would see this study as not a pure grounded theory study, but an adaptation of grounded theory techniques that nevertheless subscribes to the idea that concepts should be both emergent and closely tied to the data, and is committed to the ideal of theoretical sensitivity.

In the light of serious disagreement (Glaser 1992) between the co-originators of grounded theory (Glaser & Strauss 1967) about published procedures (Strauss 1987, Strauss & Corbin 1990), conformity to these procedures should probably not be a paramount consideration for evaluating grounded theory studies. However, this is not to say that the procedures followed should not be open to evaluation.

Given Glaser's (1992) criticism of the publication of such procedures, and Strauss's (1987) injunction to modify procedures as appropriate, use of procedures is clearly a moot point. For instance, Glaser (1992) regards the use of a coding paradigm as 'forcing' the data, rather than allowing core categories to emerge naturally. Certainly use of the coding paradigm in this study – interaction among the actors, strategies and tactics, conditions and consequences – was not forced. Rather, it acted as a sensitising device, resulting in the idea of strategies and tactics themselves incorporated as core categories. Either the data fitted or it did not – because of that lack of fit, other ways of considering relationships were sought, resulting in the use of Spradley's (1979) semantic relationships.

An evaluation of the grounded theory component of the study follows, using Strauss & Corbin's (1990) two 'canons' and seven criteria for judging a grounded theory study in *conjunction with* Glaser's (1992) response to those criteria. Where appropriate, the resultant theory in the shape of the later themes are also considered, given that they use the concepts generated in the first part of the study as their base.

The Canon of Reproducibility

Strauss and Corbin (1990) state that a researcher using the same methods ought to be able to come up with the same theoretical explanation. Glaser (1992) challenges this by saying that a substantive grounded theory continues generalising a process to continue its fit and work and relevance. While full conceptual description might require replication, it is difficult to reproduce grounded theory as it is fluid and changeable (Glaser 1992).

I would incline towards Glaser's view here, as interpretative research is necessarily a product of time, a certain situatedness and interrelationship with the participants, and the researchers values. This criteria would seem to be denying the interaction between a researcher and their subjects, and that time does not alter the context of the research.

The theory produced in this thesis would benefit from continued generalisation of the processes it attempts to describe. I hope that other researchers would be sensitive to the concepts and themes described here when they study the social nature of Information Systems Development (ISD) – in much in the same way that Hirschheim and Klein's observations on analyst–client relationships (1989), and Hirschheim and Newman's (1991) work on symbolism in ISD has been useful to this research.

The Canon of Generalisability

Strauss and Corbin (1990) state that a grounded theory study is generalisable to specific situations only. Glaser (1992) points out that taking a process based view rather than a unit based view should enable generalisation from a substantive theory with limited scope to a process of larger scope based on its ability to fit, work and be relevant. Processes are not only durable and stable over time but can also account for change over time (Glaser 1978), and may have wider implications.

Given that this study is processual in nature, ie it is the processes by which analysts and their client approach early requirements gathering that are studied, one could reasonably search for wider implications. For instance, there may be commonalities in the way that analysts and their clients relate, and the processes that they use to conceptualise the task, with other professional interactions.

Criterion 1: Are Concepts Generated?

This criterion assesses whether the concepts are grounded in the data, or at least if technical or common sense categories are applied to the data. Clearly the study fits this criterion.

Criterion 2: Are the Concepts Systematically Related?

This criterion asks if conceptual linkages have been made and if they are grounded in the data. The study gives examples from the data of linkages between concepts and also linkages between concepts, topic and themes with a clear chain of analysis, so fits this criterion.

Criterion 3: Are There Many Conceptual Linkages and are the Categories well developed? Do they have Conceptual Density?

This criterion asks if the categories and subcategories are tightly linked, and whether the categories are theoretically dense in terms of their properties. The open coding process and axial coding resulted in categories of dense properties with many dimensions. Theoretical saturation (Strauss 1987) was reached by subsequent application of those categories to subsequent cases and their identification of other properties, and new sub categories, within themes.

It could be argued that the selective application of the paradigm meant there were less linkages between categories and subcategories, but applying Spradley's (1979) domain analysis during the initial coding ensured that the links made were exhaustive, in spite of the unorthodox manner in which the paradigm was used.

Therefore the study could be viewed as fitting with the criterion, particularly in respect of conceptual density if one regards the themes as an extension of those categories.

Criterion 4: Is Much Variation Built into the Theory?

This criterion states that a feature of grounded theory is that it specifies variations in the theory, and establishes more than a few conditions, actions and consequences related to the phenomena under study.

Very careful consideration has been given in this study as to what might vary the operation of various themes and strategies, and thus variation in the theory put forward. This is achieved in two ways: Firstly, multiple interpretations are put forward where appropriate in regard to the use of various strategies by participants. Secondly, situations accompanying themes are identified to assist this search for variation. Those situations and themes can then be considered by IS practitioners as a way of extending the theory (Schön 1983).

Criterion 5: Are the Broader Conditions That Affect the Study Built Into It's Explanation?

This criterion specifies that the analysis should not be so 'microscopic' as to disregard 'macroscopic' sources such as economic conditions, social movements, trends, cultural values and so forth. Glaser (1992) regards this criterion as a good example of 'forcing' the data rather than allowing concepts to emerge. Clearly, incorporation of 'macroscopic' sources is problematic in a study that focuses on the analysis of interaction.

However, if language is indeed the surface realisation of social and contextual processes (Candlin 1984) then some of the analytic concepts from the dialogue do implicitly include some of these broader conditions. In addition, the data sources surrounding the interaction – individual interviews, the review and submitted paragraph – allow consideration of contextual issues such as culture within the organisation. For instance, the incorporation of the theme Organisational Context into the study illustrates how it was found necessary not to disregard important contextual issues. When framing the research problem, the historical and social context of ISD was considered.

I am satisfied that the theory put forward here does take macroscopic sources into account. That said, I think it significant that context in the theory was taken into account *after* the initial analysis, not before, thus allowing concepts to emerge.

Criterion 6: Has Process Been Taken Into Account?

This criterion asks if identifying movement and change in the form of process is considered. Given that the study has a processual focus and that the findings are presented in such a manner as to reflect the passage of time, it must be assumed that this criterion has been satisfied.

Criterion 7: Do the Theoretical Findings Seem Significant and to What Extent?

This criterion states that a grounded theory study can fail to produce findings of any significance if the grounded theory 'canons' or procedures are applied without imagination or insight. This would seem to be a further caution against following the method without fully understanding the requirements of the research. Analytic ability, theoretical sensitivity, sensitivity to the subtleties of the interaction and sufficient writing ability to convey the findings are required from the researcher. In addition, the data has to be fully drawn upon and data collection has to be sufficient. The design of

the case study, with its multiple sources, should ensure that the data is fully examined from differing perspectives. Theoretical sensitivity, analytical procedures, sensitivity to subtleties of interaction and writing to convey findings are all demonstrated in this paper. The findings at this time do seem to fit within some of Glaser's (1992) criteria in being parsimonious, relevant and having a satisfactory fit with the data. One measure of how significant the research findings is how well they are received by the academic discipline to which they are attached. Unlike many thesis writers I took the view that my preliminary findings should be subject to expert, and public review by others in my academic community, with a view to improving the work herein. The preliminary findings have been published and well received (Urquhart 1997, 1998a, 1998b, 1999a, 1999b) and I would regard this as evidence of the findings as being parsimonious, relevant and having satisfactory fit with the data.

Strauss and Corbin (1990) also point out that the above criteria should be regarded as guidelines rather than fixed, and that new areas of investigation require that procedures and evaluative guidelines be modified to fit the circumstances of the research. The work presented falls into this category as procedures have been modified in accordance with the focus of the research. Given that most discourse analysis either addresses structural *or* processual aspects due to the sheer difficulty of analysing large amounts of dialogue, it could be said that Criterion 5 in particular is not entirely appropriate for a study of this nature. For instance, broader conditions such as social movements can be regarded as only having a marginal impact on the detailed business of *how* analysts and clients reach agreement. This research not only examines social processes but also how a standard professional task – requirements gathering – interacts with it. How the system is conceptualised is at least as important as the social processes used.

The criticism of Criterion 5 notwithstanding, Strauss and Corbin (1990) do recommend that readers should be apprised of how exactly the study departs from the given criteria. This section performs that function, so that readers can evaluate the case study with reference to those criteria.

7.1.2 Evaluating The Research As a Whole

The principles of Klein and Myers (1999) for evaluating interpretive field studies can also be usefully applied to evaluating this study, and represent an important debating point for interpretative research in IS. Lee (1999) notes that the three examples in their paper do not conform with all seven principles, and that a study might not satisfy all seven principles, especially as in this case the principles become available *after* this study was performed. Table 7-1 gives a summary of those principles.

Klein and Myers (1999) place an important caveat on the principles they present in their paper. They state that these principles are derived primarily from anthropology, phenomenology and hermeneutics, and that there are other forms of interpretative research, such as research based on other philosophies such as post-modernism and deconstructionism. They also state that other sets of principles need to be put forward – this is consistent with the notion of interpretivism in any case. Their caveat is that these principles apply *mostly* (emphasis added) to the conduct and evaluation of interpretative research of a hermeneutic nature. It is also pointed out by Lee (1999) that hermeneutic studies of texts would require some adaptation of Klein and Myer's criteria as would all other historical studies. So, it is worth adding a caveat of my own at this point – whilst this research can be seen as fundamentally hermeneutic in character from the perspective of how the analysis was carried out, it is founded in constructivism as a research philosophy. The analysis and synthesis of the data is hermeneutic in nature – the interpretation of spoken texts and subsequent reinterpretation of those texts (Lacity & Janson 1994), and can be seen as hermeneutics applied at the level of methodology as opposed to philosophy. Therefore this evaluation of the study will itself be carried out using Principle 7 – the principle

of suspicion – incorporating sensitivity to biases and systematic distortions, with regard to the other six principles.

Table 7-1 Principles for Evaluating Interpretive Research (Klein & Myers 1999)

<p>1. The fundamental principle of the hermeneutic circle</p> <p>This principle suggests that all human understanding is achieved by iterating between considering the interdependent meaning of parts and the whole that they form. This principle of human understanding is fundamental to all the other principles.</p> <p>Example: Lee's (1994) study of information richness in email communications. It iterates between the separate message fragments of individual email participants as parts and the global context which determines the full meanings of the separate messages to interpret the message exchange as a whole.</p>
<p>2. The Principle of Contextualization</p> <p>Requires critical reflection of the social and historical background of the research setting, so that the intended audience can see how the current situation under investigation emerged.</p> <p>Example: After discussing the historical forces which led to Fiat establishing a new assembly plant, Ciborra et al. (1996) show how old Fordist production concepts still had a significant influence despite radical changes in work organization and operations.</p>
<p>3. The Principle of Interaction between the Researchers and the Subjects</p> <p>Requires critical reflection on how the research materials (or "data") were socially constructed through the interaction between the researchers and participants.</p> <p>Example: Trauth (1997) explains how her understanding improved as she became self-conscious and started to question her own assumptions.</p>
<p>4. The Principle of Abstraction and Generalization</p> <p>Requires relating the idiographic details revealed by the data interpretation through the application of Principles 1 and 2 to theoretical, general concepts that describe the nature of human understanding and social action.</p> <p>Example: Monteiro and Hanseth's (1996) findings are discussed in relation to Latour's actor-network theory.</p>
<p>5. The Principle of Dialogical Reasoning</p> <p>Requires sensitivity to possible contradictions between the theoretical preconceptions guiding the research design and actual findings ("the story which the data tell") with subsequent cycles of revision.</p> <p>Example: Lee (1991) describes how Nardulli (1978) came to revise his preconceptions of the role of case load pressure as a central concept in the study of criminal courts several times.</p>
<p>6. The Principle of Multiple Interpretations</p> <p>Requires sensitivity to possible differences in interpretations among the participants as are typically expressed in multiple narratives or stories of the same sequence of events under study. Similar to multiple witness accounts even if all tell it as they saw it.</p> <p>Example: Levine and Rossmore's (1993) account of the conflicting expectations for the Threshold system in the Bremerton Inc. case</p>
<p>7. The Principle of Suspicion</p> <p>Requires sensitivity to possible 'biases' and systematic "distortions" in the narratives collected from the participants.</p> <p>Example: Forester (1992) looks at the facetious figures of speech used by city planing staff to negotiate the problem of data acquisition.</p>

7.1.2.1 The fundamental principle of the hermeneutic circle

This principle 'suggests that all human understanding is achieved by iterating between the interdependent meanings of the parts and the whole they form' (Klein & Myers 1999). This study has respected this principle in a number of ways:

- Firstly, the interactions were subjected to line by line coding and axial coding from which a number of systems analysis and conversational strategies emerged. The interactions were then divided into topics as an intermediate analytical unit

and, according to how the codes were clustered in each unit, those topics were allocated into themes. Therefore there is iteration between meaning ascribed to the individual parts of the data and the whole they form.

- Secondly, those themes and strategies were then applied to the other data sources – individual interviews, the initial paragraph submitted, and the review of the interaction. So at this level again individual meanings were pitted against the whole – commonalities and differences were seen at this level, and there was an interaction between meanings given to data sources as a whole, and individual meanings. For instance, in Case 3, the analyst's inability to offer a solution and to concentrate on commonalities in information during the interaction took on a larger significance when pitted against the data in his individual interview and his submitted paragraph.
- Thirdly, as a researcher I was immersed in the data for some considerable time – from January 1996 to the time of writing, early 1999. The data was analysed from various standpoints as well as analytic level – for instance, individual data sources as opposed to the interaction (Urquhart 1998b). This process of immersion meant that I was constantly seeing new meanings in the text as a result of reading and rereading the data, especially when reconsidering data sources in the light of subsequent interpretations. This also confirms well to the assertion by Lacity and Janson (1994) that the researcher should 'live with a text in order to understand it'.

7.1.2.2 The principle of contextualisation

Klein and Myers (1999) assert that one of the key tasks of the interpretative researcher is to seek meaning in context. The case study design ensured that the heart of the study, the video taped interaction, was contextualised by its surrounding data sources. Before the video taped interaction, individual paragraphs were submitted and the individuals involved were interviewed. After the video taped interaction, the interaction was jointly reviewed by the participants who were then individually interviewed for the second time. In this way, the interaction is placed in time, and thus a historical context for the interaction is found. Moreover, the various data sources enable an understanding of how meaning is constructed over a period of time, and from different vantage points. Klein and Myers (1999) point out that interpretative research is idiographic in the sense that instances are treated as a unique historical occurrence. The surrounding data sources provided context in a number of ways – for instance, the stated intentions of the participants with respect to the interaction were given in the initial paragraph they submitted. Individual interviews often gave insight into the organisational context that motivated the discussion, as did the review. In addition, organisational context was seen to be so intertwined with the creation of meaning in early requirements gathering that it was subsequently elevated to a theme.

Lee (1999) notes that there is an additional dimension to historicity here – a positivist study which performed content analysis of analyst–client conversations would not consider and attribute meanings that are a result of context, in the way that this study has done. In a positivist study the meaning attributed to same words/actions used in two organisations would be the same, irrespective of context (Lee 1999).

Therefore, in its design, execution and analysis this study was very conscious of the issue of contextualisation. Also, at the macro level, some consideration was also given to the historical context of analyst–client user relationships with regard to the IS profession in particular. However it must be acknowledged that each case study is not placed within an historical and social setting, other than the historical context supplied by the participants themselves in those studies. The reason for this lies with the level of analysis applied to the study and the design as a whole, focusing as it does on specific interactions.

7.1.2.3 The principle of interaction between the researcher and the subjects

Klein and Myers (1999) rightly point out that the process of research comprises a joint construction between the researcher and the researched. They also contend that the participants are as much interpreters and analysts as they alter their horizons in interaction with the researcher. Klein and Myers (1999) note that this principle is not followed in the three articles they analyse in their paper to any great extent. They wonder if this is because authors are conforming to normative pressures to write up their research as if the researcher was unobtrusive and objective. Certainly, when writing up a thesis there is a similar pressure to conform to a particular genre, and Harvey (1997) provides an excellent discussion of various ethnographic genres where she remarks that, even in her discussion of such genres, she was asked by the reviewers to shift genres, in particular to depersonalise the text. Lee (1999) remarks that today even *MIS Quarterly* allows writing in the first person singular, so these normative pressures are now much less than when the writing of this thesis commenced.

Interaction between participants and researcher is only implicitly acknowledged in this thesis – for instance, it is posited that the concern expressed by analysts about understanding clients may be due to the fact they were motivated to join in the study in the first place. In turn, those analysts may have been influenced in their concern by me when I invited them to participate in the project. I would prefer to think that their concerns pre-existed mine, but it is hard to know for sure. However, extensive details of the data collection process are provided, even if the process of creation of that data between participants and researcher is not discussed.

Given that this principle does not seem to be explicitly acknowledged by myself and other researchers, it is worth asking why not, using the principle of suspicion. The authors state in their introduction that one of them was trained in anthropology. I would contend that this principle stems from anthropological research where the reflexivity between participants and researcher necessarily comprises an ethical concern, and this does not resonate in the same way in IS research, as the research mainly takes place inter-culturally rather than intra-culturally. In many ways this principle could be subsumed into the principle of multiple interpretations as an ethical aspect of that principle, given that it comprises an acknowledgment of the ongoing process of construction between and among researcher and participants (Guba & Lincoln 1994).

7.1.2.4 The principle of abstraction and generalisation

The essence of this principle put forward by Klein and Myers (1999), in my view, is that, while the previous principles draw attention to the specificity and necessarily situated nature of interpretative research, interpretative researchers can and do make abstractions and generalisations about their research. They quote Walsham's (1995) identification of four types of generalisations from case studies: the development of concepts, the generation of theory, the drawing of specific implications and the contribution of rich insight. They state that theory is used as a 'sensitising device' by interpretative researchers.

In this study, concepts were generated from the data using grounded theory techniques, and these concepts were subsequently used for abstraction at a higher level into themes. Lee (1999) remarks that the grounded theory genre of research is itself directly concerned with abstraction and generalisation, and indeed this is the *raison d'être* of grounded theory. The concepts and themes are presented as a substantive theory of how analysts and clients might proceed in the business of early requirements gathering. Existing theories and literature are used both as a sensitising device, in line with Glaser's (1978) recommendations on theoretical sensitivity, and also as a means of comparing the emergent theory with current (and sometimes competing) interpretations – using comparative analysis to generate theory (Strauss

1987). The emergent theory is also related to literature in IS and other substantive areas as a means to build that theory, to make it more generalisable.

7.1.2.5 The principle of dialogical reasoning

This is the principle requiring the researcher to make the fundamental philosophical assumptions of the research transparent to the reader and themselves. Klein and Myers (1999) link this to the hermeneutic tradition of researchers being aware of their own historicity. I would view it as a prerequisite for interpretative research irrespective of whether one is doing research within the hermeneutic tradition or not, given that interpretative research is necessarily from the philosophy of many interpretations or constructions. Indeed, most IS interpretative researchers do signpost clearly their philosophical assumptions. This might be because, as researchers operating within a discipline where the positivist paradigm has been dominant, there is a need to point to theoretical justification for this mode of doing research. However, I would like to think that this is also a result of doing such research in the first place – an awareness that reality is socially constructed of necessity means that one is more aware of how one's own perceptions are constructed.

In this thesis, the research is firmly located within the interpretative and constructivist tradition and also makes reference to a hermeneutic approach to interpreting and re-interpreting the 'texts' or data therein. Lee (1999) contends that dialogical reasoning can also be considered as the difference between pre understanding and what is actually encountered in the next passage or text. Certainly this was the case when considering the data sources or texts individually and collectively. Dialogical reasoning also is demonstrated where the findings are discussed reflexively with current literature in IS and other fields, as a way of strengthening the theory presented in the thesis.

7.1.2.6 The principle of multiple interpretations

This principle requires the researcher to document multiple viewpoints, to be alert for contradictions, and to revise their understanding accordingly (Klein and Myers 1999), in line with Ricoeur's (1974) work on conflicting interpretations.

I would argue that this study pays special heed to the issue of multiple viewpoints by virtue of a design that ensures that several views of the interaction are elicited – a joint view and individual views, which are then overlaid and interpreted by the researcher. This is to some extent a requirement of the subject matter – the process of early requirements gathering is about the creation of meanings, and it is of interest how participants construct individual meanings and then negotiate these with each other. These multiple viewpoints do lead to some conflicting interpretations, which I have endeavoured to represent honestly, and where appropriate, to suggest possible reasons for these conflicting views.

I have also tried to be sensitive to this principle when presenting the findings, by making sure that the participants voice is heard, as well as my own. By the presentation of their own words wherever possible, I am presenting not only my constructions on the situation but theirs, especially with regard to their constructions both in the review of the interaction and in individual interviews. I would see the study of a good example of interpreting varying constructions of both the participants and researcher in a hermeneutic and dialectical interchange (Guba & Lincoln 1994), journeying toward a 'consensus construction that is more informed and sophisticated than any of the preceding constructions' (Guba & Lincoln 1994). It is up to the reader to judge if I have succeeded in this aim.

7.1.2.7 *The principle of suspicion*

This principle is concerned with the discovery of 'false preconceptions' and not taking informant's perspectives at face value (Klein & Myers 1999). They give an example of how a study (Forester 1992, in Klein & Myers 1999) questions the surface meaning of what is said by the participants in a systematic way and relates it to the issue of how actors pursue their own interests and reproduce social and political relations. For instance, Cases 1 and 3 revealed how the analysts involved actively engaged in *agenda setting*. Thus I would contend that the study presented here does much the same by detailed analysis and deconstruction of dialogue, appropriate in a study which seeks to examine how people go about creating meaning in early requirements gathering.

7.2 Evaluating The Theory

Moving from the conduct of the research to the findings, it is important to consider what the substantive theory proposed in this thesis has to offer the academic discipline of IS and wider practice. The objective of this thesis is to offer a 'plausible account' (Prasad 1997) of early requirements gathering that 'incorporates the viewpoints of multiple actors and ties these together in a culturally coherent and articulate fashion' (Prasad 1997).

The general research question addressed by this thesis is:

- *How* do analysts and clients approach early requirements gathering?

More specifically:

- What strategies and tactics do analysts and clients employ during the process of early requirements gathering?
- What are the major themes of early requirements gathering, and how can they assist IS professionals to understand the process of early requirements gathering?

As a starting point, the important elements of the theory are revisited below.

7.2.1 Conversational and Systems Analysis Strategies

The first phase of the research uncovered conversational and systems analysis strategies by applying grounded theory techniques to the transcripts of the cases. This proved to be a very fruitful exercise both in terms of the strategies and tactics identified and as an analytical foundation for the later creation of themes. A core category of strategies and tactics in early requirements gathering was formulated. Two subcategories – conversational and systems analysis strategies – were formulated, and a number of tactics, that might be operational in one or both categories were identified. (Details of the coding process are contained in section 4.1).

7.2.1.1 *Conversational strategies*

These were concepts allied to the social context of the interaction. Below some of the major findings are summarised.

Agenda Setting

Both analysts and clients could be seen to engage in a strategy of *agenda setting*, whereby the issues to be discussed were shaped, either in advance or during the conversation. Striking examples of this could be seen in the initial paragraph

furnished by the participants in two of the cases, where the analysts circumscribed or otherwise formulated an agenda that effectively precluded or limited some of the client's concerns. Other clients used the mechanism of the initial paragraph requested by the researcher to outline some of their requirements which might not be considered otherwise. The significance of this is that, in furnishing an initial paragraph about the upcoming interaction, most if not all the participants recognised it as a the first step in a negotiation, underlining the importance of systems analysis as the accommodation of interests in a political sense (Strauss 1978, Kling 1987).

Boden (1994) defines an *organisational* agenda as a talk based activity through which organisational members pursue local issues. She also points to them being discovered in the course of a series of work tasks (Boden 1994), which is closer to the definition being proposed here. She also likens the formulation of an organisational agenda as akin to *topic management* (Boden 1994) which is precisely what is occurring when analysts and clients define and then proceed to a discussion of early requirements gathering. This is further underlined by the tactic used by participants identified in the interactions, that of opening with the *conversation topic* or issues to be discussed. In all but one of the cases, it was the analyst who outlined the topic, which can be viewed as setting the parameters for the discussion. Clients, on the other hand, tended to frame the agenda using the tactic of *problem identification*.

The significance of this concept as discussed here lies in making explicit what is obvious – early requirements gathering is subject to social and political pressures, not only at a general level but the level of how the task is defined. For instance, in Case 1, pre-meeting discussions before the researcher arrived ensured that the proposed solution was reframed as an interim solution, due to the expected arrival of an organisation wide system.

Analysts need to be conscious of their role in shaping the requirements agenda. It has been observed that analysts can and do exercise technical and structural power (Markus & Bjorn-Anderson 1987). I would contend that how agendas are formulated at the interaction level is at least as important to the production of an information system, given that organisational agendas (Boden 1994) build on successive layers of agendas at the topic level. How the initial definition of conversation topic might affect conceptualisation is given further attention in the theme Issues To Be Discussed. This provides for a more general discussion of the implications of *agenda setting* in early requirements gathering.

Negotiation

Closely allied to the strategy of agenda setting is that of negotiation. As previously discussed elsewhere in this thesis, the idea of negotiation of has been usefully elaborated on by Strauss (1978) in terms of negotiated social order. At the interactional level, analysts and clients were seen to negotiate by means of various tactics, the most powerful of which is probably the *reframe* (Watzlawick et al 1974), whereby the a different point of view is taken of the same set of facts, and the *forward reframe* (Guinan 1988) where the conversation is usefully taken forward by the same mechanism. Negotiation was also closely associated with the discussion of *future action* and *future solutions*, as the interaction drew to a close. The clients would occasionally use the tactic of *problem identification* at this point if they felt all issues had not been addressed. In general, the analyst proposed future action and solutions, drawing upon their technical power (Markus & Bjorn-Anderson 1987) accorded to the role.

However, in Cases 2 and 5, the clients could be seen to exercise a reasonable amount of influence in the negotiation. This was probably due to the 'relative balance of power exhibited by the respective parties' (Strauss 1978) in what Strauss describes as the negotiation context. In both cases, the client in question was in a powerful

position in the organisation as a whole. In another case where the client could be seen to exert a powerful influence on the requirements, there was an element of the client effectively replicating the role of the analyst in her section, so it could be argued that she also had a reasonable degree of power in the relationship – in addition to having a very participative and equal relationship with the analyst.

Rapport Building

Rapport building as a strategy emerged in only a few of the cases, tending to be marked by the tactic of frequent uses of 'we' to foster *joint ownership*. In two of the cases, *personal disclosures* by the clients (one almost inadvertent) seemed to foster rapport. Interestingly, both these clients were female. Creating rapport *as a strategy* seemed to occur when the analyst and client either didn't know each other very well, or were renewing a relationship. That said, for all analyst client pairs, increased rapport seemed to occur naturally during the review of the interaction, which was a less formal and more relaxed affair than the interaction. It may simply be that, in a 'professional discourse' such as early requirements gathering, the concentration on the task precludes such strategies, even though it has been suggested (Tan 1989) that rapport is important because it draws out difficult and controversial issues. Certainly, during the more relaxed review, organisational context became more explicit and it could be seen how this implicit aspect influenced requirements.

Summary

What can these conversational strategies tell us about early requirements gathering? By their paucity – far more systems analysis strategies were identified – we might conclude that specific conversational strategies were not that important to analysts and their clients. This would make sense in the context of 'professional discourse'. However, what these strategies lack in number they have in importance. Two of these strategies cut across the heart of early requirements gathering in that agenda setting influences subsequent conceptualisation, and the notion of systems analysis as negotiation is clearly important. Both these strategies formed the building blocks for larger themes – Issues to be Discussed and Future Action, where they are discussed at a more general level using these observations as a base. Personal disclosures, an interesting aspect of rapport building, was also pursued as a theme. It should also be noted that a number of tactics, such as *imagining* and *exemplification*, were used both in the strategies noted here and the systems analysis strategies yet to be described, so to some extent conversational and systems analysis strategies interact at a lower level.

7.2.1.2 Systems analysis strategies

These were strategies, mainly used by analysts but also by clients, to understand and define the early requirements being discussed. Some can be seen as conversational strategies – for instance *imagining* could not only be used as a way of literally stepping through the system, but also as a way of stepping through consequences when deciding on future action. The same could be said with regard to reframing as a strategy, but in the main both strategies were used for the purpose of understanding and definition of the new information system. The following strategies were identified as systems analysis strategies.

Key Searching

In three of the cases, analysts used a strategy of *key searching*, where they searched for or otherwise constructed a key for the purposes of information retrieval. The major tactic used in support of this was a *posit*, ie the simple putting up of a proposition to discover what might constitute a key. The activity of *key searching* is consistent with an observed information focus on the part of the analysts, and also represents an heuristic used by analysts for breaking apart a problem. While this strategy can be

seen as appropriate within an analysts role, it does raise the question of whether information, and the retrieval of that information, narrows the problem down to the exclusion of processes used by the client, in much the same way Schön (1983) describes those professionals who 'confine themselves to a narrowly technical practice' (p.43). *Key searching* formed the basis of the general theme Links In Information, and further discussion of these aspects is contained in that theme.

Process Identification

Throughout the interactions, both analysts and clients could be seen to engage in *process identification* whereby the existing and proposed processes were identified. Supporting tactics were *posits*, *process rule* (where the rule for the process was identified), and *process exceptions*. Very often this was accompanied by the strategy of *information identification* (see below) and the tactic of *problem identification*. The sequence tended to be the identification of a process, its components, the information required to support it, and any problems associated with it. These aspects are discussed more fully in the general theme of Processes Associated With System, and formed the foundation for this theme.

Information Identification

As indicated, this strategy was the corollary of process identification. Analysts usually wished to discover the type of information and where it was held (*information type*), and also what was required in future. Sometimes this could be a precursor to a *scoping* strategy (see below). This strategy was the genesis of the themes Information Input To System and Information Output From System.

Scoping

Also of interest to analysts was the *scope* of the system. This strategy was commonly allied to *information identification*, as the *information type* was sometimes a clue to the functions of the existing system. For instance, manual records might supplement the function of the existing system. Both analysts and clients also used *information identification* to identify new information that was required and so agree the scope of the system. Given the interrelationship between information and processes, it was also allied to *process identification* as both analysts and clients identified new processes that the system. This strategy was the foundation for the theme Scope of System.

Imagining

This strategy was used by both analysts and clients as they literally stepped through, or imagined, a current or proposed process. They used supporting tactics such as *dialogue* (assigning dialogue to people enacting the process), *metaphors*, *exemplification* ('suppose so-and-so came in and wanted..'), *vivid description* and so on. Imagining comes from an in-vivo code (Strauss 1987), where that term is used by the participants, observed in one of the cases where this type of strategy was particularly noticeable. This strategy seemed particularly helpful to participants and would be worthwhile teaching at IS undergraduate level as an explicit method for early requirements gathering.

Reframing

This was a powerful strategy used both by analysts and clients to formulate requirements. *Metaphors*, and *forward reframes*, were used as tactics to take a different view on the salient facts, and to take the requirements forward. Guinan (1988) identified the use of forward reframes and metaphors as being a characteristic of 'highly-rated' analysts, but did not consider how they might be used in conjunction

to progress early requirements gathering. Again, this strategy was very helpful to participants and could be taught at IS undergraduate level.

Summary

The identification of these systems analysis strategies were a powerful analytical foundation for the rest of the study, as evidenced by how many of them were later developed into wider themes. They also stand in their own right as useful indicators of how analysts and clients might approach the defining of a system. Analysing dialogue line by line enabled the identification of these strategies as explicit items or heuristics by which people attempt to clarify understanding when discussing that most abstract of subjects, the information and processes which comprise an information system. Their value lies in making explicit what is generally implicit, and their potential as teaching vehicles for IS undergraduates, and points of discussion with practitioners.

7.2.2 Themes

The themes comprise the major part of the theory of early requirements gathering, and as such have been given extensive discussion in Chapter 6. This section will concentrate on reiterating the major findings under those themes.

7.2.2.1 Definitional themes

These are those themes which are associated with the definitional or conceptual aspects of early requirements gathering. How a system is conceptualised is at the heart of early requirements gathering. It is also embedded in a social context which impacts on how the communication is enacted, which in turn might facilitate or constrain that communication. These themes examined in detail how conceptualisation might proceed, drawing on relevant literature pertaining to frames or interpretative schemes (Orlikowski & Gash 1994, Davidson 1996), how practitioners approach framing of problems (Schön 1983), and the 'conventional wisdom' of systems analysis texts. Their contribution lies in a detailed examination of how analysts and clients approach conceptualisation.

Issues To Be Discussed

This can be properly described as the most important of the themes, as it presents an illustration of the impact of the *initial* problem framing applied to a set of requirements. It was demonstrated that, at the interactional level, problem frames put forward by each individual could have one of three fates. Firstly, those problem frames could be adopted by the other participant. Some analysts were quite successful in getting clients to adopt their problem frames. Secondly, there could be very little co-adoption of problem frames between analyst and client, as happened in one case. Thirdly, there could be the generation of many joint problem frames as client and analyst proceeded to a shared understanding of requirements. The problem frames were also seen to be the result of many different contextual influences, and generic frames applying to issues such as organisational context and professional relationships could also be seen in the cases. Turning to Strauss's (1978) description of negotiated social order, these could be seen as characteristics of the negotiation context. For instance, the relative balance of power between the parties could be seen to have an influence in two of the cases where the client was older and was senior in rank in the organisation.

The observations contained in this theme have a number of implications:

- The recognition that how a the problem of early requirements gathering is defined at its outset, how it is framed, does influence subsequent conceptualisation at the interactional level. Schön (1983) points at the tendency of some practitioners to

narrowly define a problem, as a way of dealing with the shifting ends of inherently unstable practice. This raises the issue of the need for analysts being aware of the power they have to define an agenda from the basis of their technical power (Markus and Bjorn-Anderson 1987), *at the interactional level*. This is particularly important when one considers the idea of organisational agendas being a result of successive local interactions enacted through frames (Boden 1994) – thus the framing of an agenda about an information system has much wider ramifications.

- That there are a number of influences at work when problem frames are formed and discussed. The stage of the project, the project history, pre meeting discussions and organisational circumstances may all influence generic frames on the part of individuals on these issues, which in turn may influence problem frames. Davidson (1996) demonstrated how technological frames progress and change over the lifetime of a project.
- The power of reframing as a strategy at the interactional level – participants used forward reframes to change and alter problem frames throughout the interaction. Analysts in particular could be seen to use ‘on-the-spot experiments’ (Schön 1983) to test conceptualisations of the problem.

Scope Of System

This theme has as its foundation the systems analysis strategy of scoping. For both clients and participants, the issue of the scope of the system was important, and manifested itself in different ways for each group. Clients were far more concerned about the scope of the system from the perspective of pinpointing exactly where a computerised system might interlock with manual processes, and the implications for those processes. They tended to approach the issue at the negotiative level, one reason being that by discussing the scope with the analyst they could also better determine whether their precise requirements were being met. Analysts, on the other hand, were concerned about scope on a more specific level, usually through identifying the information concerned for a new system, or defining the scope of an existing system through the information it produced. This also seems to confirm the process/information dichotomy between analysts and clients observed elsewhere in the study.

Systems analysis texts contain very little discussion of scope, other than at general levels using systems theory, or a very specific level using the notion of ‘automation boundaries’ (Hawryszkiewicz 1998). This could be because of the seemingly narrow technical rationalist view of many systems analysis texts that what occurs at the interface between the computerised processes and manual processes is not really the purview of the analyst but of the client. A reasonable amount of discussion, however, is given over to the notion of user-friendly screens and procedures, but again, limited in the main to design as opposed to the *interaction between* computer procedures and manual procedures.

The observations contained in this theme have the following implications:

- Analysts should be aware that computerisation can have a substantial impact on current manual procedures, and that this is a concern of clients. The lack of awareness of this issue by analysts in the study is mirrored by a lack of discussion of the issue in current systems analysis texts.
- Analysts should shift their focus somewhat, from information to processes, when considering the formulation of early requirements, the better to appreciate the *interaction* between what is output by an information system and how it might be used in a day to process. There was one analyst in the study who did indeed pay

attention to processes, and it is interesting to note that she had a background in processing insurance claims.

Processes Associated With System and Information Input To System

These themes were discussed together in Chapter 6, reflecting their interdependent nature. At the strategy level, *process identification* and *information identification* occurred hand in hand, and formed the basis for these themes. In all of the cases, an information/process dichotomy could be observed, the analysts concentrating on issues of information, the clients concentrating on process aspects. At one level, this can be seen as the natural outcome of day to day concerns and allotted roles; the analyst has expertise in the structuring and retrieval of information, the client wishes to have information structured in a certain way to support day to day processes. At another, it raises a serious question – by focusing heavily on information, do analysts sometimes miss important aspects of the processes that use that information? The concern is that analysts might endow information with the meaning that it is perfect and true or immutable in some way (Boland 1987), whereas this is impossible as situations will always be open to interpretation and reinterpretation (Boland 1987). Some clients in the study felt strongly that the analysts did not always value the context they supplied, this being the context or background to processes. Certainly it is claimed that developers do not highly value domain knowledge (Jones & Walsham 1992), and this seemed to be borne out by some (but by no means all) of the cases in this study. The implications of this theme would seem to be:

- That analysts should be aware that an overly information focused approach may lead to a lack of proper consideration of processes. As processes can also be deemed the context of the problem, there is the possibility of prematurely defining a solution in information based terms that ignore certain important contexts, namely, the processes using the information. Another way to look at this is that IS practitioners should resist the strong temptation that exists for professionals to define a problem in narrow, technical terms (Schön 1983).
- That clients could usefully pose their requirements as information required to support processes in order to successfully communicate their needs to analysts. The clients who specified the information they required, and had given it consideration before the interaction, seemed to be more successful in getting analysts to form joint frames with them. This could be an example of the clients entering the analyst's world of discourse, rather than the other way round.

Links In Information

This theme had its foundation in the systems analysis strategy of *key searching*. It was observed that, not only did analysts search for keys at the information retrieval level, they also looked for links between systems at the organisational level. At the key searching level, some analysts were seen to use successive reframes that can be likened to Schön's (1983) notion of 'on-the spot-experiments' carried out to see if their conceptualisation is correct. Put simply, if the analyst can locate or structure a key – they have a possible solution and a means to help the client.

At the organisational level, analysts identified commonalities in information *across* organisational systems, to the extent of strongly encouraging clients with similar data to talk to each other. Again, this seems to reflect their role as experts in information. It also illustrates that, within their role, they may have to balance what they perceive as the interests of the organisation (shared, organisation wide information) against the needs of the client (having their specific information needs met). In this situation, and many others, the analyst is exercising not only technical power but structural power (Markus & Bjorn-Anderson 1987).

This theme can be seen to have the following implications:

- That analysts should be aware of the various heuristics they use in practice, such as key searching, are a form of 'problem setting' (Schön 1983) and as such need to be appropriate for the situation. Problem setting is clearly a vital part of the analyst's role, but has been remarked previously, there is always the possibility that the 'problem' becomes defined in narrow terms, and its solution does not take into account context or process issues. *Key searching* offers the possibility that a technical aspect (retrieval) might take precedence over gathering further information about processes and the solution might subsequently be seen to be premature, once further information comes to light.
- The identification of links in information across organisational systems raises some interesting questions about an analyst's role with regard to their client and the organisation as a whole. In the cases where this occurred the analysts could be seen to be exercising both technical and structural power (Markus & Bjorn-Anderson 1987). Analysts need to be aware of the power they exercise, and of the possible conflicts therein. Markus and Bjorn-Anderson (1987) state that it is easier for IS professionals to be aware of their technical power than the other types. The cases presented in this thesis would seem to indicate that the analysts concerned were consciously representing structural interests and therefore might well be aware that they were exercising power. In general, more discussions on all the implications of problem framing and aspects of power should take place both at IS undergraduate level and at a professional level.

Problem Identification

This theme had its origin in the tactic of *problem identification*, which was seen to be operating as part of the conversational and systems analysis strategies of agenda setting, negotiation and process identification. This particular tactic occurred at various times throughout the interaction, and was used in different ways by analysts and clients. Problem identification can be seen as a general 'labelling' of the problem rather than the more specific 'problem setting' characterised by Schön (1983). It is interesting that a recent systems analysis textbook (Hoffer, George & Valacich 1998) identify *two* skills for systems analysts associated with 'problems' – problem identification and problem analysing/solving. We can see how Schön's (1983) problem setting, where the problem is framed in a way that would aid its solution, falls into the latter category.

When engaging in *problem identification*, clients would almost invariably ally this to a problem with a particular process, thus confirming what has already been noted – clients tended to be process orientated. They also used it as a precursor to negotiation with the analyst. Analysts, on the other hand, tended to take an information focused view of *problem identification*, generally in terms of information deficits- what the system failed to provide in terms of information.

This theme has the following implications:

- Problem identification can be seen as a particular frame on the requirements, thus this theme provides confirmation that analysts tend to frame from the perspective of information, and the client from the perspective of processes.
- A distinction between problem identification, and problem analysis (or problem setting) is a useful one, and analysts should be aware that these both constitute distinctive 'takes' on a problem. Again, these would be useful concepts both for IS undergraduate and professional education. Although Hoffer, George and Valacich (1998) devote a whole chapter out of 21 chapters in their book to the skills required for systems analysis, it is not particularly well integrated with the rest of

the book, in contrast to Kendall and Kendall (1995). As such, educators might still not perceive it as important 'conventional wisdom' (Checkland & Holwell 1998). That said, the list of skills they provide and their discussion about the profession represents a hopeful signpost for IS undergraduate education into the next century. However, discussions of skills are still not prevalent in practice.

Information Output

This theme can be seen as a natural outgrowth of the Information Input theme, and to some extent can be seen as both a further manifestation of the analyst's focus on information and also a consequence of the stage of the project. Analysts would use the information output, current or proposed, as part of a strategy of scoping, which has already been mentioned. Analysts would also use the concept of desired output to further define requirements in a specific way, and this would depend on the stage of the project. A discussion of *proposed* information output could be seen then as an indicator of certain progress in early requirements gathering. Clients when discussing proposed output, again tended to be process focused, concentrating on how the information would support their processes.

This theme has the following implications:

- The identification of information output, current or proposed, represents a useful heuristic for analysts in determining scope.
- A discussion of information output generally implies that the analyst has moved to a 'solution' stage in early requirements gathering.

7.2.2.2 Environmental themes

These were themes associated with the general context of the interactions. Of these, the organisational context observed seemed to powerfully influence how the interaction proceeded, and how solutions might be arrived at. Future Action and Future Solutions are also discussed here, as how they were framed seemed to be largely a result of the general context and situation.

Organisational Context

It is fairly universally acknowledged that information systems development is a social and political process and that organisational perceptions of IT are important (Markus 1983, Hirschheim & Klein 1989, Hirschheim & Newman, 1991, Robey & Azevedo 1994). This theme is also strongly connected to those themes of Issues to Be Discussed and Professional Relationships, in that those themes interact with organisational context.

In all the cases, various organisational contexts could be seen to be affecting how early requirements gathering was conducted and framed. Lack of resources in three agencies, for instance, prevented a solution being offered in one case, and a history of difficult professional relationships between the IS section and their clients in the other two cases. Also in one of these latter cases, the solution was effectively circumscribed due to the planned advent of an organisation wide system. In two cases project history could be seen to actively shaping future requirements – manifested in a defensive attitude by the client due to (negative) project history in one case, and in the other as valuable context which the analyst assumed the client was already familiar with. In yet another case, an organisational imperative of measuring throughput of work to justify staff establishment was seen by the participants to be a very important aspect of the requirements.

Organisational context, by its nature, is largely implicit and so it proved to be in these cases. The organisational context emerged largely through individual interviews where individuals spoke fairly freely about organisational circumstances, and during the reviews. In the reviews, participants were asked to comment on successive five minute frames of their interaction, and to describe to the researcher what they thought was happening. What was interesting is that, very often, hitherto implicit organisational context was used to justify or explain why a particular requirement evolved in the way it did. On one occasion, that organisational context was actually news to the client. This raises an interesting question – do analysts and clients, when not being asked to explain their practices to a researcher, explain organisational context to each other? It might be that reviews in the early stages of early requirements gatherings would be valuable in the same way as structured walkthroughs are at a later stage. The type of reflection elicited in these cases would seem to be important – participants were asked to explain *frame by frame*. This gave ample time for reflection-in-action (Schön 1983) that allowed the drawing out of implicit context.

This theme would seem to have a number of important implications:

- Firstly, organisational context affects requirements in many different ways. Lack of resources seemed to be a problem in three of the cases, and this may be so in many other organisations due to lack of skilled personnel and increasing demands on the profession as a whole. Thus organisations, as well as individual analysts, should be aware of how lack of resourcing might affect the solution put forward. It has been suggested that organisational agendas are built from talk at the interactional level (Boden 1994). Agendas for systems seem to be formed the same way; organisations should consider how solutions built at the lower level in response to resource problems influence future perceptions of IT in a reflexive interaction between system and organisation.
- Secondly, that the concept of reflection-in-action as outlined by Schön (1983) would be helpful in early requirements gathering. The value of the reflection lies in its ability to draw out implicit context. As has been pointed out, requirements seem to be influenced by wide range of organisational factors. However, how this reflection is structured is important – to simply propose that early requirements are reviewed as a stage in a methodology, for instance, would not have the effect of drawing out implicit context in the way that occurred in these cases. The process by which reflection occurred would have to be specified, and in that specificity, again something might be lost. The value of the reflection in these cases, and their role in drawing out context, was I would suggest precisely in proportion to the unit of reflection – five minute sections of dialogue. For that reason, I would suggest the use of either audio or video tapes in order to reflect on early requirements.
- Thirdly, this theme demonstrates how organisational context and culture not only influences broad conceptualisations of IT at a general level (Robey & Azevedo 1994), but also at the interactional level, organisational issues can be seen to influence specific requirements. This again points to the need for analysts to be aware that decisions about design are affected by non ‘rational’ considerations, such as organisational values and how people have been affected by project history. One can see early requirements gathering in this respect as almost a random process, affected by its interaction with organisational context in many ways as meanings are negotiated in situated action (Gasson 1998). In this respect, decisions about early requirements gathering are probably not unlike any other day to day organisational decisions which are founded in a complex mixture of circumstances, beliefs and values. The difference of course is that decisions about early requirements are subsequently encoded into an IT artefact which holds various assumptions about how people conduct their work – it is not so easily

reversed as an organisational decision which has been found to subsequently be inappropriate.

Future Action and Future Solutions

This theme can also be seen as 'situated' in that it is closely tied to a negotiative moment where the analyst and client decide what is to occur next. For that reason, it is very much a product of individual thoughts, values and feelings that are also influenced by the organisational context. This theme had its origin in two codes, *future action* and *future solutions*, used as tactics in the strategy of *negotiation*.

Generally, towards the closing stages of an interaction, analyst or client would raise the issue of future action, and the analyst would proffer solutions. In the majority of the cases, analysts and clients also used the review of the interaction to continue negotiations. It is interesting that a number of clients used the review to press forward their negotiating position and get agreement on action. This raises a question as to whether the lack of negotiation in the interaction was due to the research design, or a normal feature of early requirements gathering. Given how much the clients used the review to continue negotiations, I would incline towards the latter – perhaps the review, which was structured so that both analyst and client had the same amount of participation, gave the client opportunity for equal air time that they would not otherwise have had.

In these negotiations, analysts and clients were clearly circumscribed by the local and organisational contexts they found themselves in. They also seemed to be circumscribed by respective roles – presumably the analysts proposed solutions because they felt it was their role to do so. In this respect, and for many of them, only in this respect, they were conforming to the paradigm of 'Analyst as Systems Expert' (Hirschheim & Klein 1989).

In Case 4, future action depended on the formulation of a policy on Council charging, whereas solutions or implementations were relatively easily found by the analyst. In Case 1, the solution was framed as 'an interim solution' by the analyst due to the planned introduction of an organisation wide system. In Case 5, the client only really grasped what was possible within the 'negotiation context', in terms of 'legitimacy boundaries' (Strauss 1978) by closely questioning the analyst as to the context and genesis of the proposed 'overhaul' to the system. In Case 2, the client proposed the use of some existing software as part of the solution during the review, probably as a result of his previous experience with the project. In all cases, future action and future solutions were tied up in a complex web of interaction with the environment at many levels.

This theme can be seen to have the following implications:

- Both future action and future solutions are intertwined with, and circumscribed by, situational aspects at the local and organisational level. This can be likened to Jones and Nandhakumar's (1997) description of physical, social and environmental constraints that interact and simultaneously enable system developers and their clients.
- That a useful distinction can be made between future action and future solutions in early requirements gathering, and yet they are closely associated. The emphasis on future action by clients and future solutions by analysts, respectively, is not dissimilar to the different levels of problem identification exhibited by analysts and clients in these cases, and can also be traced back to the role of 'analyst as expert' paradigm (Hirschheim & Klein 1989).

- That the importance of the notion of ISD as a negotiation (Hocking 1998, Kling 1987) cannot be overstated. The clients, on the whole, seemed more conscious of the negotiative potential of the reviews than the analysts, and this may be due to a narrow conception on the part of the analysts as to what their role may be in these situations.

7.2.2.3 *Individual themes*

These were themes that were largely the result of individual characteristics, concerns and approaches of the analysts and clients observed in the case studies. There seems to be little IS literature on individual perspectives on early requirements gathering, and yet intuitively this would seem to be important. If early requirements gathering is founded on communication, and communication is produced by an individual in response to their environment, then the perspective taken by the individual would seem to assume extreme importance. Most people have had the experience of a professional situation where the 'personality' of a given colleague profoundly affects how the work is carried out. Leaders, for instance, are seen to have an influence on their colleagues through 'management of meaning' (Smircich & Morgan 1982) and it is not unreasonable to suppose that individuals impact on early requirements gathering in much the same way. This section is therefore devoted to a consideration of individual perspectives and approaches in early requirements gathering.

Personal Disclosures

In two of the cases, a personal disclosure, one deliberate, and one inadvertent, seemed to have a positive effect on rapport. The result of this was an increased flow of information between analyst and client. It is difficult to say whether either was part of a conscious strategy of rapport building, or a consequence of gendered patterns in communication (Spender 1980, Henley & Kramarae 1991), given that these disclosures occurred in the only two mixed sex conversations.

What is of interest is how these disclosures did seem to contribute to rapport and the flow of information in these particular interactions.

The implication of this theme would seem to be:

- That rapport does have a role in facilitating a flow of information, though very few of the participants seemed to adopt an overt strategy of building rapport. Both Guinan (1988) and Tan (1989) identify rapport as important in 'successful' analyst-client communication. Perhaps the lesson here is that, where participants actively disclose themselves rather than waiting for rapport to occur naturally, it does seem to affect the flow of information in a positive way.

Analyst's Understanding of Processes

This emerged as a theme founded on analysts' concerns that they understood their client correctly. Two analysts who raised the issue of understanding in individual interviews, and a third who identified her role as 'facilitator and nurturer' were seen to use the tactic of *reflection* during interactions to ensure that they had understood their client correctly. This might indicate too, that they were indeed analysts who actively reflected on their practice, much in the same manner as Schön (1983) suggests. They may well have been attracted by the study in order to do something about this concern. The implication of this theme might be:

- That analysts can and do reflect on their practice, and would probably find the explicit examination of strategies and tactics and themes, such as presented in this thesis, useful and helpful, given that they were already adopting tactics which could be seen to aid understanding.

Note Taking

Two of the analysts explicitly raised the issue of note taking during when reviewing their interaction with the client. As with the previous theme, this would seem to indicate that they were actively concerned with issues around early requirements gathering. There is little space devoted to note taking in systems analysis texts, and thus there is little 'conventional wisdom' (Checkland & Holwell 1998) on the subject. Also the two analysts concerned, given their educational background, would in all probability not have been exposed to any guidance on note taking.

The implications of this theme would seem to be:

- The review was helpful in aiding these analysts reflect on their note taking practices, again pointing to the value of 'reflection-in-action' (Schön 1983).
- What would seem to be a comparatively straightforward practice in early requirements gathering, that of note taking, was not straightforward for these particular analysts, and indeed advice in text books is contradictory. From the perspective of both undergraduate education and professional practice, more discussion of note taking, and associated issues, would be helpful.

Use of Props

This theme emerged from three of the cases, where participants were seen to use the systems analysis tactic of a *prop* to aid understanding. The props were used in various ways in the cases: as a mock up of an existing document, as an explanation and diagramming of how a key might work, and as a proposed screen design. In all of these cases, they could be seen to aid understanding by breaking out of the constraint of verbalisation and allowing the conveyance of ideas in a succinct manner. In Case 6, where the frames of reference were closest, the use of 'pictures' was a common occurrence and the participants commented on this during the review.

Given how these props were seen to aid understanding, it is perhaps surprising that the other cases did not utilise them. One might think that the use of a prop might have to do with stage of design, and would be increasingly used as design progresses and this might be why they were not used in the other cases. However, in two of the cases where props were used, the interaction was the very first in defining requirements. Two of the cases where props were not used also fell into this category of a first meeting, and the remaining case was a situation where requirements were more advanced. So this does not seem a likely explanation for the use or otherwise of props.

It seems more likely those who used props have stumbled upon their use and adopted it as a useful systems analysis tactic. There is no mention of props in undergraduate systems analysis texts, but this probably reflects a general lack of attention on early requirements gathering in those same texts.

The implication of this theme would seem to be:

- That the use of props in early requirements gathering is a useful tactic to aid understanding, and should be widely promulgated in both IS undergraduate education and professional practice.

7.2.2.4 Other individual aspects in early requirements gathering

In addition to the themes presented above, two other aspects were examined from the individual perspective and related to the case studies. The first of these was individual

background, defined as that individual's educational and professional background, and sourced from the individual questionnaire administered in the case study. The reason for considering this aspect is the contribution of individual background and experience to how requirements were conceptualised in the case studies. The second aspect was that of gender, given how there are differential patterns of communication exist between men and women (Henley & Kramarae 1991, Spender 1980), and also between women (Spender 1980). What was of interest here was how these differential patterns might impact on early requirements gathering in the cases.

Observations relating to these two aspects are summarised below:

- Diverse educational and professional backgrounds seemed to contribute to diverse frames on the requirements, but in a number of the cases, these diversities were subsumed by common frames on the organisation and experience within it. Put simply, diversity of background seemed no barrier to joint frame formation when both parties were very familiar with their organisational environment and each other.
- Interestingly, the clients who had a background in architecture (two of the clients) were more at ease with and more participative in the process of early requirements gathering. This could be due to the fact they had been exposed to the notion of designing and how this might proceed. Lee (1991) has drawn parallels between the IS profession and the profession of architecture, and in the cases concerned that particular background seemed to be useful to those clients.
- Differential patterns of communication did seem to operate within the case studies. For instance, in Case 6, the only all female analyst–client interaction, there did seem to be ‘a more egalitarian structure for talk’ (Spender 1980). This case also showed far more joint frames than were present in the other cases, but on the other hand, they probably represented the most established analyst–client relationship in the cases. In the two cases of where there was a male analyst and a female client, differential patterns did seem to occur, in that generally the analyst's version of the communication prevailed. That said, this might also occur where the analyst adopts the ‘Analyst as Systems Expert’ paradigm (Hirschheim & Klein 1989). Given the socially embedded nature of early requirements gathering, it seems reasonable to conclude that gender is a factor due to the different patterns in female and male conversation.

7.2.2.5 Social themes

These themes are those that emerged as specifically associated with the social context of early requirements gathering, characterised nicely by Gasson's (1998) description of design of information systems taking place within a socially constituted organisational culture. The first theme, Professional Relationships, had its origin a question in the individual interviews where participants were asked to describe their professional role. The second theme was one particularly advanced by clients during those individual interviews.

Professional Relationships

When asked about professional roles in interactions such as the one in the case study, clients largely chose to comment on the roles of analysts at an individual and organisational level, whereas the analysts commented on their own role. The clients had much to say about poor relationships at an organisational level, and also generally had high opinions of ‘their’ analyst.

At the organisational level, their remarks seemed to imply that IT sections did wield a great deal of technical and structural power (Markus & Bjorn-Anderson 1987) and

that occasionally they could be seen to use their expertise as a defence (Wastell 1996). The paradigm of 'Analyst as Systems Expert' (Hirschheim & Klein 1989), and the notion of 'Developer of High Priest' (Hirschheim & Newman 1991) seemed to be evident in their perceptions of IT Sections. The IT Section was seen 'as almost not human' by one client, echoing comments by Kennedy (1994) and Bashein and Markus (1997), in their assessments of analyst-client relations.

By contrast, the clients were generally happy about relationships at an individual level, one remarking that she felt the analyst really understood their needs, another remarking that the analyst did not dictate from a position of technical superiority. In Case 6, the individual relationship between analyst and client seemed to have a very positive impact on computerisation in the organisation as a whole, the analyst and client jointly and positively advocating change in this area.

The analysts' perceptions of their professional role ranged from one who seemed to operate from the 'Analyst as Systems Expert' (Hirschheim & Klein 1989), to one analyst who seemed to aspire to the notion of 'Analyst as Emancipator' (Hirschheim & Newman 1991). Many of them felt that their role was facilitate and 'guide' their clients.

This theme would seem to have the following implications:

- That a number of IT Sections in the cases exercised technical and structural power in their organisations to the active detriment of analyst-client relations at an organisational level. Thus the comments by Kennedy (1994), and Bashein and Markus (1997) would seem to be borne out in these cases.
- That clients placed great value on individual relationships with analysts, and sometimes actively used these to circumvent organisational constraints. This would seem to bear out the importance of individual characteristics and beliefs in early requirements gathering. It also points at the intertwined nature and ongoing reproduction of relations at the individual and social level, much in the same way as individual and social constraints on ISD are described by Jones and Nandhakumar (1997).
- That there was great variability in how analysts perceived their role, and to some extent confusion about that role. Most, but not all, seemed to have a the model of Technical Rationality (Schön 1983) underpinning their perception of role, but were very client orientated.

Mutual Understanding

This was a theme raised by clients during individual interviews and the review. Its placing here, under the heading of Social Themes, contrasted with the analyst's view of understanding [Analyst's Understanding of Processes] placed in the category of Definitional Themes, and expresses well the different perceptions by the each group of 'understanding'.

Whereas the analysts seemed concerned with understanding from a relatively narrow viewpoint of understanding the client's processes, within the context of their role, the clients were more concerned with *mutual* understanding and presented it as a problem of social relations and negotiation. They also seemed to be concerned that the analyst thoroughly understood the context of their processes, as well as the processes themselves. This view would seem to indicate that they felt that, as clients, there was an obligation upon them to establish mutual meanings, and probably reflects how people might perceive their role with regard to consulting an 'expert' in information systems.

This theme would seem to have the following implication:

- Clients perceived the creation of joint meanings as a mutual obligation and negotiation, in contrast to the analysts' concern to understand the client's processes. This could be due how each party perceived their role. Clients seemed to take a much more social and political view, whereas the analysts could be seen to be operating far more in a model of 'Technical Rationality' (Schön 1983). This theme was particularly emergent during the reviews, again pointing to the client's concern with context.

7.2.3 Interrelationships Between Themes

The themes as presented here, Individual, Environmental, Social, and Definitional, also raise issues of their relative importance, and interrelationships, within early requirements gathering. This is particularly so when considering the contribution of the individual within early requirements gathering.

Although early requirements gathering comprises a 'professional' interaction, where people have prescribed roles, the individual background they bring to the interaction can have a large impact on how the requirements are conceptualised, thus linking to the Definitional aspect of requirements gathering. In the same way, their beliefs, attitudes and perceptions of their professional role, and how they present interpersonally, can have a positive or detrimental affect on the interaction as a whole, thus linking to the Social aspect of early requirements gathering. The individual is likely to be constrained by their immediate environment, thus linking to the Environmental part of the theory. This has echoes of Gidden's theory, outlined in Jones and Nandhakumar (1997), of social, individual and environment constraints. It is impossible to say how the constraints interact, other than to use it as an analytical framework. This also applies in to the way the theory in this thesis is used and presented here.

Certainly the theory advanced here is not an hierarchical model, starting with the individual, then the definitional, then the social, then environmental. That said, I was struck by the uniqueness and variability of each case and how each individual shaped the communication.

7.2.4 Some Further Implications

The previous section remarked that the individual aspect of early requirements gathering is potentially unique. As such, it has the potential to be a powerful force for good or ill within ISD. Anecdotally, we all know of circumstances where the personality or social skills of the developer can cause either untold difficulties or has transformed a project. Yet there seems to be little in IS literature about this, other than surveys on differences between IS professionals and other groups. Given that any information system starts with the spoken word, it starts with the beliefs, and concepts presented by an individual negotiated through a social system. As such, much greater weight needs to be given to the fact that an IS professional shapes an IT artefact through their communication and conceptual skills.

Further, that IS professionals need to consider this as an ethical question – their words, thoughts and actions have many consequences, both intended and unintended. The model of technical rationality that seems to underlie IS as a profession and many others (Schön 1983) seems to mitigate against a consideration of the impact the profession may have in a social and organisational sense. Information systems are both an ubiquitous and powerful presence in our lives and shape everyday experience and progress of humanity as a whole. As such, IS as a profession needs to understand its unique role and break out of the narrow refuge of technical rationality. IS is unique as a profession in that the individual conceptualisation of a system, becomes encoded

into an artefact that impacts on the daily welfare of many lives. When an IS developer makes an assumption about an information system without regard to wider issues, they may well be impacting on other individuals in a way that is unintended but disastrous.

Very few professions other than the IS profession, if any, proceed with the spoken word, encode conceptualisations of information, and then build those conceptualisations into an artefact that is used every day and affects subsequent conceptualisations of information that in turn affect decisions in society. As we move into the so called 'Information Age', it behoves every IS professional to consider how their communications with others affects the wider world, and how their actions in creating information systems encode not only information but values.

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8. CONCLUSIONS

'Nor is it only proper we should in general indulge our inclination in the most elaborate philosophical researches, notwithstanding our sceptical principles, but also that we should yield to that propensity, which inclines us to be positive and certain in particular points, according to the light, in which we survey them in any particular instant.'

A Treatise On Human Nature, David Hume 1740

This thesis will conclude by revisiting the research questions, and briefly summarising the major findings. The contributions of the research will be discussed, including implications for practice. Finally some suggestions for future work are made.

The research questions addressed by this thesis were:

- What strategies and tactics do analysts and clients employ during the process of early requirements gathering?
- What are the major themes of early requirements gathering, and how can they assist IS professionals to understand the process of early requirements gathering?

8.1 Summary of Major Findings

Firstly, three conversational strategies, Agenda Setting, Negotiation and Rapport Building, and six systems analysis strategies, Key Searching, Process Identification, Information Identification, Scoping, Imagining, and Reframing, were uncovered at the interactional level. These strategies were allied to a number of tactics which were sometimes used by more than one strategy.

- Agenda Setting and Negotiation can be seen to be vital aspects of early requirements gathering, emphasising as they do the social and political nature of ISD. How the agenda for conversation was set out, both in the initial paragraph and the conversation topic put forward by the analyst, was seen to influence conceptualisation of requirements markedly as the interaction progressed. Thus how the agenda is framed, and who frames it, assumes great importance. Analysts need to be conscious of how their verbal agendas influence conceptualisation from the outset, and how this contributes to organisational agendas (Boden 1994). In all the case studies bar one, the analyst framed the agenda and this then becomes an issue of technical and structural power (Markus & Bjorn-Anderson 1987).
- Negotiation as a strategy was used far more by clients than the analysts, in that clients seemed to perceive the interaction as a negotiation, the analysts more as a consultation. This may be due to an imbalance in the negotiation context (Strauss 1978), where analysts may be exercising power, or be perceived to have power, and not necessarily be aware that they do. The adoption and awareness of negotiation strategies on the part of the client can then be seen as an attempt to reverse a perceived imbalance.
- Rapport Building was used as a strategy by some participants, but not all. Where it was used, it did seem to facilitate a flow of information. The less formal atmosphere of the interaction review, seemed to serve to draw out 'difficult and controversial issues' (Tan 1989). This would seem to underline the importance of the conscious cultivation of rapport, and also raise the question of how to do this within what is seen as a formal professional discourse.

- The Systems Analysis Strategies identified in the cases give a good indication of how analysts in particular approach early requirements gathering, and more importantly, how they conceptualise or engage in 'problem-setting' (Schön 1983). Key Searching and Scoping, in particular, seem to represent important heuristics used by analysts in professional practice. At the same time, these strategies may close down consideration of other factors prematurely, in that the problem may then be too narrowly defined. Process Identification and Information Identification were seen to be very intertwined, and yet at the same time it was observed that analysts by and large were information focused, and clients process focused. This issue is given further attention and consideration in the themes Information Input to System and Processes Associated With System.
- Imagining and Reframing were identified as powerful systems analysis strategies at the interactional level, enabling analysts and clients to 'step through' proposed and existing processes and to move conceptualisation forward.

The strategies identified at an interactional level provided the analytical foundation for a number of themes which effectively scaled up the analysis and allowed further elaboration of a theory of early requirements gathering. Four types of themes were identified – Definitional, associated with conceptualisation, Social, associated with interaction between analyst and client, Environmental, associated with the environment of the interaction, and finally, Individual themes which concentrate on individual perspectives and aspects of early requirements gathering.

These categorisations correspond to the characterisations of issues put forward in Chapter 1, and the discussion contained in Chapter 7 relates the themes back to the literature used to characterise those issues. These characterisations naturally interact in a complex manner, best illustrated by Giddens (1984) theory of physical, individual and social constraints simultaneously enabling and constraining the reproduction of relations. They also represent the complexities of discourse, in particular Candlin's (1985) representation of language as the surface realisation of strategies working through social, contextual and epistemological routes. In the cases studied, individual aspects could be seen to influence both the conceptualisation of requirements and social interaction.

The Definitional themes – Issues To Be Discussed, Scope of System, Processes Associated With System and Information Input To System, Links In Information, Problem Identification and Information Output – provide a useful theory of how analysts in particular proceed with the conceptualisation of early requirements.

- In the discussion of Issues To Be Discussed, it was demonstrated through the use of frames (Orlikowski & Gash 1994, Davidson 1996) how the initial framing of issues to be discussed influenced their subsequent conceptualisation, and how frames might become joint frames as the interaction progressed. This again underlines the importance of initial conceptualisation and the analyst's contribution to an initial agenda. If organisational agendas are formed from successive verbal interactions (Boden 1994), then the importance of initial framing cannot be overstated.
- The theme of Scope Of System had as its foundation scoping as a strategy used by the analyst. The client viewpoint however, was concerned with the precise intersection of computer processes and manual processes, a subject not discussed in systems analysis texts, other than discussion of 'automation boundaries' (Hawryszkiewicz 1998). In contrast, the analysts were concerned about scope from the point of view of information provided by the system. This would seem to confirm a process/information dichotomy between analysts and clients observed in the study.

- The theme of Processes Associated With System and Information Input To System explores the process/information dichotomy between analysts and clients. Clients were concerned with processes and the context of those processes, whereas analysts were concerned with information. Domain knowledge is not highly valued by developers (Jones & Walsham 1992), and the vast majority of IS undergraduate education is focused on the structuring and manipulation of information in a technical sense. As such, IS as a profession can be seen to have a base of 'technical rationality' (Schön 1983) which ill equips them for consideration of processes and context. Certainly this may result in a rather narrow definition of the problem which ignores processes and context, and may represent a closing down of options before vital processual aspects are considered.
- The theme of Links in Information had as its foundation the systems analysis strategy of *key searching*. It was found that analysts not only used key searching as a heuristic to provide a solution for information retrieval, but they also identified information links at an organisational level across systems. This is consistent with their focus on information and possibly how they perceive their role as one of aiding information retrieval first and foremost. Their identification of organisation wide links raises interesting questions of exercise of technical and structural power (Markus & Bjorn-Anderson 1987), and the possibility of a conflict between representing their client's interest vis a vis organisational interests. Analysts should be aware of this aspect to their role.
- The theme of Problem Identification had its origin the tactic of problem identification. It was found that, while analysts and clients labelled problems via problem identification, they did so in different ways. Analysts tended to label problems in terms of information deficits, whereas clients labelled problems as a precursor to negotiation about the problem so labelled. Again this illustrates the very different conceptualisations analysts and clients bring to early requirements gathering, and raises questions about analysts taking an overly technical rationalist view of problems.
- The theme of Information Output is closely allied to Information Input, but was kept separate as it was noted that discussion of both information currently output and information required provided a useful heuristic for analysts in determining scope. Also, a discussion of proposed information output seemed to indicate that an analyst had moved to a 'solution' stage in the interaction.

The Environmental themes – Organisational Context and Future Action and Solutions, gave insight into how the environment of the interaction interacted with conceptualisation of early requirements and how future action and solutions were negotiated.

- Organisational context, in the form of resource constraints, project history, and organisation wide changes to systems was found to substantially influence how the requirements were conceptualised. This illustrates how interactional agendas might interact and reproduce organisational agendas (Boden 1994) about IT, and how broad conceptualisations of IT at an organisational level (Robey & Azevedo 1994) might influence individual conceptualisations. It was also significant that organisational context was largely implicit, and commonly emerged in reviews where reasons for proceeding in a certain way became apparent. This underlines the importance of providing opportunities for 'reflection-in-action' (Schön 1983), where the influence of organisational context on early requirements gathering can be explored.
- Analysts tended to emphasise future solutions, in keeping with their role, whereas clients tended to focus on future action, in much the same manner as analysts and clients engaged in problem identification in different ways. Again, clients were far

more aware of the negotiative potential of such discussions, possibly due to how they perceived power differentials in the negotiative context (Strauss 1978). Future action and future solutions negotiated by the analysts and clients were seen to be circumscribed and embedded in situational aspects at the local and organisational level. This theme provides a good illustration of how physical, social and environmental constraints (Giddens 1984, in Jones & Nandhakumar 1997) might operate with respect to early requirements gathering.

The Individual themes, Personal Disclosures, Analyst's Understanding of Processes, Note Taking, and Use of Props, all represent individual approaches and perspectives of the participants in the study to early requirements gathering. They were primarily a product of the review of the interaction, demonstrating the high utility of 'reflection-in-action' (Schön 1983) to practitioners. How individual background, and gender, might influence conceptualisation and interaction in the cases was also considered. These themes represent a useful exploration of the impact of the individual, their beliefs, attitudes, values and perception of their practices, might have on early requirements gathering.

- The theme Personal Disclosures noted that, where these occurred, they had a beneficial effect on rapport and the flow of information, and would support the notion that rapport building as a strategy might be more usefully adopted by analysts.
- The theme of Analyst's Understanding of Processes was founded on the concern of two analysts in the case studies about the issue of understanding. It was noted that these analysts, and a third who saw herself primarily as a 'facilitator and nurturer', actively used the tactic of reflection in their interactions with clients to good effect. This would seem to indicate that once analysts are aware of the issue of the need to understand their clients, they can and do adopt effective tactics to assist understanding.
- The theme of Note Taking was raised by two analysts who found it problematic. Certainly, information in systems analysis texts about this issue is scant and contradictory, and underlines that a technical focus in undergraduate education may not adequately prepare analysts for practice situations such as early requirements gathering.
- The theme of Use of Props stems from the use of various paper 'props' in interactions used by the participants to variously model, explain and express their ideas, possible implementations and screens, and to 'mock up' existing documents not to hand. The participants that used these props seemed to generate more joint frames and have a more effective interaction generally. Again, the 'conventional wisdom of the field' (Checkland & Holwell 1998) seems not to discuss this strategy, which would be of great utility to IS practitioners in general.
- Individual background did seem to impact on how requirements were conceptualised – for instance, two clients with an architecture background were very at ease with the design process. That said, a commonality of organisational experience seemed to be the overriding factor in the manufacture of joint frames.
- Differential patterns of communication due to gender were observed in the case studies, and this may impact on early requirements gathering as a domain in a similar way to the way gender differences operate in communication generally. This again indicates the very social and political nature of ISD – gender differences in communication can be thought of as one instance of differential patterns similar to those found between ethnic, racial, religious, age and class groups (Henley & Kramarae 1991).

The two Social themes, Professional Relationships and Mutual Understanding, are concerned with how analysts and clients related to each other in a social context, and reflect the notion of ISD as being very much a social and political issue (Hirschheim & Newman 1991, Kling 1987).

- In the theme of Professional Relationships, clients had much to say about poor relationships with IT Sections at an organisational level, and contrasted this with good relationships at a personal level. Their remarks about IT Sections seemed to confirm that IT Sections did wield a great deal of structural and technical power (Markus & Bjorn-Anderson 1987) and that they did occasionally use expertise as a defence (Wastell 1996). Perceptions of IT sections seemed to conform to the paradigm of 'Analyst as Systems Expert' (Hirschheim & Klein 1989), and the myth of 'Developer as High Priest' (Hirschheim & Newman 1991). All this would seem to point to poor relationships as a consequence of an adherence to a 'technical rationalist' view of the IS profession. Clients however, were generally happy with their particular relationship with 'their' analyst, and some viewed it as a mechanism to circumvent particular organisational constraints. In the main, analysts seemed to perceive their role as one of expert guidance and facilitator, representing a technical rationalist but nevertheless very client orientated view.
- Mutual Understanding was a theme raised by clients, and its placing as a Social theme indicates that they perceived the issue of understanding to be founded in analyst-client relations, with negotiative and political undertones. They were concerned particularly that analysts understood their processes and the context of their operations, in a way that contrasts with the analysts' more narrow definition of this issue (Analyst's Understanding Of Processes). They also felt an obligation to foster mutual understanding, where the analysts felt no such obligation, and this probably reflects the differences in role perceived by each group.

8.2 Contributions of the Research

The contributions of the research presented here can be summarised as follows:

- The research uncovers *implicit* communication strategies and tactics utilised by analysts and their clients, and makes them *explicit* by dint of detailed analysis. These strategies and tactics would be of value in both IS undergraduate education and professional practice.
- The research also presents a number of themes derived from situations of early requirements gathering that represent a useful vehicle of discussion with IS practitioners, much in the same way as advocated by Schön (1983).
- The research as a whole represents a substantive theory of how analysts and clients might proceed in early requirements gathering. As such, it represents an important contribution in this specific area about which little theory is available either in IS research literature or in professional practice. The area of early requirements gathering tends not to be researched from a discourse perspective, and comprises a unique domain within discourse. It is hoped that this study combines some insights from the detailed examination of dialogue with the unique aspects of what is the activity of early requirements gathering. It gives insights into the process of early requirements gathering much in the same way Gasson (1998) and Davidson (1996) cast light on the social and cognitive processes in ISD.
- The research illustrates how successive agendas of early requirements gathering operate reflexively with agendas at the organisational level (Boden 1994). In particular, it demonstrates the importance of communication at a detailed level in

terms of its larger influence on not only the future shape of the information system, but also how information technology is perceived at an organisational level (Robey & Azevedo 1994).

- The research represents a methodological contribution in how the themes are rooted in strategies and tactics at a lower level of analytic unit. It demonstrates how grounded theory techniques can be adapted and the level of analysis 'scaled up' to good effect while maintaining close ties to the data. In its design, the reflective component has enabled reflection-in-action (Schön 1983) on the part of the participants, and can be considered to be part of the research method in much the same way as advocated by Heiskanen and Newman (1997). The inclusion of this component naturally adds to the credibility of the research from a practice viewpoint, as it stems from analysts and clients reflecting on their actions in a professional situation.

8.3 Implications for Practice

Given that the substantive theory presented in this thesis represents the distilled experiences of practitioners in early requirements gathering, it seems appropriate to ask how they might be disseminated in a meaningful way to practitioners. Dissemination might usefully be discussed from two perspectives – the vehicle for that dissemination and the content of that vehicle.

Vehicles that could be used include the following: seminars and workshops where early requirements gathering is discussed, articles in practitioner magazines, consultancy, and in undergraduate and post graduate teaching. Content is more problematic – how to present what is essentially focused research in more general terms. There seem to be a number of ways that this can be achieved.

Firstly, guidelines or a suggested model can be put forward, based on the themes. In a seminar or workshop situation, it would be preferable to encourage practitioners to add themes or modify those guidelines in the light of their own experience, thus theory building from situational themes in the manner suggested by Schön (1983).

Given the small number of case studies involved, practitioners could legitimately ask about the generalisability of such themes and experiences as represented in this paper. However, the small number allows depth of analysis, and it is precisely that depth of analysis that allows the generation of themes that represent certain issues that generally remain *implicit* rather than explicit in early requirements gathering. It is as if the skeleton of the issue is laid bare through consistent digging and stripping away of context – but that is necessary to have understood the context otherwise we would not recognise the bare bones when we come across them.

Therefore, it would seem sensible to discuss these themes with practitioners in the context that they were created. In the cases presented in this thesis, one can see clearly how the situation of each case, in terms of the prescribed task, influenced the discussion. The value of this type of research, when disseminated, would be in asking practitioners to reflect on what implicit factors might be operating when they are engaged in early requirements gathering. This is a service that qualitative researchers can offer to practitioners – detailed, retrospective analysis that the practitioner may not have the time to engage in, nor wish to. All the practitioners involved in this study were without exception interested in the issue of improving requirements gathering, realised that communication was a vital aspect, and yet felt that they lacked the skills to make their interactions with clients completely satisfactory.

Table 8-1 presents the themes allied to the situations that produced them, and practitioners could then extend this through discussion.

Table 8-1 Situational Influences On Themes

THEME	SITUATIONAL INFLUENCES IDENTIFIED IN CASES
1. Issues to be Discussed	<ul style="list-style-type: none"> • Limits on possible solutions imposed by other systems. • Pre meeting discussions. • Disparities between analyst's aims and client aims for discussion. • Commonalties in analyst and client perceptions of issues. • Use of a document to focus and possibly limit discussion. • Agreeing a process by which the issues will be discussed. • Who sets the agenda for discussion, analyst or client
2. Scope of System	<ul style="list-style-type: none"> • Extending the scope of a system through amendment • Establishing the current scope of the system by distinguishing between manual and computer records • Deciding how manual processes interface with a proposed system
3. Personal Disclosures	<ul style="list-style-type: none"> • Attempting to build rapport through personal disclosures • Analyst as confidante when confronted with client's job stresses.
4. Information Input to System - data currently input - data currently held - data that needs to be held	<ul style="list-style-type: none"> • Nature of information – manual or computer • Information required for changing processes • Using props or examples of current documents
5. Processes Associated with System - current processes - new processes required	<ul style="list-style-type: none"> • How information received influences a process • How a process might work using new information
6. Links in Information	<ul style="list-style-type: none"> • Finding a key for information retrieval • Tracking progress through a system • Linking systems in order to meet client needs • Identifying common information required by more than one section of the organisation. • Using keys to provide information
7. Future Action - on individual elements - associated with project - general	<ul style="list-style-type: none"> • Constraints on future solutions due to limits imposed by other systems, or capacity of existing system. • Policies that need to be determined before processes can be decided. • Need to interview others to for further information.
8. Problem Identification	<ul style="list-style-type: none"> • Problems in carrying out processes due to lack of information. • Duplicated effort due to incompatible systems. • Information deficits in current system due to significant changes.
9. Information Output from System - data currently output - data required to be output	<ul style="list-style-type: none"> • Examples of current documents
10. Analyst's Understanding of Processes	<ul style="list-style-type: none"> • Analyst's use of reflection to communicate with client
11. Future Solutions	<ul style="list-style-type: none"> • Limits and feasibility of solutions • Analyst's need for more information
12. Organisational Context - affecting system design and project conduct - general	<ul style="list-style-type: none"> • System history • Previous design decisions • Personnel changes • Previously failed projects • Relationship with analyst and role of client • Relationship with IT Section • Lack of IT resources • Changing customer service ethos in organisation • Management monitoring of productivity

This sort of representation of the findings could be used independently as well as in conjunction with a dialogue with practitioners about their own experiences.

Markus (1997) points out that there is a lag between current best practice and current textbooks and teaching cases. Whilst most undergraduate courses are offering the latest technologies, our collective understanding of practice is not state of the art

(Markus 1997). This focus on technology is understandable in the context of the cramped space of an undergraduate degree, but does disadvantage the new IS professional who may enter an organisation believing that technical skills are all that is required when developing what is essentially a human activity system.

Some systems analysis texts (Kendall & Kendall 1995) provide excellent advice to a systems analyst engaged in requirements gathering with regard to setting up interviews, use of information sources, use of metaphors in interpreting organisational literature, and structuring interviews. However, detailed consideration of social processes is unfortunately given scant treatment in most traditional systems analysis textbooks. This is surprising, given the impact of social processes on project failure (Edstrom 1977, DeMarco & Lister 1987, Rothfeder 1988, Kennedy 1994). Perhaps this not too surprising when one considers that current teaching of systems analysis has but a short time within an undergraduate program to convey many technical concepts, which the system analyst must possess in order to design an information system. In other words, attention is given to conceptualisation of an information system rather than strategies and tactics required to elicit the information upon which the conceptualisation is based. As this thesis has demonstrates, these two issues are intimately intertwined. It is difficult for systems analysts to perform well if they are not competent at both. It is interesting to note that all the analysts involved in the six case studies felt communication with clients to be an important issue and one where they felt detailed examination would be helpful. This perhaps indicates that they felt more skilled at conceptualisation than eliciting information.

In addition to discussion and extension of themes with practitioner, the strategies and tactics presented in this thesis could assist current practice in the following ways.

Use of Reframes

Reframing is a powerful interactional strategy that influences conceptualisation. If systems analysts were aware of reframing in general and the concepts of problem identification, forward reframes and reparcelling in particular, they would become sensitive to how the labelling of an object or an idea using certain words influences the joint perception of an information system. In a previous study, Guinan (1988) concentrated on framing rather than reframing, and suggested outcome framing (suggesting goals), backtrack framing, pointers, an 'as if' frame, and metaframing (looking at the issues as a whole). Some of these concepts have been coded differently in this study, and it was difficult to find instances of some of them. As this study looks at how shared meaning evolves between an analyst and a client, reframing is an important category as it represents a tactic by which meaning changes throughout the interaction.

Use of Props

Systems analysts are not given much advice in systems analysis texts as to the use of props except with regard to prototyping input. Most systems analysts stumble on to the use of props such as finding 'whiteboarding' a good way to work with a client. If the use of props was to be formally discussed, systems analysts would become aware of a range of possibilities to aid communication between themselves and the client. Consideration of props in a formal manner would also demonstrate the different ways people process information. Some clients who do not react well to data flow diagrams for instance might react better to other mechanisms.

Use of Imagining and Associated Tactics

If systems analysts were to be formally trained in 'stepping through' a process to the extent of using metaphors, acting out and vivid description, they would gain greater insights into the processes being discussed. Certainly this strategy worked well for a

number of analysts and clients in the cases. This was to some extent dependent on the analyst being able to enter into the client's mode of thinking. Perhaps systems analysts should also consider how best to do this. The notion of entering into another person's mode of thinking carries with it an implicit assumption that multiple views of a system are possible..

Rapport Building and Joint Ownership

The role of *rapport building* in eliciting information, and the importance of *joint ownership* of solutions, was clearly illustrated in the case studies, yet systems analysis texts do not pay much regard to either issue. Previous studies (Guinan 1988, Tan 1989) regarded rapport as an important variable in analyst-client interaction. In other types of interviewing (Dwyer 1992) rapport is regarded as an important element. This case study demonstrated that information processing between analyst and client speeded up after the establishing of rapport. Similarly, the tactic of *joint ownership* ensures that solutions are jointly owned and this is important in ensuring the success of an implemented system.

Systems analysts need to be aware of the role of such tactics in interaction in gaining information and cooperation.

Use of the Concepts of Processes and Information

By consciously labelling processes, information and associated conditions, the conceptualisation of an information system during an interaction could be greatly strengthened. A supporting document (or prop) requiring this identification could be used throughout the interaction. Such a document would have to be very carefully designed so as not to stifle interaction. One of the case studies, used a supporting form to structure the discussion, but it had an unexpected effect on the interaction as the client was not conversant with the concepts therein. An alternative way of using these concepts would be for the analyst to explain to the client how they can be used to build up a joint picture of the information system.

8.4 Further Work

Ideally, the themes, strategies and tactics presented here will be of assistance to future researchers in early requirements gathering, representing as they do a coherent theory of how analysts and clients might approach this complex area. The following suggestions for further work are proffered:

- Consideration of non verbal elements in analyst-communication. This study does not explicitly address the role of non verbal signals and intonation to the development of shared understanding, and as such can be seen as a limitation of the research. The majority of the analysis has been done from transcripts of the data as a practical necessity. However, original sources were periodically checked where the meaning intended by the participant was unclear, in order to gain further information by examination of non verbal indicators or tone of voice. In addition the review of the video tape, itself on video tape, has acted as a further cross check. Halliday (1979) points out that intonation acts as a means of saying different things and that if you change the intonation of a sentence you change the meaning. Non verbal elements are said to comprise 75% of human communication (Dwyer 1992), yet a surprising amount of discourse analysis is done on written words as opposed to spoken words. When dealing with something as complex as human communication, it is difficult to address all elements – the size of the data analysis task probably contributes to this tendency to specialise in one direction or the other. One issue here is that non verbal elements are said to contribute to conversation structure (McLaughlin 1984) and this may be of importance in

professional interactions such as analyst–client conversations where the outcome is important and related to a specific task.

- Further consideration of individual factors such as professional background, gender and organisational experience in early requirements gathering. Giddens's (1984) theory of physical, individual and social constraints may be very helpful in this regard, as demonstrated by Jones and Nandhakumar (1997).
- Further consideration of early requirements gathering as a negotiation. The case studies presented here could be usefully re-analysed to uncover more aspects of negotiative strategies and tactics used by analysts and clients, in particular power differentials in negotiative contexts (Strauss 1978).
- Further consideration of the role metaphors in particular play in early requirements gathering, in particular distinguishing metaphors which help define requirements and increase creativity (Davies & Ledington 1988) from those which are incidental to every day speech and have little meaning.

8.5 Concluding Reflections

To conclude, this thesis has aimed to provide a substantive theory of how analysts and clients approach the activity of early requirements gathering. As with all research, the utility of the theory will be demonstrated by its uptake amongst the IS community and practitioners, and it is hoped that the thesis itself demonstrates both 'rigour and relevance' as put forward as a requirement for IS research (Keen 1991).

As someone who has been associated with information systems for nearly twenty years, first as a systems analyst and then as an academic, it is my sincerest wish that the ideas contained in this thesis find their way into practice. Information systems professionals create meaning every day in a way that impacts on all of us profoundly. Too often the 'conventional wisdom in the field' (Checkland & Holwell 1998) ignores that information systems are founded in the spoken word, and as such, we need to speak wisely and create meanings with care.

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APPENDIX ONE – INTERVIEW QUESTIONS AND BACKGROUND QUESTIONNAIRE

Interview 1 (prior to interaction)

Thank them for participating. Briefly restate the running order and objectives of the study.

1. Is there anything you wish to ask about procedures?

Purpose: To ensure understanding and commitment to procedures, and to put them at their ease.

2. Can you tell me what your thoughts are about this interview with (other participant name)

Purpose: To determine the initial thoughts of the participant about the interaction they will shortly enter.

Interview 2 (post interaction)

1. Now that's all over, can you tell me what your goals were in terms of the task as you saw it?

(An example of a task based goal would be gaining or giving the information necessary)

2. Did you achieve those goals?
3. What prevented you from achieving those goals?
4. In terms of social goals, for example building up a relationship with the person, can you tell me if you had any for this particular interaction?
5. Did you achieve those goals?
6. How would you describe your professional role in interactions such as these?
7. If you were asked to rate how the interaction went overall, on a scale of 1 to 5, those being equivalent to:

Badly (1), Not So Badly (2), OK (3), Well (4), Very Well (5)

How would you rate it?

8. Debrief.

That closes the interview, we are now into the 'debrief' phase.

Turn tape recorder off.

Anything you tell me in this part does not go into the research results. The objective of this phase is to resolve any emotional responses you might have had to the whole exercise before you leave it. The idea is that you walk out of the door feeling as good, if not better, than when you came in. Can you give me both positive and negative feedback about today. How did you feel about the situation you were in?

Background Questionnaire

Client–Analyst Communication Project

Please answer the following questions as fully as you can.

Education

Please indicate your educational qualifications, with dates and discipline/subject areas eg HSC, BSc/BA, Graduate Diploma and any others

Qualification	Subject Areas	Date
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Profession

What is your current job title? _____

How long have you been in this post? _____

Please give a brief account of the activities associated with the post.

Previous Posts

Please describe briefly the previous posts you have held, with dates, and a brief description of the activities of that post, including the most recent.

Job Title	Date	Tasks
_____	_____	_____ _____ _____
_____	_____	_____ _____ _____ _____ _____
_____	_____	_____ _____ _____ _____ _____

Age

Which age category are you in?

20 – 29 _____
30 – 39 _____
40 – 49 _____
50 – 59 _____
60 – 69 _____

Interests

Finally, could you describe your hobbies and interests.

Thank you for your time in filling out this questionnaire

APPENDIX TWO – ANALYTIC MEMOS

Analytic Memo on Actions, Processes and Information

18/1/97

These categories can be seen in the general category of conceptualisation of the information system. A number of difficulties should be mentioned straight off: Firstly, whose conceptualisation are we describing, the analyst's or the client's? As the analyst drives the conversation, one could assume mainly the analyst, as in many cases the questions asked determine the format of the answer. However, the text analysed can be seen as a joint creation of the analyst and client, so can be seen as their joint conceptualisation of the system. Secondly, when analysing the text for evidence of conceptualisation one is twice removed; the participants themselves are discussing abstract concepts which are not always explicitly mentioned in the text, and the researcher also brings their preconceptions about how information systems are structured to the text. This is a problem without resolution in discourse analysis; language is necessarily the surface realisation of concepts. That said, when open coding the transcript, it was noticeable how much of the conversation focused on information, conditions and actions with accompanying formats and destinations. Also, taking a temporal view on how the conceptualisation *proceeds* may also be of interest.

Some observations on relationships in the transcript:

- Information is produced/caused by actions
- Some information is source information, other information is intermediate or output
- An action may or may not have an associated condition.
- An action has an outcome which is generally an information type.
- An action may be part of string of actions, a temporal sequence.

(Ontological dependencies; actions depend on the existence of an information type)

The interaction between Clerical and Computer Systems in Case 1

When trying to draw an integrative diagram covering system(s) and processes, I was struck by the fact that I had no relationship between the clerical and computer systems discussed, when in fact this issue is at the heart of the interaction in case 1, and probably many other interactions between systems analysts and their clients. The relationship I came up with was one of *scope* – how many processes does the computer system cover, and at what point does the clerical system pick up the job and pick up output from the computer system and process it clerically. All through the interaction, one can see the analyst trying to distinguish what is carried out by the database (computer system) and what is carried out by clerical processes and other generic computer systems such as word processing and spreadsheets.

The analyst asks early on in the interaction:

29 “ does the database help you with the assessment of those?”

31 “It’s just to record the statistics basically?”

And the client clearly by a ‘process’ means a computerised process:

34 “ that would be good, if we could get a process”

One quick way for the analyst to start to delineate is to look at where the *storage* of information is located – he asks

39 “ and the sort of information you put into the database, so then you’ve got a list of files that you keep, umm paper records”

So I would deduce that one of the implicit objectives (I can’t find anywhere where it is stated explicitly, the closest being line 7 about ‘improvement’ and line 550 where a process of some sort is offered) is the *extension of the scope of the current system*. I suspect that quite often when an existing computer system is discussed, it is with this underlying agenda, as generally the client wishes to discuss some amendment that constitutes an extra process, and thereby an extension of functionality. Sometimes the amendment may be a streamlining of an existing process. So it is an interesting question as to whether all interactions about existing systems can be characterised in this way, or indeed do they only get to formal discussion if its recognised that the client is asking for something outside the normal scope of the system (perhaps this is seen as a ‘big’ amendment that needs a ‘big’ discussion)

Other references to paper records and generic computer systems and relationships:

89 A “ right, so for.. you get basically I guess like a paper file for each student?”

90 C “ yes, for each school”

100 C “and then a summary sheet which has the consecutive numbers which.. it is an Excel spreadsheet actually”

142 A “..what do you actually put into the database..?”

184 A “ mm what I’ll have to do at some time is to have a look at this database and see, see exactly what information you do have in there”

So for the analyst this distinction about what is held in the database, and what is not, is extremely important. I assume that the relationship between the two is deduced by establishing what information is non computer, and examining the processes which

use particular information. Certainly there is no explicit search for a link, other than making the distinction between computer and non computer (paper) information.
X ref to memo on how analyst builds up picture of information

Agenda Setting as a key to both Conceptualisation and Tactics

AM 5297

The purpose of this memo is to try and clarify a few thoughts on *agenda setting*. Agenda setting has many elements, both conceptual and tactical. It could be defined as the process by which a participant (generally the analyst) sets out the topic for discussion, and sometimes the process for managing that topic. Another way of viewing agenda setting is that it comprises a framework for **conceptualisation** and negotiation (which is a tactical element). Who actually sets the agenda for discussion gives some indicators as to the type of relationship between the analyst and client (cf Hirschheim's four models). There is evidence in negotiation literature that whoever sets up the framework for discussion is at a tactical advantage.

The way the topic is introduced gives many clues as to how the participant is conceptualising the problem. Therefore by looking at how the analyst defines the problem, we can gain insight into the conceptual schema the analyst is using. What is also of interest is if this conceptual schema influences the solution proffered in the conversation. More broadly, the notion of a conceptual schema that the analyst employs can be seen to be important in the design of information systems. For instance, if the problem is narrowly defined by virtue of the conceptual schema, then the resultant design may be similarly narrow in scope. As the design of information systems rests purely on concepts, then the conceptual schema used becomes very important.

In addition, by examining how the client presents the problem, one can judge if differing schemas are bridged in a joint conceptualisation. If analysts recognise the schemas they are applying to an information system, then they can perhaps apply one or a number of schemas that are appropriate for the problem. It may be that bringing in a too rigid conceptual schema limits the solution, and that broader schemas are appropriate. It may also be that a tactic of information gathering, without bringing in a particular schema, might be more successful.

Agenda setting can be seen as a mediating process between tactics and concepts. As such it could be construed as a relationship. It also provides a bridge between structure of the text and the social processes evidenced by the text, thus helping to resolve the structural/processual dichotomy encountered when analysing discourse. As agenda setting contains both conceptual and tactical elements, one can deduce from the text: the concepts that are informing tactics; how the problem is formulated influences tactics; how the tactics used by both participants influence joint conceptualisation.

Possibly agenda setting is the core category of the study – that process of *how* analysts and clients reach agreement (which after all is the research question). Although the term agenda setting implies a starting point, communications research has put forward the notion of topic as a chain of subtopics – this also fits in neatly with the idea of evolving conceptualisation. The rest of this memo will give instances of agenda

setting and its elements, and will discuss how it might play a role in linking concepts and tactics.

Agenda Setting and its elements

In both Case 1 and 4, the analyst outlines the purpose of the discussion and this can be seen as setting the agenda for the subsequent discussion.

Case 1

1 “What I’ve done Sue I’ve drawn up.. a couple of points from when we talked last..when you gave me an overview of the system”

Apart from using a number of personal references in as a tactic construed as joint ownership, this can be seen as putting forward a general *conversation topic* (a couple of points) using a *prop* (I’ve drawn up). This can be seen as a tactic.

5 “Basically what I’ve..got down here is the data base is about keeping statistics ..for a Student Assistance Scheme”

The analyst refers to a *computer term* – the database almost immediately. One could deduce then that then he sees the database of primary importance in solving the problem. Not surprising as presumably he is in the role of someone whose role it is to provide computer expertise. He then outlines the *system purpose* – a student assistant scheme, and the *system function* – keeping statistics.

These codes can be seen as referring to conceptualisation.

7 “Basically we are looking at..how the database works and possibly some points we are thinking about improving”

He introduces the *conversation topic* – ‘we are looking at’ and a *conversation objective* – ‘points of improvement’. These can be seen as tactical statements.

9 “..recording of information”

Here is a *conversation issue*.

10 (client) “ You’ve got by school have you?”

The client makes an (*issue*) *inclusion check* and can also be seen as *negotiation*. This also occurs in Case 4, where the client states that broader issues will need to be considered also. This can be seen as both conceptual (and therefore influencing the agenda) and tactical.

11 “..and the system of applicants and inquiries from public useability recording, just general things we are thinking about as we are going along”

Here more *conversation issues* are listed, and an assurance that general things (see also Case 4) will also be considered, plus a ‘we’ statement indicating that *joint ownership* is desired.

This can be seen as both conceptual and tactical.

13 “but to get to that sort of point ...I need to work out what the actual database does and how it functions at the moment”

Here the analyst states his *problem solving mode* . This can be seen as tactical.

15 “ So we’ll be able to look at.. what sort of changes we can make to improve things?”

Here the *conversation objective* (from the analysts point of view) is repeated, as is the *we* reference (*joint ownership* being requested). Again this is tactical.

Case 4

In case 4, there are a number of similarities and some differences. The differences in my opinion can be attributed to the sex and status of the client, and the type of working relationship that has already been established.

1 “Right what we want to talk about today is the rubbish crates and wheelie bins and garbage bins beginning the next financial year. Now we’ve got two issues, one is that we want to keep track of them and the second one is that we are going to have to start implementing some new charges”

Again, the analyst assumes responsibility for defining the topic. He introduces the *conversation topic*

“rubbish crates.. wheelie bins .. and garbage bins”. Each one can be seen as a *subtopic*. The *conversation objective* is somewhat implicit – presumably these changes have to be made to the system “beginning the end of the financial year”. He introduces *conversation issues* “keeping track.. implementing some new changes”. There are already references to *joint ownership* – ‘we’ occurs 4 times in this opening statement. There are both tactical and conceptual elements. Note that *topic* is seen as tactical, while *issue* is conceptual. One assumes that the unifying structure of a conversation contains both elements (see McLaughlin on issue and context space).

Perhaps the analyst assumes responsibility for the topic because those in the professional capacity of expert advice giver, feel that that they should define in what area they feel they are able to advise on. Also as they have been called in to give advice, so it is probably necessary to clarify at the outset what they think they are giving advice on. *This could also constitute the beginning of *negotiation* on what the agenda is to be.

2 (Client) “Yeah there’s probably a few more issues in it, well there are variations on those issues.

Here the client also performs an *inclusion check*, making sure that broader issues are considered. This could also be seen as the first step of *negotiation* on an *evolving agenda*.

3 “Yeah”

4 “ the first one you mentioned.. keeping track of them is important, because the wheelie bin, the recycling Clarence Council is actually paying for, so we want to know (where) when and they will be issued to the householder..”

The client immediately picks up on the first *conversation issue* and states its *importance*. He gives an *action justification*, and specifies the desired *process*. He continues in the same vein, and specifies precisely the process that will need to take place for crates and wheelie bins (the first 2 subtopics)

5 “so the charging side of it we’ll have to accommodate different volumes of bin and a different charge for correct volume, there might be three different sizes of bin that we use..”

Here the client moves on to the second *conversation issue*, charges, again specifying *processes* and some *constraints*.

A couple of interesting things – the client follows the issues in the order that the analyst introduced them, and immediately offers information on both without prompting from the analyst. This could indicate many things, the status of the client (relatively high) and perhaps an already evolved way of working with each other. For instance, while joint ownership is requested, the analyst does not bother with social niceties such as rapport building – possibly because they know each other well.

Agenda setting in other cases

Case 3

3 “ As a result of you sending a letter to our section, we’ve now arranged this meeting to get together and talk about some of your business processes in your area, and some of the problems you’re having and basically that’s what we’re here to talk about. So if I get a brief background, you have given me some brief indication in your letter, I’d just like to go over them and find out why, more information about what you are trying to do”

Here the analyst makes an *historic reference* to the context of the meeting. The *conversation topic* is identified as ‘your business processes in your area and some of the problems you’re having’. There is a *we* reference ‘what we’re here to talk about’ which could be construed as an attempt to indicate joint ownership. The *problem solving mode* that the analyst proposes to adopt is stated ‘ if I get a brief background, I’d just like to go over them and find out why, more information about what you are trying to do.’ No conversation issues are identified, this seem logical in the light of the analysts problem solving mode of requiring more information.

Apart from ‘we’re here’ there seems little effort on the part of the analyst to gain joint ownership. In fact, the ‘business processes’ and ‘problems’ are very firmly yours, as indicated by the use of you and yours three times. This may in fact be an attempt on the part of the analyst to recognise that the client’s control over the area is not in question, or it could be signalling disinterest on the part of the analyst. (ie this is your problem, not our problem).

4 (client) “Ok. Well, at present.. umm are you familiar with Taric..”

The client again responds with an *inclusion check* – this time checking that the analyst’s starting point of knowledge.

Case 6

This case is very different. Both analyst and client are female. Possibly due to gender differences in style and the fact they have a long standing relationship that is very equal, the client introduces the problem.

4 “So basically we’ve got the same thing again its got to hang off (the system) somehow. So the first thing really is to have a subdivision number, at the moment sub division numbers are consecutive or whatever you call them.. So with our previous sub division numbers you have no idea of the dates of it, so I think we should change the numbering systems like we have done with the others.”

‘We’ve’ here indicates *joint ownership*, probably **already** existing, rather than ‘we’ve’ being used as a tactic to build joint ownership. ‘got the same thing again’ is a *historic reference* to context. ‘It’s got to hang off the system somehow’ – a *problem solving mode* is identified immediately, presumably one that has been used in the past. A *conversation sub topic* is introduced – presumably the conversation topic is known well to both so there is no need to state it – an implicit general topic. She follows with a *problem identification* – that of the dates – and a *posited solution* (in all other cases, the analyst has been the only one to do this). Again there is a *historic reference*, *joint ownership*, and also again a proposed *problem solving mode* (like we’ve done with the others).

How agenda setting gives insight into conceptualisation

Explain here how analyst introduces topic reveals something about conceptualisation and problem solving mode –

Case 1 – ‘what the actual data base does’ – problem of scope?

Case 4 – information gathering

Case 3 – information gathering

Case 6 – applying previous solutions

AM 52971

12.2.97

Addendum to Agenda Setting Memo

This should be read after AM5297.

How problem solving mode, and conversation topic, might give insight to conceptual schemas

Clearly, how a *conversation topic* is defined and how *conversation issues* are put forward, together with the *problem solving mode* an analyst proposes (these things together can be seen as *agenda setting*), give some insight into the conceptual schema is being applied the problem. In order to introduce a topic and propose how it might be handled in a conversation, some prior thought must be given to what the ‘problem’ might be. Therefore, a *problem type* can be seen to exist from the point of view of the analyst. Once the analyst has decided (however prematurely?) that the problem is of a certain type, using the conceptual schema(s) available to them, then, they apply an

initial problem solving mode. One would further assume that the problem solving mode initially applied would either be supplemented with other problem solving modes as information becomes available, or is of such a nature that it is broad enough to encompass the evolving problem (or agenda).

One difficulty with the concept of a *problem type* is that it has to be inferred from the data at a fairly high level of abstraction. However, this is not surprising given that one is trying to deduce a persons mode of thinking from a text. What is clear however is that the *problem solving mode* can be thoroughly grounded in the data, and from this the *problem type* as conceived of by the analyst can be deduced. The *conversation topic*, and how it is introduced, can also be seen as a surface indicator of how the *problem type* might be conceptualised at the outset. Of interest here therefore is whether the agenda evolves throughout the conversation, and whether problem solving modes are adapted or expanded in the light of information gained.

Is agenda setting the core category of the study?

The notion of an evolving agenda clearly points to it being a process – according to Glaser (1978), core categories can be a process. The core category should be a relationship or theoretical code. In this case it is a way of explaining how the relationship between conceptualisation and tactics might operate. Agenda setting could certainly be seen as the ‘main theme’ within the study, in terms of answering the question “how do analysts and clients reach a shared understanding of systems requirements?”. It could also be assumed that this is the main problem for people within the setting; how to process the particular task of reaching a shared understanding of systems requirements. Whether agenda setting is the best label for this process is another question, but as a label it fits adequately for the moment. It could be labelled problem solving, but this would be to take the view that the participants set out looking for solutions to problems, which is not immediately apparent in the case studies or view taken by systems analysis literature, as the early stages of the systems life cycle are typified by information gathering. Certainly by setting an agenda, one is providing both a process for talking about systems requirements and a structure for viewing system issues – this partially resolves the processual/structural dichotomy evident in discourse analysis and abstracted by the previous emergent (core?) categories, conceptualisation and tactics.

By looking at the criteria Glaser (1978) puts forward for a core category, a brief assessment can be done to see if agenda setting is a possible contender for a core category;

1. It must be central and related to as many other categories and their properties. It is central in the sense that it relates well to both tactics and conceptualisation.
2. It must be seen to recur frequently in the data. The fact that it occurs in all cases was how it was detected initially – a unifying concept was needed to explain how analysts and clients handled their conversations.
3. By being related to many other categories and recurring frequently, it takes more time to saturate the core category. It will take time to track in each case study how the process of agenda setting influences both tactics and conceptualisation.

4. It relates meaningfully and easily with other categories. It is meaningful – however – the relationships are not always clear. I like to think that this is due to the difficulty of analysing conversation rather than the label itself. Certainly some concepts of topic management in communications research are hard to grasp; probably because of the level of abstraction involved. The level of abstraction is high because language is only a surface expression of concepts. The relationships are also unclear at this stage as I am still in the process of saturating the category. If too much forcing is involved, then this category should be given away.

5. It has clear and ‘grabbing’ implications for formal theory. Certainly how the agenda is set in one professional work situation may be similar to how it is set in other professional work situations.

6. It has considerable ‘carry through’ – the analysis can be carried through on the core’s use. This would seem to be the case, that the concept of agenda setting enables a way of understanding and analysing the other case studies.

7. It is completely variable – its frequent relations to other categories make it highly dependently variable in degree, dimension and type. Conditions vary it easily, and it is readily modifiable. Agenda setting certainly meets these criteria.

8. A core category is also a dimension of the problem – thus its relationship to the research question is unsurprising!

Another way of looking at agenda setting is to see it as a process of negotiation. Is negotiation too general a term for the process? Certainly people negotiate on the process for both dealing with the conversation and what may be included in solutions; but how the agenda is set seems to be a powerful determinant of everything that comes thereafter, and in particular how the problem is conceptualised. Certainly negotiative elements are present, but are hard to ground.

Stages in agenda setting?

If agenda setting is a process, it should have discernible stages. In a previous paper (1995), the stages of task (conversation topic or agenda), problem framing, interpretation, agreed definition and possible solutions, and final agreement were put forward. Interaction between task, and also interaction between problem framing and interpretation, was noted in a time based analysis of a pilot study. Because of the tendency to process a number of topics, it would not be unreasonable to suppose that these stages are applied to each subtopic, thus resulting in iteration.

Problem type in agenda setting

The *problem type* (as it appears at the outset) can be seen to be indicated by the *problem solving mode* adopted by the analyst or client. Sometimes both the problem type and problem solving mode remain unstated. Here are examples from the cases.

Case 1

“Basically we are looking at how the database works and possibly some points we are thinking about improving”

The *conversation topic* “how the database works” posed from the perspective of the analyst gives a clue as to how he might be perceiving the topic from a conceptual viewpoint.

“But to get to that sort of point.. I need to work out what the actual database does and how it functions at the moment”

So here is a stated *problem solving mode*. It also gives an indication of the *problem type* – the focus being on what the ‘actual’ database does – the problem then is probably one of scope.

(note: check original paragraph on conversation subject from data sources)

This is further confirmed by later remarks:

29 “ does the database help you with the assessment of those?”

31 “It’s just to record the statistics basically?”

37 “ All right, if you could just go through the information you get from schools..

39 “and the sort of information you put into the database, so then you’ve got a list of files that you keep.. umm paper records”

These remarks would seem to confirm that the *problem type* is one of scope, as evidenced by a *problem solving mode* of *scoping* – the analyst is using *information type* – clerical, computer, to distinguish the scope of the database function.

This problem solving mode is fairly consistent;

43 “I just need to get an idea of what’s, what you get from schools and what you actually put into the database?”

55 “Is it the schools that basically do the assessment?”

77 “ So what sort of information do they send back to you?”

85 “ So they, they send that summary of information back to you do they?”

89 “ ..so ..you get basically a paper file for that student?”

This represents the first four and a half minutes of the conversation.

122 “Right OK. so you get a batch summary sheet plus all the application forms?”

124 “And then you assess those and

125 (client) “and then the information is recorded on the database”

142 “..what do you actually then put into the database?”

The problem solving mode seems to shift from *scoping* to *key searching* (note: this happens in a very obvious way in case 6)

152 “OK, so when you put in the summary information you put in, you put in the number, ..does each number.. apply to each application?”

153 (client) “yes it does”

154 “so you sort of have another code number or something for each applicant that gets put into the database?”

161 (client) “It’s not, its not a reference to the stu(dent), the moment it can’t be referenced to any individual student..”

163 (client) “ but we don’t have any student records there, so.. the capacity you know”

(8 minutes)

(Instance of *negotiation*?)

170 “we have to just get through until then”

171 Client “mm, so its an interim solution”

172 “yeah an interim solution..”)

The *key searching* continues

172 “So like each of these applicants have like a numerical or reference number?”

174 “does that get recorded on their application form or something?”

178 “So you can then go back to the paper files and find out which one it talked about?”

APPENDIX THREE – INTEGRATIVE DIAGRAM

(ID 29/9/96)

