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Organisation Development and Successful Information Systems Development

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ABSTRACT

This thesis represents a qualitative study of the Information Systems Development (ISD) process and puts forward the argument that IS development leads to Organisation Development (OD). The thesis argues that an OD perspective should be incorporated into the main ISD paradigm and provide the basis for transformation in the field which is plagued by failure.

The thesis reviews both the IS development and Organisation Development literature and makes connections between the two fields, as in practice they are both comparable activities. With the qualitative framework, Grounded Theory Methodology was used to guide research and analytical activities. We conducted research in 6 large and large-medium sized consultancy firms and in 5 large organisations that utilised non-traditional approaches to ISD.

Fieldwork and analysis resulted in the emergence of an ISD process theory that explains how information systems are developed within the organisational context. The theory provided the basis from which we could more rigorously understand the true nature of IS development and determine the nature of a suitable OD contribution.

In this thesis, the superiority of an OD-informed solution is argued in detail and contrasted to other proposals from the ISD field. The OD contribution is distinguished in: a) formulating an OD-informed ISD approach, we have termed the Total Systems Development Approach (TSD), b) defining a diagnostic model of ISD practice, c) and providing an extensive collection of OD improvement programmes and techniques that have direct application to ISD.

The contribution the thesis makes is also multi-level. At one level we have contributed in rectifying the lack of research in the area of "process" in IS development. In doing so we have provided the basis from which the aspects of the ISD process can be explored in detail. The emergent ISD process theory itself confirms arguments that ISD is a complex socio-technical and organisational process. It highlights aspects of development that have been traditionally outside the ISD paradigm. Our theory helps readdress and challenge a number of elements in the ISD process. The notion of Approach emerges as much more suitable for solving ISD problems than methodology. The role of the ISD consultant also emerges as requiring a range of appropriate consultation modes to deal with intervention complexity. Our results also show that the role of the client is much more involving and demanding than previously assumed.

Another area of contribution is the formulation of the TSD approach which focuses on the development of the total system: the organisation, through IS or system development activities. It is holistic, iterative, it allows flexible problem-solving, collaboration and focuses on change, intervention and reflection.

A final area of contribution is in establishing a link between OD content and IS development. With the advent of new types of development, OD "interventions" have an increasing applicability to ISD situations. The diagnostic model of ISD practice also utilizes an OD-perspective to facilitate diagnosis of organisational failure that leads to IS failure.

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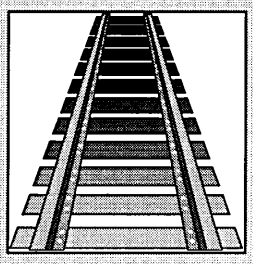


INTRODUCTION

The efficacy of Information Systems Development (ISD) has been seriously challenged following a series of Information Systems (IS) failures, which have concerned many in the field. Most notable in the UK have been the London Ambulance Service (LAS) and the London Stock Exchange's TAURUS systems failures have revealed the field's difficulties in dealing with issues in the organisation arena. This thesis is a result of our interest to explore this phenomenon. The main aims of our thesis are:

1. To argue for the need of incorporating an Organisational Development perspective into the current Information Systems paradigm of theory and practice,
2. To use an OD-informed perspective for developing a sophisticated model of the IS development process, by understanding how Information Systems are *actually* developed within organisations.

As it is has been argued in the literature, the mainstream IS paradigm focuses strongly on providing methodological and technological solutions to problems which although have enjoyed success in the past are proving increasingly limited, (Bostrom & Heinen, 1977a; Kumar & Welke, 1984; Kling 1977; Couger et al, 1979; Hedberg & Mumford, 1975). An Organisation Development (OD) perspective focuses on the organisation as a system to be developed in its own right. Within this viewpoint, IS development can be examined in terms of its contribution to organisational improvement. Like Dos Santos & Hawk, (1988) we do not argue that the current IS paradigm should be completely abandoned —clearly methodologies and technical expertise are still very useful. The solution however cannot, in our opinion, follow the usual critique in the field, which is still raised very much from within the ISD paradigm. Instead, an external OD-informed paradigm shift can transform ISD practice. Such transformation has not been achieved, despite the fact organisational issues are gaining recognition in ISD theory and research, (Lederer & Nath, 1991; Land et al, 1992; Willcocks et al, 1994; Maglitta, 1995; Cannon, 1994), and a number of alternative paradigms have been raised, (Hirschheim & Klein, 1989). Through OD, the way these issues are treated today within the ISD paradigm can be also transformed. Although these issues reveal the complexity of developing systems

in organisations their discussion is permeated from the traditional IS perspective, which to an extent views all problems as engineering problems. As a result organisational issues are identified in a fragmented fashion and their discussion is largely outside the notion of methodology, which renders them as marginal to mainstream ISD. In practice any discussion that does not concern itself with the construction of systems runs the danger of being regarded as cosmetic and of limited usefulness. OD can help change the way organisational issues, but also any issues that deal with ISD complexity, are viewed by linking them together into a holistic framework. Such a framework would provide both the necessary frames of reference for understanding these issues and "hooks" for connecting these frames to methodological and technical practice. Additionally, because OD itself is close to organisations and practitioners, it stands a better chance to be accepted in ISD practice, than alternative radical approaches, (SSM, Ethics).

We were first sensitized to the problems facing ISD while studying for a Systems Development course. Being familiar with OD, allowed us to recognize that a number of issues and assumptions found in ISD failure are characteristic of *Organisational failure*.

In contrast to ISD assumptions, OD is a generic change meta-methodology which uses behavioural science knowledge for diagnosing problems, increasing readiness to change, managing culture and planning interventions that improve organisational effectiveness and human well-being. Every intervention is seen to affect the total system —change in any sub-system causes change to other sub-systems resulting to system-wide change. Organisational activities are seen to be of an on-going nature. OD provides guidance in using a range of techniques, tools and theories for understanding and bringing about change in variety of organisational situations, contexts and issues. Organisational failure assumptions can not easily hold under an OD perspective.

The Subject of Study

Given the above thoughts we decided to research how information systems are *actually* developed within organisations and with the involvement of external ISD professionals. This meant focusing on the nature of the IS development process in a rather holistic

way. This we felt, would allow us to understand the true nature of the ISD process and contrast our observations to OD, which is a holistic process itself.

Such a study was needed as there is a lack of literature that treats the ISD process from such a viewpoint. Work covering smaller aspects of the wider picture exists but is fragmented. We also found little work outside ISD's paradigm of assumptions and practices. Furthermore, while the role of OD has been noted before, (Desanctis & Courtney, 1983; Willcocks & Mason, 1987), its full potential for transforming ISD has not been examined.

Methodology

Our viewpoint required a holistic evaluation of a process within the organisational context, and given that there were a few previous accounts to guide us, the most suitable methodological approach was a qualitative one. Within the qualitative framework we further identified Glaser & Strauss's (1967), Grounded Theory Methodology as a rigorous, iterative, flexible, comparative method that is strongly suited to the study of process and context.

Thesis Outline

In *Chapter 1* observations are made about the nature of the field's difficulties. We examine evidence of IS failure and models offering explanations. At another level, we look at the role of dominant and alternative ISD paradigms in guiding effective and ineffective action. We also examine literature on the role of organisational issues in ISD. The chapter concludes with a presentation of key observations about the nature of ISD and OD's plausibility as arising from the literature.

In *Chapter 2* we look closer at the Organisation Development literature to highlight the field's unique approach and present areas of relevance to IS development. We examine a number of elements such as values, philosophy, models and consultation modes. The chapter concludes with the identification of the areas of OD's potential suitability to ISD.

Chapter 3 presents the research methodology that guided our research activities. The chapter begins with a focused problem definition that raises a number of research questions. The methodological choices and research design are explicated in detail. The chapter concludes with an account of the research's history and complexity.
Following research, *Chapter 4* presents the outcome of research and analytical activities that led to the emergence of key categories and their links. These make up a grounded theory of the ISD process. We explore how the emerged process theory addresses our problem definition and initial expectations expressed in our conceptual model.

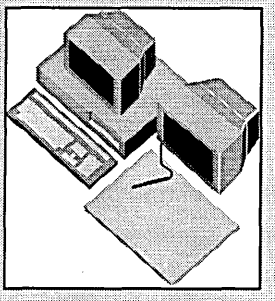
In *Chapter 5* we formulate a number of critical observations about the ISD process. We explore a number of key links to relevant theory, and we examine how our process theory reveals limitations of ISD. We further analyse the emerged theory from our OD-informed perspective. The chapter concludes with a discussion of research findings and formulates a number of implications our research presents to ISD.

Chapter 6 first explores the OD contribution as argued in the relevant literature. Then we examine in detail the OD contribution to ISD by bringing together the work done in the previous chapters. We use insight from the literature, our fieldwork and analyses to formulate an OD-informed ISD approach we have termed Total Systems Development. In the final discussion we show how such an approach may be used and we contrast it to alternative approaches, arguing for its superiority as a viable and desirable solution. In this chapter other forms of OD contribution are examined such as an OD-informed diagnostic model and the application of the OD toolkit of interventions to ISD practice.

The main contribution of this thesis is structured along three dimensions. In a first area we argue for the plausibility of the OD perspective in ISD as supported by the relevant literature from the two fields. In a second area, research and analytical activities help us produce a novel theory of the IS development process which has profound implications to ISD. This process theory expands the view of the traditional ISD process to reveal more of its true nature and complexity. The theory can become the stepping stone for other studies focusing on individual elements of the process or for arguing for transformation in the field. In the third area of contribution, we put forward an OD-informed ISD approach that builds on the insight gained from the developed process

theory and the OD perspective. The suggested approach aims to contribute to the discussion about the needed transformation in the ISD field, as does the thesis on the whole.

Chapter 1



Information Systems Development

1 - INFORMATION SYSTEMS DEVELOPMENT

1.1 Introduction

In this chapter we aim to develop a sophisticated problem definition capable of guiding research activities. To understand IS Development's difficulties we examine the relevant literature at a number of levels. At the level of practice, IS failure cases and models of understanding reveal the extent of the field's problems and reveal the nature of ISD itself. At a theoretical level, the functional and pragmatic paradigms dominate ISD practice and are criticized for their assumptions. Various alternative paradigms have emerged to challenge them, but without acknowledging the reasons behind the strength of their legacy. At the level of ISD research, a growing argument has raised awareness of organisational issues and emphasized the point that ISD is a social as much as a technical process. The picture that emerges indicates that IS development is a form of organisational development. This realization supports the plausibility of an OD perspective in ISD and helps argue that effective paradigmatic change can proceed from such perspective.

1.2 IS Development Practice

Despite cases of very successful IS development projects, it is widely accepted in the field that an unacceptable number of projects experience failure. While some estimates show that half of all systems fail, (Lyyttinen & Hirschheim, 1987; Galloway & Whyte, 1989), others argue that more systems fail than succeed, (DeMarco, 1982; Gladden, 1982; Hunt, 1992; Whyte & Bytheway, 1996). The phenomenon is also experienced at an international scale, (Oz, 1994a; Bowman, 1992; Bozman, 1994; Raheb, 1992). In the UK the failures of the London Ambulance Service's dispatch system and the London's Stock Exchange's TAURUS, (Flowers, 1996), were highly publicized as they involved mission-safety critical systems and huge investments. A number of internal failures, however, go largely unnoticed since there is often no public legal action involved, OZ (1994b). While not all projects are a priori destined to fail, ISD finds increasingly difficult to ensure the success of its projects using its traditional paradigm of thinking and means of developing information systems.

As Abdel-Hamid & Madnick (1990) point out, learning from failures has been limited, partly due to a tendency to walk away from embarrassing errors and partly due to unwillingness to undertake the cost of revealing the deeper lessons from the project experience. In all cases the tendency is not to publicize failure. From an OD viewpoint, in organisations experiencing failure or disaster, individual, group and organisational defenses are raised to protect members from the painful experiences and anxiety that is caused by failure. Although these defenses may be difficult to overcome, adopting an OD viewpoint could be useful in identifying a deeper class of issues that can facilitate learning. For example, the following two failure cases are rich in issues that are not of a methodological or technical nature.

London Ambulance Service (LAS)

A large number of contributing factors surrounded the LAS failure, (Page et al, 1993; Bray, 1993), revealing the multi-faceted nature of failure, (Beyon-Davis, 1995). These factors, consistently with failure reports in general, were not presented in relation to their deeper causes, (Abdel-Hamid & Madnick, 1990). From an OD viewpoint, these factors are characteristic of *organisational decline*, (Cameron et al, 1988). As such we can see why LAS regarded ISD as the only chance for an organisational turnaround, overestimating its capacity to develop systems. LAS's adaptation to its environment was deteriorating as increasing pressure was put on the service to achieve the national response targets and to improve its cost effectiveness. Prior to the ISD effort a number of hasty decisions and a history of organisational pathologies plagued the service, (Mullin, 1993). The decision to appoint an autocratic leader seemed to cause friction and deterioration in the organisational climate and trust. The reported pathologies included a demoralized workforce, a climate of mistrust and a polarization between management and staff, (Page et al, 1993). Leadership is accused of shaping a culture of 'fear of failure' and of pressure for success (Flowers, 1996). 20% of LAS managers were made redundant resulting in a reduction of managerial resources within the organisation.

Decline seemed to be evident before any ISD project began and increased dissatisfaction created a strong desire to improve things as quickly as possible. The intensity of this desire meant tight time-scales, selection of the lowest bidder and abandonment of many good practices: testing, quality assurance, project management, user and stakeholder

involvement, (Bray, 1993). Ironically when system development was introduced it caused additional problems well before the system was delivered. Management appeared to overlook them in a mixture of defensive behaviour and hoped that once the system was installed these would go away as well, (Page et al, 1993).

It can be argued that LAS was an organisational failure that was ultimately responsible for IS failure. LAS seems to have found itself in a vicious circle of self-fulfilling prophecy: everything management did was not trusted, and everything staff did was seen as an attempt to sabotage development. However, we feel that the organisation as a whole was responsible, not simply its management or the users. While management, (Flowers, 1996), and the developer, (Bray, 1993), have been blamed, responsibility should also be attributed to the authority managing the service that decided autocratic leadership was needed in the first place. One cannot blame the developers completely either, as they were selected although it was obvious their size and inexperience was an issue, (Page et al, 1993).

Interestingly, methodologies and technology could not ensure the success of the project, but also clearly did not contribute to its failure. We believe that an OD perspective adopted by either management or the developers could have helped avoid failure by considering organisational issues rather than development issues.

London Stock Exchange (SE)

In the failure of SE's Taurus system the role of the organisation in IS development overshadowed the role of ISD professionals. It showed that the nature of the organisation influenced directly how systems are developed —even when external professionals are involved. The very same principles used in running the organisation seemed to be applied to running the project creating a legacy of "development by committee", (Flowers, 1996). The project run with little feedback on its progress. The context in which the SE was operating became too the context of Taurus as IS development had to deal with conflicting interests, numerous external stakeholders and a politically sensitive environment exactly as the SE as an organisation had to do, (Duffy, 1993; Anonymous, 1993c). The organisational context seemed to be never peripheral and 'out there', but constantly centre-stage. The ISD effort demanded

addressing the very same issues the SE had to address and which were reported ultimately at the root of the Taurus failure, (Bose, 1993; Currie, 1994). While the SE was not in decline, Taurus forced threatening changes and the examination of issues the SE was clearly not prepared to examine. Many argued publicly for the danger of the SE loosing its international status, putting in jeopardy the role of the City as a financial centre, (Bose, 1993; Anonymous, 1993a). An OD perspective, adopted by either management or the developers, could perhaps have enabled a more sophisticated diagnostic study considering not only feasibility, but the nature of the particular organisation, its environment and it own approach to managing projects and complex activities.

Given the extent of IS failure, a number of explanations and models for understanding IS failure have emerged. These sophisticated models reflect the complexity of IS development and reveal its social nature. One of the first studies, examines failure in terms of ignoring a number of organisational behaviour factors arguing for the first time for the importance of organisational variables in ISD, (Lucas, 1979). Lyytinen & Hirschheim (1987), comprehensive study has mapped the main types of IS failure found in the empirical literature. In their framework failure occurs when the IS fails to meet its design objectives, (*correspondence failure*), when the users maintain low or non interaction the IS, (*Interaction failure*), when the IS overruns its budget or time constraints, (*Process failure*), and when the IS does not meet stakeholders' expectations, (*Expectation failure*). To these types Sauer (1993) adds *Termination failure*, when developmental or operational activities stop, leading to stakeholders dissatisfaction due to the limited provision of service by the IS. We also like to add the case of *Organisational failure,* when the organisation's ineffectiveness causes the failure of systems development and the IS. This type of failure was, as we saw, evident in the LAS and SE cases.

Apart from the last three failure concepts, the aforementioned types adopt a highly rational view of IS failure which is limited in capturing the complexity of the phenomenon. For the Expectation, Termination and Organisational types, failure is seen emerging out of a problematic situation within which a number of stakeholders exist, (Lyytinen & Hirschheim, 1987). Sauer, (1993) for example identifies a number of

problem areas and the systemic nature of failure which views the IS, the project organisation, and its supporters as forming a cycle. All three models recognize organizational stakeholders as important in determining what constitutes success or failure. Stakeholders are organisational members or groups that have an interest in the outcome of development. As a consequence, these models implicitly view IS development as socio-technical in nature.

The socio-technical viewpoint recognizes that problematic situations exist within the organisational context. This renders failure as multi-dimensional because problematic situations have many different aspects by which stakeholders formulate expectations about systems development, (Lyytinen & Hirschheim, 1987). In their framework, Poulymenakou & Holmes (1996), identify a number of contingent variables at a macro (organisational context) and a micro level (project processes) that represent different areas of problems. However, as these problems can be even more varied, the study of failure, and ultimately of systems development, requires a systems approach which adopts a holistic perspective taking into account the emergent properties and partiality of understanding the problematic situation.

The "failures method", formulated by Spear (1976) and revised by Bignel & Fortune, (1984) and Fortune & Peters (1993; 1995), is such a meta-method for the study of systemic failure. Failure itself is a system that is compared to a purposeful formal systems model and with other failure paradigms operating without failure. The method works in a creative, interpretative and iterative fashion as the analyst uses systems concepts and techniques to analyse the wealth of information around failure.

Implicit support for the notion of a failure system can be found in Turner (1994) who argues that pre-failure signals accumulate until a crisis turns them into a failure. The factors responsible for failure are significantly social, administrative and managerial, rather than technical. Preconditions for failure, also termed 'pathogens' involve a multiplicity of minor causes, misinterpretations and miscommunications that are not resolved until they emerge as failure.

Davis et al (1992) also recognize the systemic nature of failure and have suggested a diagnostic framework that views the technical system as an intervention into an already existing social system. As such the characteristics of the technical system are the results of social processes in which key actors make and implement system development decisions.

The above models of IS failure are important for our problem definition and the study of IS development itself. All of the above models view IS failure, and therefore ISD, as a complex, systemic, emergent, socio-technical and organisational phenomenon. Unfortunately, the same is not the case with ISD methodologies. While IS failure emerges as complex and difficult to get to grips with, IS development is expressed in well defined terms, procedures, and processes. So much so that this "textbook approach" is said to reflect a romantic and simplistic idealism, (Beyon-Davis, 1995). Such a view is inconsistent with the way organisations, groups and individuals operate and how problematic situations are dealt with.

The theoretical solutions for resolving and avoiding failure, argued by the models themselves, argue for a comprehensive, flexible and holistic systemic approach that differs considerably from mainstream IS development methodologies. OD, like the failures method, is such an approach that can be applied towards both the study of organisational failure and IS development.

1.3 The nature of ISD Thinking

Failures indicate that there is a great divide between how information systems are developed and the true nature of the organisational context and situation. To understand why ISD thinking cannot meet the requirements revealed by IS failure we need to access the core understanding of fundamental assumptions which guide practical action. The content of such understanding varies and is organised in different ISD paradigms. According to Burrell & Morgan (1978), paradigms organise assumptions about:

- *ontology,* the nature of information systems,
- *epistemology,* what constitutes warranted knowledge,
- *methodology,* the process or activities of development, and

- the *role of humans* in information systems and their development.

Through these assumptions ISD paradigms represent different ways of answering the question: *what is an information system and how to develop one.* Paradigms guide practical action whenever the above question is posed and therefore ineffective IS development is also linked to certain paradigms and their weaknesses. The discussion that follows explores ISD paradigms and identifies the ineffective assumptions of ISD thinking and practice.

The distinguishing feature of paradigms is an unequivocal belief concerning the nature of information systems. Towards such a distinction the traditional social sciences debate between objectivism versus subjectivism permeates ISD paradigms. Wood-Harper & Fitzgerald (1982), identify the **Science** and **Systems** paradigms, similar to, Chekland's (1981), distinction between "hard" and "soft" systems. This dichotomy is important in IS development as the Science paradigm is the field's main tradition and largely responsible for ISD's character. The Systems paradigm has emerged to challenge such legacy.

In the **Science** paradigm, information systems are seen to be *structurally complex* entities with a large number of interacting parts. While these parts may be structurally complex themselves, they are ultimately made up of simple elements and interact through simple identifiable relationships. Information systems can be observed independently by the analyst, without disturbing them or changing irreversibly the nature of their elements or their relationships. Successful information systems in the Science paradigm, are those systems that perform required tasks in the most efficient and economic fashion. These systems optimize their performance and operation under various constraints imposed on them. They are also characterized by structural soundness and reliability.

Checkland metaphorically terms these systems as "hard", because they are based on the belief that real-world problems can be expressed in terms of a "*gap*" between a present state and a ideal state, with an availability of alternative ways of reducing it. As such the Science paradigm is an expression of functionalism under which systems development is seen as instrumental reasoning, (Hirschheim & Klein, 1989). This paradigm adheres

to the economic principle and exhibits a preoccupation with means, as opposed to ends, in the development of systems. Systems design is a technical process where systems are developed to achieve organisational goals in a rational, formal, measurable and predictable way. The analyst as a technological expert needs to understand the various parts and elements, their structure, their exchanges and how they best fit together to build systems.

Underlying hard systems thinking is a view of reality being systemic in nature requiring systematic methodological approaches, (Checkland, 1992), based on a set of rules and procedures that are constantly refined until they come to express the proven best process of development. Examples of such methodologies are structured methods like SSADM, Information Engineering, SSA. Information systems themselves are envisaged in terms of the "machine" metaphor and IS Development in terms of "engineering".

In the **Systems** paradigm, information systems are *interactionally complex* entities having a large number of complex and indistinguishable interactions with their environments. The complexity and extent of interactions determine the system's behaviour. This behaviour has emergent properties due to the synergy created from complex interactions. Systems need to be understood holistically and systemically: the analyst is himself participating in the complex interactions and forms perceptions rather than observations about them. It is also impossible for anyone to decompose a system in order to observe its basic elements: the very process of decomposition changes the nature of what is observed. The successful development of such systems requires understanding of interactions and interpretations amongst the various actors, (Murray & Willmott, 1992). The best systems are those that interrelate in an effective and meaningful fashion with other systems and stakeholders in their environment. Such systems may be termed "Soft" because they represent human-activity where desirable ideal states cannot be taken for granted or are simply not known, (Checkland, 1981). The Systems paradigm views ISD as a facilitation process, (Hirschheim & Klein, 1989), arguing that there isn't a single reality, but different perceptions of it. The analyst is a facilitator that interacts with organisational actors in their efforts to find out which system makes sense. The authors point out the fact that there isn't a good or bad system as belief to a particular solution is more important. ISD is ultimately seen as a process of socially constructed meaning, bringing this paradigm in antithesis with functionalism.

In the Systems paradigm, the analyst and other entities exist in constant interaction, where one entity influences and is influenced by others. The analyst has to systemically assess whether he and the various entities involved interact effectively with each other. This is determined by examining assumptions, outcomes of actions and behaviours. The analyst identifies various principles and processes of effective interaction. These may take the form of a methodology such as: Soft Systems Methods and true Evolutionary Development Methods. Systems paradigm approaches regard information systems as being many things at the same time and IS development as a "hermeneutic" process, i.e. a process of interpretation and explication of meaning.

As we noted, the Systems paradigm has emerged as a critique of the Science paradigm. Viewing information systems as machines ignores important human factors. As Murray & Willmott (1992) argue:

> "Analysing systems development as if it were equivalent to a mechanical, or even an organic, process is seen to exclude an appreciation of key, constitutive elements; namely meaning and power.", (87).

In traditional ISD, meaning and power are considered management's responsibility. In contrast, methods in the Systems paradigm these issues can be dealt with by involving human actors directly in the development process.

A second observation is that the Science paradigm is the tradition in IS development and the most dominating of the two. The assumptions of the Science paradigm are deeply rooted in ISD thinking and practice:

> "One seemingly common assumption ,..., is that ISD can be thought of as a largely rational and mostly technical process, undertaken with the help of certain well-tried and proven tools and techniques, which is founded on the tenets of classical science." (Hirschheim & Klein, 1992:235).

Its legacy has its origins in the beginnings of the field when ISD was an elaborate technical task that only highly skillful technicians could handle, (Crinnion, 1991). Technological improvements, experience, education and standardization have reduced the complexity of IT increasing both its applicability and its use by non-technical people. One only has to think of the progression from early mainframes to personal computers. The first required a number of technical personnel for their operation and maintenance. The latter can be operated and maintained by an informed or even interested end-user. Despite however the technological progress, the legacy of

engineering and building information systems has remained. Behind the Science paradigm's dominance lies preference by organisations. For example, organisations first perceive information systems to be complex machines requiring Science approaches to be adopted for their development.

Both paradigms are capable of guiding successful action if used within the appropriate context. For example, a Science approach is most appropriate to a situation requiring the solution of mechanistic-functional problems. There are however paradigms that go some way to recognize a range of different contexts and which may organise several paradigms together. One such example, identified by Hirscheim & Klein (1989), views ISD as a process of social therapy aiming at achieving the ideal of *Rational Discourse* which sees ISD inflicting changes on organisational life, while social influences constrain the rationality of such changes. Two social arenas are identified: *work*, providing sources of livelihood and *language use*, that provides the establishment of mutual understanding and engagement in "emancipatory discourse". ISD is a process that discovers knowledge in these areas. In the work arena, there is a technical knowledge interest which can be pursued in a functionalist fashion. In the language use arena, the analyst can use interpretative techniques such as Hermeneutics to acquire knowledge about mutual understanding. In the process of emancipation the analyst facilitates the development of systems that allow a wide debate on issues and problems, and support the sharing of objectives and the policies for achieving them. In effect the analyst acts as a social therapist and emancipator intervening in a social system, aiming at bringing together different stakeholder groups. The development process removes barriers and distorting influences that prevent rational discourse.

The acknowledgment of the context of IS development is reflected in the identification of the social arenas of work and language use. The interplay between concerns in these two arenas is characteristic of the context in which IS development concerns emerge. This paradigm argues that successful IS development must come from successful intervention in the social system. This intervention is not necessarily of an ISD nature, but can also be of a social nature (e.g. emancipation). This paradigm acknowledges that what happens in the context determines what happens in the foreground of development and uses this to make choices between alternative courses of action. In doing so it is really a meta-paradigm.

Meta-paradigms highlight the distinction between isolationist and pluralist thinking. Science and Systems paradigms are isolationist or essentialist because they argue that their single perspective of thinking should prevail, (Jackson & Keys, 1984; Alvesson & Willmott, 1992). Other thinking may be considered, but in a less favourable manner. For example hard systems are seen as a special case of soft systems. On the other hand, pluralism regards all points of view as making a contribution to understanding reality because no single theory or viewpoint is seen capable of fully understanding complex reality, (Flood & Jackson, 1991a). Pluralistic paradigms, like Rational Discourse, utilize a number of different perspectives in egalitarian terms. Depending on how paradigms utilize these perspectives we can distinguish between Complementarism and Pragmatism.

In Complementarism, theoretical and philosophical assumptions must be well understood before deciding the appropriateness of various paradigms and their effective combination, (Flood & Jackson, 1991a; Deetz, 1996). In doing so, one paradigm can complement another, since strengths and weaknesses are recognised and understood. For example, Hirschheim & Klein (1989), argue that while all paradigms have their weaknesses they only way to overcome them is to understand their alternatives and study their philosophical underpinnings. The analyst may mix methods, techniques and tools but he does so in a theoretically consistent manner. The mix is carefully put together to build on the emergent strengths of the combined elements as no single approach is always appropriate, (Watson & Wood-Harper, 1995). This theoretical orientation enables and forms the basis of validation, reflection and learning. Methodologies in this area provide a theoretically consistent framework for building on the strengths of a number of individual methods. Examples are: Sociotechnical Design, Multiview, and Total System Intervention.
Complementarism views information systems too as being many things at the same time, but with the possibility of being partly a complex machine and partly a web of social interactions. Developing such a system, IS development must include elements that deal with both metaphors by becoming a flexible problem-solving process. It is interesting to note that OD can be placed within this paradigm.

In Pragmatism, theoretical and philosophical assumptions are overlooked as techniques and methods are validated in terms of what is needed and what works in practice. In fact theory is considered just another kind of practice, and theories are used as practical tools themselves, (Coyne, 1995). If a technique or method fails to produce desired results it is abandoned, irrespective of its sound philosophical underpinnings. Paradigms, methods, tools and techniques are mixed in ways that may appear to be theoretically paradoxical. Use of theory to support mixing is, if any, minimal and usually takes place afterwards for justification only. Pragmatism's multiperspectivialism has been accused for producing shallow readings of different situations and unsophisticated use of alternative options because it ignores fundamental theoretical assumptions that have hidden qualities, (Deetz, 1996). Information systems are seen as tools themselves and IS development is a process of fixing and building. IS Development activities are largely seen as a response to crisis.

The pragmatic analyst has to identify and deal with the practical concerns in which systems design is immersed, (Coyne, 1995). Technical problems are not as important as overcoming the practical concerns of the human context. The analyst utilizes a toolbox for solving a variety of practical and technical problems. As such toolboxes grow they may be included in a methodology which would also contain recipes, tips and practical lessons from previous experience. Such examples are most of the methodologies marketed by ISD consultancy firms. This paradigm also includes IS Development where no formal methodology is used.

Pragmatic development is also dominating IS development. In fact most organisations developing ISs have utilised this paradigm in their early days of growth as they strove to move towards the Science and Functionalist position. The pragmatist way of working is very appealing to those who use it. The lack of a theoretical basis makes it suitable for rapid development and experimentation. It emphasizes a "get on with the job" attitude which allows skillful people to concentrate directly on the problems at hand and produce impressive results. Pragmatism is also capable of producing systems that directly reflect the unique character and culture of a particular firm —a property which is highly desirable in strategic information systems, (Ciborra, 1992). It can be however a risky

strategy offering short term gain for general IS development. Without consistent theoretical underpinnings, interpretation, communication, analysis and learning can become problematic. The organisation and ISD professionals do not learn from mistakes and there is nothing to prevent errors from happening again. Pragmatism is successful in delivering the quick fix but misses the wider picture. As organisations grow and mature they introduce formality in order to build on what has been learned in the past and in order to plan for the future. Science approaches in IS development are introduced which are compatible with the functionalist-economic approaches to organisational functioning and development. This defines a cycle between the Science-Functionalist paradigm and Pragmatism. Alternative paradigms have been caught up in this cycle and aim to challenge it. However, they fail to recognize that the strength of both paradigms' domination comes from their compatibility and appeal on organisations and their management. Simply resolving the objective-subjective dilemma is not enough, but may have also been somewhat misleading, (Deetz, 1996). Challengers may have to accept the possibility that all current and new paradigms are useful and have their place within ISD. The ISD field has long ignored the role of organisations in influencing its destiny. Today it is changes in the business environment and organisations themselves that determine priorities in both the areas of technology and ISD —rather than technologists. Characteristically, many businesses have discovered that technology alone cannot ensure the success of information systems, (Allen, 1982), and many valid ISD approaches are met with reluctance by organisations, (e.g. SSM, Ethics, Full Evolutionary Methods). By contrast, apparently less theoretically convincing approaches enjoy a phenomenal success (e.g. Business Process Redesign, Downsizing/Client-Server). The organisation should be the focus in understanding the complexity of the fundamental ISD problems, as it creates most of it. Information systems cause the total organisation to develop through the organisation as medium of development.

An OD viewpoint in ISD would enable the field to deal with such complexity. In a complementary fashion and in alignment with organisational reality, this would allow the identification of both what is structurally complex in the organisation, (e.g. structure, production process), and what is interactionally complex, (e.g. group performance, culture), and facilitate choice of the most appropriate approach.

The implications for developing our OD-informed perspective are that any paradigm-shift must take into account the ISD tradition and preferences of organisations as well as the difficulties of organisational reality that affect development activities. OD, located in the complementarist paradigm, is not an critique of any particular paradigm, but can be used to help determine appropriate choice of paradigm. It is difficult to facilitate a paradigm-shift from an isolationist position and a pluralist position must understand what happens to organisations. OD's position can deal with the criticisms of the dominant ISD paradigms without loosing its appeal with organisations.

Concluding this section, we need to note that the identification of discrete paradigms is an arbitrary conceptual division of thinking, despite claims made by their proponents. As Jayaratna (1994), argues "the world is neither soft or hard, it is we that have chosen to view it as such", (208). The combination of functionalism and pragmatism in ISD is deeply embedded in ISD values and therefore difficult to change. The discussion of paradigms is important for the understanding what requirements are posed on a plausible OD solution.

1.4 Organisation & IS Development

Understanding organisational issues is important for both OD and IS development. From our OD perspective, these issues indicate that IS development and organisation development are comparable activities. Organisational issues are important both in ISD and OD. While OD deals with them more effectively, ISD practice largely ignores their importance.

A number of researchers have studied aspects of organisational reality that influence ISD activities and processes, (Lederer & Nath, 1991; Land et al, 1992a; Willcocks & Margetts, 1994; Maglitta, 1994; Cannon, 1994). The outcome of this effort is the appreciation that ISD is not solely a technical process, but quite significantly a social one, (Hirschheim & Klein, 1992; Myers, 1994; Kling 1980,1982), or social-organisational one, (Land et al 1992a), which takes place in an organisational setting, (Newman & Robey, 1992). Information systems are themselves seen as social systems

relying on IT for their function, (Land & Hirschheim, 1983). This is important as the organisation too is a socio-technical system. As such information systems need to be contingent to very nature of the organisation, (Hedberg & Jonsson, 1978; Markus & Robey, 1983). The study of organisational issues is a result of the problems evident in failures and of the types of problems arising during implementations of systems in organisations, (Wood-Harper & Corder, 1988). The following research areas explore aspects of the socio-technical nature of IS development and together show how IS development relates to organisational development:

- Power & Politics
- Conflict
- Culture
- Organisational Structure & Design
- Organisational Change
- Business Environment
- Technological Changes
- Consultant-Client relationship
- Socio-Technical Systems

1.4.1 Power & Politics

The social system provides a number of mediums and resources of development through which IS development takes place. One such medium is power, (Murray & Willmott, 1992). The recognition of power has drawn attention to the political nature of IS development, (Davenport et al, 1992; Keen, 1981; Markus, 1983; Markus & Bjorn-Andersen, 1987; Newman & Rosenberg, 1985; Markus & Pfeffer, 1983; Turner, 1982). IS development takes place within the context of a political arena where various parties have vested interests and are willing to influence the outcome of development according to those interests and the power they maintain. In the organisational context, individuals and groups may compete for sparse resources or for maintenance of their status, (Bjorn-Andersen & Hedberg, 1977). In the IS development process, users may resist development that is seen to threaten their jobs, the status quo or familiar methods of working, (Hirschheim & Newman, 1988). ISD professionals may exercise power over users during development, (Markus & Bjorn-Andersen, 1987). Information itself also

has and helps sustain power. Davenport et al (1992), argue that information is an organisational "currency" which can be exchanged in order to maximize the welfare of individuals or groups. Understanding power and politics is essential to successful development. Many failures of ISs can be seen in terms of political failure, for example when adequate top management support is not secured, (Newman & Rosenberg, 1985). While power and politics may influence an IS development effort, IS development itself may introduce changes to the management power structure, (Bjorn-Andersen & Pedersen, 1980). This shows the systemic nature of IS development and the recursive relationship between the social and technical system. It is interesting to note that power and politics are not unique to ISD, but originate in the organisational theory literature. Any activity that develops the organisation has the potential of disrupting the political environment. Power and politics show that IS development is such an activity.

1.4.2 Conflict

Related to the above issues is the phenomenon of conflict which is endemic of most social activities. IS development is open to conflict arising as diverse individuals have to work together to solve complex design problems and take important decisions under time and resource constraints, (Robey & Farrow, 1989; Newman & Noble, 1990). Conflict, however, should not be always resolved. At the appropriate levels constructive conflict may stimulate creativity and problem solving. On the other hand, destructive conflict prevents individuals and groups from accomplishing any work by reducing co-operation and team-work, (Robey & Farrow, 1982). Conflict also shows that IS development may introduce constructive or destructive conflict that may have wider implications for the organisation's effectiveness which, as we saw, has further implications for IS failure.

1.4.3 Culture

The *Culture* of an organisation is also another important medium of development. A computerized information system may challenge cultural norms by being perceived as de-skilling expert users and in some cases threatening professional cultures within the organisation, (De Salabert & Newman, 1995). This shows that ISD and information systems are not free from symbolic value and have to be culturally compatible with the

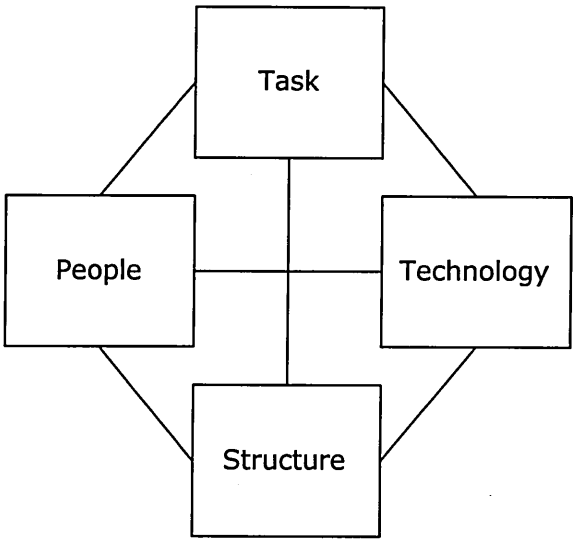
organisation. However, the ISD paradigm ignores the medium of culture. Cultural diagnostic information needs to be acquired through traditional information requirements determination activities, (Leifer et al, 1994). Leifer terms this as "deep structure" information, which includes values, norms, beliefs, value-judgments and theories-in-use. Traditional methodologies are not designed to elicit the class of information revealed by exploring deep structure. This important in ISD as users may reject a system that does not take into account the unobtrusive aspects of the organisation by focusing only on the expressed and formal rules and procedures. Culture is also important when facilitating organisational reengineering through IT implementations, Cooper (1994). Change can be inhibited by organisational inertia rooted in cultural conflict. IT implementations need to take into account cultural issues to adapt IT implementations and avoid failure.

Cultural issues bring forward the realization that there is another deeper level of issues of importance. These issues require a more facilitative, group based, and loosely structured approach which would allow flexibility and discovery. Leifer (1994) proposes a technique called focus group which has its origins in group therapy methods. This technique stems also from organisational theory and is within OD's expertise.

1.4.4 Organisational Structure & Design

The impact technology has on the organisation has been first acknowledged in ISD research and theory mostly through Leavitt's (1965) diamond model. Through this systems model technology interrelates with tasks, people and structure. Organisational structure may be changed in response to IT-related change and vice versa.

Figure 1.1: Leavitt's Interacting Variables Model



• People	management and workforce
• Technology	tools and techniques used in pursuit of the task
• Structure	pattern of authority, responsibility, communications and workflow
• Task	the reason for the organisation's existence
• One variable can be changed deliberately in order to bring about desired changes in the other variables. • Changes to one variable may lead to unanticipated and undesirable changes in the other variables.	

This model highlights the link between IT/ISD and the organisation. It puts forward the argument that IT-related change cannot happen in isolation and can introduce change to the rest of the organisational elements, the people, the organisational structure and the nature of the tasks undertaken. Organisations take advantage of the ability to restructure through the power of electronic integration that is possible by IT, (Benjamin & Scott Morton, 1988). IT-related change can have implications for the very form the organisation takes. IT has enabled completely new organisational designs, (Lucas & Baroudi, 1994). Advanced IT is also expected to change or set new criteria for determining the effectiveness of organisational information systems, (Huber, 1982), and put pressure on IT executives to learn change management skills, (Benjamin & Blunt, 1992). Despite its impact, we need to note that IT and IS do not universally cause structural change in every organisation, (Robey, 1981). When they do their impact is usually consistent with a wider organisational effort. For example, the main vehicle to facilitate changes to organisations recently has been Business Process Reengineering which values innovation and transformation of ineffective organisational, (rather than

IT), processes, (Hammer, 1990; Davenport & Stoddard, 1994; Davenport & Short, 1990; Davenport, 1993). It is also possible for effective information systems to achieve a fit with the organisational context, (Markus, & Robey, 1983). However, such is a fit is also necessary in some cases to achieve increased competitive advantage that transforms they way a firm operates in its market, (McFarlan, 1984).

So far we see a number of organisational aspects affected by IS development and we see the disruptive potential it has on the organisation at a number of levels: power, the political arena, conflict, culture, structure and organisational design. These areas are essential in all forms of organisational development and consulting. In all of them ISD exhibits weaknesses that an OD viewpoint could eliminate.

1.4.5 Organisational Change

For a number of theorists and researchers IT and ISD-related change is considered a special case of organisational change, (Eason, 1988; Alter & Ginzberg, 1978; Hirschheim & Newman, 1988; Keen, 1981; Lederer & Nath, 1991). Social change is seen introduced to an organisation as a result of technical change, (Robey & Farrow, 1982). This is quite important as the particular social system on the whole may not be prepared for the system-wide ramifications of IS change. In some cases information systems have delayed necessary organisational changes, (Hedberg & Jonsson, 1978). As Keen (1981) argues, many technically successful information systems are actually organisational failures. For the author, organisations are not as rational as they appear to be or considered by ISD professionals and their methodologies. Organisations are political arenas where negotiations, rules of thumb and "muddling through" are exhibited. Managerial decision making processes are multifaceted, emotive, conservative and only partially cognitive. Human information processing is simple, experiential and non-analytic. Furthermore, information and data are for many organisations a central political resource around which conflict of interests occur. Dramatic change will be avoided in favour of incremental, facilitative and remedial decision making processes. ISD assumptions about change may come into direct contrast with organisational values about change. The above picture renders ISD an intensely political process which needs to be examined in terms of organisational

change. Social inertia, resistance and counter-implementation can be expected and must be managed by the ISD process.

Current ISD approaches have an indeterminate position towards managing organisational change. Even evolutionary methods pay no special attention to organisational change. Resistance to IS development may be heightened because they value high user involvement while largely ignoring organisational change issues. Without the appropriate consideration of organisational change issues, user involvement is not always beneficial or even appropriate, (Newman, 1989). From OD's perspective, it is fundamentally important to assess the readiness of change of the particular organisation or social system before engaging into disruptive development activities. Resistance to change, from a system that is not ready, is seen in ISD as irrational behaviour, (Hirschheim & Klein, 1992), but is important diagnostic information which OD always pursues, (Cummings & Huse, 1989).

Overall organisational change is an important area in ISD because it provides a link between all the organisational issues discussed so far. Change may initiated for a number of reasons: power structure, cultural norms or the organisation's design. Change is a systemic concept as the organisation is a system itself. As such organisational change is systems change. In OD this is a fundamental principle which separates it from other forms of organisational consulting. Organisational change is at the heart of OD and future expectations for ISD call IT management to understand more of it, (Benjamin & Blunt, 1992). Through OD, IS development can understand organisational change and thus effectively explore organisational issues.

1.4.6 Business Environment

The business environment within which organisations operate is in continuous flux and transformation. New forms of organisation and new collaborative agreements emerge putting pressures on ISD. The current competitive environment demands organisations to respond immediately and on a global scale. ISD will be required to deliver in a much shorter scale, much more effective systems that will make the difference for an organisation. Long development periods are becoming less and less acceptable as the

business environment changes faster than before. RAD methods have emerged to deal with this situation. IT will become a strategic competitive advantage:

> "The new challenge is to harness IT to tap the core competencies of the corporation, creating new information and knowledge... If firms can build similar platforms and access the same data, the competitive advantage related to IT can only come from cognitive and organisational capabilities for converting such data into practical knowledge for action.", Ciborra (1992:289).

This quote shows that IT and ISD will not simply be technical installations of systems. For an IT-based competitive advantage, the development of systems will have to be closer to the organisation's core capabilities. The complexity of the business environment shows the importance of the organisation as the focus for understanding requirements posed on ISD. New ways of developing systems will be needed in the future as traditional methodologies are unable to get close to the organisation.

One such attempt is BPR which has provided a specific context of IT development within the organisation. BRP provides organisations with a business road-map to IT. It has managed to place IT in a suitable business-organisational "wrapping" that makes it very popular to organisations. However, due to its panacea status and its rather simplistic theoretical framework, it has recently run into some difficulty, (Mumford, 1994; Davenport & Stoddard, 1994; Cafasso, 1993; Moad, 1994). As with any solution, we feel the key issue is that IT/ISD within BPR must be:

> "...used for the right reasons: to increase flexibility, to improve communication, and to integrate different functions and organisations. It is deployed to provide specific capabilities, not just because it exists. But skills like process analysis and teamwork seemed more critical for the design and implementation of radically different business processes than the power of information technology itself.", (Dixon et al, 1994:105)

We note the importance of approaches providing a business-organisation context to IS development. OD can be utilised to provide such context as it is already responding to changes by offering to organisations development processes that suit challenges from the business environment.

1.4.7 Technological Changes

Improvements in technology have resulted in hiding the structural complexity of information systems. As technical expertise is encapsulated in technological solutions,

the interactional complexity of human activity systems is exposed. When technological solutions were structurally complex, end-users had limited ways of interacting with the systems themselves or with other users. Improved technology causes an "interactions explosion" by offering new mediums of interaction for systems and people. We need only to think of e-mail, the Internet / Intranet, Groupware, Virtual Reality Systems and Expert Systems. While the user is still unable to intervene into the structure of the system, he can change the behaviour of the system by interacting with it. Technological improvements bring the end-user closer to the information system.

For these kinds of new systems the use of incremental socio-technical, participatory and collaborative methods are most appropriate, (Grudin, 1994), rather than traditional methodologies. Already tools like desktop RDBMs, data warehouses, visual query tools, 4GLs, and Internet Browsers allow users to interact with system design using tools which encapsulate complex services and functionality. Along with changes in the business environment, technological improvements bring IT and ISD even closer to the core of the organisation and its development. Technical expertise will become a background activity and facilitation and collaboration will become key activities. OD is such a collaborative approach that can provide facilitation in group situations.

1.4.8 Consultant-Client Relationship

A growing argument calls for consultants to improve their relationship to their clients by addressing issues of power and control, (De Bradander & Thiers, 1984; Markus & Bjorn-Andersen, 1987; Williamson, 1993), organisational change (Lederer & Nath, 1991), improving communication (Murray & Willmott, 1991; Shand, 1994), by sharing knowledge and expertise, and by being jointly involved in the development process (Boland 1978; Murray & Willmott, 1991). From the client side, involvement of management in the relationship is important. Management problems involve lack of IT-knowledge, (Boynton et al, 1994), misunderstanding IT and its strategic significance, (Geisler, 1994), failure to involve the organisation, (Adriaans, 1993), and failure to link IT plans with business plans, (Wood & Houle, 1991; Lederer et al, 1991).

The existence of the client-consultant relationship requires effective management and interpersonal skills. Through this relationship the consultant can minimise his disruption

into the client system and deal with organisational issues. OD's strength lies in recognising process issues and managing the dynamics of working relationships.

1.4.9 Socio-Technical Systems

Socio-technical design methodologies recognize explicitly the nature of organisational systems as socio-technical systems, (Mumford, 1981;1983; Mumford & Hensal, 1983). They have originated in research showing that when a technical system is created at the expense of the social system results will be sub-optimal, (Mumford, 1994). This means that the optimization of technology is dependent on the optimization of the social system. Improved quality of work life and enhanced job satisfaction must be a major objective of the systems design, along with consideration for technical excellence. Mumford (1983) defines a socio-technical approach as:

> "one which recognises the interaction of technology and people and produces work systems which are both technically efficient and have social characteristics which lead to high job satisfaction.", (10).

The main delivery vehicle for socio-technical approaches is participation. IS development is seen as a change process and as such conflicts of interest will arise between the involved actors. Success is ensured through a process of negotiation between affected and interested parties. Participation allows issues to be brought in the open and facilitates the process of negotiation. Interestingly socio-technical systems and participation are found in OD where they are applied in work design with a particular focus on self-regulating work groups, (Cummings, 1975; 1978; Pearce & Ravlin, 1987; Zobrist & Enggist, 1984).

1.5 Conclusions

We have examined the situation that confronts IS development at a number of levels and we have formulated a number of observations about the nature of ISD, the roots of its ineffectiveness. Adopting an OD perspective has allowed us to define organisational failure leading to IS failure and the plausibility of OD as an approach that can contribute towards effective IS development.

ISD is a complex, socio-technical processes in which the organisation plays an important role. Organisational issues show that IS development is a form of

organisational development as it directly impacts organisational functioning. ISD paradigms help us explore the requirements for change that a new solution may have to take into account.

Traditionally ISD has been carried out in isolation of the client environment. However, the complexity of ISD as an organisational activity proves that ISD is not confronted with isolated technical problems, but with a problematic situation. This includes a number of problems: *organisational, social, technical, interactional*, at different levels: *task, process, personal, group,* a variety of stakeholders: *groups, management, users*, a variety of influencing factors: *other systems, procedures, cultures* and a variety of contexts: *organisational, business, change, ISD process, intervention.* Current ISD does not generate enough meaningful data about the problematic situation at the different levels, threatening even technical solutions.

In conclusion the following points can be made towards a problem definition:

- *Organisational Efficacy is taken for granted*

IS development is not seen as an organisational activity and as a result it is assumed that the organisation is a-priori in a position to assist in the development of the IS it has commissioned. The organisation's capacity to develop systems is not examined, which involves not only necessary resources, skills and competencies, but an assessment of the organisation's competence in developing systems in general —not just information systems. In cases of Organisational failure, like LAS, any systems development would have experienced problems and ultimately failure.

- *Lack of Organisational Systems Focus*

ISD professionals and ISD methodologies focus on the role of an outsider invited to deliver a system. This "delivery metaphor" moves attention away from the development of systems which organisations develop to achieve their goals. The consultant is expected to deliver a 'product', an isolated 'system', not transformational and developmental capacity.

- *Problematic Situation Ignored*

We see that IS development occurs in a issue-rich situation where various interrelated problems exist at different levels. The analyst is confronted not with a single ISD problem, but with a multitude of problems: an organisational change problem, an attitude change problem, a motivational problem, a communication problem, a planning problem, a consultant-client relationship problem, which may require prior or concurrent solution.

- *No Intervention Assumption*

Organisations do not develop ISs as part of their normal everyday business. The systemic nature of the problematic situation and organisation indicates that ISD can have a disruptive effect that neither management or developers recognize. The assumption is that IS development is not an intervention that can cause organisational change —positive or negative.

- *Dominant Paradigms*

The Functionalist and Pragmatist paradigms form a cycle and both dominate the practice of IS development. This cycle lies at the basis of the field's ineffectiveness, Their strength of domination is due to the fact they guide and organise ways of working that are favourable to organisations. Any paradigm-shift must be able to address such dominance.

Chapter 2

Organisation Development

2 - ORGANISATION DEVELOPMENT

2.1 Introduction

From the preceding review, IS development and organisation development emerge as comparable exercises. In this chapter, we examine how OD deals with systems development in order to advance our argument for the plausibility of an OD-informed ISD perspective.

OD itself is undergoing significant change in almost every aspect, (Katz, & Marshak, 1995). The field's literature reflects this dynamism through a diversity of views surrounding the field's past, present and future. We explore the nature and character of the field and assess its potential as a paradigm of thinking in IS development.

2.2 Definition of OD

In essence OD aims to create productive work places characterized by dignity and meaning, (Sorensen, 1993; Weisboard, 1987). Our working definition shows how this is achieved:

> "In the behavioural science, and perhaps ideal, sense of the term, organisation development is a top-management-supported, long range effort to improve an organisation's problem solving and renewal processes, particularly through a more effective and collaborative diagnosis and management of organisational culture —with special emphasis on formal work team, temporary team, and intergroup culture— with the assistance of a consultant-facilitator and the use of the theory and technology of applied behavioural science, including action research", (French & Bell, 1990:17).

Departing from this view of OD there are a number of points that make the field unique and relevant to IS development. OD is a generic change methodology which uses behavioural science knowledge for diagnosing problems, increasing readiness to change, managing culture and planning remedial interventions to change norms and reeducate the client-system, (Beckhard, 1969; Eubanks et al, 1990; Fagenson & Burke, 1990a; French & Bell, 1990). IS development has been seen as a special case of organisational change, (Keen, 1981; Lederer & Nath, 1991). Additionally, IT-related change and change in the business environment extensively influence IS development. Therefore OD can facilitate a sophisticated approach towards change issues in ISD. For example in

OD, every change effort is seen as affecting the whole organisation or the total system —change in any sub-system results to system-wide change. ISD too has the same potential, but it's focus is on the immediate information system under development. What ISD lacks is understanding the organisation in terms of a system which is developed through the development of systems: information or not, computerized or manual.

Systems thinking is considered as one of the foundations of OD, (French & Bell, 1990) and is extensively used in OD programmes, (Raia & Marguilies, 1985). Often an OD program may start from one point in the organisation and end up in bringing about change in another. As such OD is a systemic approach. The consultant enters the client-system, establishes relationships with organisational members and becomes part of the problematic situation. Due to this fact, OD is a collaborative methodology. Client and consultant establish a relationship which supports joint problem solving and joint action taking activities, (French & Bell, 1990). Participation and empowerement on a broad and deep basis throughout the organisation are fundamental OD strategies. In ISD however, apart from methodologies stemming from the non-dominant paradigms, (SSM, Ethics), ISD practice in general is not systemic or collaborative. It is quite common for the ISD consultants to develop information systems in isolation of the client. Participation and empowerement are not considered at all. However, as in OD systemic change is at the basis of its approach, these strategies are important in ensuring lasting change. In ISD a common type of failure is interaction failure where users do not want to use the system developed. Often development faces resistance by organisational members and users. OD could help eliminate this type of failure.

Related to change, OD is a dynamic process for changing dynamic systems. The organisation cannot be frozen at any point in time for an adequate and thorough evaluation of its state. It is a dynamic system which is constantly undergoing change and transformation. Change needs to be managed and positive behaviour and improvement reinforced while people and systems carry out their everyday tasks, (French & Bell, 1990). This focus is certainly lacking from ISD which operates largely under the fixed point theorem —a point in time where agreement is reached by everyone involved in ISD, (Gardner et al 1995). Alternative approaches, like Soft Systems, Ethics and

Evolutionary development, as well as the recognition of power and politics have challenged this assumption. Dominant paradigms assume that IS requirements can be frozen and can provide the basis for systems development. Even when structured or pragmatic development are appropriate, an OD perspective can introduce an appreciation of the on-going nature of organisational activities. For the ISD consultant this is important for the management of the intervention process. Any form of development intervenes into an ongoing system of relationships, comes between people and groups for the purpose of helping them, (Argyris, 1970). In OD the process of intervention is as important as the content of intervention. Process has the potential of interfering in the delivery of content.

As a meta-methodology OD is open and pluralistic, providing access and guidance for using a range of theories, techniques and tools for understanding and bringing about change, (Edmonstone & Havergal, 1995). This has allowed the field to continuously remain relevant and follow changes in organisations. IS development on the contrary struggles to expand its conceptual boundaries and as we have seen many valid alternative paradigms are not taken up in practice. OD could help ISD open up to other disciplines and approaches.

OD is also an action oriented, data-based approach where action forms a continuous cycle with data collection. Action may also generate data about the client-system itself and the areas of concern. IS development may appear too as action oriented and based on data, however its focus is on the information system. From an OD perspective a number of related areas could become the focus for data collection and action —like culture, (Leifer et al, 1994).

An important discipline in OD is Applied Behavioural Science which provided the basis from which OD emerged as a scientific and practical field, (Eubanks, et al, 1990; Fagenson & Burke, 1990a). Behavioural Science is also important in ISD as it can provide sensitivity to "people" issues and the appropriate tools for understanding the complexity of human actors and their interactions.

OD values reflection on process. Assumptions, values, metaphors, theories, interventions, actions are rigorously examined, (Alderfer, 1977). The aim is to elicit the double loop learning that leads to meaningful improvement of beliefs, skills and practices. The field itself is also scrutinized by its own members who ask continuously

questions such as where is the field going, what can be done better, what do clients want from OD, and how can OD be improved. In ISD such a discussion is lacking and it is only ISD theorists and researchers that have raised an argument for change in the field. Irrespective of the overall argument for OD's suitability, reflection on process is desperately needed if ISD is to be transformed.

OD's strength lies in its evolutionary-collaborative and change focused problem solving intervention which utilizes a vast array of theories, models, techniques and tools. This array continuously feeds from practice and theoretical developments, and includes contributions from a number of disciplines: organisational theory, behavioural sciences, psychology, psychoanalysis, systems theory, physics (chaos theory) and philosophy —in short all disciplines that can contribute to the study of complex human arrangements and activities.

2.3 The OD Approach

2.3.1 OD Values

OD values evolve around two sets: Humanistic and Organisational Effectiveness values. While these values appear to be contradictory or exclusive in OD they exist in balance with each other. To understand how, we explore how these values sets have emerged in the field.

In the early days, the founders of the field instilled into OD humanistic values involving democracy, human well being and openness. These can be seen in terms of emancipation as they aim to free organisational members from the autocratic-Tayloristic work environments which lacked dignity and meaning. This gave OD an idealistic overtone and narrow focus, (Mastenbroek, 1993), that was enhanced by post-war growth and stability in the business environment. Early OD can be also thought as essentialist for not viewing other alternatives, (Alvesson & Willmott, 1992), as its main technology focused on small group development, (Sorensen, 1993), and process interventions, (Nielsen et al, 1992). In those early days the field was able to impress clients with its novel approach as OD enjoyed the status of a panacea convincing management it could be used to "cure most organisational ills", (Gill & Whittle, 1993). This is consistent with Critical Theory's grandiose aims for transforming not only

organisations but society as well, (Alvesson & Willmott, 1992). In fact this interest is still expressed through "Big OD" which involves system-wide change with second order transformations of organisational strategy, structure, with no beginning and no end, (Woodman, 1993). Michaels (1993) too identifies the "groupists" camp who prefer dealing with culture change, large systems change, quality initiatives and complex systems. In these viewpoints change is always large-scale, all-encompassing and never ending —overcoming emancipation's danger of replacing one dogma with another one, (Alvesson & Willmott, 1992).

With the changes in the business environment occurring in the 1980's such idealism was seriously challenged, (Sanzgiri & Gotlieb, 1992; Fagenson & Burke, 1990a). Organisations would only use OD to improve their productivity and profitability. As Nielsen et al (1992) argue, while OD implied top-down and organisation-wide change, very few organisations implemented efforts that in fact achieved such "lofty goals". Practice showed that few organisations have actually fully completed or were engaged in system wide OD programmes like Grid OD, Likert System 4 and Socio-technical approaches. This situation introduced organisational effectiveness values in the field which emphasised productivity, efficiency and bottom-line results, (Van Eynde et al 1992). These were pursued at the expense of humanistic values, but not however in an exclusive manner.

The change in values shows that OD was forced to depart from Critical Theory's ideal all encompassing form towards Alvesson & Willmott's (1992) "compromised" version, which nevertheless takes into account criticism of the theory and the particularities of human and organisational complexity. Through the attack led by organisational effectiveness concerns on OD's humanistic values, OD's expression of critical theory has followed this position towards micro-emancipation. OD is no longer a panacea, it is open and pluralistic examining a range of alternative interventions and theories. OD's understanding of change in organisations has shifted to include smaller scale projects, as many organisations experience the flow of change which requires incremental and focused interventions, rather than top-down, system-wide transformations, (Kobrak, 1993; Katz & Marshak, 1995; Kyle, 1993). In Alvesson & Willmott's (1992) terms, this shift represents micro-emancipation:

> "...in which attention is focused on concrete activities, forms, and techniques that offer themselves not only as means of control, but also as objects and facilitators of resistance and, thus, as vehicles of liberation. In this formulation, processes of emancipation are understood to be uncertain, contradictory, ambiguous, and precarious. Where power techniques are in operation "loop-holes" can be found", (ibid:446).

Micro-emancipation operates within such loop-holes in managerial and organisational control emphasizing emancipatory action which is "less visible and less grandiose". OD operates in this mode and there are arguments that it always has, as most interventions did not start from the top nor did they cascade downwards to change behaviour on the part of the leadership structure, but were confined to risk-taking managers' limited areas of control, (Nielsen et al, 1992). This mode is also reflected in OD's political pacifism. OD aims to understand power and politics in order to maximize the effectiveness of intervention, (Kumar & Thibodeaux, 1990), rather than use any means to achieve intervention goals suggested by political activism.

The current and future business environment requires the integration of both value sets which appear contradictory. As Alvesson & Willmott (1992) note there are certain costs in "loss of gross productive capacities" by achieving emancipation. For example, a Japanese worker freed from the "work-to-death" ethic (Karoshi), may work less, take more holiday and even sabotage production. As the authors note, a critical questioning of beliefs and values may lead to loss of identity and alienation from a person's tradition forming his subjectivity. While a work-to-death ethic is an extreme position so is full and never-ending emancipation. In OD the two, apparently contradictory, value sets help resolve the contradiction and ensure appropriate balance between the two extreme positions and of appropriate choice of action. In Golembiewski's (1993) terms, this interplay between the two value sets serves the purpose of "curbing exuberance" and guiding choice making. In Alvesson & Willmott's (1992) terms, emancipation cannot be considered without the wider context of social relations and alternative ends. There is a danger in leaving the "social totality unexamined, taken for granted, or undisturbed". This has been noted in OD practice, which Woodman (1993) calls "small OD" focusing on piece-meal intervention carried out in isolation and with no congruent link to strategy and goals. These micro-interventions become ends in themselves and can be purchased from a "supermarket of metaphors", Reed (1990). Additionally, in Habermas' (1972) terms the dialectic between the two value sets can be contrasted with the dialectic

between work and interaction. As in OD, the latter is characterized by awareness of the wider context which is used to make choices between alternative courses of action — either work-oriented or interaction-oriented.

From OD's perspective, organisations require help with market survival, transformational interventions and multicultural integration, issues which require both value sets, (Marguilies & Raia, 1990). The integration is already taking place, (Clement, 1992; Kobrak, 1993; Woodman, 1993), maintaining the core values, (Sorensen, 1993), while dealing increasingly with task issues and organisational effectiveness, (Van Eynde et al 1990; 1992). Some inconsistency noted in the field has been attributed to a discrepancy between particular practitioners' espoused and actual values, (Raia & Marguiles, 1985; Brown-Hinckley, 1989). In the future OD values will require an explicit statement, (Sanzgiri & Gotlieb, 1992), and will need to satisfy many diverse values at different levels, (Van Eynde et al 1992).

In IS development there has been an argument for realizing emancipatory principles in ISD, (Avison et al, 1993; Lyytinen & Klein, 1985), and in ISD methodologies, (Hirschheim & Klein, 1994). However, these emancipatory claims do not escape from intellectualism and essentialist tendencies, (Alvesson & Willmott, 1992). As such these arguments may have difficulties being accepted in organisations pursuing effectiveness interests as well. Similarly to OD, Total Systems Intervention has recognised the need for complementarism, (Flood & Jackson, 1991a). ISD could benefit from a more modest emancipatory framework that would allow the development of richer complementarist meta-methodologies.

2.3.2 OD philosophy

For Schein OD "is a philosophy of how you do things, not a technology of what you do", (Luthans, 1989). He along with others, (French & Bell, 1990; Armstrong, 1993a; Woodman, 1993), warn of the danger of emphasizing techniques and interventions at the expense of process. Unavoidably some in the field are using OD to provide a front cover for their own consultancy practices. Others too have used process interventions as ends rather than means, (Woodman, 1993). In any case, OD should not be judged by the

content of the intervention, i.e. the specific technology used, but it should be verified in terms of the existence of a key process reflecting the OD philosophy. For some, this philosophy may be elusive as: "OD is dead in that it has dissipated into society so much that it no longer has meaning as OD", (Michaels, 1993). This indicates that OD may have been successful enough to be accepted in society yet may have failed to stay "alive" by identifying new ways to change and working towards making them "mainstream discussions", (Michaels, 1993). However, Sorensen argues that OD has become more acceptable and popular to management evolving through "macro orientations":

Sorensen (1993)	Hanson & Lubin (1995)
• Organisational Culture • Organisational Transformation • Employee Involvement • Sociotechnical Systems (STS) • Total Quality Management (TQM) • Organisational Learning (OL)	• Organisational Behaviour (OB) • Organisational Effectiveness • Quality Circles (QC) • Total Quality Improvement (TQI)

While this list seems surprising Woodman (1993) argues:

> "Bizarre as it seems to some of us, one can actually find people who believe that these improvement strategies have nothing to do with OD." and "OD ought to own these terms, since they embody what the field has always been about.", (73).

Michaels (1993) makes the case for Chaos theory and toasts to the "death" of OD. In the light of Schein's statement we realize that OD *will be* dead for all those deciding to pursue a single favourite technological panacea. As Anderson et al, (1995) put it: "OD is only dead for those who can't or won't move with it". Thus OD may be barely alive for Mastenbroek (1993) who has put forward his own intervention theory. Surprisingly, he still finds it useful to keep OD's process orientation and OD's arsenal of interventions. What he proposes keeping seems as largely OD itself: a process orientation or *how* you do things, and an arsenal of OD interventions which result from the pluralistic and complementary nature of the OD paradigm. If anything is indeed "dead" in OD is the field's "infancy". As Head (1993) argues, OD has grown into a more mature paradigm: it is no longer a technology or even an art, it is a science. Despite its maturity, OD's philosophical basis remains unaffected. OD as a philosophy can encompass new technologies providing the context of their appropriate use. As Hanson & Lubin (1995)

argue, OD becomes "similar" to other approaches if the situation requires it or as Larsen (1993) characteristically puts it, OD takes "colour from situational factors". What this shows is that OD may utilize a certain technology which is appropriate to a particular situation, but does not fade away when the content changes, and so it can still be identified as OD. As the authors further illustrate in the case of Strategic Planning (SP):

> "If an OD consultant suggests SP to the client, then SP is an OD intervention. If there is no OD consultant or program involved, then SP is not an OD intervention...The setting up, design, and work through (of SP) is an important learning process itself, and how these activities are done is as important as the content of the activities themselves.", (Hanson & Lubin, 1995:62).

In this case OD philosophy guides the content activity rendering the SP program an OD program. Through this property OD evolves as a field even when new technologies are discovered. This also allows the proliferation of new techniques, interventions and concepts that still flood the field. OD philosophical stance still views every problematic situation as unique where no pre-determined solutions should be introduced. As Levin & Gottlieb (1993) note:

> "The OD field has recognised that not all approaches for improvement are equally effective with all client systems at all points in time. This core belief has been a distinguishing feature of OD work", (302).

OD practitioners, match interventions to diagnosed problems and utilize a combination of approaches to resolve problems, (Case et al, 1990). This exhibits the dynamic and open-minded nature of the OD approach which deals with change, (Armstrong, 1993a). OD will continue to inspire new developments as "The work that OD consultants are asked to become involved with today is so varied that few practitioners have designs of the shelf to cover them.", (Van Eynde & Bledsoe, 1990), without ever producing a singular-universal OD approach:

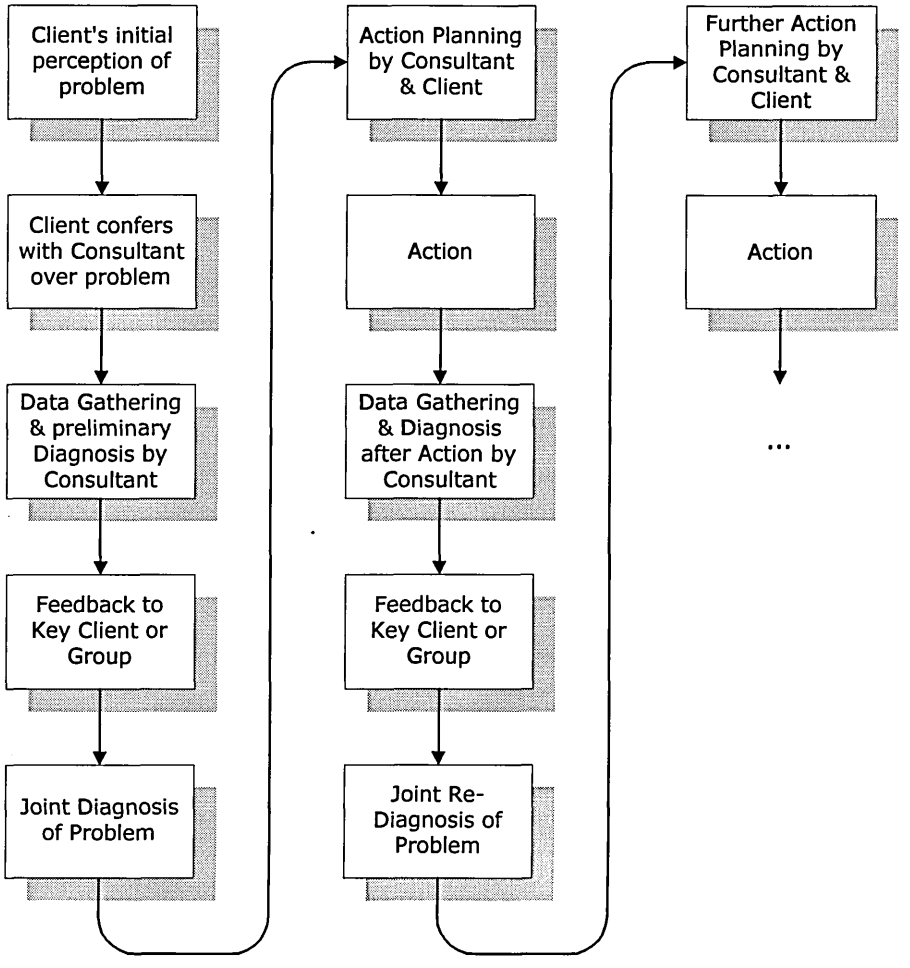
> "...the holy Grail of OD will never be found, and for the very best reason. Simply, it does not exist. The dominant view of OD praxis should feature a growing aggregation, not a newly-revealed singleton —an expanding network of theory and experience, a building-upon that retains the proven foundations but only to build above and beyond them.", (Golembiewski, 1993:20).

The above properties of OD have important implications for IS development. In the ISD field the effort is to discover the "holy grail", the single technology or methodology that encompasses everything needed to develop information systems. This has proven to be a futile exercise as the requirements for technology and methodology continuously

change. OD shows that a more effective strategy is to focus on ensuring an appropriate process-philosophy that would allow new appropriate technologies to be utilised as they emerge. In certain cases existing prescriptions are inappropriate, in which case the philosophy guides the practitioner. Another implication is that the OD perspective can be incorporated in the ISD paradigm without conflict as ISD can be used under the OD frame as another macro orientation. In this case ISD could "take colour" from OD.

The model that is the best expression of the OD approach is Action Research, (Figure 2.1, pg.40), proposed initially by Lewin (1952) and refined by others (Frohman et al, 1976; Susman & Evered, 1978).

Figure 2.1: Action Research



Source: Adapted from Cummings & Huse, (1989) & French & Bell, (1990)

Action research is an iterative, collaborative, data based approach that aims at achieving increased understanding of a situation and improving the client problem-solving skills, (Hult & Lennung, 1980).

> "Action Research aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework", (Rapoport, 1970:499).

Action research is considered the "cornerstone of OD practice", (Bushe, 1995), "at the heart of the open and pluralistic OD world-view", (Edmonstone & Havergal, 1995), and "the primary methodology for the practice of OD", (Van Eynde & Bledsoe, 1990). OD itself has been described as the fruit of action research: "...a philosophy of how to be helpful to client systems by working with them to understand what is going on and how to help change happen.", (Coghlan, 1994). Lewin's intention was for an approach that would guide solutions to social problems while simultaneously providing knowledge and understanding of social phenomena, or more elaborately, that would be:

> "...simultaneously concerned with producing empirically disconfirmable propositions that could be organised in a theory for use in everyday life", (Argyris, 1983:115).

However, change models founded on the tenets of Action Research have focused more on planned change, (Cummings & Huse, 1989). French & Bell (1990) and earlier Shepard (1960), supported the idea that action research is at the same time: a process, a practitioner's tool and an approach to planned change. Bryant (1979) notes action research's commitment to finding and implementing solutions to problems. Sherwood (1976) emphasizes the action-oriented or rather action-forcing nature of action research that contributes to the capacity of an organisation to learn and develop.

Action research may be *Participant,* when activities are carried out collaboratively between client and consultant, and *Experimental,* where client and consultant collaborate to discover the best action technique, (French & Bell, 1990). The experimental model, although harder to implement, is at the very heart of OD practice since interventions that are found to be successful are added to the repertoire of the practitioner and unsuccessful ones are dropped.

The elements found in action research are also found in most OD models of change:

Model Elements	Frohman	Clark	Sushman & Evered	Tranfield & Smith	Lippit	Lewin
Scouting	x				x	
Entry	x	x		x	x	Unfreezing
Data Collection	x	x				
Data Feedback	x	x				
Diagnosis	x	x	x	x	x	
Action Planning	x	x	x	x	x	Moving
Action Taking	x	x	x	x	x	
Reinforcement			x		x	Refreezing
Evaluation	x	x	x	x	x	
Withdrawal				x	x	

Lewin's (1952), model is a higher level view of the classical OD models of change. Unfreezing for example can be seen as covering gaining entry, data collection and diagnosis. Underlying this model, and by extension the OD models above, are several assumptions, (Schein, 1980):

(a) Any change process involves unlearning something as well as learning new things and behaviours,

(b) No change occurs without motivation to change and that can be difficult to introduce,

(c) Organisational change is mediated through individual changes in key members,

(d) Change may involve changing attitudes, values and self-images which can be initially inherently painful and threatening,

(e) Change is a multi-stage cycle and all stages need to be negotiated before stable change can take place.

Underlying action research and the models of change is an analytical process based on the sub-processes of diagnosis, choice and application, which form an iterative cycle. Lippit et al (1976), term this process an "analytic framework" and a "descriptive-analytic theory" that the OD practitioner adopts to arrange and interpret information about the organisation and choose interventions into the client system. Frohman et al (1976), argue that it is important for the practitioner to understand such framework and communicate its elements, values and assumptions to the client. The process relies on

various conceptual constructs which are examined in terms of *metaphors*, (Morgan, 1986).

- *Diagnosis*

Diagnosis is the process by which metaphors, conceptual frameworks and diagnostic models are used to read a problematic situation. They guide the analyst by indicating *where* to look, *what* to look for and *how* to look for diagnostic data. OD relies on diagnostic information about the client system itself, its processes, its culture and its functioning, (French & Bell, 1990; Cummings & Huse, 1989).

- *Choice*

The choice of an appropriate construct from a range of alternative options is a diagnostic process itself. The consultant conceptually positions the various options available within his personal conceptual classification schema. Such schema is maintained through experimental action research. Useful metaphors are kept and metaphors that failed repeatedly to produce improvements are dropped. This even applies to technical methods, techniques and tools.

- *Action*

Injunction is metaphor's ability to command action as a natural consequence of its use, (Morgan, 1986). This action can take two forms: gaining understanding and guiding praxis. The analytical cycle continues with further diagnosis aimed to evaluate the effectiveness of action.

Analysis moves from the conceptual level to gradually provide access to the practical level were specific actions are taken to improve a situation of concern. The arbitrary nature of dividing the three processes is evident. Indeed, diagnosis can be carried out to discover the strengths and limitations of metaphors, but also a metaphor can be used in diagnosis. Application of a metaphor can influence subsequent metaphorical choices.

Action research has been noted in the ISD literature, (Warmington, 1980), it has been used by some theorists in their effort to develop and refine methodologies, (Checkland,

1981; Wood-Harper et al, 1985; Avison & Fitzgerald, 1988), and has been suggested as a useful research approach, (Wood-Harper, 1984), for the study of the application of IT, (Keen, 1987). However, action research as a model of change in complex group situations is largely ignored in mainstream ISD practice and research. If we accept the growing evidence, presented earlier, that ISD is a form of organisational change moving into group-based development through RAD, then action research emerges an extremely useful approach. However, outside the OD perspective action research looses its analytical character which is relies on the processes of diagnosis and choice. Direct use in ISD runs the danger of using the approach as another prescription.

2.3.3 OD Interventions

Interventions are sets of activities intended to improve the organisation's effectiveness in both quality of work life and performance terms, (French & Bell, 1990; Cummings & Huse, 1989). They can vary from standardized to uniquely tailored programmes. Interventions represent the "technology" of OD and should not be confused with the process of intervention which refers to the process of entering into an existing client-system and establishing appropriate relationships with organisational members.
The "OD toolkit" or "arsenal" is highly populated with a variety of interventions dealing with different organisational issues, at different organisational levels and depths of intervention. Various classification schemata, typologies and criteria are used for facilitating their choice and customization to the particular situation, (Appendix 3).
The notion of an intervention-programme does not exist in ISD. The ISD toolkit includes a proliferation of methodologies, techniques and tools but there is no effort to organise them in terms of programmes of action. Additionally, very few frameworks and classification schemata exist and are usually oriented towards methodologies, (Olle et al, 1988; Jayaratna, 1994; Kumar & Welke, 1992) and ISD paradigms, (Hirschheim & Klein, 1989).

2.3.4 Consultation Modes

Understanding and coping with the complexity and ambiguity of a problematic situation renders the process or *how* the consultant does things as equally important with the content or *what* he does. In some cases, when the context of change is problematic,

managing the *process agenda* becomes the top priority for both consultant and organisation, (Buchanan & Boddy, 1992). Schein (1988) differentiates between the *Content Expert* and *Process Facilitator* modes of consultation where the consultant's role ranges from telling others what to do, to facilitating a better problem-solving process so others can solve the problem for themselves, Margulies & Raia, (1978).

The *Content Expert* mode can be take two forms, (Schein, 1988):

- *Purchase of Expertise or Information*, where the consultant offers his specialized expertise. The client has made correct diagnosis of his own problem and has correctly identified the consultant's capabilities in solving the specific problem.
- *Doctor-Patient*, where the consultant visits the organisation, diagnoses the problem and prescribes a solution. The client has correctly interpreted the symptoms and identified the "sick" area accepting and implementing whatever prescription he is given.

The *Process Consultation* mode can also take the following forms:

- *Catalyst*, where the consultant does not know the solution but has skills in helping the client to figure out his or her own solution.
- *Facilitator*, where the consultant might be aware of a possible solution but decides that a better solution can be achieved if the client system is assisted in solving their own problem.

Both versions of process consultation assume that the nature of the problem is such that the client needs help in making an initial diagnosis, and would benefit from participating in making that diagnosis. The client must have a constructive intent, (not being destructive or dependent on the consultant), and some problem-solving ability. He is ultimately the one who knows what form of solution will work or be accepted in his situation. Finally, his problem-solving skills for future problems will increase if the client selects and implements his own solution. It is important to note that each consultation mode is suitable for a certain organisational situation and certain underlying assumptions need to be fulfilled for each model to be effective.

Different forms of consultation are useful in ISD were there is little understanding of the range of possible modes. Overall, the primary mode of operation is largely Content Expertise. Some ISD researchers have noted on the subject. In Boland's (1978) *traditional* rationality protocol of interaction the analyst is the main problem solver and the user is the information provider, while in the *alternative* rationality protocol users and analysts are both problem solvers and information providers. As different problematic situations require different protocols of rationality to structure the analyst-client relationship a contingency approach is suggested. We believe that OD can inform such an approach.

Other ISD work has also brought attention to the need of adopting consultation modes other than content expertise. Lyytinen (1988) argues for the development of theories and methods that can assist consultants understand and anticipate social aspects of systems development and use. Markus & Benzamin (1996), call for IS specialists to become change agents which would require them to switch roles and increase their behaviour complexity. Similarly, Dos Santos & Hawk (1988) have argued that different consultant attitudes are suitable for different projects. This means that a single model, (either technical or facilitative) is inappropriate for every consulting situation.

Another area of complexity is noted in the power asymmetry in favour of analysts, (De Bradander & Thiers, 1984), and in the exercise of consultants' power over the users, (Markus & Bjorn-Andersen, 1987). The content expertise mode is limited in dealing with such issues. Similarly, another issue is communication between the two parties. Murray & Willmott (1991) argue that analysts need to abolish their own preoccupation with control of the development process and "relax their bonding to a given identity" in order to communicate effectively.

Alternative paradigms too require more complex consultation modes such as facilitation, emancipation and political intervention. Furthermore, the adoption of organisational learning models is suggested for improving user-analyst interaction and communication, (Salaway, 1987). While OD can help inform understanding about more sophisticated consultation models, it can also inform management of relationships with the client and with other stakeholders in the organisation.

2.3.5 The OD consultant

For the consultant OD is a helping profession. He helps the organisation define and clarify its own issues, values, problems and make the most of its resources. While he may be an expert in certain areas, overall he is an expert on process issues, as OD consultation is not prescriptive, (Hanson & Lubin, 1995). Unlike other forms of consultancy, the OD consultant maintains no preconceptions as to the possible courses of action in a particular situation. It is his collaboration with the client that determines the choice of solution.

A number of other professionals may be also practicing OD or aspects of it. They are usually termed OD practitioners and may include people specializing in fields related to OD, (e.g. reward systems), but managers may also apply OD in their work, (Cummings & Huse, 1989). OD practitioners may be internal or external to the client-organisation.

OD consultants has developed from being non-directive and primarily process oriented, (Van Eynde et all 1992), to being authoritative specialists, (Burke, 1995), in the areas of strategy, structure, corporate culture, technology, and human resource development, (Fagenson & Burke, 1990a). OD consultants today have an extensive range of skills, (Appendix 4).

2.3.6 Limitations

OD has enjoyed a period of popularity with management and organisations that have given the field a 'panacea' status. The early idealistic definitions of the field reflected an optimism that OD could be used to deal with most organisational problems, (Gill & Whittle, 1993). While OD is a powerful approach to change and improvement of organisations it is not a panacea anymore and the realization is that there are situations where alternative approaches should be employed. For example, OD requires readiness from the client organisation towards change and a willingness to participate in the change process. If these conditions are not present change may not be possible creating little use for OD. A more traditional management consultancy or training programme may be more suitable instead. OD is considered to be inappropriate in societies with "highly autocratic cultures and in which social position is governed by caste or class",

(Hanson & Lubin, 1995). In the organisational context OD may be able to facilitate cultural change even in autocratic situations, but it may require significant process consultation, some key-stakeholder support, and the potential of increasing motivation to change.

As a philosophical approach OD assumes that practitioners share both similar values and have an adequate understand of the approach itself. Under the OD umbrella there is a danger of using the macro orientations we mentioned earlier, outside the OD frame. As a result orientations like TQM, and BPR for that matter, have been described as amorphous constructs that "become social objects whose meanings get defined by the context of their use", (De Cock & Hipkin, 1997). Similarly, Process Consultation, "a philosophy of a helping relationship" has been reduced in some literature to the status of simply another group OD intervention, (Coghlan, 1988). OD provides the needed context for use of its technology, but because it is not prescriptive it cannot enforce its philosophy in practice.

According to Sorensen (1993), OD has ignored technology which is one of the most powerful agents of change, both in terms of process and information. This is also characteristic of the way organisational sciences have treated technology in general. With the advent of IT this stance is no longer adequate as this type of technology is transforming directly organisational forms and the role of change agent, (Barry, 1989). IT implementations require flexible organisational change models that will be customized to fit the social network of the specific organisation, (Thach & Woodman, 1994).

Planned change models like Lewin's have been accused of being simplistic, equilibrium-seeking, (Michaels, 1993), assumes the organisation can be 'frozen', (Myers, 1994), being rather general, assuming rationality from organisational members, and missing the political nature of the implementation process, (Hirschheim, 1985b). Alternative approaches for understanding complex systems change have been proposed such as Chaos Theory, (Michaels, 1993; Goldstein, 1990). To an extent, this valid criticism, but again seems to ignore the notion of OD as a philosophical framework. For example, unfreezing seems an overtly simplified step which involves significant

complexity in practice. As indeed chaos theory argues, simple systems are capable of complex behaviour, (Gleick, 1987).

Action Research has also been criticized as focusing narrowly on detecting errors and correcting them, (Cummings & Huse, 1989). Action research has also been used under logical-positivist assumptions in most projects, (Sussman & Evered, 1978). Extended models of action research have been proposed like Appreciative Inquiry, (Cooperrider & Srivastva, 1987), which argues for an action research model that starts with appreciating what is best in a situation, understanding what creates the best, and amplifying people and processes that exemplify it, (Bushe, 1995).

OD approaches and techniques have also been accused as for limited ability to deal with power relations in the organisational change process, (Willcocks & Mason, 1987), as have OD values, (McLean, 1981). Edmonstone & Havergal (1995) attributes this to the OD expectation that personal development would lead to organisational effectiveness rather than direct structured, technological and political change approaches. The authors point out that consultants have not been always "up-front" or clear about their humanistic values possibly becoming servants of powerful individuals and groups. Elsewhere it is argued that OD consultants are unlikely to play the role of the political activist or manipulator, but would rather rely on positive politics, recognizing the political realities in an organization and helping managers deal with them, (Clement, 1992). This view is consistent with attributing a certain conservatism and caution to OD consultants in dealing with political realities, (Kumar & Thibodeaux, 1990). However, we need to keep in mind that:

> "Because OD is sanctioned by those in power it rarely involves an invitation to change the essential nature of the system or the distribution of power within the system", (Pasmore & Fagans, 1992:375).

In other words, a more radical political or power managing approach would be out of place in the types of situations OD is used. Despite previous criticism OD has indeed come to grips with the issues of power and the political nature of change and organisations, (Clement, 1992). The willingness to deal with the issues of power and influence in organisations was noted as early as the 80's (Raia & Marguilies 1985).

As a technology OD orientations, change models, methods and tools are not always appropriate, but as a philosophical framework, expressing OD values, the field remains relevant to organisations and to IS development as well. ISD can become another macro orientation that OD can provide the context to. The critique of OD also serves the purpose to bring realism in our assessment of OD's appropriateness.

2.4 OD and alternative ISD Approaches

In this section we examine some pioneering work in the area of alternative ISD approaches. We contrast them with OD in order to show the desirability of an OD-informed approach in ISD.

2.4.1 Soft Systems Methodology (SSM)

SSM is located within the interpretive paradigm that views reality as a complex phenomenon where problems occur because actors maintain diverse perceptions about the situations they find themselves in. SSM employs systems concepts in facilitating interpretation of diverse perceptions within the situation. The reliance on such paradigm cannot be criticized per se when considering SSM as a specific methodology for tackling 'soft' problems. SSM has challenged the dominant paradigms in ISD and has re-addressed the nature of systems thinking in the field. However, SSM seems limited as an approach which would be widely adopted by organisations and would transform IS development.

As Jayaratna (1994) argues "the world is neither 'soft' or 'hard', it is we who have chosen to treat it as such". Although SSM creators have identified a fundamental dichotomy between 'hard' and 'soft' systems others have identified even more divisions where 'soft' is only one paradigm, (Burell & Morgan, 1978; Hirschheim & Klein, 1989). Others may even find that 'soft' is simply not an appropriate metaphor or construct. Problematic situations may require a mixture of appropriate soft and hard methodologies to provide the needed variety and richness. It is clear that SSM's strength lies in dealing with soft problems and it is unclear how hard or otherwise conceptualized problems can be examined within its frame. SSM is not treating different approaches from an orthogonal point of view. Such a point of view can only be realized from a pluralistic-complementarist position and a genuine understanding of the diversity of

methodologies. SSM has been accused as imperialist, treating hard approaches as a special case of soft, (Flood & Jackson, 1991a).

SSM seems aware of the importance of the organisation and organisational change, however is vague about their role in ensuring the success of a project. This is also critical since SSM views problems and solutions being in a flux where problems do not stay 'solved'.

SSM is oriented towards the content of intervention through its effort to achieve mutual understanding between actors. However, in a situation where the greatest of care needs to be taken in order to avoid setting into action a wrongly structured informal system, the analyst may need to conceal his problem solving (content) approach until working relationships have been successfully established and necessary diagnostic data collected. In other words the analyst may carefully adopt a process intervention that is compatible with the current functioning of the organisation, until he is in a position to facilitate the appropriate content approach —something we saw in our research effort in the process of matching client needs and wants. Unquestioned application of SSM risks introducing unexpected and undesirable changes by intensifying the issues with its highly visible and highly involving nature. If for any reasons involvement of all actors is not immediately appropriate or politically permissible, use of SSM becomes problematic. Client environments and actors that value hard approaches may find SSM inappropriate and oppose to it, irrespective of the analyst's belief in SSM's superiority for the particular problems that need solving. Furthermore, SSM may be redundant in situations where the organisational members are already in agreement as to what the problems are, but are not aware of the best solution, and in coercive environments where consensus is influenced by power struggles. Concerning the latter SSM has been accused for enabling powerful organisational members retain their power status and ideological hegemony, (Flood & Jackson, 1991a). SSM may be also inappropriate in situations where clients genuinely require expert consultation by the analyst, as a costly and time consuming way of delivering such expertise.

SSM relies on the analyst's skills to focus his analysis from very abstract use of systems concepts to very pragmatic problem solving activities. It is not clear also how 'hard' approaches are incorporated in such modeling. A great deal is invested in the analyst's skills in making choices of appropriate constructs, models, techniques and methods.

Assistance with such choices is expected to be guided by a learning system, a meta-level praxiology which

> "...decides what action to take, action which may be or may not be 'efficient'; with respect to various criteria.", (Checkland, 1981:214).

However, how such a learning system forms and how criteria are formed and used is not explained by SSM. At a meta-methodological level this is another very important exclusion from the approach's focus. It should also be possible to apply the methodology to making sense of such praxiology and aspects of the organisational context. Inclusion and explicit attention to activities in a methodology expresses underlying values of what is considered important. For example, if organisational change was valued in SSM there would be explicit reference within its frame. In contrast, in the revised version of SSM there is explicit reference to the importance of the analysis of intervention, culture and politics. Perhaps organisational change will follow as these changes reveal a clear move towards organisational issues. Despite such move, SSM is still lacking a clarified understanding of organisational issues and intervention. For example, changes of systemically desirable systems are evaluated for their feasibility by cultural criteria. However, culture is only one metaphor for understanding organisational issues, other equally insightful ones exist that can help provide assessment of the feasibility of the system. Furthermore, in some organisational situations identifying culture may be very difficult.

From a practical viewpoint, SSM does not cover all the aspects of the ISD process. Although the methodology can be applied to any aspect of a problematic situation, physical design and implementation are not explicitly covered in SSM. This has lead some to suggest SSM should be used as a prelude to practical action guided by more structured methodologies, (Avison & Fitzgerald, 1988). This may explain why SSM hasn't been taken up in a big way by ISD professionals and organisations. Finally, it is argued that CATWOE is not sufficient by it self for considering organisational aspects in developing root definitions since it does not focus on the interactions and connectivity between its elements, (Jayaratna, 1994).

SSM may have challenged a number of assumptions that plague traditional systems thinking, but has not challenged the strength of the dominance of traditional approaches in practice. SSM lacks an organisational and practical framework that would allow business people and professionals to utilize effective new systems thinking in the actual

development of systems. As there is no emphasis on practical results, once a system proposition is accepted, SSM requires another ISD methodology to deliver the system.

2.4.2 Total Systems Intervention (TSI)

As a meta-methodology TSI is placed within the paradigm of Critical Systems Theory, (Flood & Jackson, 1991b). TSI is based on an iterative process and thus consistent with the requirements of a flexible problem solving approach which confronts complex problematic situations where a single solution is not obvious from the outset. TSI acknowledges the complex and diverse nature of organisational situations recognising that an equally rich and diverse range of problem solving approaches need to be employed for their resolution. Such variety is provided in TSI through the use of systems metaphors which can be related to systems methodologies. The use of metaphors in guiding choice of methodologies is a crucial process in TSI, but may also present a contradiction with TSI's principles. The system of systems methodologies is only one way of informing and guiding choice; other continua or dimension or sets of criteria also exist. As a framework for informing choice the System of Systems Metaphors (SoSMs) is a valid construct. The authors emphasize that the SoSMs is one useful way of classifying, what they regard, as the "most important" methodologies. However, they do not offer any alternative classification schemata, neither do they explain how TSI could relate to them. In terms therefore of frameworks and components repository, TSI offers a single path for accessing only one type of component: systems methodologies. There is no indication how TSI would encourage highly creative thinking with classification schemata not based on SoSMs. In the ISD field there is a vast number of developed methodologies and techniques, and a number of alternative classifications for the analyst to use. TSI offers no explanation as to what happens when the SoSMs is contrasted with a situation too rich or too ill structured to define the values of the problem complexity and problem context dimensions adequately. This may happen during the initial stages of an intervention when the analyst is trying to make sense of the situation and his position. Without adequate diagnostic data choice of systems methodology may be impossible.

The Creativity phase relies heavily on using metaphors to encourage creative thinking about the organisation. This could prove a limitation at the meta-methodological level

since in the ISD field, methodologies can be evaluated through constructs other than the set of systems metaphors proposed in TSI, (e.g. the NIMSAD framework). Constructs such as frameworks, models, ideas, observations, or "simple" reflection and expression of feelings can facilitate creativity as well. Additionally, inspiration for the creative individual can come even from the use of apparently unlikely metaphors, as Newton's inspiration came from the falling apple and Archimedes' from his overflowing water tab. Outcomes in systemic analysis may be derived at in a variety of ways. What the analyst and organisational actors might lack is a way of validating, expressing and communicating their creative thoughts. TSI adequately provides such a "language" only if the preferred SoSMs is adopted. TSI as a potential solution for ISD should not a priori exclude metaphors or other constructs and should cater for the diversity of alternative frameworks, (similar to the system of systems methodologies), for informing choice.
TSI lacks explicit consideration of process issues, understanding of change, and the importance of interpersonal relationships, although like SSM it could be argued that its flexibility allows potentially for all of these notions. Although TSI promotes the involvement of clients, facilitators and actors, there is no guidance as how to manage such involvement or how such involvement becomes the source for diagnostic information. The emancipatory interest of critical systems theory seems not to be realized in a methodological interest for change and the impact of change. TSI relies on the specific methodologies to cater for the expression of such methodological interest.
As the authors note, TSI regards the selection of hard systems approaches consistent with the critical systems notion of "work" and soft systems with the notion of "interaction". The "implicit" belief is that organisational assistance and readiness can be taken-for-granted. However, choice of the appropriate process of intervention is as fundamental as the selection of the appropriate systems methodology.
As depicted in the presented West Newton CVS case study, (Flood & Jackson, 1991a), the nature of the problem context gave the analysts some indication as to the suitability of the SSM methodology for expressing the dominant metaphor, since various coalitions existed and there was a need for generating a "culture for change". There is no indication however, as to how SSM would be and was deployed in understanding the existing culture in order to facilitate the introduction of new cultural elements or for assessing the resistance to change the various groups and coalitions possessed. It seems TSI relied on the all inclusive-consensus seeking characteristics of SSM and the skills of

the analysts to manage issues at the process level. In the ISD arena however, even fewer methodologies handle naturally process issues let alone not take organisational assistance for granted. It is apparent in the case study that much process activity did take place, but the authors-analysts present it as methodology led and not as their genuine personal "backstage" process activity. Indication of a process level intervention were the analysts' adoption of a "hidden" cybernetic agenda for defining minimum specifications for the success of agreed changes and their need for "side-stepping and managing political problems". The choice of the cybernetic metaphor per se is not criticized here and it is adequately explained in TSI in terms of a dependent metaphor and methodology. What is not clear from the case study, is why such agenda had to be hidden, given that cybernetic thinking was introduced with success earlier in the organisation. Furthermore, what reasons, events, observations made the analysts think it should remain hidden and what insights such realizations provided into the functioning of the organisation and its processes, again are not clarified. Clearly what emerges is the skill of the analyst than the role of TSI.

We must note that TSI was never intended as an ISD approach, although its advocates make claims of its meta-methodological nature. TSI may have more success with organisations and professionals as it offers a simple and powerful approach to creative problem solving. It needs to be understood, however, that people in organisations have also developed personal tool-kits which include techniques, tools, models and theories not organized in complete methodologies as TSI requires. This may require a reframing process from the point of view of organisational users of TSI which they might not be willing to undertake.

Another obstacle to the adoption of TSI into businesses is that it is a problem solving methodology and not a systems development approach. TSI is in many ways similar to IT itself —both requiring their appropriate business context to be determined first.

2.4.3 The NIMSAD framework

NIMSAD offers independent support for the process of choice of methodologies. Currently, the sheer number of methodologies available pose a significant choice problem. Furthermore, creators of methodologies do not always express the methodological suitability, strengths and weaknesses, and applicability of their products.

NIMSAD provides an understanding of the overall information systems development process by including in the discussion not simply the methodology, but its comprehensive context. Such context involves the concepts of the analyst, the organisation, the nature of the problematic situation and the interactions among these concepts.

NIMSAD expresses a genuine understanding of organisations, their realities and the importance of the analyst-client relationship. Within the framework this is exhibited by Jayaratna's (1994) statement that organisations serve as the context of information systems which is important as:

- the effectiveness of an ISD effort can only be measured in organisational and user terms,
- to obtain necessary information for the project effort the analyst needs to interact successfully with organisational members,
- the intended problem solvers are introduced to the situation from within the organisation and this introduction process is important for subsequent problem solving activities, and
- important interpersonal relationships are formed between the analyst and organisational members that influence the outcome of the development effort..

As Jayaratna (1994) notes:

> "... one of the major weaknesses of most current information systems methodologies is that they are not concerned with what really happens in organisations.", (58-59).

NIMSAD thus confirms ISD's lack of genuine organisational understanding. NIMSAD understands the complexity and variety of problems that are interdependent and interrelated in the 'situation of concern' and the importance the analyst's characteristics and mental constructs have on diagnosing such problems. NIMSAD calls for assumptions, values and problem formulations to be traced back to the analyst's characteristics and mental construct and be challenged for their diachronical validity. This is also important for "Systemic Analysis", the process consisting of problem formulation activities. As Jayaratna (1990) argues, models and structures used in

gaining understanding are of limited variety since they are 'human-information processor' bound and not 'real world' bound. Thus capturing the true richness of the situation is not easy unless the analyst is able to operate at a meta-level of awareness and be able to examine the effects of his own values, models, assumptions and preferences. Only if the analyst operates at this kind of level will he be in a position to receive a greater range of information messages from the organisational context of development. As Jayaratna (1994) indicates, in most ISD methodologies, problem formulations are largely taken for granted and as determined by clients.
The NIMSAD framework aims to provide the necessary language for communicating and expressing choice by translating methodological issues and their aspects into their 'real world' bound expressions-interpretations. It is a model for diagnosing methodological applicability for specific 'real-world' situations. It is useful for highlighting inadequacies of methodologies, especially when is comes to the context of development.

The framework has been successful in indicating the paradigm shift needed in ISD methodologies concerning their technical rationality and orientation. It recognizes the distinction between the implicit and unconscious selection based on feelings, assumptions and hunches, and explicit selection based on models, concepts and methodologies. NIMSAD has been designed as a framework and as its creator emphasizes, it is not a methodology since it answers the "what to" and not the "how to" question.

NIMSAD does not make an explicit distinction between process and content of intervention. Perhaps this is due to the static nature of the framework construct. However, this means that methodologies are not evaluated according to their intervention process management merits.

Organisational change and disruption to development are not considered in NIMSAD. The possibility therefore exists for NIMSAD to indicate an 'appropriate' methodology that will fail because the organisation is not ready for the changes involved. Although the organisational context is considered in the NIMSAD framework, change may require a dynamic process of diagnosis. To diagnose issues of change the analyst needs to

intervene, make observations and collect data in an ongoing organisational situation. Additionally, some aspects of the organisation cannot be statically examined or without introducing change in them. Organisational reality is mostly obscured leaving real issues well hidden from sight. To make things worse, organisational members are usually too close to the situation in hand to recognize the subtlety of their erroneous beliefs, assumptions and actions or to determine adequately their response to change. This led Lewin to argue that in order to really understand a system you should try changing it. In other words organisational reality is problematic requiring a systemic approach to make sense of it, (Checkland, 1992). NIMSAD is a systematic approach to evaluating methodologies rather than a dynamic systemic process that guides action and understanding from within the very problematic reality of organisations. This is evident in the way NIMSAD comprehensively defines in length the various elements of evaluation and their interrelationships. As a solution for ISD, NIMSAD could successfully compliment a systems development approach which would provide a dynamic context of use. NIMSAD could also be the basis for the development of an approach for ISD as it reflects the necessary values and places great importance on processes like diagnosis and choice.

2.4.4 Multiview

Multiview is a contingency approach that combines five powerful methodological views of IS development into one hybrid methodology. The methodological choice depends on the particular circumstances within the situation that the analyst and methodology are to interact with. Mutliview makes no presumptions on the nature of the situation, the skills of the analyst and the suitability of the methodology. These three elements form a relationship which expresses the fundamental view of the ISD process. Choice is constrained within the approach as techniques and tools within the Multiview framework are chosen and adjusted according to the particular situation, rather than tools and techniques outside the five methodologies. Multiview views data as the 'building blocks' of information which is a "major constituent of the information system which supports the activities in an organisation". The methodology's viewpoint caters for a wide definition of information systems, not necessarily computerized. The methodology is designed to support ISD professionals who wish to adopt a flexible

approach which copes with changes in the market. Another assumption at the basis of Multiview is that:

> "different ranges of 'solutions' will be appropriate to different companies, different departments within the same company, different users, operators, and so on. A more flexible approach is likely to be appropriate under these circumstances.", (Avison & Fitzgerald, 1988:6).

Despite the above belief the five methodological options have been already made by the creators, although variation is allowed between them. Multiview by design does not cover the whole ISD life cycle and sets out to cover the analysis and conceptual design of information systems. As such implementation issues are excluded.

The five stages of Multiview can be emphasised, reduced in scale, or even omitted according to the particular circumstances. This is consistent with the realization that:

> "...information systems development theories should be contingent rather than prescriptive because the skills of different analysts and the situations in which they are constrained to work has always to be taken into account in any project.", (ibid).

Multiview is a contingent approach which aims at achieving the right balance between the five elements of the methodology. Multiview exhibits an understanding of the complexity of problems during ISD but not a clear understanding of organisations and how they change. This is evident in the way Stage 3, Analysis and Design of the Socio-Technical system is a distinguished activity and not a concurrently pursued process from the start of the project. This is perhaps because the main emphasis is to match technical designs with social designs in order to ensure acceptance and minimise the impact of technology, rather than improving the way the organisation develops through ISD. It is about fitting the system in the users working lives, not about changing their working lives.

A simple matching of a social setup to a technical solution, as required in Stage 3, can only be done at a superficial level, possibly missing critical deep rooted issues. It is assumed that within the boundaries of this stage the analysts will be in a position to diagnose the social impacts of the IS on the working lives of the users, and that users will be readily in a position to adequately assist in such a process. Furthermore, this stage is expected to be completed without any consideration to interpersonal working relationships between the analyst and the organisational members, without attention to process issues and without a proper assessment of the readiness and the ability of the organisation to develop the IS and its related social system.

Although the five main views covered may seem to cover most aspects of ISD there can be other important views that the analyst and client may want to consider, (e.g. RAD). Additionally there is a wealth of methodologies that can express practically these views when chosen appropriately in contingent situations. The particular five views may be problematical where they are not accepted by the client or where they are culturally incompatible. This may be likely in the cases of SSM and Ethics. In such cases Multiview is not able to resolve the conflicts that indeed arise from the problematic situation.

Another area of concern is the area of intervention. Although Multiview recognizes that the analyst interacts with a complex situation the process of intervention is not given any consideration. Overall the approach is oriented towards the complexity of the content of developing an information system rather than both content and the complexity of the process of development. Surely if the situation and the organisation create complexity for the nature of the information system and social system, it should create complexity in the process of IS development. Multiview goes some way to broaden the scope of an ISD methodology, but if we are to accept complexity of the situation and organisation we have to accept no limits in our approach. A typical example is the fact that an organisation may not be in a position to undergo desired change. Although Multiview recognizes that the initial interaction between the consultant and the client may determine the direction of the project, it does not provide support for the initial pre-ISD phases or for the interim organisational development before ISD starts.

Finally, within the individual five areas Multiview does not escape from the criticisms of the particular approaches (SSM, Ethics, Functional), although as an approach it provides a different context for their use. As an ISD approach Multiview is a step in the right direction requiring a further broadening of its conceptual boundaries.

2.4.5 ETHICS

The metaphor central to Ethics is the socio-technical system and the main model of intervention is user participation. The basic Ethics framework aims to facilitate the

matching of social with technical alternatives. The methodology helps examine a range of socio-technical alternatives for the best solution, (Mumford, 1981;1983).

Ethics is not open to other metaphors or views or processes which may be equally useful or even necessary in certain situations. Every system is considered a socio-technical system and has to be developed through participation. However, participation may not be an option, for example in autocratic environments or in organisations undergoing crises. Additionally, other views of systems may be important, for example a critical view of systems. Ethics has no frameworks for evaluating alternative viewpoints. Even, if it did alternative methods would have to be categorized either as social or technical. The social metaphor expresses a narrow emphasis on job satisfaction and quality of work life. Indeed socio-technical systems design is a methodology used in OD for this purpose. However, the complexity of the organisation means that the social aspect includes a larger variety of organisational issues such as politics, culture, management style, decision making and problem solving processes, and structure, which should be included in the analysis.

Ethics provides no guidance in the area of organisational change although again the flexibility of the approach and its social element could potentially be stretched to address such issues. Ethics, like any other approach, intervenes into an organisation in order to bring about change. The organisation, its groups or members may not be prepared for such changes (either social or technical). In other cases, they might be willing to undergo change but may not have the capacity to sustain change. Ethics provides no guidance that will help move the client-system towards a position where change can be facilitated. This indicates that Ethics does not see organisational reality as systemic and the overall approach taken is rather static. The dynamic change issues are left to be considered by the design groups. What also contributes to the static approach to change is that Ethics is surprisingly not an iterative problem solving approach. It assumes that the optimization of the socio-technical system can be delivered in one go and that the introduction of the new socio-technical solution will not create new unforeseen problems that would extend the intervention. One serious problem with structured-traditional methodologies is that the business and the organisation genuinely change during development. Ethics has no way of monitoring change other than through the understanding participants might have.

In many problematic situations change in the social system is required before technical change can be introduced. As such Ethics still gives an undeclared primacy and maintains the dominance of the technical solution. The technical solution is seen as disruptive and as such its impact needs to be minimized. However, organisational effectiveness comes from the effectiveness, (not only well being), of the social system. In order to address the effectiveness of the social system power relations, culture, group performance, communication, and relationships are a small collection of what needs to be examined. As a result Ethics may not be appealing to organisations because while the technical aspect differs little from traditional structured approaches, the social aspect emphasizes issues of employee well being and quality of work life. Organisations need to examine the harder aspects of the social system as well: the performance and effectiveness of the social system. The soft and hard aspects of the social system may require contradictory goals and an approach needs to be able to reconcile potential conflict. As we have seen in the discussion about OD values, these contradictions are not necessarily unethical or undesirable. Ethics avoids being drawn in this potential conflicting and contradictory situation by focusing on the soft aspects of the social system. For this it has been noted that power relations and conflict are not examined and resolved in Ethics. An ineffective social system will participate ineffectively in the design of ISs. Ethics has no way of dealing with this.

The outcome of Ethics, as well as many ISD methods, is to produce information systems. However, it may be necessary to intervene in the client system, improve, develop or transform the social systems and then place systems development in context. Simply examining social considerations when developing systems is not ensuring organisational success.

Ethics also requires participation in order to work. Participation is a highly involving-disrupting process that needs to be managed in its own right. As participation is highly involving it brings to the foreground latent structures such repressed conflict, problems in communication, power differences, distortions in perceptions and misconceptions. Apart from the facilitator no one else participating in the development process has the ability to deal with these issues and the methodology itself provides no framework and tools for utilizing other methods in this.

One could use alternative social and technical methods when examining the social and technical systems objectives separately in Ethics. Off course this has not been the intention of the method and there are no ways of facilitating this apart from relying on the analyst's intuition and knowledge. For the key joint optimization of the social and technical systems again there is no way of linking alternative methods, models and techniques. Ethics is also seen as weak in implementation and as lacking techniques and tools to translate objectives into design, (Jayaratna, 1994). This means that the technical side of the methodology may appear unclear to the design teams which try to deal with the structural complexities of development and they may require the use of a more traditional technical methodology after all.

Ethics can not facilitate a paradigm-shift in IS development. It has strong alliance with a particular socio-technical framework which is not open to contingent choice of appropriate methods. As such existing approaches would need to be replaced. Ethics also requires participation which not all organisations regard as appropriate or may view as costly. It is also not clear on guiding organisational change in relation to IS development. Organisational complexity may require a more extensive view of both the social and technical aspects of the methodology. As an ISD methodology Ethics remains a powerful way to develop socio-technical systems whenever this is appropriate.

2.4.6 Methodology Engineering (ME)

Methodology engineering aims to provide a formal, efficient methodology for developing ISD methodologies which satisfy requirements for being situation-specific, complete, and relying on the accumulated past experience, (Kumar & Welke, 1992). ME has a much wider scope than most of the approaches we reviewed so far. It does not focus on a small number of methodologies, neither it employs a narrow framework for facilitating methodological choice, like Multiview or TSI. The methodology's framework is open to all methodologies and their components.

With ME the end-result is the design and production of a customized ISD methodology, but never the less an ISD methodology. As we have seen in our research, methodologies

are not necessarily the answer and are not in a position to ensure success in a project. The components in ME's repository are derived solely from ISD methodologies and so the scope of the content of ME remains defined by their boundaries. This means that ME can not facilitate a discipline-wide paradigm shift, but it does have implications for transforming the nature of ISD methodological practice. Organisational issues, the process of intervention, the process of change are not part of ISD methodologies and so they would be missing from any custom built methodology, thus confirming the need for an approach to handle those additional areas and levels.

ME also links the choice process with the single stakeholder-values dimension and does not address the role of the analyst's own values and the values reflected in methodologies. This assumes that stakeholders know better than analysts which may allow the pursuit of client-desires rather than actual needs. Again the capacity of the organisation is not considered in this issue. Methodology engineering is contrasted by the authors, and others (Olle et al, 1983), to the design of application systems. This view however overlooks the fact that an ineffective organisation will design an ineffective methodology as it would design an ineffective information system. The role of the analyst is not simply to collude with the desires or values of the stakeholders —some of which may be powerful individuals pushing their own agenda— but to introduce change that is really needed in the organisation. In may cases the use of an external professional is instrumental in helping local actors, groups and interests to challenge their own perceptions, assumptions and even values. Of course, not all development situations may at all utilize an external professional or use him is such capacity. In those cases internal ISD staff should manage their role effectively to achieve a balance between being local to the particular organisation and maintaining an independent point of view. Luckily ISD staff have traditionally enjoyed a strong and distinct culture that helps them maintain their distance from the organisational problems —although this distance has been so great that in some cases they render themselves not useful at all. While the role of ISD professionals needs to be re-addressed in the near future in relation to new approaches in ISD, internal analysts can also be in a position to introduce desired change to the organisation in preparation of ISD.

ME also aims to populate its components repository with pre-tested methodological components, derived from methodologies. As we have seen in our research a greater variety of components is required for successful development, not only methodological in nature.

ME includes some powerful notions that can be a great contribution to approach development in ISD. Especially as a methodology is considered a system of information systems development. This relates to our notion of the action system, which we however apply to a wider range of systems improvement. ME also introduces a strong model for automated component repositories and for appropriate organisational support for methodology construction.

We conclude the discussion of alternative approaches with the observation that overall they too seem to ignore the role of organisations and their influence on IS development. In contrast with OD they appear to lack the sophistication and comprehensive viewpoint that OD applies to the study of organisations and their change.

2.5 Conclusions

In the preceding analysis we have explored OD's fundamental elements and how it uniquely approaches systems development. OD, as a practical field, follows what happens to organisations and their business environments. The field's continuous theoretical and practical expansion into new areas, and a strong self-reflection process are instrumental in producing the uniqueness of the OD approach to other apparently similar consultancy fields. As a consultancy field, ISD is comparable to OD making the latter a plausible option for improvement. Due to OD's nature, existing ISD methodologies do not need to be replaced, as OD can provide the missing meta-methodological layer that can help determine the appropriate use of ISD methodologies and tools for organisational situations. ISD can benefit from OD's popularity and compatibility with organisations in challenging dominant paradigms. OD can help provide the business interface between organisations and technical systems development.

The need for change in ISD is not of a theoretical nature. Changes expected to confront OD confront ISD as they are driven by what will happen to organisations:

FROM	TO
Developmental & Transitional Change	Transformational Change
Linear change	Cyclical change
Create Disequilibrium to Initiate change	Create balance & harmony
Plan & Implement Change	Align with on-going or emerging changes
Start & stop change	Manage the flow of change

Source: Katz & Marshak, 1995:64

Already IT is part of transformational change efforts, (e.g. BPR). The recent growth of RAD and evolutionary development indicate the emergence of cyclical change. Many organisations now pursue future visions rather than reactively discovering and dealing with problems, and IT is helping realize these visions. While there is a similarity in principle, the two fields are completely different in the way the perceive organisational reality, the various actors and problematic situations.

ISD becomes meaningful once the analyst starts developing the IS and not when he is invited to interface and enter the client organisation. This means that important activities such gaining entry, establishing a relationship and interaction with the client over the problem are managed at a superficial level.

The thrust of mainstream ISD approaches solve technical and usually computer related problems and ignore people problems. OD deals with multiple (technical, organisational and people) dimensions of problems and therefore can help ISD become a philosophy rather than a technology, in Schein's terms.

Systems and Contingency theory has influenced OD in the belief that there isn't an-priori "best" solution and that the organisation's readiness to change needs to be diagnosed before any solution is discussed. The analyst has to work at achieving the best solution: a good methodology or technology does not per se guarantee him success. This same realization is becoming increasingly important in ISD due to increased rates of failure.

Although IS Development is in principle based on Systems theory, the nature of systems change is poorly understood and managed. ISD is not considered as a case of

organisational change. OD can start with solving one problem, but ending up solving others not previously considered, but equally or more important. The context of ISD is not recognised to the degree it should. Jelinek & Litterer (1988) argue change will become more important as increased computerisation means that change in one part is multiplied and reproduced much more quickly within the organisation. An OD perspective could help ISD focus more on what happens to organisations.

Problem definitions are taken for granted in ISD: the client might be "saying" very different things —the need for system development may be merely an excuse from the client's point of view to be seen as doing something about the problem. In such cases OD's technologies, such as behavioural science, can be useful in enhancing the ISD analyst's diagnostic abilities.

As Willcocks & Mason (1987) argue, attention to the process of change has been lacking from ISD and behavioural change is not seen as starting from the beginning of the project. This is important as behaviour change is required to occur long before the implementation of the system.

ISD lacks a wide discussion on classification schemata of alternative ISD metaphors and ISD values. The ISD analyst in the future will need to understand the strengths and limitations and suitability of such constructs in practical situations and be able to make choices.

In the ISD paradigm the analyst will always develop a computerized system as a solution, even if everything has showed him that organisational change is needed before hand. In the OD paradigm the consultant deals with the client-system first and then helps them decide what further change is required.

The OD approach and values are favourable ways of solving problems in organisational settings. By design OD deals with change, intervention, process, organisational issues, people issues and organisational effectiveness. It does so using flexible, collaborative, action-oriented, evolutionary approach which matches the way most organisations themselves deal with problems. OD intervention ensures that client-system concerns are not overlooked but taken into account as diagnostic information. OD guides intervention in a way appropriate to the client-system by means of collaboration. Client-organisations find OD an empowering way of solving problems.

The field has matured into an academic as well as practical discipline with its own theory and research. The field is no longer a 'panacea' or an 'art', but is considered a science. This indicates that OD is no longer claiming universality of application and is realistic about its strengths and weaknesses. Such a viewpoint is also needed in ISD.

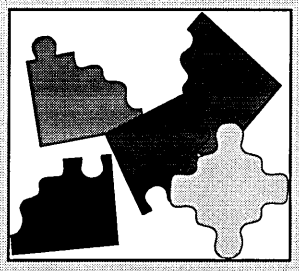
Despite OD's plausibility, we need to be aware of the difficulties in realizing the OD contribution. The main issue is the degree of readiness for a paradigm-shift in ISD practice. ISD consultants face pragmatic pressures which means that commerciality is an issue when adopting a new approach. It will be easier for ISD practice to change if client-organisations change first and push for certain changes in the way systems are developed. The expectation is that OD-type approaches will become more needed in the future.

Another difficulty lies in the new skills that may need to be developed by ISD consultants in order to properly utilize the OD contribution. This implies skills development, re-education and in some cases extensive training.

The OD way of thinking requires also a redefinition of traditional ISD values. This is difficult in its own right as values may be difficult to change. One positive point is that there is growing dissatisfaction in the ISD field about its overall efficacy. ISD practitioners that experience this dissatisfaction may be in a position to readdress their actual values. A possible OD contribution implies an approach that is of a higher level, more abstract and less prescribed which may create problems of adoption by ISD professionals who currently prefer highly prescribed approaches.

Finally, evaluation of the OD contribution may be difficult. Improved evaluation and assessment of efforts has only relatively recently been rigorously utilised to deal with criticism in the field, (Walters, 1990). There is some complexity in evaluating an OD-led approach that builds on both fields, as there is an issue of separating the effects of the OD and the ISD approach. For many purposes it may be impossible to prove that a project succeeded because of the OD contribution alone or the overall approach.

Chapter 3



Research Methodology

3 - RESEARCH METHODOLOGY

3.1 Introduction

To an open minded analyst any research effort poses a number of dilemmas concerning the best way of researching the problem at hand. Choice is not made easier with the existence of many alternative approaches. Approaches range from quantitative vs. qualitative and structured vs. unstructured. Such continua are very powerful in guiding research efforts, but are also artificial as in practice nothing is so clear cut. It is also clearly possible to arrive at the same purpose or end goal from many initial starting points and under differing initial situations and means. This means that a particular approach is not a priori better than any other.

We believe that a research approach should be chosen by examining the appropriateness and effectiveness of a research path against others leading to the same end goal. Since starting points, characteristics and means do not determine the achievement of an end goal, it becomes clear that what is fundamental is the *process* of getting to that goal. We like to view the research method as a dynamic system in its own right rather than a static structure. We very often see presentations of the classic systems models depicting inputs flowing into processes which transform them into outputs within an environment which provides feedback back to the system. What is often overlooked are the dynamic aspects of the system. The inputs or outputs themselves tell us little about the system. What tells us are not only the processes of transformation and control, but also the synergy which is produced by such processes. Only then can we put inputs, outputs, environment and feedback into context. Similarly in our methodological system we may not be entirely clear of the means, the initial conditions and assumptions or even the end goals. However, we can be sure of a process that will bring us closer to establishing what the end goal should be, what are the means needed, what are the appropriate assumptions and conditions, and which are the right questions to ask. Maintaining a process viewpoint demands a constant evaluation of the current research situation and the end goal, (known or unknown, initial or final). Feedback to such constant evaluation will result from the consequences of research events and actions. We like to be clear of our values and our overall viewpoint in doing research. We value the adoption of a flexible, systemic and process viewpoint irrespective of the methodological choices made. As we do not have firm beliefs on the universality of any particular approach our main criterion

for choosing the methodology is appropriateness to the research problem, the analyst and the research subjects. Our overall objectives for this study are:

- To gain an insight and understanding into the total IS development process.
- To assess the potential contribution of Organisation Development (OD) in defining a solution to ISD problems.

The first objective expresses our wish to approach our subject holistically and systemically, rather than in a piecemeal and fragmented way. The second objective is our ultimate aim to determine whether OD can be useful in determining a solution to ISD's problems. The criteria that would help us do so are linked with determining the role of organisational issues within the total system development process. By organisational issues meaning the entirety of issues relating to the processes of bringing about change and intervention within a client-system. OD differs from ISD along this dimension, but I believe the need is common in both fields.

In the discussion that follows we will examine the methodological approach chosen and the rational behind the various choices made. The table summarizes our approach:

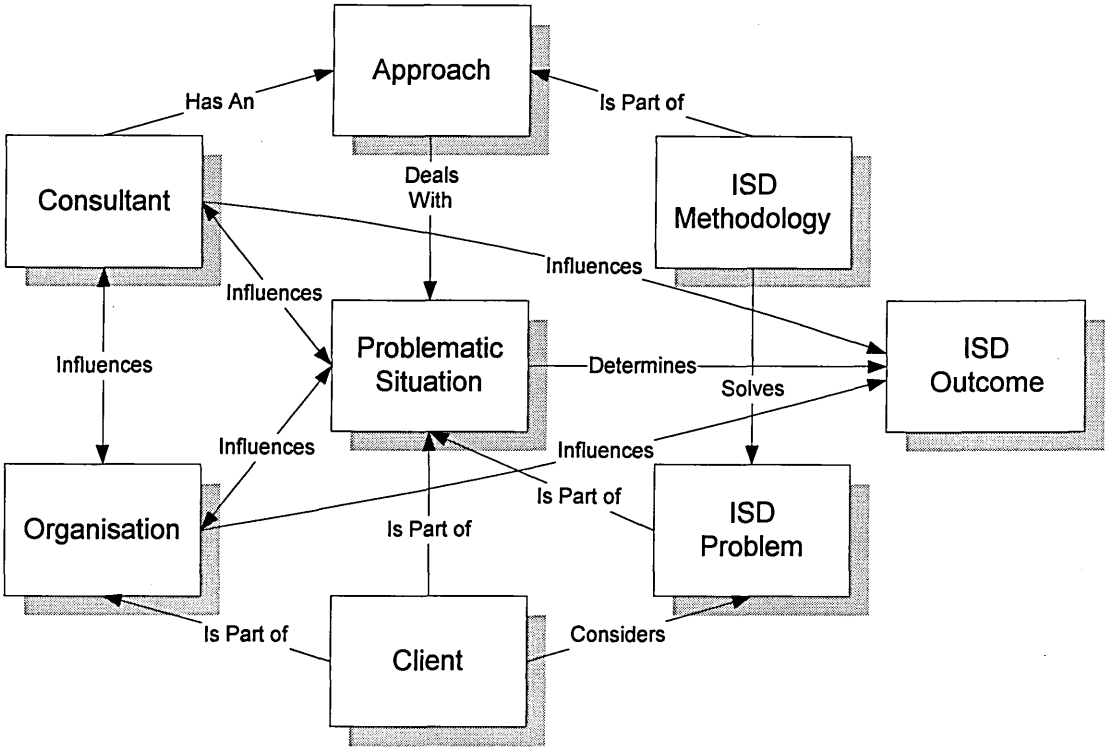
Table 3.1: Summary of the Methodological Framework

Problem Definition	Supported by the Conceptual Model
Research Method	Grounded Theory
Reasons	Studying a Process
	Generation of data and lack of theory
	Complexities of Organisational Situation and Context
Site Selection	Large Consultancy firms
	Client-Organisations
Reasons	Experts in ISD process
	Overview and depth of the ISD process
	Complexity of the organisational context
Data Sources	Qualitative interviews
	Documentation & Internet
	Observation & Critical Reflection
Data Collection	Phase 1 - Consultants
	Phase 2 - Organisations & Follow-up
Data Analysis	Development of categories, links, and theory
Evaluation	Research achievements & constraints
Analyst Reflection	Reflection on process and bias

3.2 Conceptual Model & Problem Definition

Stemming from our initial motivation to research IS development a problem definition was more explicitly formulated. The definition supported the development of a conceptual model which was used throughout our research effort to express the research focus and boundaries.

Figure 3.1: Conceptual Model



3.2.1 Model Elements

- *Consultant*

The consultant is the professional who uses his skills and knowledge to facilitate the development of ISs by utilizing organisational resources available and by developing the ISD capability of clients.

- *Approach*

An approach is a holistic way of doing things with an improvement intent and comprises of a wide set of activities, (Earl, 1992). It reflects a philosophy and a set of guidelines for decision making, problem solving and focuses on total systems development.

- *ISD Methodology*

An ISD methodology is a way of resolving the ISD problem. It expresses a philosophical stance towards ISD and a series of phases, steps and activities consistent with that philosophy. Accumulating experience in using this way of developing systems is incorporated in the methodology itself, through its revisions.

- *ISD Problem*

The motivation for every ISD effort is the identification and resolution of the ISD problem. Such a problem is concerned with what information system to build and how.

- *Client*

The client initiates the ISD process and provides the contact point between the organisation and (external or internal) assistance in the form of consultants. Clarity is needed in defining who is really the client and what is his role and responsibilities, amongst the various stakeholders that can be confused to be clients.

- *Organisation*

ISD is an organisational activity to which the organisation provides the wider context and media of development. It provides resources and the use of established rules and procedures, management structures, and culture. Also in the organisation exist a number of interrelated stakeholders such as management, users, and internal ISD staff. The organisation may have other influencing systems (not necessarily computerized) that interface with the IS under development. ISs are expected to (directly or indirectly) solve the organisation's inability to achieve certain desired goals or levels of efficiency and effectiveness.

- *Problematic Situation*

Due to the systemic nature of organisations every problem does not exist in isolation, but it is perceived within its wider context. The ISD problem is only one in a multitude of interrelated problems. This context is important as it may either be the locus of root causes and where some of the effects of the problem are experienced.

- *ISD Outcome*

ISD success is achieved when an IS has been developed using an appropriate process which manages change and when the resultant information system is appropriate to the organisation's needs and goals in a comprehensive and acceptable fashion. A successful system may be delivered using a disruptive process and a successful process may deliver an inappropriate system.

3.2.2 Model Relationships

The consultant during an ISD project is confronted with a problematic situation in an organisational setting. This means the consultant has to deal with a number of problems, define who the client is, identify the organisation's readiness for systems development and decide his intervention strategy. The adoption of an ISD methodology is clearly not enough to deal with the above requirements. The adoption of a more holistic approach is necessary. Such an approach would be capable to diagnose problems and help decide the most appropriate way of action. A single ISD methodology is only one possible way of action and can only be appropriately used when certain conditions are met.
The organisation may be part of the problematic situation or significantly influence it. The organisation is an on-going system that is disrupted by the consultant's intervention and the ISD process. The organisation has to maintain its level of efficiency and at the same time commit scarce resources efficiently to development efforts. The client sees only the ISD Problem which is the motivation for initiating the project and usually fails to visualize and communicate an overview of the problematic situation. The problematic situation influences ISD outcome. The consultant, the organisation, the client, the ISD methodology must all come together in tackling what is important in the problematic situation.

3.2.3 Problem Definition

The main problem we have identified is that IS development is a process that is not considered an organisational activity. ISD's ineffectiveness appears to stem from its inability to deal with the complexity of the whole process which unfolds within the

organisation context. IS development can not deal with inherent complexity along a number of dimensions:

Table 3.2: Unresolved Complexities in ISD

• Organisational context
• Problematic situation encapsulating ISD problems
• Consultant Intervention into the Client-System
• IT-related organisational change

3.2.4 Research Questions

The starting question for us was: What is the nature of the process of developing an information system and how this process unfolds within an organisational situation and context? What is the sequence of events, activities and decisions that lead towards successful IS development? How sub-processes and elements interact to make up the overall process of developing an IS? What conditions influence this process?

By nature of the process we want to examine how the process structured: is it a long sequence of identifiable events or is it a series of parallel sub-events? Additionally, what is the nature of these events or activities? Are they elaborate prescriptions or key ISD processes? The ISD process can not be separated from its context and can not be understood in isolation of the situations it encounters. Therefore both organisational situation and context create conditions that influence events and their sequence within organisational reality. We aim to understand this influence and see how ISD professionals and other actors cope under such conditions. From the start we have regarded all actors (consultants, clients, users, management) as part of the total systems development process and we will be looking at their particular role.

Given our problem definition, the particular viewpoint in this study and our main research question, it is clear that further questions are raised. These are summarized below with the aim of mapping conceptually the problem and research area:

- *The Role of ISD Methodology.* Wynekoop & Russo, (1997), argue the area of ISD methodology utility organizes research issues and questions that are essential for

understanding ISD and the role of methodologies within the development process. The main questions are:

What is the extend of methodology use in practice?
How are methodologies actually applied in practice?
If a methodology is not used, what is, how and why?
Are methodologies used as intended by their creators?
If they are not how are they modified and what makes them work?
Are methodologies used in isolation or do they complement each other?
What methodological elements are used outside the context of a methodology?
How a methodology is selected amongst numerous alternatives?
What makes methodologies more favourable than others?
How methodologies contribute to ISD success?
Are methodologies inappropriate in certain contexts?

- *Consultant Decision Making* and *Problem Solving Processes*. Examining the role of methodology unavoidably points back to consultants making methodological decisions. Consultants are confronted with many alternative methodologies, techniques and tools. They also confront the client and establish a working relationship in order to deal with his concerns.

How consultants make methodological decisions and choices?
How consultants solve technical, ISD and non-ISD problems?
How do consultants deal and manage their clients?
How do consultants manage their own intervention?

- *The Consultant's Approach*. Assuming that consultants employ additional processes for problem solving and decision making, that are not necessarily determined by a methodology, how consultants approach development is important.

Does the consultant's effectiveness depends solely on methodologies and skills?
When no methodologies are used, is an overall approach used?
How an approach tackles a problematic situation?
Is the consultant's every action influencing the ISD outcome?
Does the consultant's approach determine use of methodologies and his conduct?
How consultants modify their approach and to suit what they perceive is required in problematic situations?

- *The Role of the Client.* The client is an important part of the ISD process and the consultant relies on his assistance or collaboration.

What is the role of the client in assisting or hindering, consciously or unconsciously, the work of the consultant, of the users, of project or system development teams and the development process?
What do consultants require from clients and vice versa?
Do clients approach IS development differently than consultants and how?

- *The Organisational Context.* This set of questions examine the role of organisational issues interfering and influencing the ISD process and its actors.

Is ISD an organisational activity? If so what are the implications for the consultant's intervention?
How does the organisation assist or hinder or influence ISD?
Does the organisation create or sustain the problematic situation or concerns that must be resolved?
What sources and types of problems in ISD can be attributed to the organisation's functioning and capacity to change?

- *The potential of OD.* This set of questions are needed to make sure data are collected that will allow us to assess the potential role of OD in IS Development

Are current ISD approaches, models and methodologies providing effective solutions to client-organisations?
Do current ISD approaches, models and methodologies solve most of the problems that arise in the course of an ISD project?
Are current ISD values and beliefs appropriate for the purpose of the field?
Are the following necessary for a successful ISD outcome: • Diagnosing and resolving organisational issues • Managing organisational change • Intervening into processes • Collaboration • Improving organisational effectiveness

- *Conceptual* Model. These questions stem from the elements of our conceptual model and their relationships.

Does success in dealing with the Problematic Situation lead to a successful ISD outcome (process and content)?
How do the conceptual model's elements interact to produce the synergy of the ISD process?
What is the role of each element and what are their relationships in practice?
Which elements are most important and why?
Can we identify any new elements or relationships?

3.3 Research Methodology

At the centre of our study lies the understanding of how the IS development process unfolds within the organisational context. The inherent complexity of this research subject is apparent in the number of question areas presented above. These questions are certainly not exhaustive, but are given as indicative of the areas that are important in our research. It has not been our aim to gain an isolated understanding of each element of the ISD process. A qualitative approach matches the complexity and holistic nature of the subject while meeting our preferences for a flexible research viewpoint:

> "Qualitative research,..., is carried out in ways that are sensitive to the nature of human and cultural social contexts, and is commonly guided by the ethic to remain loyal or true to the phenomena under study, rather than to any particular set of methodological techniques or principles.", (Altheide & Johnson, 1994:488).

As Cassell & Simon (1994) argue, qualitative methods allow flexibility in the research process which means the researcher can be responsive not only to the changing complexity of the situation, but also to his own changing understanding of that situation. This enables the researcher to drop, change or adopt new hypotheses while doing his research:

> "Many qualitative methods, because they are less rigidly defined allow the researcher to change the nature of his or her intervention as the research develops in response to the changing nature of the context. With respect to organisational research —where we always have to be responsive to the organisational circumstances— this is crucial: not just in terms of what we are allowed to do but also because the fact that we are working in complex situations means we cannot define exactly what we are interested in or how to explore the issue at the outset.", (Cassell & Simon, 1994:4).

Qualitative methods are more suited to research situations where the analyst, like myself, has no long experience or expert knowledge of the setting under study. Quantitative methods require significant input and analysis at the beginning in order to develop theories that can be confirmed. In our case this would not be easy as we had no previous practical experience in ISD and because there is very little existing literature that covers the whole ISD process. These two factors would make using quantitative methods problematic, even if quantitative methods where the most appropriate for our research. On the other hand qualitative approaches require less at the beginning allowing the analyst to build gradually his understanding of the setting and situation. Of course both approaches have trade-offs. The qualitative analyst will have to spend significantly more time in analysis and interpretation of his data. The quantitative analyst, having

worked intensely up-front enjoys a less demanding process of statistical analysis, which in most cases nowadays is supported by computers. This contrast is reflected in the characteristics between the two approaches:

> "... qualitative research can be said to have a number of defining characteristics which include: a focus on interpretation rather than quantification; an emphasis on subjectivity rather than objectivity; flexibility in the process of conducting research; an orientation towards process rather than outcome; a concern with context —regarding behaviour and situation as inextricably linked in forming experience; and finally, an explicit recognition of the impact of the research process on the research situation.", (ibid,7).

Qualitative research is becoming increasingly accepted and used in ISD research. The main reason is a shift in IS research towards managerial and organisational issues that have fueled interest in qualitative methods in the field, (Myers, 1997).

Within the qualitative framework we adopted grounded theory as our main methodology, (Glaser and Strauss, 1967; Martin and Turner, 1986; Turner, 1983).

> "The grounded theory perspective reflects a naturalistic approach to ethnography and interpretation, stressing naturalistic observations, open-ended interviewing, the sensitising use of concepts, and a grounded (inductive) approach to theorising, which can be both formal and substantive", (Altheide & Johnson, 1994:508).

Grounded theory was found appropriate for a number of reasons discussed below. While these can be thought to be relevant to any qualitative methodology, they are considered grounded theory's specialty.

- ***Studying a Process***

The prime focus of the study is a process —the process of developing an Information System. The study of process is best suited to grounded theory:

> "If the question concerns experience and the phenomenon is a process, the method of choice for addressing the question is grounded theory.", (Morse, 1994, 223).

Through the notion of process, grounded theory facilitates the study of organisational change, the sequence of events and social interaction, (Glaser & Strauss, 1967). Characteristic of the study of process is the use of the gerund to define the research subject, (ibid). In our case this is expressed by the phrase: "developing an information system".

- ***Generation of Explanatory Theory***

There is relative poverty of research in the subject area. There are very few if any similar studies explaining or predicting how the ISD process unfolds. This means that we can not rely on existing theories for understanding the ISD process. The models of the ISD process expressed or reflected by ISD methodologies come close, but are significantly limited in explaining the overall complexity. Due to this situation, our main aim was to formulate an explanatory theory of the ISD process and its operation, which could provide support and direction to our arguments for improving IS development. Given this aim, grounded theory was seen as the most suitable research methodology that was consistent with a qualitative framework, but rigorous enough for theory development. It is suggested that grounded theory is most appropriate "when little is known about the topic and there can be little reliance on previous literature or empirical evidence", (Gill & Johnson, 1991:119). Its case study structure is suitable for generating theories in a poor research area, (Eisenhardt, 1989).

- ***Complexities of Organisational Situation and Context***

Our methodological approach had also to be capable of dealing with the richness of the organisation context within which ISD takes place. It was our firm belief that the examination of the ISD process in isolation of its context would be inappropriate and misleading for our purposes. This posed further the need for a qualitative framework and the choice of Grounded Theory which is sensitive to the organisational context. Indeed where Grounded Theory is used data is collected from the research site irrespective of whether it is foreground or contextual. Qualitative data are collected and patterns emerge from the analysis. Only after data collection can we distinguish between context and foreground. This strength of grounded theory was seen as particularly advantageous as we did not want to impose any preconceptions on what constitutes the context and what not. We wanted to enter the research situation, collect rich data and then allow the data to ground our analysis. This would also allow our theory of the ISD process to be densely linked with its context.

To an extent any methodology is capable of addressing the three issues above, but it has been established that grounded theory is the most suitable research vehicle. For

example, grounded theory has been used in IS research because it is useful in developing context-based, process-oriented descriptions and explanations of the phenomenon under study, (Myers, 1997; Orlikowski, 1993). Application of grounded theory is also increasing in the IS literature, (Bowker et al, 1995; Elsbach and Sutton, 1992; PriesHeje, 1992; Ancona, 1990; Isabella, 1990; Kahn, 1990; Pettigrew, 1990,1985; Sutton, 1987).

3.4 Research Design

The primary design implication of grounded theory is a case by case study of the research subject as multiple instances of the studied process are displayed in many different cases, (Janesick, 1994). Grounded theory is a constant comparative approach that picks up fragments from one case to the next. This way, the interplay between data and analysis is facilitated and emergent theory becomes densely grounded in data from different cases.

3.4.1 Site Selection

We identified large and large-medium sized consultancy firms as our research sites with an aim to maximize the effectiveness of theoretical sampling and create conditions that would enhance our theoretical sensitivity, (Strauss & Corbin, 1990). Due to their size these consultancy firms could provide us with access to experts in the ISD process, possessing many years of experience. Our sites also included a key number of large client-organisations that have developed systems on their own. The reason for such selection was to place ourselves in a position to research the complexity of the organisational context within which ISD takes place.

Given the identification of our research sites we recognised the potential issue of gaining access. It is a common realization that studies of consultants and their firms is somewhat lacking, not only in ISD, but in management consultancy as well, which is the main business for many of these firms, (Berry & Oakley, 1993;1994). The studies that exist are usually produced by employees and usually refer to in-house methodologies, (e.g. Wallmuller, 1991). Our strategy to overcome any issues of access was to address high-powered people in the organisations that would invite us in to do research, rather than approaching consultants directly.

3.4.2 Data Sources

Qualitative data result from naturally occurring ordinary events in natural settings. They help us see what "real life" is like and see the forces and processes at work. The analyst comes to direct contact with the research subjects and utilizes face-to-face communication. He is also open to observations within the research situation that allow him a genuine account of feelings and impressions of "being there" —even if such accounts can never match local experience. They require interpretation of the visible and politically acceptable aspects of such processes and forces. Challenging of assumptions is therefore enabled and required.

The main sources for qualitative data in our study were: the qualitative interview, observation, and documentation review.

- *Qualitative Semi-Structured Interview*

The qualitative interview is the central technique used under the framework of Grounded Theory Methodology, (Morse, 1994), and is chosen because there was a need in our study for:

- the prospective study of perceptions of processes,
- collection of historical accounts of the development of a particular phenomenon,
- focus on the meaning of particular phenomena.

The characteristics of the qualitative interview are:

- Low degree of structure imposed by the interviewer;
- Preponderance of open questions;
- Focus on 'specific situations and action sequences in the world of the interviewee' rather than abstractions and general opinions,
- The analyst-subject relationship is part of the research process not a distraction from it that needs to be ignored or removed. There is no 'relationship free' interview, (Cassell & Simon, 1994).

The latter is very important to us but also in any qualitative study as the analyst has to be able to: "...see the research topic from the perspective of the interviewee, and to understand how and why he or she comes to have this particular perspective", (ibid). In our study this has been a central aim given our lack of experience in the domain area.

- *Observation & Reflection*

Within the area of observation our strategy was to observe the contextual and cultural aspects such as the organisational settings and artifacts, symbols, jargon, rituals, and probe for company documentation were applicable. Observation, in the hermeneutic sense, is not only directed to the research setting, but to the researcher as well. The analyst himself can become another source of data through the reflection on his personal feelings and sensitivity to impressions:

> "If, as a consultant, I find I am becoming anxious, embarrassed, hurt, or pleased, I can ask myself why I am feeling what I am feeling and attempt to sort out what comes from within myself and what from the consultant-client relationship. So far as I am sure that some of the feeling arises in the situation and not as a result of idiosyncrasies of my own personality, I can use myself as a measuring instrument—however rough and ready—to give me information about the underlying difficulties and their strength.", (Rice, 1963:6).

Adopting these different sources was not specifically done for purposes of triangulation as suggested in other studies, (Orlikowski, 1993). Our aim was to maximize data collection due to the potential issue of gaining high levels of access. Throughout our research effort, we treated all data the same irrespective of their source. In the constant comparative process of grounded theory an implicit triangulation is unavoidable, as a fragment from a document is compared with something said in an interview or contrasted to a ritual observed while interviewing. In such a fashion triangulation is built-in grounded theory when different data sources are adopted. At the methodological level we did not adopt another methodology for the purposes of triangulation as we did not see the need to do so. Grounded theory provided us with a suitably rigorous inductive process.

- *Data Management*

One characteristic of qualitative research and a potential problem, is the large amounts of generated data. A related criticism concerns the lack of rigour associated with doing qualitative research. While grounded theory provides a rigorous methodology for theory generation we felt it was necessary to adopt a data management framework that would ensure the following:

a) high-quality, accessible data,

b) documentation of analyses,

c) retention of data and associated analyses after the completion of the study, (Denzin & Lincoln, 1994).

As qualitative analysis is an iterative process, data management is crucial in ensuring time is not wasted tracing analyses back to the data and retrieving data stored in different locations and under different filing schemes. During our research effort we organized our data and analytical material into the two types of files according to Turner (1981):

- One file for conventional storage and easy retrievable of material, and
- A second file for hosting the emerging analysis.

In practice, we also used a third conventional "file": a bound notebook dedicated to memos, notes, quotes and rough diagrams. The material within the conventional files were further organised according to Miles & Huberman (1994) data management guidelines, (Appendix 1).

3.5 Methodology of Analysis

Our analytical efforts were influenced by Turner (1981) and Strauss & Corbin (1990) who offer in-depth guidelines for a grounded theory project. Turner (1981) identified a series of key phases that proceed gradually from the data to produce the theory, (Appendix 1). Strauss & Corbin (1990) focus on the key processes behind these phases and identify a series of different types of analytical activities:

Activity	***Process***
Open Coding	Breaking down, examining, comparing, conceptualizing, and categorizing data.
Axial Coding	Putting data back together in new ways after open coding, by making connections between categories.
Selective Coding	Selecting the core category, systematically relating it to other categories, validating those relationships, and filling in categories that need further refinement and development.
Process	Linking action / interactional sequences.
The conditional matrix	Considering the wide range of conditions and implications related to the phenomenon under study.

In practice the stages and processes of analysis did not proceed sequentially, but iteratively and, in many instances, in parallel to each other. The first stage of analysis

was the development of categories or open coding which took more than one iterations to produce the maximum of categories possible from the data. In the beginning this was a daunting task as there were two many categories with too many possible links to begin to see a clearer pattern emerging. However, after revisiting Strauss & Corbin (1990) and continuing fieldwork a clearer pattern begun to emerge. One analytical process that was extremely useful was to identify not only the categories, but their properties, dimensions and their values:

Type	***Example***
Category	Tailoring of Methodology
Property	Choice of Methodology
Dimension	Locus of the choice decision
Value Range	FROM: Client choice — TO: Consultant Choice

Using this analytical scheme what are identified initially as categories are reorganized according to their different types and so categories become denser, more saturated and more robust. The next phase was to carry out axial coding where links between categories are considered. A link represents a form of causality between an initiating category and a resultant category or phenomenon. This entails looking at the context of the specific link and examining the conditions under which the link holds.

The following table presents an example:

Type	***Example***
Link	*Method Tailoring may involve Method Streamlining*
Category	Tailoring of Methodology
Property	Choice of Methodology
Dimension	Locus of the choice decision
Value Range	FROM: Client choice — TO: Consultant Choice
Causal Condition	*Client has already made a choice of method*
Category	Methodology Streamlining
Property	Removing unnecessary phases from the Methodology
Dimension	Degree of method rigour
Value Range	FROM: Too rigorous — TO: Not at all rigorous
Context of Streamlining	*A small-sized client has chosen a very structured, time consuming and resource hungry method for a small/medium sized project.*
Strategies for Streamlining	*Examine requirements for documentation,* *Examine duplicate tasks,* *Examine activities that relate specifically to managing a large project with many teams.*
Intervening Conditions	*Client dogma and preconceptions about method use,* *Lack of trust in the consultant,* *Client-organisation overtly formal.*

Strauss & Corbin (1990) extend axial coding by examining additional analytical characteristics and help to eventually map a sequence of links through the linking of multiple paradigms into mini-frameworks. In our example, another paradigm would extend the link if additional streamlining is needed. Then analysis would examine differences between initial and additional types of streamlining.

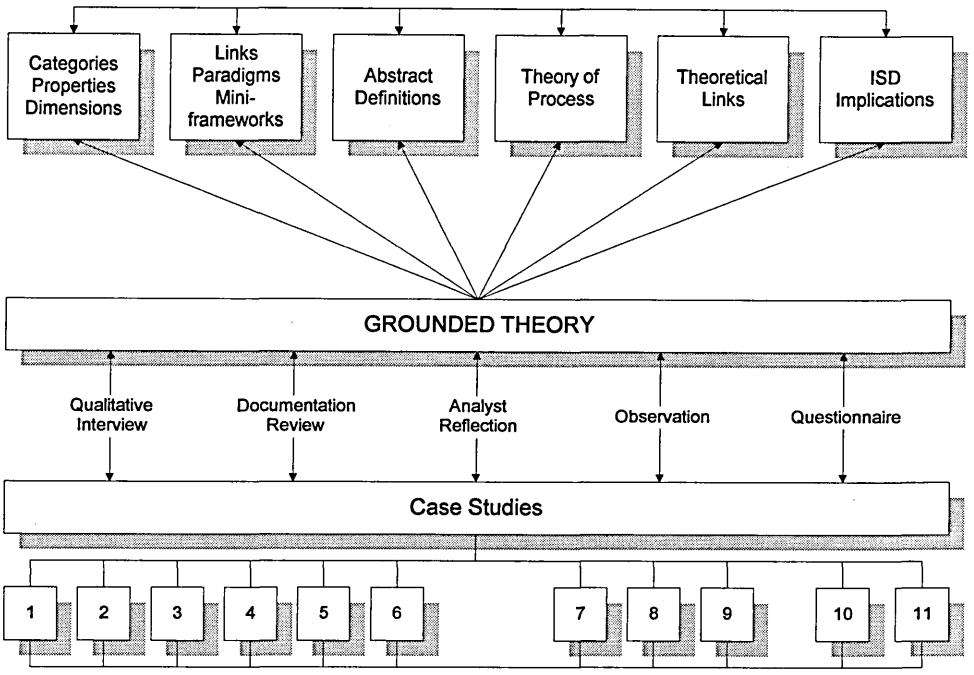
This type of analysis was significantly more time consuming but helped the emergence of a grounded process that was very tight conceptually and very well "networked". This type of analysis was also useful in identifying gaps not only at the level of category but in links and the rest of the sub-concepts. This led naturally to selective coding with an aim to fill in these gaps. However, before reverting to the field, a reevaluation of the rest of the data and analysis under the emerging paradigms and mini-frameworks was extremely useful. As categories are developed hypotheses are formed about earlier data and analytical observations. For example, while streamlining emerged from one case we went back to all other cases to see whether we could identify streamlining in another form or under different conditions. Quite often open coding had missed a small expression of a category that emerged much latter. This led to the fuller saturation of categories and links. Additional analytical techniques were also used, as suggested by Strauss & Corbin (1990). For example, we would also examine what happens if instead of removing unnecessary phases there is a need to add necessary phases. Again we would examine conditions, properties, links and contexts by going back to the data or the field.

With the selective coding the analysis reaches a point where the core category has been identified and the level of analysis becomes more abstract in order to integrate categories into a theory that explains the phenomenon under study. Based on all the preceding analyses, the clarification of a story line is an essential step. As Strauss & Corbin (1990) argue, if there is difficulty in committing to a story line it means that the core category and its essential behaviour may have not been adequately explicated. There is also the case that the sheer complexity of the phenomenon under study does not permit the analyst to identify with certainty what is important and what is not. The latter was not the case with our study where we were able to draw the story line either in the form of a paragraph or the form of a chapter where the story line is explicated with

detail. The story line for us was inextricably linked with the notion of process. Process for Strauss & Corbin (1990) captures the changing action relating to the phenomenon which achieves a desired goal under changing conditions and over a period of time. Process addresses the issue of change in a dynamic setting and results in developing a process rather than a variance theory of change that explains the phenomenon, (Markus & Robey, 1988). In our case, the process that emerged was how an information system is developed from the point in time were it relates to a client-concern to the point of its integration into the client-organisation. Our emerging theory explains the detailed unfolding of the ISD process within the changing conditions of the organisational and situational context. In our effort, we also did not impose any process related constructs from the outset in determining our resultant model, as in other studies of process, (Newman & Robey, 1992), but remained faithful in grounding our categories in the data.

However, to make our theory useful we needed to explore the wider implications and relationships of our theory to the general field of IS development and the world of science in general. Strauss & Corbin (1990) propose the use of the conditional matrix a model for exploring gradually wider contexts to the study. We did not use the matrix as rigorously, but opted for Turner's (1981) scheme of exploring links to existing theory and examining the implications of our theory to the discipline of IS development. We did so because our study was focused on the action and interaction levels, in terms of the matrix, rather than on wider societal levels of phenomena. Figure 2 below provides an overview of the research process depicting the interplay between data raised from the comparison of different cases and the analysis that itself is raised gradually to more abstract levels:

Figure 3.2: Overview of the Research Process.

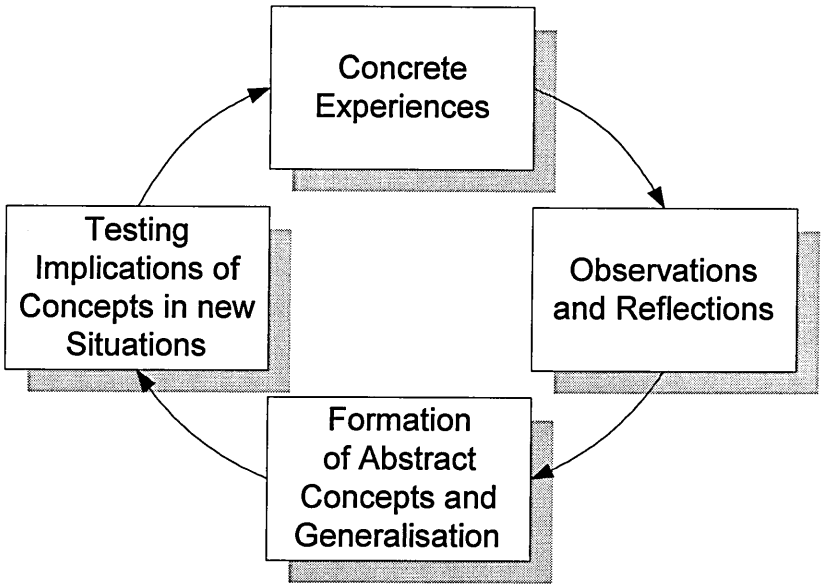


While the above picture may come across as a "clean" procedure of analysis it has certainly not been the case in practice. As research is itself a process we could study in a grounded theory fashion, we found that many intervening conditions render the above process quite messy and even frustrating at times. Analysis is a creative activity which cannot be fully planned, predicted or forced by the analyst. On the other hand other activities are meticulously planned and are forced upon the analyst. This means that the analyst may not have the luxury of imposing to the world his process of research. For example, the analyst can not carry out an interview just after a major analytical breakthrough for the purposes of selective coding. In our case, it was difficult at times to complete open coding before moving to the next case and when we wanted to do additional interviews they were arranged only after wasting a lot of time. Additionally, respecting a research agreement to a collaborating organisation meant producing quick case studies before even starting on the grounded theory analysis. Despite this kind of "administrative" side to research and analysis, the "creative" side was indeed significantly more rewarding —given the element of discovery. It has been my personal experience that the analyst needs to be himself "saturated" and familiar with the data before analytical observation can begin to form naturally even accidentally. When that happens the grounded theory analyst is rewarded for his troubles. Quite often inability to

"squeeze" an analytical observation is down to unfamiliarity with the data the analyst already has collected, but in the effort to attend the administrative side of researching the data may become "alien" and difficult to work with. If data accumulate without analysis, analysis itself ends up being a tedious rather than a creative-enjoyable task.

Another area of intervening conditions to our research process has been conceptual. We believe that no research methodology is free from weaknesses and limitations. The main weakness of any qualitative study is analyst bias. We were concerned initially with our OD background and familiarity that could cloud our judgment on the genuine role OD can play in ISD. As it turned out this did not became an issue as we strove to explore literature on OD weaknesses and OD failure. We also modified our viewpoint from examining directly what OD can do for ISD to what ISD really needs. This way OD is examined as one of the possible options for ISD improvement. Finally, we did not set out to confirm elements of our conceptual model and our understanding, although we could. We allowed our analysis to emerge as "purely" as possible in the style of grounded theory. For this reason our current discussion lacks the presentation of hypotheses and a detailed conceptual schema. Of course, there is no theory-free or theory-neutral discovery, (Turner, 1981; Bryman, 1988; Gill & Johnson, 1991), and to an extent our theory of the ISD process is a result of our particular OD-informed viewpoint. However, this viewpoint was used in a diagnostic rather than prescriptive way. As Kolb et al (1979) has argued, we need to be aware of the experiential learning cycle that shows that theory is not developed not out of nothing, but proceeds from some previous pre-understanding:

Figure 3.3: Kolb's Experiential Cycle



Even when grounded theory is adopted as a research methodology this cycle still exists and shows that while theory may emerge from concrete experiences and reflection, further data can be collected after testing the theory in new situations. As research can be thought of a form of learning about the phenomenon under study, it too has to evolve out of continuous cycles between the above four phases. With grounded theory we choose to start the learning process from the examination and analytical reflection of concrete experiences from one case with an aim to form abstract concepts and generalizations that are tested in subsequent new cases. The testing process allows us to produce additional data that perhaps we would not have produced otherwise. While we choose to start the research process this way that does not mean that we are not applying some theory to the test. In our case the conceptual model is such a theory expressing a conceptual structure of key elements and relationships that is meant to guide our research effort —however not to be confirmed itself. This interplay between data and analysis that tries to enable both the development and testing of theory is the hallmark of grounded theory. This cycle has been also termed as analytical induction, (Gill & Johnson, 1991). Bias is managed through the analyst's awareness and self-reflection on his values and assumptions. Testing of theory proceeds by searching for contrasts, surprises, (Shein, 1987), and negative cases, (Gill & Johnson, 1991). Theory that survives testing must primarily exhibit sophisticated empirical grounding, (Strauss & Corbin, 1990).

A related criticism of grounded theory has been that while the theory generated is empirically valid, novel and testable, it may lack the thrust of grand theory remaining modest and idiosyncratic, (Eisenhardt, 1989). If this is the case with our process theory, we feel this is acceptable as our theory can become the starting point of other studies. While we noted the lack of relevant literature and personal experience in the domain of study, future studies may not experience the same difficulty. However, we believe that our study has produced important implications for the whole IS development discipline that give it qualities of a grand theory. Our instinct indicated from the beginning that a paradigm shift is required in ISD and our theory contributes towards such a shift.

While it was not intended, our theory has avoided an idiosyncratic character due to the fact that the professionals we contacted were all very experienced and very senior in their fields of expertise. This meant that within the data a number of concepts and categories were already formulated by them. Once their accounts were accepted as genuine, after cross-examination within a case and with other cases, it was obvious they too had performed a form of open and axial coding. This raised our level of analysis from observing and noting words, phrases and actions of actors to considering already formulated, albeit rough, "theoretical" fragments.

Another criticism of grounded theory is that it is unable to "analyse situations in which the phenomena do not occur", (Gill & Johnson, 1991). If a phenomenon does not take place there are little if any data to support analytical observations. However, as we said earlier no analysis is theory-free. In our case, we noted a lack of data in the area of methodologies. We noted this because we expected to gather data in that area. We did not "miss" this because of our pre-understanding. Although the data were lacking the lack of data itself was quite revealing in its own right. In other areas with lack of phenomena we directed our analysis to what appeared to be missing using our conceptual model as a guide.

3.6 Research History

The following table highlights the main research activities and phases in our research effort:

Table 3.3: Outline of Research Activities

Data Collection Activities		Analytical Activities	Evaluation & Reflection
Phase 1	**Phase 2**		
• Consultancy Interviews • Secondary Data	• Organisation Interviews • DSDM Interviews • Questionnaire Validation / Pilot	• Analysis of Interviews / Observations • Analysis of Secondary Data • Analysis of Questionnaires	• Evaluation of Research • Reflection on Research and Personal Process

A sample of 45 very large, large and large medium consultancy firms was compiled. A two page request letter was mailed to them. A first round of in-depth semi-structured interviews was arranged with an aim to carry out the first phase of data collection as those responding were domain experts in their own right, and for gaining entry into a research relationship. For every firm a file was created to hold the interview notes, memos on observations, additional materials given by the people interviewed, and first cut analyses of the data. Various indexes were created as all material were coded. Finally, paragraphs were numbered in transcriptions and notes for reference purposes.

In a second phase, we carried out interviews with 5 large client-organisations. Two of these organisations adopted their own approach in ISD without the use of an external consultant. The remaining three organisations adopted the DSDM RAD framework, again without the use of external consultants. In both sub-samples internal ISD professionals were involved. The experience of these organisations in developing systems internally was the focal point of our engagement. The table below gives a summary of the fieldwork.

Table 3.4: Fieldwork Summary

Sample & Firms	Size	Personal Interviews	No of People	Telephone Interviews	Positions
Consultancies					
WS Atkins	Very Large	1	1	1	IT dept. Manager
E&Y	Very Large	3	2	1	IT dept. Manager, Executive Consultant
Olsy	Very Large	1	1		Manager, Methods and Tools
Link	Medium	1	1		IT dept. manager
ACL	Large	1	1		Director
JHorwood	Medium	1	2	1	Director, Practicing Manager
Organisations					
LA	Very Large	1	2		IT manager, Senior Developer
AC	Large	1	1		Programme Manager
Lubrizol	Large	1	1		Communications Manager
IC	Large		1	2	Business Manager
VM	Large	1	1		IT Development Manager
Total		12	14	5	

A significant level of secondary data in the form of documentation was also collected. An interesting source was the internet as these firms present themselves and their ISD philosophy in a way that appeals to clients.

Organisation	Documentation
WS Atkins	Internet
E&Y	Brochure, Internet, Literature
Olsy	Brochures, Internet, Literature
Link	Literature
ACL	Internet
JHorwood	Brochure, Internet
AC	Project Report
Lubrizol	Project Reports
VM	2 Project Reports

One of our initial aims for a third phase was to identify OD consultancy firms that are involved in ISD projects. We included a request for help in our research in the UK branch of the OD-network's newsletter. However, no interest was generated and we were not able to identify any consultancies. We did contact a couple of freelance OD consultants that were involved in some ISD development and utilised their experience as domain experts rather than research cases.

In our efforts we found it very time consuming to gain access into consultancy firms and consultants. This is indicative of the business pressures that organisations are facing in

general, but perhaps also of an unwillingness on their part to reveal their approach / methodology in any detail to an outsider. Future research efforts may overcome this with the adoption of a covert-ethnographic approach.

It took well over a year to carry out interviews and collect the data. This was due to the high level of seniority of the people contacted / interviewed. These senior people spend most of their time out of their offices, in meetings and almost never come directly to the phone. Meetings are arranged months in advanced only to be postponed or canceled a few days before. Worst even was the fact that after a period of relative inactivity a number of interviews happened all at once. As we discussed earlier this put pressure on trying to maintain a neat grounded theory cycle were one moves from one case to the next in a neat fashion. Part of the frustration was that some of these senior people agreed to additional fieldwork only to change their mind when the time came to deliver.

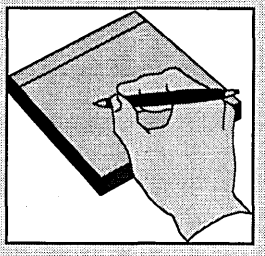
One technique that was employed to complement selective coding was use of a questionnaire, not so for the collection of data as such, but to create an opportunity for additional interviewing. Specifically, we asked a number of firms to act as domain experts that would assist in formulating and testing a questionnaire. The questionnaire, (Appendix 2, pg. A-II), was structured along key questions, but also included a number of open questions. This was done with the purpose to stimulate discussion with our experts. In this way we collected both data in the form of questionnaire replies from domain experts and additional interview data. This effort was not inconsistent with grounded theory, (Strauss & Corbin,1990) or with our overall qualitative framework, which naturally allows for such creativity, (Remenyi & Williams, 1996). The following firms were contacted for additional data in this way:

Organisation	Questionnaires
WS Atkins	1
ACL	1
JHorwood	4

One question at this point is whether the analyst lacked the needed interpersonal skills to gain further access. This was not the case as further access was promised in all cases, but due to events which are characteristic of the consultancy business environment, they were not fulfilled. Almost all participants were key stakeholders in their organisations and were in a position to sponsor further research.

Despite these difficulties, however, the data collected were more than enough in supporting the case based structure we wanted in our research. Firstly this was possible due to the high level of seniority of people interviewed. As we have seen this ensured an automatically high level of saturation of emerging categories. All of the people interviewed in our consultancy sample have worked as consultants themselves for more than 15 years, have monitored numerous projects and consultants, and are responsible for determining the direction of their firms on issues concerning methodologies, approach and consultation frameworks. Achieving similar quality of data would have required a significantly higher number of (junior) consultants to be interviewed over a longer period of time.

Chapter 4

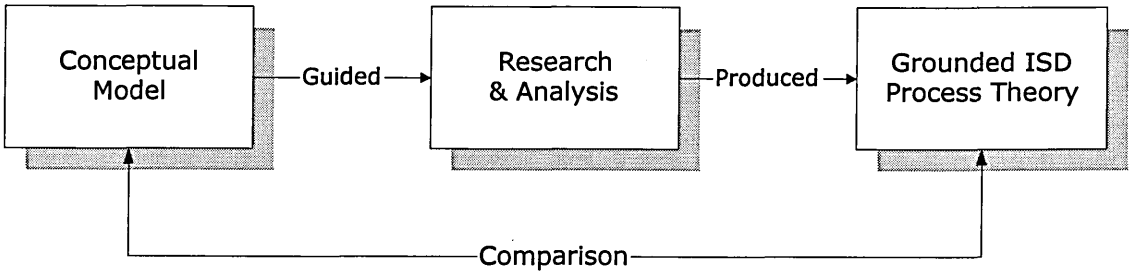


Analysis & Research Findings

4 - ANALYSIS & RESEARCH FINDINGS

4.1 Introduction

In the previous chapter we outlined the research methodology adopted for collecting data about the problem definition and research questions we identified from the body of ISD practice and literature seen from an OD-informed perspective. In this chapter we discuss the results of applying our research methodology to the field. The following figure shows how this discussion relates to the previous one:



Our problem definition and hypotheses were expressed in the researchable form of a conceptual model, (pg.71), which we used as a guide to research and analytical activities. Due to our grounded theory methodological approach, these activities produced a substantive IS development Process Theory grounded in our research data. In this chapter we contrast the emerging process theory with our initial problem definition and hypotheses, as well as the theory's novel elements. The ISD process theory replaces our original limited understanding of the research problem.

As we saw in chapter 3, we created case studies from two samples involving respectively: consultancies, (Appendix 5, A-VII), and organisations developing systems in-house, (Appendix 6, A-XVI). From data collected using interviews, observation, secondary sources and critical reflection various categories begun to emerge. As data collection and comparative analysis proceeded these categories were strengthened and their links to other categories were developed and explored. From categories, properties, and links that "endured" the analytical rigour of grounded theory methodology, a substantive process theory emerged. This theory is extensive, explanatory and provides us with a basis from which to explore the desirability and suitability of an OD perspective in IS development. In the discussion that follows we present the key elements of the theory that address our problem definition.

4.2 Fieldwork & Data Analysis

Our main concern initially was to establish a research relationship with our research subjects that would ensure data collection and further research opportunities. This involved significant contact management, which continued right to the very end. Having arranged a first series of interviews we proceeded with data collection. Given the qualitative nature of our research methodology we did not prepare a list of questions, despite the fact we had identified a number of research questions, (pg.74), or sensitizing concepts, (Blumer, 1967). Instead we relied on our conceptual model which identified elements and relationships that outlined the core and the boundaries of our research. All the interviews we carried out were semi-structured qualitative interviews. As such we did not impose a tight structure of questions, but allow a discussion to unfold that would progressively explore our conceptual model's themes. This was achieved by asking open questions at the start about the company's history, the person's position, the company's specialization areas and the overall structure of the particular organisation. This is an effective strategy for identifying areas for exploring cultural assumptions, (Schein, 1987). By getting people to give a historical account of their company and their career, they unavoidably referred to key decisions made, past successes and problem solving. Research subjects also gave us an account of their values-albeit espoused initially. While this was our opening strategy, we also made sure we "gave little back" to our interviewees concerning our interests and values towards IS development. We avoided mentioning any of the elements of our conceptual model explicitly and our preference for Organisation Development as a potential IS solution. The aim was to present and conduct myself as a student requiring assistance in his research project. This strategy appealed to subjects' altruism, but more significantly enabled them to give us genuine accounts of what they *actually do* in practice rather than what they would *say they do*. This was an important issue as we felt consultants could easily identify with their professional and corporate culture and provide us with no more than "sales talk". In dealing with this particular issue, the level of seniority also helped, both in terms of increased willingness to help a starting student, but also because their high power status enabled them to express themselves freely and openly, without any fear of reproach by others.

In most cases we had to do little in generating conversation, which showed that our "student" strategy was working well. Our role then was to direct the discussion towards the areas that we felt useful data could be collected. Throughout a discussion we would be sensitive as to when the interviewee "threaded" on areas relating to our underlying conceptual model. The sensitizing effect of the conceptual model was very important in determining when to explore something said further. Strategies we also employed were to note the subject's espoused values, in all cases expressed very early on in the interview, and contrast them with the various subsequent accounts of practices. Any ambiguities, contradictions or inconsistencies gave additional "warnings" for exploring further and revealing values-in-use.

Observation and reflection were also used in data collection. Observation was mostly directed to cultural elements and reflection was focused on changes in personal feelings. In doing the latter, the effort was to distinguish feelings generated from the analyst-subject relationship, the particular site and from me personally. A significant amount of additional data were collected this way, as long as one was prepared to observe both others and himself. In almost all cases I entered an organisation, observed its working environment and talked briefly with various people before doing an interview. In a few cases, the office layout was such that I was able to observe the rest of the employees working and in some cases I could both see them and listen to their conversations. While all this was happening in the background, in relation to the interview, it did provide with valuable data in terms of "getting a feeling for a place".

A useful strategy for assessing differences between cultures was to consider myself both a potential client and a potential employee and assess whether I could employ or work for each organisation respectively. All firms came across differently and projected quite diverse cultural images to me, as an outsider, irrespective of their particular IS development practices and values. Additionally, being presented as a student, there was little reason for them to put up any elaborate pretenses or create artificial cultural elements, specially in the cases where I was allowed direct access in their offices rather than an isolated meeting room. If I was indeed a client or a researcher they could have felt obliged to present their 'best' possible image.

Apart from a few initial interviews where notes were taken, interviews were taped and transcribed. Observational notes and reflections, as well as transcriptions, were recorded the same day of the interview in order to retain as much as possible from the discussion, the research site, and the whole experience. All paragraphs in all documents containing data were numbered and documents were filed and indexed for easy retrieval.

While doing fieldwork, an important issue was management of bias. Before entering the field we had already explored themes in ISD and OD literature, and we had established in our minds the ineffectiveness of the ISD paradigm and the desirability of an OD solution. Our conceptual model was drawn from such initial pre-understanding of the domain areas. Although removing bias is an elusive task, we attempted to understand the nature of our bias and if not minimise it at least identify its effects in our conduct and analyses. We tried to minimise our bias by not generating detailed research questions or completely mapping out the elements of our conceptual model, their properties and relationships. Our conceptual model identifies only the essential elements and relationships for the purposes of assisting our search for useful data.

Another aspect was our bias towards OD's superiority as a paradigm. Our strategy for minimizing this kind of bias was to suspend our understanding of OD and any consideration of its potential until after we produced our research findings. Additionally, we made sure we kept the ISD and OD areas separate and distinct. As such we did not ask questions that directly assess OD's potential contribution, but rather tried to collect data concerning the underlying issues identified by applying an OD viewpoint to ISD practice. In doing so we opened up to the possibility that, no matter how good we felt OD was, another strategy could be more effective in dealing with such issues. For example, our OD related research questions evolve around core issues of ISD ineffectiveness —issues that any alternative should be exploring.

We aimed to carry out analysis in parallel with data collection to achieve a dynamic constant comparative cycle. However, this was not fully achieved due to our initial unfamiliarity with Grounded Theory and due to the unpredictability of doing research with large organisations and senior people. Concerning the first point we adopted

initially Turner's (1981) guidelines and tried to apply them, (see Appendix I). This involved examining our data and identifying everything that could be coded as we felt we should not impose any assumptions as to what should or should not be relevant to the ISD process. This way we were also able to examine the data with a minimal pre-determined agenda. For example, we were not looking for data patterns that could help us prove OD's suitability. However, the problem was that we ended up with too many coded data fragments and it seemed impossible to make any sense out of them. Initially a further contributing factor was also unfamiliarity with the data. I felt that I had to be "saturated" myself with data before I was able to engage in any serious analytical effort which involves discovery of often hidden or obstructed patterns. We thus decided to complete the collection of data first and familiarise ourselves with the data. In the process Strauss & Corbin's (1990) framework proved to be far more useful in coping with large volumes of data. Its main strength is the identification of various types of analyses and clarity about the structure and conceptual elements of categories, (ch.3, pg.83). Having gathered almost the entirety of the data, we proceeded with open coding. The case-by-case constant comparative structure was preserved by starting the analysis from the first case, exhausting data fragment generation before moving on to the next case. This slowly begun to produce a list of unrelated categories with some of their properties and properties with some of their dimensions. As we moved from one case to the next we were able to either saturate existing categories with more supportive data fragments, discover an additional property of a category or identify a completely new category. In many cases a new category emerged in a latter case which could exist in a different form in earlier cases. To cater for this we revisited every case from the beginning forming many analytical cycles and completely exploring support for each category in every case. A parallel activity that also took place was the generation of numerous memos which recorded analytical notes and data fragments that did not necessarily fit into the structure of a category or within the remit of open coding. We kept these memos in accordance to Miles and Huberman (1994), and Glaser & Strauss (1967). Almost immediately these memos provided material for axial coding, where we had to switch analytical "filters" to look for links between categories. Such links also have to be supported by data fragments and as such our memos with unmatched data made better sense when looking for links. Axial coding also required a few iterations to identify completely as many links as possibly supported by our data. At this point we

need to note that the analyses of open coding and axial coding never really stopped throughout our study, but perhaps their mode changed from identification to refinement of emerging concepts. We did realize that under rigorous reviewing and revisiting of the data, a few categories and properties were not properly coded in the first place. We also found useful to employ Strauss & Corbin's (1990:75) suggestions for enhancing theoretical sensitivity in order to extract as much as possible from our data.

We also need to emphasize that while we were focusing on our grounded theory analysis external events unavoidably removed, in some instances, the luxury of an unspoiled analytical immersion in our data. For example, although we had not even started open or axial coding on a particular case, a research site would request a case study to be knocked up before deciding on additional interviewing. This meant we had to do a "quick and dirty" analysis of the data to satisfy our research requirements. This however, did not turn out to be a problem as we found that devoting plenty of time to becoming familiar with the data and not forcing analysis, grounded theory's rigour could not be easily jeopardized. The quick case studies were simply another way of presenting the data we had, focusing on the key themes in every reported case.

Having coded as much as possible, we took a more holistic perspective towards our data and analyses in order to examine whether anything was missing —given our conceptual model— and whether we still lacked enough data for our purposes. This reflection upon our analyses progressed naturally to selective coding, (Strauss & Corbin, 1990). In selective coding the main task is to select the core category and systematically relate it to other categories. We did not have problems selecting the core category, as it is evident throughout this chapter and the next. A number of categories and areas were identified for collecting additional data and in some cases a few of our data already collected required some further clarification. It was also a good opportunity to test out some of the assumptions made during analysis. Again the issues of bias were respected while the style of interviewing was more directed during selective coding. As we mentioned in chapter 3 it was not always easy to arrange additional interviews for selective coding but overall a satisfactory amount of data was collected. A positive indication was that no new categories were developed in the additional interviews and no new categories emerged. The additional data served the purpose to increase the

density of the already developed categories and links. This meant that our assumptions and formulation of categories, as well as the core category, were very close to the data —an important validity criterion in grounded theory, (Strauss & Corbin, 1990).

With selective coding analysis utilised another few iterations of revisiting and refining categories and links. At the end of this process we ended up with both categories with very high saturation levels and categories which were poorly supported: having either with data fragments from a small number of cases or being not very dense with dimensionalized properties. In contrast, well supported cases organised data fragments from almost every case and had a long list of well supported properties with their respective dimensions. Similarly, we also ended up with well saturated links and poorly supported ones. All poorly supported categories and links were put aside and the key categories and links were identified as the basis for an emerging process theory of IS development.

To turn our key categories and links into a process theory we proceeded to the analysis of process, (Strauss & Corbin, 1990). This involved looking at the surviving categories and links and assessing their role, order and placement in an overall sequence of changing events, actions and conditions. The development of links, mini-frameworks and paradigms, (ch.3, pg.84-85), already from axial coding made the task easier. Links were fully traced and mapped out as parts of an overall sequence rather than a simple action-interaction sequence between two categories. In the end we were able to easily explicate the main story line that expressed the essence of the emerged process theory.

Once process was considered we decided to explore links to existing theory, OD and the implications of our findings for IS development. In doing so we did not use Strauss & Corbin's (1990) conditional matrix, but revisited Turner's (1981) guidelines for making connections to existing theory. Structuration Theory, Gestalt Theory and Archetypes, were found to be particularly relevant theoretical perspectives. Structuration theory was selected because it fitted well with the dynamic and static elements of the ISD process. Gestalt theory and Archetypes were selected due to their conceptual closeness with the core category of Approach.

Given our research purposes we felt necessary to contrast our emerging theory with OD, not so much as another connection to existing theory, but in effort to assess whether the emerged process theory reflected any of the limitations of the ISD paradigm identified in our problem definition. This allowed us to contrast, for the first time, the two processes of systems development and make valuable observations which we develop in chapter 5. Finally, we explored the implications our emerged process theory has for the ISD field.

In the appendices case studies have been formulated for the purposes of the thesis, rather than research, and they aim to provide corporate information, key themes from each case and a selection of actual data from interviews and documentation.

4.3 Conceptual Model Contrasted with Research Findings

Given our pre-research conceptual model, we initially placed emphasis on three key elements: Approach, Organisation and Problematic Situation. Furthermore, we expected Problematic Situation to be the most important of the three because we felt its resolution determined largely the ISD outcome. However, in our research results it emerges that *Approach* is significantly the most important element. The boundaries of Problematic Situation and Organisation have become less easily distinguishable showing a strong interrelationship between the two elements. As we expected, approach is still a holistic way of doing things, but now, through grounded theory analysis, we now understand in depth its role, properties and function. While we identified the term using our OD perspective and from some isolated work, (Earl, 1993), we were surprised to find it applicable to ISD in large. Our initial perspective was different as it focused on the consultant's approach in terms of his overall conduct. Now we understand approach as an entity in its own right that goes beyond the level of methodology. Another expectation that was not met was that approach would lead to total systems development. This was not reflected in the approaches we examined as their particular value sets did not include such interest and they remain largely within the ISD paradigm identified in chapter 1. Consultancies' pragmatic values mean they primarily focus on the immediate problem in hand unless unexpected or out-of-scope problems crop up. In projects where the client's ISD capability is developed, the focus is also limited on the

organisation of IT departments and the provision of training in ISD methods and tools —rather than improving the whole organisation's effectiveness.

The existence of a problematic situation was supported by the emergent ISD process theory agreeing with the literature that views ISD as a primarily social process. Consultancies and projects face a series of problems which are not necessarily technical. A number of ISD Outcome Factors represent a series of issues that are so important that have to be addressed in every project and irrespective of any methodology used. Before IS development can even begin as series of issues are resolved by the consultant and his client. Two novel key categories, *Client Assessment* and *Project-Start* emerged from our data to describe the effort of creating the best conditions possible for IS development. Throughout the duration of IS development, *Project Management* and the consultant-client working *Relationship* takes the additional role of dealing with issues that do not arise directly from development. All these as well as the practice of *Tailoring*, reveal the uniqueness, extent and complexity of the problematic situation in every project.

Another change in our understanding was achieved in clarifying the nature of the ISD problem. Contrary to our initial hypothesis, certain types of projects do deal with a well-defined ISD problem that may not involve system-wide change or may not impact directly the working life of users. Such an example is the development of an internal technical application which interfaces with other applications rather than with users. Furthermore, as shown by the *Project Range* category, the ISD problem is not always "what system to build and how", but it may also be "how to develop the organisation's ISD capability." For the latter type of problems methodologies are only one element of the consultant's overall delivery. While we expected ISD problems to be very narrow in focus, our research results showed that they too can be intrinsically complex and diverse. This leads to the paradoxical realization that ISD methodologies are not always suitable for solving ISD problems! Clarifying the nature of the ISD problem consolidated the role and primacy of approach for solving ISD problems as well as problems of methodological choice. Another important finding was that ISD problems may be solved without the use of ISD methodologies. Therefore, our initial expectation that the ISD methodology's role is to solve ISD problems has weakened significantly. In terms of our post-research understanding, the role of ISD methodology emerges to be

the provision of a communication, documentation and standardization scheme that facilitates capturing what is important in IS development and in the project. This derived definition is consistent with the fact that consultancies do not have a preference for a specific methodology within a paradigm. Using a particular methodology thus does not jeopardize the fundamental capturing of information needed in order to develop an IS. What changes is the particular scheme for managing communication, documentation and standardization of the effort. This particular role clearly emerged from our data and was not envisaged by us initially. We assumed that a methodology was something more than simply a communication scheme. We thought it incorporated a unique philosophical framework. Methodologies do reflect a philosophical-paradigmatical framework, but it is not unique to them. What is unique is their particular scheme. For this reason consultancies can specialize in the use of many similar methods without problems of application or values conflict. Furthermore, philosophical frameworks expected to be part of a methodology emerge as being part of approaches and unique to them.

As we will see in chapter 5, we identified archetypes which highlight similarities between different approaches. However, these were similarities of principle and fundamental structure. Every approach, even within an archetype, is completely different from others. Another distinction with methodologies which can share a philosophical framework. For example, *Components Repository* structures are different in E&Y, ACL and Link —however they all have one. Overall, our initial conceptual model attributed certain properties to ISD methodology that now have emerged as characteristic of the approach element.

The importance of the organisation in influencing IS development was also supported by our research data, but now we understand that the organisation is more inextricably linked with the Problematic Situation. In many ways it is more appropriate to talk about an organisational problematic situation, rather than identify two separate elements. For example, a series of organisational aspects were identified as sources of unexpected problems. Such aspects are management, organisational structure and culture, users, the organisational and business environment. Another indication of the organisation's role was the fact that all consultancies made sure the key stakeholders, users and various

parts of the organisation are involved in ISD and that all visions are communicated among them. Furthermore, the capability of the client organisation is assessed by the consultant at the beginning of every project to determine the viability of the project and the capacity of the client to support it successfully. Additionally, the way organisations approach project management is important as the client may lack the necessary skills and standards. The importance of understanding the particular organisation in ISD was further reflected in our analysis of the client-organisations' data. There, we saw clearly the significance of the internal political and cultural environment and the fact the ISD initiated organisational change in almost every case.

The significance of the Client element was noted in our research data. Our initial expectation of the importance of clarifying who is the client out of many potential clients-stakeholders was confirmed. Consultancies make sure they identify who are the important stakeholders, who are the main supporters and who is responsible in the organisation for taking things forward. Another important aspect was also the establishment and maintenance of a working relationship between the identified client and consultant.

The ISD outcome was defined initially in terms of process and content. Our data confirm this, although we noted that consultancies may define a completed project as successful irrespective of whether it is used / accepted or not. Identified ISD factors represent fundamental issues that must be resolved along with the particular ISD concerns to ensure a successful outcome.

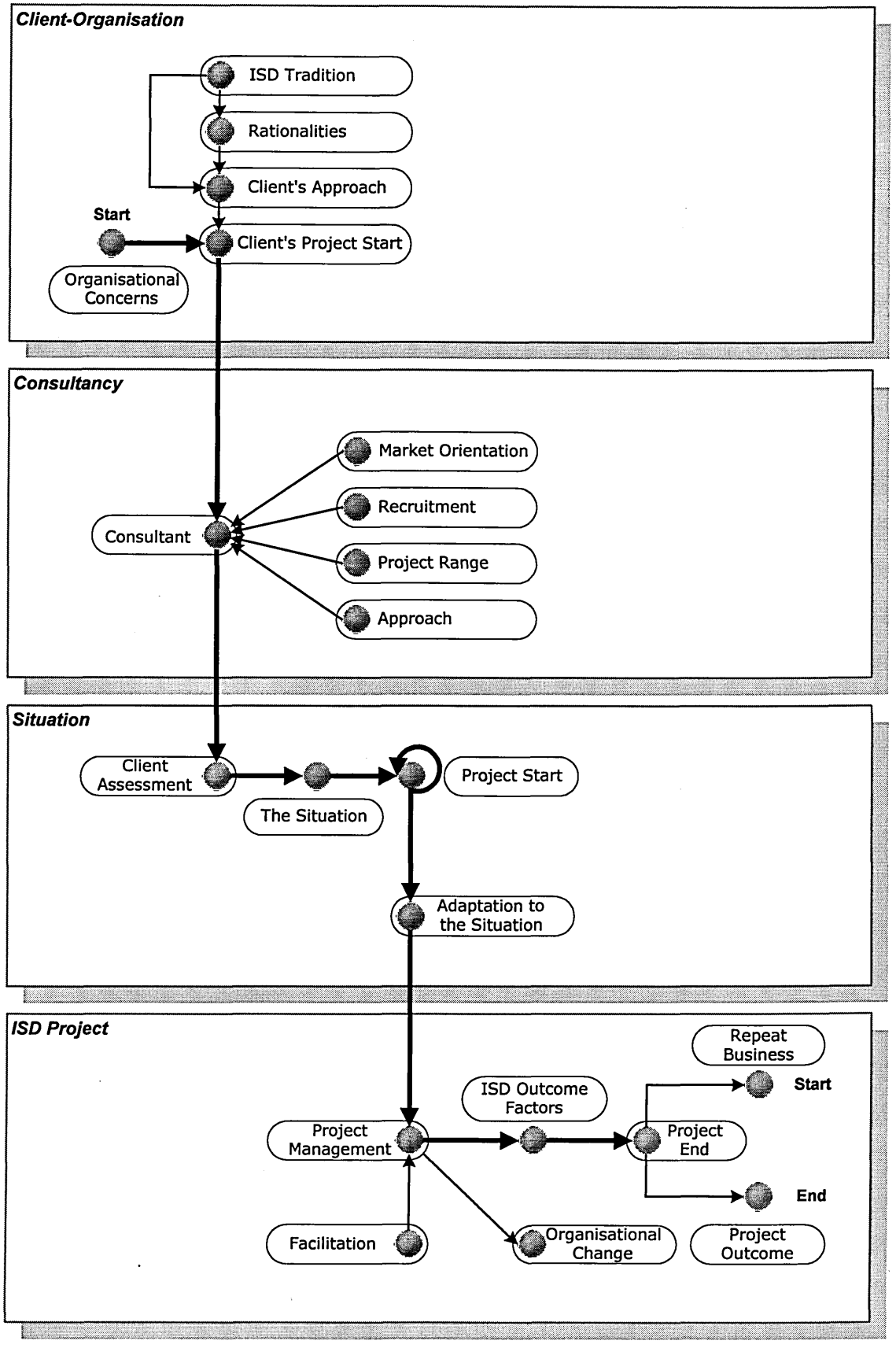
Our expectations on the role of the consultant have not changed. Our research results confirm that the consultant needs to operate not only at a technical-content level but also at a process level. The skills reported as necessary to do this reveal that ISD and OD consultants differ in their particular domain areas, while they share the remaining skills. This was another interesting result that shows that ISD and OD are comparable exercises in terms of process complexity. Another aspect we did not cater for initially was the fact that ISD consultants specialize in different areas, meaning that business-process consultants may head an intervention into the client-system while technical-training ones are invited on a need-to basis. As such, a consultant with a business

specialization may be more inclined and open-minded to consider an OD-informed solution than technical ones.

The relationships between the elements are also different and more accurate as a result of research. A post-research view of our conceptual model looks like this: the ISD consultant enters the client-organisation to assess the capacity of the client-system in undertaking ISD, to make an initial assessment of the problematic situation and understand in some detail the ISD problem at hand. The consultant knows the difficulty in undertaking IS development therefore collaborates with the client in order to establish a working relationship that will ensure that all the necessary conditions are met for a successful project set-up. The adoption of an ISD methodology is an important decision, but not a critical one. Often the consultant will accept the client's preference, but relying on his initial assessments will tailor the methodology and any other methodological components necessary to suit the situation, the client and the problem. While the consultant makes sure everything is taken care of, he is open to the possibility of out-of-scope problems interfering with his project. The consultant deals with these by collaborating further with the client for their resolution. In many cases the particular project is part of a larger situation or concern that needs to be considered. However, the consultant will not go looking for problems. The consultant relies on his approach to deal with any problem or situation as it arises. Having an appropriate approach ensures the fundamental ISD factors are addressed and that all the necessary issues are resolved as early as possible. Approach ensures a successful ISD outcome.

The above view, however, represent the core problem definition we identified initially. As such, the ISD process theory that emerged from our data encompasses the a posteriori version of the conceptual model. Figure 4.1, (pg.108), provides an overview of the theory. The elements discussed above are accurately defined and placed within the context of the ISD process. Using Strauss & Corbin's (1990) notion of process, the diagram depicts the ISD process in terms of a sequence of events that take place under different influencing factors and over a period of time while producing certain outcomes. The thick arrows shows the main sequence, linking categories representing key events. Influencing categories are linked through dotted arrows. The process starts from the top of the diagram and ends at the bottom with the process's outcome

Figure 4.1: The Grounded ISD Process Theory



The diagram shows four main areas: Client-Organisation, Consultancy, Situation and ISD project. Following the sequence of events, IS development starts as a response to certain organisational concerns that have been identified as requiring resolution. How the client start the project depends on his organisational tradition in IS development, the rationalities that prevail between business and ISD staff and his particular approach towards systems development. Having decided to do something about the identified concerns the client invites a consultant to undertake an ISD project. As our research data showed, consultancies are market oriented-commercial organisations with recruitment schemes that enforce their unique cultures. As such their approach towards IS development and client-management is also unique. Before the consultant commits to the project, he assesses the client-organisation and the nature of the concerns at hand. If he finds them satisfactory he enters the situation-organisation to understand in more depth the identified concerns and define requirements for a project. At that point Project-Start takes place which indicates a number of iterative-collaborative activities between client and consultant that aim to prepare and setup the ISD project in such a way as to maximize success. A subsequent step is for the consultant to adapt his approach and methodological components to the particular situation before launching the ISD project formally. The ISD project starts with considering project management as well as facilitation for evolutionary projects. A number of ISD Outcome Factors are examined that relate to the success of the project and must be observed in every project. These factors represent the actual IS development activities that take place, which when completed lead to the project's end. As our firms report every project is capable of producing organisational change and leads to a project outcome. Finally, depending on the project experience and consultant-client relationship, the project may lead to repeat business which lead to another start of this process. In some cases the client may wish to undertake a small project on his own with minimal external help. In such case the consultancy area events do not take place.

4.4 Key Findings and Elements of the ISD process

In this section we discuss in more detail a number of key findings along with patterns of data that emerged from our research to address the problem definition. The findings have implications for supporting our argument for an OD perspective and provide the basis for a more critical analysis which takes place in chapter 5.

4.4.1 Approach

The core category of *Approach* expresses the rich, varied and complex ways in which consultancies deal with development situations. A highly saturated cluster of data showed that Approach is a meta-methodological concept that is more abstract than a methodology. It reflects a set of values, includes a number of frameworks and utilizes a number of methodological components. The properties of approach are discussed below. Approach helped us understand what is actually needed for a successful ISD outcome and what form is appropriate for a possible OD-informed solution to ISD problems.

4.4.1.1 Reflection of Values

Values embody assumptions and core metaphors about the nature of ISD, the various actors, the consultation process and the role of the firm in the market. Our data showed that values remain relatively stable within an approach and determine its overall character. Initially, we expected values to relate to the particular choice of methods, for example functional values would relate to structured methods. However, values appear to transcend any particular method and relate to what is considered essential in every project —the essence of best practice. For WS, a consultancy that utilizes structured methodologies, every project must have adequate involvement, even from parts of the organisation that have been excluded initially. Similarly, HI always identify the client's actual needs as opposed to his stated wishes.

Values are unique to the particular organisation and as a result each approach is unique. As we will discuss in the next chapter, we can differentiate approaches according to their underlying values, unlike methodologies.

4.4.1.2 Framework

Our data showed that approach utilizes a framework for making methodological choices. The framework is consistent with the overall values and employs a number of criteria for providing different paths to development. In E&Y's terms, it guides a "...process that filters out inappropriate components while focusing on the specific needs of a project." and provides "...context-sensitive guidance throughout the project". Apart for explicit frameworks, like ACL's and E&Y's, (Appendix 5, pg. ix, xiv), several framework dimensions emerge in our data:

1. The type of project which determines the applicability of methodologies and components, (ALL firms). For example, safety or mission critical systems tend to be developed using structured methodologies while application development is not, (WS, LINK).
2. The *stage of systems development* at which the consultant joins the project poses different choice. For example, an implementation phase is different than an investigation one, (LINK).
3. The *relationship* between consultant and client determines whether the client will impose his own methodological choice or will accept the consultant's proposal, (LINK, HI, ACL). This dimension depends on the client's culture and the situation, (OLSY), as certain organisations have a strong preference towards particular methods.
4. *Methodological applicability*, (ALL). WS would never use SSADM for very small projects or clients. Additionally, certain RAD projects may pose additional requirements for documentation and tighter project management.
5. *Level of stakeholder involvement*, (ALL). If a project has low user involvement, consultants find ways to involve the user and stakeholder community.
6. A final dimension depends on the *skills of the consultant*, (ALL), as they may determine choice of methods. For example, a technical consultant will be less predisposed in running group facilitation workshops.

The various dimensions are summarized in the table below:

Table 4.1: Framework Dimensions & Indicative Choices

Dimensions	If	Then
Project Type	Safety / Mission Critical	Structured Development
	Package Selection	Cost Benefit Analysis
	Interface Design	Non-Structured Method
Project / Client Size	Large Distributed	Banking Applications Development
	Large	Structured Development
	Small Bespoke	RAD-DSDM
Stage of Project	Pre-Project Start	Present Method Choices
	Already Started	Accept Existing method
	Client Determines Method	Accept / Streamline
Client Culture	Specific Preference	Structured or Evolutionary
Client Request	Objectives Determined	Technical-Expert Development
	Objectives to be Determined	Process Consultation
Consultant Skills	Technical	Structured Method
	Facilitative-Technical	Evolutionary Method
Impact of Development	High to Stakeholders	User or Client Involvement

The existence of a framework shows the scope of approach in contrast to methodology. Different types of projects may require different types of methodology. The framework facilitates choice decisions and renders the approach a meta-methodological entity. At this point the similarity with OD frameworks for choosing OD interventions is obvious. Furthermore, they indicate that the process of Choice must also exist in ISD as part of a similar analytical cycle supporting the OD approach.

4.4.1.3 Combination of Methodological Components

Related to frameworks, the practices reported by our consultancies and organisations show that each firm utilizes a rich variety of methodological components:

Table 4.2: Methodological Components in Approaches

Component	WS	E&Y	LINK	ACL	OLSY	HI
Structured Methods	■	■	■	■	■	■
Evolutionary Methods					■	■
RAD Methods	■	■	■	■	■	
Project Mgmt Methods	■	■	■			
Project Management				■	■	■
Quality Management	■	■	■	■	■	■
BPR	■	■		■		
Facilitation / Catalyst	■	■		■	■	■
Process Consultation						■
In-house Method		■	■		■	
In-house Framework				■		■
In-house Tools	■	■			■	
Development Tools	■	■	■	■	■	■
Stand Alone Techniques	■	■	■	■	■	■
Instruments / Analyses	■	■				■
Models / Standards		■			■	■
SSM	■	■		■		
Components Repository		■	■	■		

The table above highlights the diversity of components as well as the fact that the same components are found in more than one approach. An approach may utilize a project management and an IS development methodology in the same project. For example, it is common practice in WS to use PRINCE for project management and SSADM for systems development both at the same project. Similarly, E&Y's methodologies integrate project management with quality management, and OLSY use their evolutionary method under the DSDM framework. We also witnessed a similar combination of different components in our organisational sample. For example, IC utilised DSDM under a BPR methodology which in turn was part of an overall change management programme. Within the DSDM RAD framework waterfall was also used, (Appendix 6, pg. A-XVI).

4.4.1.4 Components Repository

As a result of the diversity of components, consultancies may create central libraries or knowledge bases of methodological, project support and process components

accumulated from a number of sources and project experiences. These repositories make knowledge and expertise available to future projects.

Table 4.3: Components in Repository

Methodological Components	*Repositories*
• Information on methods & techniques	E&Y "Automated Methods Environment"
• approach guidelines	
• techniques with narratives	
• tools with descriptions	
• frameworks	
• models	
Project Support Components	LINK "Templates Library"
• case studies	
• contacts	
• templates	
• skeleton code	ACL "Components Library"
Process Components	
• experience on method use	
• how-to-do advice	
• lessons learnt	
• tips and hints	

The emphasis is not in any particular method or technique, but in providing a platform that can facilitate selection and tailoring of appropriate components when needed on a particular project. They store and help disseminate knowledge and expertise that the consultancy has accumulated through its consultants and projects. What is gathered, stored and shared is what is valued as important by the particular firm and its culture. The repository is more central than any methodology. The diversity of any project can be matched with a rich variety of supporting methodological and project support components. In the repositories, advice, guidance concerning *how* to use methods and techniques, along with lessons learnt the hard way, are available for consultants to use. As Link's IT manager put it, in the library "there is a lot of material at the periphery of methodologies". This "periphery" covers what methodologies do not cover: best practice and expertise. This ensures consistency of performance and approach between different consultants and in different projects. The repositories are the best physical evidence of an approach, towards IS development, and consist its only documented aspect.

4.4.1.5 Tailoring

Another characteristic feature of approach is tailoring of the various components in order to match situational and project requirements. The reported percentage of projects undertaken that require tailoring is extremely high:

Table 4.4: Projects that require tailoring

WS	E&Y	LINK	ACL	OLSY	HI
100%	100%	100%	100%	100%	90%

Very low or no tailoring would indicate that methods covered most of the requirements and characteristics of projects. The high percentage of tailoring indicates that methods should not be regarded as stable and comprehensive, as assumed by their creators. Tailoring reveals that every project is unique presenting its own challenges to consultants and clients. Through tailoring consultancies manage to meet the unique needs of a project with the most appropriate way. ACL characteristically note "we have a framework to be tailored —no two solutions are the same". Within the framework, methods are also "streamlined" so that requirements for rigour, communication and documentation are met. In E&Y's case, a form of tailoring is built-in the methodology which allows the consultant to make a choice from a range of components to just the right ones for his project in order to:

> "...provide creative and innovative solutions which not only meet the immediate needs but also enhance the client's ability to manage future change and growth. Such solutions are always individual, based on a particular situation and a specific response..."

This form of tailoring, called "Project Support", is the normal operation of the methodology. However, beyond it, the consultant may decide to omit or modify steps within the chosen components if he sees the need for it. For example, if a process requires a certain deliverable to be produced before moving to the next process, the consultant could perform a risk analysis to determine whether to capture the related information or not. When tailoring the methodology the consultant may consider:

E&Y (Executive Consultant)	*WS (IT Division Manager)*
• the skills of the people involved (client's staff - E&Y's staff), • the client's context, • the level of experience, • the risks associated, • where the emphasis is on the system and project, and • the content of information.	• what is considered to be best practice, • what is used already, • what is appropriate to the client, • what is WS's standard, • what is the industry's standard, and • what is the type of project (i.e. procurement or IS development)

WS support moves for evolving SSADM into a tailorable methodology, indicating the importance of tailoring. While this is an in-built form of tailoring similar to E&Y's project support, WS also carry out the second form of tailoring through PRINCE, which is a framework by definition. In HI's holistic problem solving approach all activities and solutions are highly tailored to fit the particular situation and client. Tailoring in HI is determined by its flexible approach, (Appendix 5, pg. A-VII), as quality models and standards are naturally very prescriptive.

Frameworks, the combination and tailoring of diverse components and their repositories, show significant similarity of the Approach with the way OD itself operates as a philosophy. They also show there is significant parallel effort that goes into actually using methodologies that we take for granted in the ISD field. Tailoring in particular, seriously challenges the traditional structure of methodologies which are expected to be followed in detail. Additionally, it shows that although no methodology can be used "as is" without tailoring, this creates no problems in practice.

4.4.1.6 Methodology

Methodology within the approach ensures consistency of approach, communication and documentation. This property was at the basis E&Y's methodology development:

> "Communication problems arise when people assign implicitly different meanings to various common constructions. Consistency of language allows for a common set of constructs and terms to be used when communicating. Otherwise there would be a need to reinterpret the framework each time there was an inconsistency of language and approach. Such inconsistencies are also significant when different consultants get involved in a project that spans the whole ISD life cycle. Having consistency ensures that bottom line results are not

> jeopardized when specialized consultants carry on from business consultants. E&Y has developed a methodology aiming at addressing the above issues."

As we see characteristically in the above quote, the reason behind methodology development was not a requirement for improving the essential elements of the method, but to ensure a common communication scheme. For similar reasons, ACL review a method for its documentation merits and may even tailor its communication scheme if needed. This realization has important implications for the role of methodologies in ISD given their high profile. In a later discussion we explore how approach emerges as ultimately more important that methodology.

The utilization of an Approach is also evident in our organisational sample. In AC's and LB's cases no particular method was adopted, (Appendix 6, pg. A-XXI, A-XXV). In the rest of the projects DSDM was used, but not in isolation from other methods, principles, techniques and tools, (Appendix 6, pg. A-XVI).

4.4.2 Project Range

Due to approach and their market orientation, consultancies undertake a range of different projects. For all six consultancies projects range from being consultant-intensive to client-intensive. In E&Y executive consultant's words:

> "the nature of work with clients ranges between: doing something for the client, i.e. setting something up, producing a report, implementing something, in short delivering something to be handed over to the client to helping the client create or achieve something himself. The consultants for example may build the client's capability to develop information systems themselves. E&Y recognize there are elements of both ends of the continuum in every project."

There are also projects that do not fall clearly into either ends of this continuum. These are training projects, package selection and improving organisational performance which may delivered either prescriptively or facilitatively. It is important to note that the range of projects was witnessed in all 6 consultancies, even the ones expected to be more "structured" like E&Y. The firm's IT director noted:

> "The main approach towards clients is the redesign of business processes. However, some clients want a specific job done and have clear objectives and deadlines to meet; in this case E&Y come up with what is required. Other clients desire to be taught how to carry out the project and produce the results with the help of the consultants. The first type of client usually has very well defined objectives and deadlines to meet and it is satisfied that the scope of the project will not drift during its development. In the second type of client, E&Y train the client on how to manage the project and develop the systems needed. Usually, Navigator methodology is taught and consultants from E&Y enter client organisations and help clients learn how to develop systems using the methodology. This has led to significant gains in productivity, as measured by independent measures, up to 20% time gains and significant cost savings for first time users of the methodology."

In line with the latest hype, it is not surprising that "redesign of business processes" is E&Y's focus towards clients. This implies that some form of process consultation is preferred and that the improvement of business processes requires some facilitation. However, "Navigator methodology is taught", meaning the opportunity to sell the methodology makes these projects as desirable as prescriptive ones. In ACL's case, projects also range from content-specific to process-oriented. In the former type, ACL also provides skills and training on the approach needed. A project office may be specifically setup to improve the customers' self-sufficiency in ISD. WS also undertake projects in the following categories:

- "delivering training,"
- "developing software,"
- "doing systems analysis,"
- "developing specific products as part of the ISD life-cycle,"
- "developing procedures for the client, and"
- "developing things that improve the way the client works."

Projects have elements of both ends and it is common in process consultation projects for technical expertise to be "brought in on a need-to-basis". Of all WS's projects 40% are 'doing something specific' for the client and 30% helping the client 'achieve something on their own'.

The type of process consultation implied in the above project ranges is known in OD as catalytic, (Shein, 1988). As we see in the data, the consultant brings the client up to date and up to speed in ISD rather than assisting him in building his own problem solving

and diagnostic abilities. As a catalyst, consultancies help clients become better in ISD by selling their in-house or marketed methodology:

> "Up till recently clients expressed requests such as 'can we buy your methodology?'. What they really meant was 'can you help us become better at Information Systems Development?'. In such cases E&Y would not simply sell a product, but help clients build their capabilities and self sufficiency, train them, develop their skills, coach them, develop their infrastructure, help them think about standards, procedures, project management and issue resolution. Within this context the E&Y method could be offered as one possible approach as the infrastructure to deploy the method would be in place."

Similarly, WS and Olsy market specific tools and methods which again become part of a client improvement solution. ACL are similarly proud of a "number of companies up and down the country that use the ACL approach". The exception to this are HI who carry out a significant portion of pure process consultation projects, although they specialize in the quality standards area which is very prescriptive.

Project range ties in with the diversity expressed by the consultant's specialization and role, as well as with the richness of approach. Due to their market orientation all firms specialize in the same markets and have expertise in the same methods. What ultimately differentiates them and helps the client select a firm is the overall approach, which also allows a number of different consultation styles.

4.4.3 "Diagnostic" Activities

An important cluster of research findings relates to our discussion about diagnosis as in the OD approach. Specifically, the two key categories of Client Assessment and ISD Outcome Factors could be seen to be forms of diagnosis. Indeed both categories along with their properties resemble diagnostic models which are applied by consultants in every project and situation. Both categories operate outside the context of a methodology, but are guided by the overall Approach. The two categories are closely aligned with values as they are the practical expression of what is considered the essence of best practice.

4.4.3.1 Client Assessment

Our data show that the consultant, upon his invitation into the client-system, assesses the client, the project, and his own abilities before even committing to the project. His assessment of the client takes place along a number of dimensions:

Identification of Risks, a number of risk factors are examined that lead to the expansion of the estimated time scales and costs. For example, even before there is a bid, ACL assess whether a project is based on the right idea, whether it is suitable for both the client and the consultant and whether it has clear objectives. Link also estimates the level of independence of the proposed system. For all firms, risks relate to the client's abilities and past experience in IS development. Risks may be unacceptable if a project lacks significant user involvement and if there is inadequate sponsorship behind it. In all cases, the consultant needs to look out for the potential of a "sick" project —a project where everything goes wrong— as early as possible.

The Project's future, the consultancies in our sample are not a priori reluctant to help a client with financial problems, because they expect to be always in a position to improve the client's standing. As such, a consultancy will undertake a project that can be sustained long enough to produce results. Another aspect is the availability of resources to the project. HI's experience shows that production takes precedence over development. A project may be disrupted if there is a sudden requirement for "all hands to the deck".

The Organisation, and it's attitude towards dealing with critical issues is also assessed. Clients that insist on following an inappropriate solution to their needs, or clients that do not work well with consultants are rejected, even if they meet all other criteria. For WS and E&Y, the project is terminated if clients prove unable to help consultants bring about the changes needed:

> "This may be due to development teams consisting of members from the client-organisation that are of questionable skills and qualities. Clients may also wish to manage the project while clearly not being capable of doing so. In such cases there is a possibility of getting a «sick» project", (E&Y).

For both WS and E&Y sick projects are a result of an organisation's inability to manage projects successfully. Client assessment is important because, (WS):

> "If the project is seen not to follow a good track a decision should be made to "axe" it"

Vision and Leadership, these are important for assessing how the project may develop in the future and how problems are likely to be solved. For E&Y the consultant has to "drill to the bottom" in order to assess the depth of the vision related to the project and the system. The quality of leadership behind the project, its vision and level of commitment are also important indicators. For WS, it is also important to assess who has the power to shut down the development process and who will be affected or victimized by it. All firms recognize that in many cases visions are not properly communicated around the client-organisation and may cause unexpected resistance later on. In some cases it is important to assess the leadership's actual agenda behind development. Management may see IS development as an opportunity to enforce their own objectives. HI experience shows that consultants may find themselves caught up in conflict and pressure to participate into an unethical intervention.

Formal Project Characteristics, projects and clients may also be rejected due to the project's characteristics like the type of development (Link), the tools needed, the time scales posed (Olsy), and whether third parties are imposed.

Client assessment continues even after the project has started as consultants may walk out of a project if they realize the client's attitude towards working with consultants is not the appropriate one after all, (WS). This category explores a significant range of factors, not of an economic or technical nature. The consultant not only examines the feasibility of the project but the ability of the client-organisation to undertake the project. While client assessment determines whether the consultant will accept a project the next set of factors determines whether it will be successful.

4.4.3.2 ISD Outcome Factors

Consultancies in our sample ensure success by assessing a set of key ISD Factors that determine a successful Outcome in every project. We have identified the following factors:

a. *Involvement*

Involvement, both of users and the client, is considered important irrespective of whether the methodology requires it or not. According to Link, clients tend to expect consultants to do everything by themselves, not realizing that they too have to be involved. All firms recognize the importance of company-wide involvement and not just the affected or interested parties.

b. *Understanding Needs*

This type of understanding must be achieved by the consultant and the client — including top management. Cases of IS failure reveal incorrect assessments of the problems to be solved, (ACL), or failure to address and manage the "problems that inevitably occur", (WS). For E&Y problematic projects lack a deep understanding of needs where consultants appear unable to address the key issues. Consultancies ensure a good level of understanding is shared with the client and time is spent by the client reading requirements to avoid any misunderstanding. Link and Olsy also favour prototyping as a technique for clarifying needs and requirements.

c. *Organisational Culture*

Understanding the client's culture is important and may help determine choice of approach. Olsy's methods manager argued there is a "right culture" for certain methods which needs to be understood before introducing a particular methodological approach.

d. *Communication*

Understanding must be shared between the consultant and the client. Effective communication utilizes a common frame of reference which helps actors exchange unambiguous information. Provision of such a frame of reference is, for the executive consultant at E&Y, the most important role of an ISD methodology.

ACL recognize the importance of using clear and unambiguous language in their communication with the client. Similarly, Link note the importance of interpretation of what is communicated between consultant and client:

> "IS failures occur because people are unable to state exactly what it is they want done or can't interpret what the system should be".

e. *Understanding Technology*

For WS, ACL and Link projects sometimes fail due to technology not being understood properly, or in some cases a piece of technology does not meet the expectations of consultants and clients.

f. *Vision*

It is Link's experience that:

> "Systems fail due to no vision and as a result subsequently delivered systems do not satisfy the client".

E&Y and WS also place great emphasis on vision, the vision of leadership and visions shared in the organisation. It is also HI 's experience that visions about a project may differ throughout the organisation and management may be ignorant that such differences exist.

g. *Top Management Support*

For most consultancies, and the client organisations, "across the board" top management support is seen as a necessary factor for success. It relates to the level of project sponsorship and support. As a project may require organisational resources and may involve hard decisions that incur changes, top management support ensures the project moves forward overcoming difficulties.

h. *Management of Changes*

A number of changes are imposed to the project's scope that are not planned initially, but are to an extent unavoidable. In all cases, pressures on the project for changes to its scope must be managed in order for IS development to stay on track.

i. *Pressures*

Problematic projects face unrealistic pressures in terms of time-scales, cost and available resources. A successful ISD outcome can be enabled if pressures are suitable and relate to realistic plans. For ACL prototyping projects may face additional pressures as requirements and goals can become elusive.

j. *Team*

The composition of teams in a project is seen as important. For E&Y and VM, the selection of the appropriate team is a focal point of their approach. For ACL and HI, poor team structure is seen as contributing to failure. We also see the importance of teams in our organisational sample. A well formed team is able to overcome problems quickly.

k. *Client's Role*

The client is expected to act as a partner rather than someone who commissions a piece of work. For WS the client must assume responsibility for managing the project. The ISD outcome depends on how he manages IT and projects. For Link clients need to be involved in their projects and work with the consultants on creating clear specifications. For HI clients must recognize the value of IS and what is possible to achieve through ISD. For ACL the client must have a good understanding of his capabilities. Finally for E&Y the level of commitment that exists on the client side is also important.

Like client assessment, ISD outcome factors can be also thought of in terms of a diagnostic model. The various factors are interrelated and represent key elements that are characteristic of a successful project. Consultants assessing these factors may decide that some of them are not appropriate in every situation they encounter. For example, technology is not an issue in every project. However, the success of a project is ensured if all these factors are examined and accounted for.

4.4.4 Situational Complexity

Our data confirmed the fact that when the consultant enters a particular situation he is confronted with a series of problems —not simply ISD problems. While consultancies,

and clients for that matter, may consider these to be outside the scope of ISD, they are important in determining a successful ISD outcome. The existence of the situation was noted by ACL, WS and HI, who argued that ISD is part of a larger problematic situation in two thirds of the projects they undertake. Similarly in our organisational all projects were part or were disrupted by the wider organisational situation. Both samples reveal the richness and complexity of the situation. This is evident in the nature of the reported out-of-scope (non-IS) problems:

Table 4.5: Out-of-scope problems

Organisational Problems
Organisational Structure
Organisational Culture
Organisational Politics
Other business influences and plans
Inability of top management to recognize current and expected problems
Inability to fund project
Relationship Problems
Not being given the total picture
Hidden agendas
Management Problems
Scope too narrowly defined to allow changes to procedures and other change management
Poor team structures
System dependency on other systems or on other people making decisions.

As the most common sources of problems in ISD, ACL, WS and HI consistently identify *management* and the *organisation* as the most important sources, followed by an equal position for *users* and *development staff*. Important sources are also the *organisational environment*, *external pressures* and *technology*. Surprisingly methodologies account for a very small number of problems revealing that IS related sources are the minority. This also reveals the difficulty consultancies face when confronting the organisation and shows the limited role of methodologies. For HI unexpected problems are unavoidable:

> "In every project consultants identify issues that need attention that were not part of the initial requirements of the client. Often such issues have the potential to influence the overall success of the project."

Similarly WS argue:

> "it is much harder to avoid risks in IT. Every new system the organisation wishes to develop is functionally new and therefore there is a need for managing the risks involved."

This creates an element of inherent complexity in every project. Furthermore, it is also possible for the consultant to face completely new areas of development where his skills and knowledge may prove to be inadequate. To deal with organisational issues and out-of-scope problems consultancies try to work with the client for resolving them. If that is not possible they try to understand the nature of the problems and facilitate some kind of a solution with or without the client's help. Less important strategies are considered to be providing information to the client and letting the client deal with the problems on his own. Working with the client were possible shows that without the client's help the project's success can be jeopardized.

Another indicator of the complexity of the situation is the fact that not all clients are seen as excellent or easy to work with. Consultancies reported that 25% of all clients range from difficult to impossible to work with. This shows that about one in four projects will pose extra difficulties to the consultant who has not only to deal with the complexities of ISD but has to manage a relationship with a difficult-impossible client. Furthermore, almost half of all clients are seen not to be ready for IT-related changes entailed by the project they commission.

Indicative of situational complexity is also the assessment of success and failure by consultancies. While half of the projects undertaken are considered to be a total success, a 32% faces minor problems, and a 18% ranges from facing major problems to being a total disaster. While the numbers are only indicative they show that problems can be expected to half of all the projects undertaken. In fact these numbers may not be entirely accurate as consultancies label projects completed, but not used, as "success with minor problems". In a breakdown of their assessments, consultancies responded that half of the projects were successful but also that 12% of projects were completed but not used, 11% were canceled, 9% created problems to other projects, 9% created problems to the organisation and 8% were completed but not used. Success with minor and major problems includes various types of failure: interaction, expectation and organisational

failure. This raises the number of projects facing serious problems and failure closer to 50%.

The firms in our organisational sample are closest to the effects of the situation than external consultants can be. As evident in their cases, (Appendix 6, pg. xvi), the decision to deal with a particular issue emerges as dissatisfaction grows within the organisation over a period of time. Assessment of its importance and the particular approach that needs to be followed is influenced by the organisation's tradition, history and internal rationalities-cultures. In other words the organisational situation begins to influence ISD effort long before a consultant or the project take place. Failure can not be seen at this point. However, as we saw in chapter 1, various pathogens are unnoticeable but are cultivated to emerge as failure latter on when suitable conditions occur, (Turner, 1994; Fortune & Peters, 1995). At this point we can see the importance of client assessment and ISD outcome factors as within the situation the presence of non-ISD problems / pathogens may need to be addressed concurrently with the IS concern. In AC's case the project could not get of the ground without resolving the issue of top management support and communication with the divisions, (Appendix 6, pg. A-XXI). An external consultant having performed his assessments could have noted factors that clients themselves take for granted when commissioning ISD.

The situation is characterized by *volatility* as the future of a project may be put into question at any time. This relates to consultants assessing the future of the project and its pressures. In AC and LB cases, (Appendix 6, pg. A-XXI, A-XXV), both projects were affected by larger organisational efforts that appeared suddenly to overshadow any other effort. In AC the rationale behind RAD was to deliver parts of the system as rapidly as possible as it was threatened to be put on hold. In LB the project has actually been put on hold as the new CEO introduced company-wide change.

As in our consultancy sample, IS development was for the organisations in our sample *part of a larger concern*. In AC's and LB's cases the systems developed aimed to provide information where it is needed most in the organisation. In IC's case the project was part of a much wider BPR effort which was in turn a part of a wider organisational change program aimed to improve organisational effectiveness. In LA's and VM cases,

improving difficulties with structured ISD projects and achieving increased business performance gains were behind moves towards RAD.

Situation is also characterized by *power and political issues*, as a number of stakeholders exist. In AC's case the project was seen by other divisions as a threat and was resisted. From a technical viewpoint the project was fairly straight-forward and simple, but from a political-organisational change viewpoint it emerged as extremely complex creating a series of contentions, (Appendix 6, pg. A-XXI). Similar political issues were noted by IC in relation to higher positioned managers interfering with the course of the project, while in VM such difficulties existed long before DSDM was introduced:

> "When I took over my position 18 months ago I felt there was a good opportunity to bring about changes to address difficulties with delivering projects. While projects were completed successfully they did not achieve their maximum potential. There were also a couple of failed projects as well. All the difficulties experienced were clearly due to political issues. Politics meant that wrong people were assigned on projects or people (both IT and business) were motivated in the wrong way. I decided to deal with politics by removing the traditional barriers between IT and business people."

Politics and cultural issues emerge as two of the strongest situational characteristics for VM, IC and AC. In these RAD cases, group dynamics and process issues also emerged as part of the situation.

Parallel to IS development activities, and as a direct result of ISD, our research findings show that organisational change is introduced into the client-organisation. In IC, VM and AC the projects introduced far reaching cultural and organisational change. Our initial expectation concerning the unresolved complexity of IT related change however, remains. In both our samples we noted a lack of a sophisticated understanding of organisational change. Consultancies seem to recognize change issues but consider them out-of-scope or unavoidable. Surprisingly, even business managers in our organisational sample were bemused with the organisation-wide impact of change initiated from 'isolated' test-case projects.

Our research findings from both samples, confirm the importance of viewing ISD as a complex socio-technical process. The novel angle here is that we do not only have the existence of a complex organisational situation which provides the context of ISD, but the realization is that often such situation becomes centre-stage and must be dealt with in its own right. As such, the consultant may assess the client and the ISD outcome factors and may demand resolution of key issues before getting involved in the project or before development starts. The particular factor helps identify a disruptive issue that needs prior resolution.

4.4.5 Consultation Complexity

Our research findings reveal the complexity of ISD consultation. The consultant is not only concerned with developing a system or the client's ISD capability, but with a number of process issues that determine how he manages activities, relationships and his own intervention into the client-system. Our findings suggest we should extend the boundaries of the traditional SDLC to include new phases that represent significant consultation, rather than purely developmental activities. Without these phases development activities are problematic and their success or failure cannot be easily explained.

4.4.5.1 Approach Life Cycle

The approach follows the consultant's intervention into the client-system. It starts working the minute consultant and client make contact. The values, expectations and understanding of IS development are communicated in the pre-project period where expectations are clarified and when consultants present their approach to the client. Before a methodology is actually used, what guides initial activities is the set of values that is communicated to the client. The approach remains active during the project providing the context of use of the methods, techniques and problem solving. When the project is over approach ensures evaluation and learning are carried out and that the relationship with the client reaches an appropriate closure without jeopardizing future work. The approach's "life cycle" is therefore wider than the methodology's which means that the traditional SDLCs may be limited to represent what activities actually take place during a project. As such methodology designers may design methods that do not cater for significant periods of a project. Indeed during these early stages there are

no methodologies in ISD, although some from alternative paradigms could be theoretically stretched to do so. In contrast, as we saw OD both recognizes early consultant-client interaction and has interventions for its management. The consultant has to utilize his skills and rely on his approach for managing the activities that fall outside the traditional SDLC and consequently methodology support.

4.4.5.2 Project-Start & Project-End

Important not ISD activities were identified in our data as Project-Start and Project-End, to describe what happens before and after IS development takes place. *Project-Start* activities take place in preparation of launching the formal project. They proceed flexibly and iteratively until client and consultant are confident for IS development to start. According to E&Y, the consultant collaborates with the client in order to produce value propositions concerning the systems needed. The client's infrastructure is examined to identify actual needs and resources. In HI's case, and for projects which are less extensively defined, the consultant may produce a list of diagnostic issues which the client prioritizes and decides which ones to confront. In both cases these activities are carried out iteratively until satisfactory business cases are developed and the client is satisfied with the consultant's proposal for the project.

During project start the consultant presents his approach to the client. In some cases, (E&Y, ACL), the client may decide to be trained in a particular methodology or approach. Where the client has already decided on a particular methodology, the consultant would accept the choice, but try to assess its best use, streamline it and, if needed, make sure it is not over-rigorous and that it meets the project's requirements, (ACL).

Project start is also very important for Olsy who recognize that estimates about cost and time scales are usually underestimated at the beginning of the project. While changes to these initial conceptions are carried when the starts is launched, their consequences are not fully examined yet have a significant cumulative impact. At the beginning, visions about the system are more comprehensible by management than later when complications (technical and other) may appear. A good project start ensures critical issues are dealt with in the early stages of the project where costs are smaller. Towards the latter, the consultant continues to carry out his assessment of the client and the situation.

Another important activity during project-start is the establishment of a good working relationship between consultant and client. HI referred to this in terms of a "personal chemistry" developing between the two parties. Such chemistry appears to develop naturally as both parties find out more about each other. The client expresses his concerns while the consultant presents his understanding of these concerns. The client also has the opportunity to counter-assess the consultant and experience his approach towards IS development.

As evident in our data, the client largely controls the initiation of the project as he will not proceed with the project until he is convinced that (his) priority issues will be resolved at an acceptable cost. The consultant may have different ideas about what these priorities are and the project cannot start until there is a match between the client's *wants* and his actual *needs*. As HI's practicing manager put it:

> "Clients wish consultants satisfied their wants rather than their needs. Consultants may wish the opposite but it depends on their skills to achieve a match of wants and needs. This differentiation creates a lot of conflict."

The differentiation indicates the adamacy of the client's views and difficulty in changing perceptions formed about the nature of the IS concern. The client may not be willing to let the intervention go at the deeper level the consultant is pushing for —i.e. by examining why the actual needs are not identified by the client in the first place. Despite potential conflict at this stage, the consultant's market orientation means he will always help the client achieve his wants. However, if success may be jeopardized consultants have to employ a number of strategies to match client wants and needs:

- The consultant may "test the water" by suggesting what is really needed but may not try to change the client's mind initially, (ACL, HI). As the project develops the consultant is in a better prepared to change the direction of the project. Another variation to this strategy is sensitizing the client at every opportunity possible, but without raising the issues directly. This requires that the consultant keeps the important issues in mind throughout his intervention.
- Another strategy is to "put a flag on the problem" by openly raising awareness about the actual problem, (HI). It is expected that by challenging the client's perceptions

about the problem and by placing it in its appropriate wider context, the client may reconsider his views more easily.

- A third strategy is to raise the issue but continue to offer help to the client in whatever direction is desired. Reality unavoidably force the reconsideration of ineffective assumptions made. By offering help and support the consultant leaves the door open for the client to change his mind.
- An ineffective view of the problem usually will not be shared by others in the organisation. The client's views can be challenged more easily with the support of data collected from the rest of the organisation.
- An ineffective strategy is to spend a lot of time trying to convince the client and so coming in sharp contrast with him allowing conflict to develop in the relationship.

Matching client wants and needs requires time, a great deal of political intervention and use of interpersonal skills which reveal the potential extreme complexity of ISD consultation. The above effective strategies are not guarantied to work and show the significant backstage activity that is required by the consultant. ISD consultants, however, will not spend all their time and effort to manage this demanding backstage activity. At the end of the day their strong market orientation means that for some projects they are prepared to fulfill the client's desires rather than his actual needs.

While the above properties and dimension highlight the significant amount of complex consultation activity that takes place before ISD starts, equally demanding may be the period following the formal project. Once an ISD outcome is produced, ISD activities are terminated and the formal project comes to its *Project-End.* The transition from IS development to IS operation can be problematic and it is not covered by methods —not even evolutionary ones, (Appendix 6, A-XIX). Additional complexity arises from the consultant's withdrawal from the project and organisation. The consultant has to ensure that his relationship with the client comes to an appropriate closure and leaves the door open for future work. *Repeat Business* is evidence of successful and lasting consultant-client relationships. Again project-end is a period the consultant relies on his own skills and approach to manage effectively.

4.4.5.3 Project Management

Another category that emerged to highlight the importance of the context of IS development is *Project Management*. All consultancies in our sample talked about ISD in terms of project management, which follows a successful project-start. Project management issues are resolved before any ISD methodologies are utilised. The focus is placed on managing the project rather than IS development. The concept "project" is more abstract and wider than the concept "information system". For WS project management helps balance changes, focus on a good project-start, manage inherent risks, and, like ACL, manage expectations and keeping the project under control. Project management helps consider change management issues pertaining to the project by considering from the outset how the project will be structured and resourced. While this property of the category reveals the need for controlling project activities, it indicated that projects become difficult to manage if focused narrowly on IS development. A distinction noted characteristically by ACL's director:

> "The way success and effective client managed are ensured is by means of project management, not by using methodologies, and risk management, by reviewing the risks constantly and by having independent reviews of a project. Methodologies do not make Admiral's overall framework which expresses a continuous process improvement cycle."

While project management issues are considered as "reasonably basic" they are important because they have extensive IS development implications. They provide a high level overview of the issues involved in a project and are the focal point of the various parties involved in a development. Project management allows the project to interface with the organisation and the development effort.

Along with the categories discussed previously in this section, project management again points to the complexity of consultation activity involved in a project. Resolution of project management issues with the client also involve an element of political intervention, negotiation and potentially conflict that the consultant has to deal with before ISD starts, throughout the project and even after its completion. In the context of these activities the centrality of ISD methodologies and the ISD paradigm's assumptions noted in chapter 1 are seriously challenged.

4.4.6 Consultant Skills & Role

One of our initial expectations was that the ISD consultant and ISD in general was limited in managing an effective intervention into the client system. This was confirmed only to an extent and only from data gathered from our organisational sample. As we saw in the in-house development projects ISD professionals exhibited an *IT Rationality* which in most of the cases, (VM, AC, IC, LB, see Appendix 6, pg. A-XVI), rendered them of limited use to the project, other than very technical tasks. The values exhibited by such rationality was pursuit of the technically excellent solution and lack of understanding the nature of their organisation's business. To an extent, the rationality of in-house IT staff has been nurtured by a structured-formal ISD project tradition in most large organisations. However, we need to note that once some issues of facilitation were resolved in the above projects some IT staff emerged with the skills needed to communicate better with business people and help them understand development issues, (IC, Appendix 6, pg. A-XVII).

Turning now to data from our consultancy sample, the initial generic problem statement cannot be easily supported. The strong market orientation, and therefore pragmatic values, of consultancies we identified does not mean that they are ineffective in managing their clients and dealing with intervention issues. The main reason for this is also pragmatic: as we saw in the previous two sections, the problematic situation becomes often centre-stage rather than back-stage activity. As such consultants often have to deal with complexity during their consultation process and have developed a number of strategies for dealing with difficult situations like conflict of views.

Another distinction we did not envisage in our initial problem definition, was that consultants specialize in business and technical areas and it is quite common for both types of expertise to be involved in the same project. Business consultants tend to precede technical ones who undertake a more supportive role on a need-to basis. Consultants may also be divided in technical, process and training areas. Process consultants help the client with IS development and develop the client's capability and infrastructure. In E&Y, WS and Olsy consultants are also identified according to their specialization domain, e.g. banking. This means that when we talk about consultant ineffectiveness we must be clear about which exactly type of consultant we are talking about. The type that seems most ineffective are all the expert types, such as technical

and domain-specific, but only in situations were they undertake the whole project without the involvement of business or process consultants. We saw this in our organisational sample cases were technical staff were involved in the projects. Issues in the IC case study were only resolved when an external (process) facilitator was invited to consultant to the mixed development group, (Appendix 6, A-XVII).

Another area which confirms the above observations was the skills all ISD consultant must share:

A Fundamental Knowledge of ISD, To use any methodology, even a structured one, the consultant must have a fundamental knowledge and understanding of how information systems are developed. This is necessary to interpret and communicate the requirements of development in a consistent manner. Additionally, fundamental knowledge of ISD ensures that issues concerning the challenges of change, sharing of visions, understanding culture, pursuing learning and assuming responsibility, are also addressed. This fundamental knowledge acts as an implicit frame of reference. Without it the consultant is unable to interpret what is going on and what he is required to do.

Political / Interpersonal skills, These involve an "ability to influence customers" and a willingness on behalf of the consultant to "upset people" if needed. This also requires negotiating skills. The consultant must be able to "access and involve parts of the organisation that have been shut-out of the process of development". He must not take for granted how the client has setup the project as clients may not involve all of the organisation from the outset. The consultant assesses who needs to be involved and use his political-interpersonal skills to ensure their involvement. Towards this he also needs to understand different types of clients and markets. Additionally, effective communication skills enable consultants to visualize and communicate visually, to make abstractions and use clear and unambiguous language.

Technical skills, According to WS and ACL, failures occur in certain projects due to technology not being properly understood. The consultant needs to be up-to-date with the latest technological developments and use his skills to assess the capabilities of the technology involved in his project.

Managerial skills, The consultant is required to have strong project management skills, but also an "ability to make decisions" and an ability to "manage the quality of his personal work and the quality of the project".

Process skills, A significant aspect of the consultant's work involves managing his relationship with the client, which requires the consultant to manage his process of consultation. For this reason HI view consultants as process consultants. In Olsy's case consultants facilitate development is driven by users. Political and managerial skills are also based on a sound foundation of process skills.

The best consultants are separated by their ability and skill in maintaining successful relationships with clients (ACL, WS, HI), solving problems in practical ways, (ACL, WS, HI), listening to clients, (ACL, HI), and in tight project management, (E&Y, WS). Unsuccessful consultants are seen to lack a fundamental understanding of ISD and their role, (ALL firms) and lack the necessary skills for building effective relationships with their clients, (ALL). The above skills are largely characteristic of other more business consultancy fields and certainly of OD. The difference lies in the domain specific fundamental knowledge.

Similarly non-ISD are the roles consultants undertake in their everyday work, which reveal a wide variety of styles:

Table 4.6: Assumed Consultant Roles

• coach	13%
• adviser	11%
• facilitator	11%
• problem solver	11%
• catalyst	9%
• doctor	9%
• technical expert	9%
• trainer	9%
• manager	9%
• organisational expert	6%
• psychoanalyst	3%

Technical expertise and the doctor role are second rated, behind coaching, advising, facilitative and problem solving roles. Advanced roles more characteristic of OD, however, are not that common as organisational expertise and psychoanalytical roles are less frequently adopted.

Consultancies build the expertise of their consultants by moving them to different positions or assigning them to different projects over a period of time. In ACL directors too change positions to keep in touch with practice. In HI new consultants are placed first in a sales position before undertaking projects. This shows an implicit experimental Action Research model of operation where consultants build their experience and expertise in practice. Of course external consultants have the ability to encounter a variety of projects, clients and problematic situations, while internal ones become very close to their host organisation. Even for technical consultants such experiential learning can be beneficial and may encourage an open-mind needed to collaborate effectively with business people.

Although our initial expectations about consultant efficacy were only partially met, the message is optimistic as it shows that it will not be impossible for at least business, training and process consultants to challenge their assumptions that originate in the traditional ISD paradigm.

4.5 Conclusions

Our discussion in this chapter was structured around our key research findings. A number of novel areas arise as insightful and provide the basis for an informed discussion of OD suitability. In conclusion we have identified the following points:

Approach is a meta-methodological concept that matches the problematic situation's complexity and guides the entirety of activities and phases of a systems development effort. It also helps the consultant deal with the consultation and intervention complexity of his work.

In contrast the role of ISD methodology lies in providing a communication scheme that provides a frame of reference between involved parties in IS development. As our research data show, there are a number of ISD problems that ISD methodologies do not address. The range of ISD projects undertaken by consultancies extends not only to technical automation projects, but to developing the client's capability in IS development. In the latter projects a methodology is an optional and small part of a wider delivery which may include process consultation, process redesign, and training. As a consequence the role of Approach emerges as more important than methodology and an effective approach is seen leading to a successful ISD outcome.

Our research findings also show that a significant number of activities take place outside the traditional notion of the SDLC, in terms of pre-project diagnostic and preparatory activities that are ignored by ISD methodology and are catered for by the approach. These activities are reported to be crucial for ensuring the success of a project. Complementing these activities are diagnostic processes and models that are employed to assess every situation, client and project. Indeed significant emphasis is placed on the early identification of risks before committing to a project and subsequently to IS development. Part of the reason for doing so is the fact that clients may have wrong expectations from IT, misconceptions about the role of users and other stakeholders, may be narrow-minded and may find it difficult to establish effective working relationships with consultants. In our findings clients emerge as another area of risk as they are seen as more likely to contribute to failure than success.

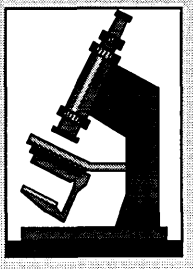
Our data reveal the complexity of the problematic situation and the fundamental role of the organisation in fostering the most important sources of problems. Approach, with its flexibility allows management of the situation by the consultant, but intervention issues and organisational change issues are considered largely as an unavoidable risk. Sophisticated model of intervention and change are lacking from both ISD consultants and clients.

Consultants exhibit an overall pragmatic value set but their division into different specialties shows that not all consultants can be accused of being overtly technical or methodological. In organisations with a particular structured tradition IT staff are reported to exhibit a traditional ISD rationality, but given a chance individuals from

their ranks emerge to communicate effectively with business staff. In consultancies a number of consultants are not considered technical at all as they specialize in the business, process or training areas. These consultants provide the interface between the organisation and more technical consultants, and may also be suitable for opening up to an OD perspective.

Our research findings have implications for our argument concerning the necessity of an OD perspective in ISD, for ISD itself, for consultants and clients. In the next chapter these implications are examined in detail.

Chapter 5

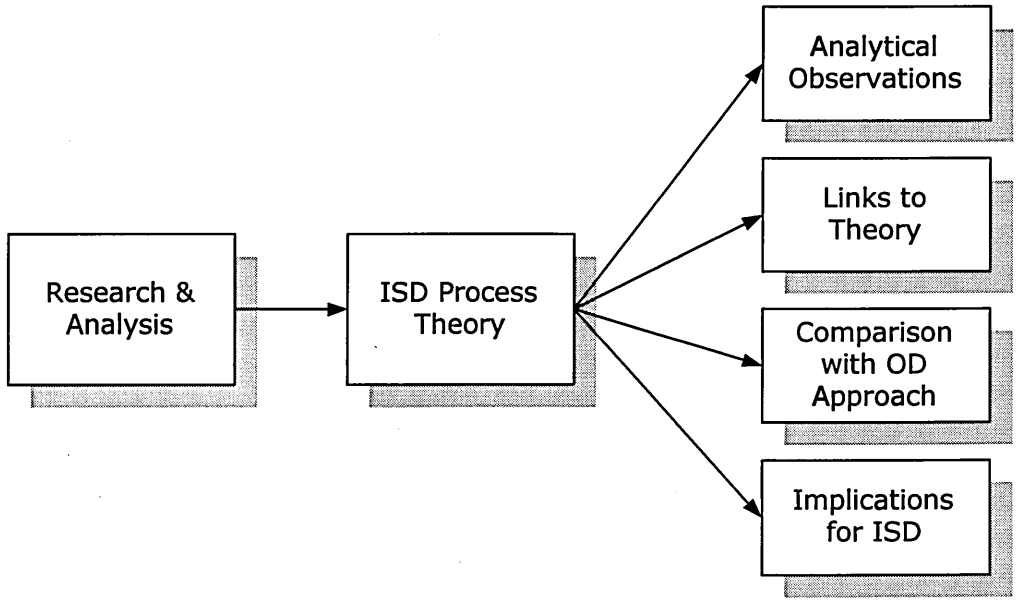


Critical Analysis

5 - CRITICAL ANALYSIS

5.1 Introduction

In the previous chapter our analysis focused on the key elements of our research findings that are part of the grounded ISD process theory. In the current analysis we adopt a critical stance to discuss the wider implications our research findings have for ISD and for developing our argument further. As the following diagram shows, the chapter explores a number of analyses determined by our grounded theory framework, that are progressively wider in scope. Our first point of departure are a number of analytical observations about the emerged theory. The analysis focus lies not on what our data fragments show directly, but on what is revealed in the context of the whole process theory.



At the next level we explore links to relevant theory which help us critically review and strengthen our research findings further. Relevant theory is invaluable in exploring a range of potential consequences our theory may have as it allows us to review it from a number of different perspectives. Another critical discussion compares our research findings with the OD approach and develops a number of observations that show that a number of deficiencies of the ISD model as they emerge from our data. Finally, we conclude this chapter with a discussion of the wider implications our emergent theory of ISD has on the field itself and its fundamental paradigm.

5.2 Analytical Observations

5.2.1 Absence of a "middle" period

Reflecting on the preceding chapter we can not help noting a conceptual "distance" between the project-start and the project-outcome, with a "quiet" period in the middle of the project when actual IS development takes place. As such the two most important periods for assessing the project's direction, process and success are the beginning and the end. This implies that the only opportunity for action is at the beginning. IS development activities take place without allowing changes or reversal of changes to initial conditions. The "middle" period is devoted to actual development activities which require significant investment of effort and time before visible outcomes are produced. Only once these outcomes are produced the effect of changes allowed in the initial conditions can be assessed fully. At the end of the project the only useful action possible is the elicitation of learning from the whole project process. This of course is consistent with ISD wisdom that it is easier to make changes to the system during analysis. In our case pre-project activities ensure the success of the whole project. Evolutionary projects too do not escape from this phenomenon although are in a better position to reach outcomes sooner. The significant levels of facilitation, teamwork and the tendency of people to escalate commitment means that it is useful to create the preconditions of success as early as possible.

5.2.2 Differences in Approach

Studying the ISD process we sought similarities between approach. As we saw approaches do not differ significantly when it comes to their essential characteristics. To understand difference in approach we need to examine their underlying philosophical assumptions, which ultimately determine their practical expression. Using Burrell & Morgan's, (1979) framework we base our analysis along the Functional-Interpretive continuum, (Table 5.1), in order to produce a taxonomy of the different approaches.

Table 5.1: Criteria for Exploring Differences in Approach

Assumptions	Functional	Interpretive
Nature of Systems	Technical Systems	Human Activity Systems
Acquisition of Knowledge	Scientific Method	Interpretation Methods
Analyst Viewpoint	Outside System	Inside System
Methodology	Procedures	Key Processes

Ontological assumptions in ISD concern the nature of systems which either considered techno-structural or human activity. Epistemological assumptions are reflected in how an approach ensures the acquiring of valid knowledge about a system and its operation. The expression of assumptions concerning human nature are whether the analyst is considered part of the system developed or not. Methodological assumptions are revealed when an approach relies on a number of extensive procedures or the identification of few key processes.

The following table outlines the relative positions of the six approaches along the various dimension pairs. This positioning has been based on the assessment of each approach and from the gathered and analyzed. The dimension positioning remains relatively consistent and thus supports well the overall positioning along the Functional-Interpretive continuum.

Table 5.2: Dimensions of Continuum and Relative Positions

Techno-structural	**WS**		*EY*	LN	***AC***		OL		HI	Human Activity
Science	*EY*	**WS**		LN	***AC***		OL	HI		Interpretation
Analyst Outside	**WS**	*EY*		LN	***AC***		OL	HI		Analyst Inside
Procedures	*EY*	**WS**		LN		***AC***	OL		HI	Processes
FUNCTIONAL	**WS**	*EY*		LN	***AC***		OL		HI	INTERPRETIVE

- *Techno-structural vs Human Activity*

WS do not regard themselves as too technical, but a number of factors indicate their assumptions about systems are strongly techno-structural. Structured methods are by far the preferred way of developing systems and managing projects. PRINCE is considered a solution to IS failure. Method tailoring focuses on refinements with minimum waste of

time and resources. Other indicators are the company's extensive engineering background and specialization, coupled with the centrality of the government customer. WS's approach is less closely aligned with the human activity side of the dimension, although there is a small core of values that recognize the importance of human factors in ISD such as adequate user involvement. While these reveal pragmatic concerns they also show that certain aspects of systems are seen as interactionally complex.

E&Y's ontological beliefs are similar. E&Y go to great lengths to observe projects, systems and consultants in order to identify and collect structural components. The company's reputation is built on "knowledge management and thought leadership" which is only possible if systems, situations and people are observable. The principles behind their methodologies reveal a need for controlling projects, quality and performance.
E&Y differs from WS because it views every situation as unique, requiring a highly individual solution. As such they recognize that some of the complexity can not be explained before a project has started. E&Y's are also placed to the right of WS because they reflect stronger pragmatic values in their development of methodologies. This allows their approach to overcome some of the weaknesses of traditional structured approaches and their knowledge base contains best practice knowledge as well as structured components.

The middle ground is occupied by Link and ACL. Both companies are quite similar in many ways and their assumptions are predominantly pragmatic. Both recognize structural and interactional complexity. No method is preferred or imposed to the client even when an in-house method is available. We also see a good mixture of different methods in both approaches. Their emphasis is on delivering value to the client. The ends of this dimension are almost irrelevant to the two firms because beliefs about the nature of systems do not determine the choice of approach. Practical concerns and a competitive environment push these companies to offer a range of services.

Olsy is closer to the human activity end of the continuum as its approach is closely aligned with Evolutionary Development (ED). The assumptions at the basis of ED are that systems, projects and people create situations of significant interactional complexity

which can not be interpreted once and for all. Every project is unique and information systems are seen as human activity systems which have both technical and human elements. Their dynamic character imposes continuous change to the project and development. However, Olsy cannot be placed completely at the right hand side due to a significant portion of its business being structured systems projects.

For HI every situation, client and system is regarded as unique even though prescriptions may exist. HI manage project complexity by diagnosing for themselves the issues and problems experienced by the client. HI's approach to ISD shows an understanding of the political and symbolic-cultural nature of organisations within which projects undertaken. HI's holistic approach views an IS to be part of the larger organisation. HI utilizes strategies for understanding and dealing with issues of organisational change.

- *Science vs Interpretation*

Both WS and E&Y are closely aligned with scientific epistemological assumptions. E&Y's approach development is characteristically "scientific". Latest knowledge refutes existing knowledge and is adopted until refuted itself. Engagement teams monitor large projects without being part of any of the project teams. A methodology development centre collects all the information from around the world and decides which changes will be made to the methods. Interpretation plays a much smaller part in this process which is very efficient. Additionally, structured methodologies to both organisations are by far considered superior.

Link and ACL are again placed in the middle of the range as their pragmatic ontological values cascade to the epistemological level. In both organisations scientism is reflected in the existence of central libraries and interpretation is reflected in the non-prescriptive in-house methods and frameworks.

Olsy's epistemological assumptions are a direct consequence for viewing ISD problems as evolutionary development problems. Valid information comes from people who are at the heart of the situation and of the ISD concern. Olsy, discards information produced solely by the analyst, relying solely on his technical expertise. In ED useful and valid

information is defined by the quality of participation of stakeholders in the development process. Interpretation and sense making is more important for Olsy where Prototyping and Joint Application Development depend heavily on it.

HI's approach has the frame of reference to understand symbolic processes and interaction in significant depth. Interpretation is fundamental both in terms of diagnosis of the client situation and for understanding the real reasons for the client's insistence to pursue certain desires. For HI knowledge and understanding can only be warranted if they emerge after an investigation into the situation presented before the consultant. For this purpose, diagnosis and process consultation are seen as key elements of HI's approach. Without these two elements solutions are seen to search for problems which is not HI's effective mode of operation.

- *Analyst Outside vs Analyst Inside*

Most of our consultancies do require the client to be involved in the project forming a collaborative relationship with the client. Often projects utilize mixed development teams. However, the analyst viewpoint is predominantly an external one. An exemption to this is Olsy and HI. In Olsy's case and in true ED projects end-users and consultants collaborate in the development process. The consultant is a facilitator —a member of the development team that helps the rest of the team move the project forward. In HI's case the analyst is immersed in the client system aiming quite often to "be accepted as a member of staff for the duration of the contract".

- *Procedures vs Processes*

WS's methodological approach places emphasis on control and refinement. The core metaphor is that of Project Management. Almost every aspect of IS development is regarded as a project management problem. The consultant's expertise is used to assess the client-organisation and the ISD problem in order to put together a good project that will become the vehicle for managing the ISD process. Project management is used to deal with problem solving, expectations, change management, continuous validation and user involvement. We can also trace some pragmatic values as WS deal with the weaknesses of waterfall. Additionally, despite their centrality, SSDAM and PRINCE are regarded as inappropriate for certain types of projects and clients. The firm's

involvement in making SSADM a more tailorable methodology indicate that some key processes exist, but are loosely organized as guidelines of best practice.

E&Y's approach is comprehensive, well structured, and focused on content even when identifying processes. The fundamental metaphor behind the approach is that of a software product: when the content changes so does the methodology. E&Y roll-out an improved version of their methodologies every 6 months in order to keep up with competition which eventually catches on. Any interpretive qualities in the approach depend wholly on consultant values and expertise.

In the cases of Link and ACL we see pragmatic values creating a good mix of processes and procedures. The central libraries in both firms include a mixture of process guidelines with technical components, like skeleton code. Both firms place importance in the correct interpretation of requirements, expectations and visions. Methods are refined, customized and optimized. User involvement is highly valued and pursued in every project. Both firms have developed non-prescriptive in-house methods/frameworks and they are also confident in the use of structured methods. ACL is more to the right due to the fact that there isn't a preferred methodological approach, but a well defined set of key processes like method choice and optimization. There is also a key framework and the establishment of mixed development and project teams. Adding value to the customer is ACL's favourite metaphor that links values, framework and methods. The client's capability may be developed along side the completion of technical tasks. Link's approach is oriented towards the technical / expert delivery of software and services, which is the central metaphor.

The core metaphor at the basis of Olsy's approach is evolutionary development. At the methodological level Olsy's core metaphor is expressed by an implicit framework which focuses on a set of key processes and principles. These ED principles make even structured methods successful by overcoming their weaknesses. ED methodologies are naturally aligned with the interpretive paradigm. For example, the in-house ED method and DSDM, by design focus on a small set of key activities.

The fundamental metaphors in HI's approach are investigation and flexible problem solving. HI's approach is closely aligned with the interpretive paradigm's principles, as the approach is based on creative processes like diagnosis and process consultation. The only pointer towards the left side of the continuum is that the sets of models and standards models adopted by HI are a characteristic expression of functionalist values.

The above analysis is important in assessing approaches and their values. The highly individual character of each approach permeates every aspect of the approach and gives it its unique character. The above analysis highlights the role of the approach. Every approach is different and components may be used that express diverse values, however consistency is maintained.

5.2.3 Diagnostic Scheme

A number of issues are diagnosed in every ISD project situation. For example, what are the client's actual needs, capability in ISD, the most likely problems, who might resist, what constraints are posed, and what skills are needed. These issues remain the same, although their importance may change from project to project. Consultancies in our sample do not use ISD methodologies to assess these issues. However, the approach seems to embody a fundamental *diagnostic scheme* that is examined in every situation. An example of one aspect of such scheme is involvement. Not all methodologies require involvement of the client and users. However, all firms conveyed the point that involvement must be addressed in every project —required or not by the methodology or the client.

In every project, the consultant has to find out more about the nature of the ISD problem, its context, the resources available, and the visions identified to help materialize the logical and physical entity of an IS. In this process the fundamental processes are known to the consultant —hence the skill of having a fundamental knowledge of ISD— but their practical expression, labeling and form may be expressed in terms of a methodology. The consultant's approach determines what key activities must take place with or without a methodology. His fundamental understanding and knowledge of ISD enables him to switch between methodologies while retaining his

effectiveness. Approach can also guide development in projects where no methodology is used.

Not all diagnostic schemes are the same, but there is one in every approach. The differences lie in the nature of the issues interpreted in every situation. Clearly firms like HI have a more extensive diagnostic scheme than WS and E&Y. HI aim to interpret almost everything in a situation and do not have any predetermined "interpretations".

Supporting the diagnostic scheme are fundamental ISD outcome factors. These are seen to determine the outcome of the project and IS development and do not exclusively "belong" to a particular methodology as they transcend ISD paradigms. ISD factors are fundamental expressions of the problematic situation that consultants confront. Consultants come across requirements for involving users and parts of the organisation in every project, not just the occasional evolutionary project. Similarly, issues of vision and communication are significant factors in every project engagement. An approach deals with these fundamental issues which in their entirety are not addressed by any single methodology. The approach helps produce a synergistic methodology which is made up by various components which handle different issues at different levels. For example, client assessment and project start deals with client management and setting up the project, project management components ensure management of change and resources and tailored methodological components ensure efficient IS development. At another level, political strategies ensure support for the project and facilitative skills ensure a good process is maintained throughout.

While the diagnostic scheme reveals pragmatic values it also shows that consultancies test any theoretical "solution" in practice and improve it by complemented it with the necessary custom features. In this fashion, structured development is complemented with prototyping and JAD workshops. Ineffective solutions mean loss of clientele and revenue. Even if structured development is the favourite approach a consultancy must still be able to produce results with it. The key diagnostic scheme allows the optimization of the effectiveness of various components used in an approach.

5.2.4 Approach versus Methods

The absence of a middle period and differences in approach, bring into focus the fact that the main emphasis for success is placed not on ISD methodologies, but on the meta-methodological entity of approach. While methods focus on ISD, approach focuses on the context of ISD and provides such context to methodologies.

Approach proves there is no one way is best in IS development and supports the systems property of Equifinality, i.e. reaching the same end goal from many alternative routes and initial conditions, (Cummings & Huse, 1989). As such approach is the main vehicle for dealing with all levels of ISD complexity and represents its systemic nature.

Approaches differ more at the level of values and frameworks of choice rather than at the level of methodologies and project types, where they were very similar. Because of their differences at the paradigmatical level the same methodology may be used in two different ways depending upon the overall approach.

Approach is a meta-methodology guiding thinking about value-consistent action in situations, where a methodology may be used in some form or not. The approach's conceptual level looks at the wider problematic situation and not only at an isolated concern that has been raised within an organisation. At that abstraction level there are a series of problems and a series of alternative options. Approach guides selection using a framework of choice, i.e. an elaborate decision making model that helps eliminate possibilities and point towards the appropriate solution(s). The use of the framework is key for making methodological decisions. The outcome of choice may be that:

a) more information is needed to make a decision,
b) a viable outcome is impossible,
c) a methodology can be used as is,
d) a methodology can be used but after modifications,
e) a combination of methodologies can be used,
f) no methodology is needed —instead use either a collection of unrelated techniques or simply let skillful people get on with it.

Despite the great number of outcomes, approach ensures consistency in delivery of service to the client. Values and fundamental assumptions determine the "character" of each approach and no matter what methodologies are used clients deal with a particular consultancy firm. As we have seen each consultancy adopts a different core metaphor at the basis of their approach. Each metaphor shows where the emphasis is placed in ISD. For example, in WS's case the core metaphor of Project Management means that the client will not be "allowed" to address project management too lightly —a phenomenon typical of many client-organisations. For another firm, HI, this may be still an important issue, but not as critical as flexibility in problem solving and diagnosis. To take our example further, WS and HI may both use SSADM, but WS will capitalize on the project management features of the methodology while HI will use SSADM as a starting point for diagnosis into the client system. Formally both would be using the same methodology, but in reality methodology use would be diametrically different. This is the main function of approach, which based on the fundamental values, determines the content and process of action.

Characteristic of the functioning of an approach is client assessment. Again no methodology is used, but expectations about the client's contribution, functioning and intentions are contrasted against an actual assessment of the client. Approach ensures consistency as this is a "step" that is carried out in every project and for every client. Similarly, an individualized character is also given by the overall approach to methodology tailoring. Two different approaches place different emphasis when tailoring. For ACL the emphasis is on "streamlining", i.e. achieving the right degree of rigour. For E&Y the emphasis is on offering just the right amount of features for the characteristics of a particular situation.

As we have seen throughout the analysis of categories and the emergent ISD process, approach determines the particular quality of every aspect of the consultant's engagement with the client. I personally realized this point when confronting each consultancy firm for the purposes of my research. In an effort to assess differences between cultures I decided on a mental game: to consider myself both a potential client and a potential consultant seeking work. As it turned out, every firm came across differently and as I expected projected different cultural images to the outsider. What I did not expect was to be "attracted" to a particular firm towards which my personal

fundamental beliefs about ISD are in total opposition. Before meeting people in this firm I was convinced this could never be a company I would like to either work with as a client, or to work for as a consultant. However, after meeting them I was amazed at the way these people operated and approached me as an outsider. At the end of the day I was not a client, simply a student, and there was no reason for them to put up any pretenses or false image. Even if they did it would be difficult to put together such an elaborate plot. Their behaviour was genuine towards me and I was overwhelmed by the general environment and conduct of the people working in this firm. Similarly, I felt very disappointed in a firm which I felt in total agreement at the conceptual and methodological levels. Given the two examples, if I was indeed a client who would I choose? Obviously the first firm, irrespective of the fact I did not agree in principle with their point of view towards ISD. However, I could relate totally with their approach, i.e. their values which create the particular idiosyncrasy permeating every aspect of their conduct. The second set of people sounded right, seemed right but did not feel right. Their approach was totally different placing emphasis at different things. This means that another person or client could better relate to them than with the first firm. The point made here can be related to something mentioned by WS's manager who told me that "clients ultimately purchase a set of values". In other words clients purchase the approach rather than expertise on methodologies. Expertise may be available from many sources, but the client does require a personal chemistry to develop between him and the consultant. HI noted this important function of the approach by describing how this special connection means the acceptance of the consultant even if he is a less favourable option, in the same way I would choose to work with the first set of people.

The importance of approach has serious implications for the role of methodologies. Through the property of tailoring, and with the support of frameworks and components repositories, it emerges that there is no "pure" use of methodologies —at least as the creators of methodologies intended. The consultant uses his approach's framework to tailor various methodologies to the requirements of the particular situation. Although some methodologies have an in-built form of tailoring the consultant carries out tailoring decisions even in areas of the methodology that were not meant to be tailorable, without this being contradictory. Through the approach, methodological construction or mixing works because it matches what is needed in the situation. The

methodology creator has to think of all possible situations and therefore tailoring of components removes the methodology's universal applicability. Tailoring may be also based on more than one methodology. For example, certain procedures may be left out from SSDAM, but may be provided by less rigorous ones from another structured methodology. Alternatively, SSADM procedures may be used with custom made procedures for documentation.

Where components repositories are utilised, we see that project and process support components framed methodological ones. Additionally, within methodological collections items included not only methods, but also a series of individual techniques, tools, aspects of methods, lessons and tips. This supports the point that there is no pure method use, but the actual method used emerges synergistically by carefully selected components that are chosen to address a series of issues. This process takes place even in projects where the client has already determine the adoption of an ISD methodology. In such cases the consultant reviews the specified method and optimizes its use. The fact is that no one could ever design a methodology that would match the complexity of *all* ISD situations. This means that existing methodologies, even with an in-built degree of tailoring, will always include or suggest things that are not needed in every project and will lack things that are really needed. Consultants' market orientation is also important as methodologies may specify activities for theoretical consistency and robustness that have little impact on the delivery of value.

As it emerges from the ISD process, every single project requires tailoring. This means that tailoring does not occur in the odd project that falls outside the frame methodologies, but in "normal" ISD projects. Given that there are so few tailorable methodologies, if any, the question is why develop methodologies that are not? ISD methodologies appear to be the focus of significant investment, effort and theoretical discussion. For the consultancies in our sample methodologies are surprisingly low key, even in cases where millions have been spent to develop them. The fundamental point is that ISD methodologies assist in ISD, but alone can not ensure success or directly lead to failure. WS characteristically noted that systems do not fail due to some part of SSADM, while E&Y's IT manager argued that systems fail because of the way people use them rather than methodologies themselves. Additionally, none of the firms argued

that a particular methodology was the cause of success in projects —even when they had developed their own. Even Olsy are be successful in undertaking structured projects, i.e. using methodologies they do not favour.

ISD methodologies do, however, play an important role in ensuring consistency of communication. They can provide a scheme of categories and a terminology which is useful for organizing the collection, processing and communication of data. Where a methodology is not used, issues of interpreting communication frames of reference become a problem.

5.2.5 The Client's Role

The role of the client in the ISD process is regarded as very important by the consultancies in our sample. For them the client too can influence the success of a project. As we have seen, the process of client assessment aims to determine the client's influence on a number of dimensions.

An important observation is that the client emerges as more inclined to contribute to failure than success. Our consultancies report that about half of all clients are unprepared for IT-related change. This means that while they commission the development of an IS they do not fully understand what it entails —we saw this in our client sample too. Additionally, a fourth of all clients are classed from difficult to impossible to work with, showing that a number of organisations fail completely to contribute their part to ISD or help consultants in their work. These extreme cases have caused WS consultants to terminate their involvement and HI's consultants to face hidden agendas of management.

Overall the actual role of the client emerges to be a purchaser of a product or service rather than one who develops systems. For Link, clients very often hand over complete responsibility for the project to the consultant not realizing the importance of their collaboration. Although this realization should be preferable to consultancies with a strong market orientation, it is seen as introducing risks into projects. The importance of project start indicates that the client, in most cases, is not immediately in a position to launch the project. For example, a number of important ISD outcome factors may not

have been addressed properly. As the client sees himself as a commissioner of a piece of work, he may also place pressures on the project that are not realistic.

The client also represents the organisation which influences the client's approach towards ISD. As we saw project management tradition in an organisation determines how ISD projects themselves are carried out. As such the organisational context is important. For example, a proposed system may be commissioned by the client as a discrete piece of work, but within the organisational context it may be extensively dependent on other systems or on a variety of people. The client may not recognize how this increases the complexity of both the ISD process and the IS itself considerably. Another aspect of the organisational context, is the fact that in many organisations availability of resources to the project may suddenly decrease as production takes precedence over development.

It seems surprising that consultancies themselves attribute and require a much more important role to their clients and characteristically dismiss that the client is simply the "person who pays the money". He may be considered as such only when all other conditions are met. In most cases, consultancies will even consider working with clients that face financial difficulty. When problems arise consultants expect to work together with the client for their resolution, even if these problems are of a business nature.

Throughout our data, consultancies also expressed desired client characteristics. For HI, clients must recognize the value of IS, understand what is possible to achieve through ISD and have a willingness to accept and work within realistic constraints. For ACL, clients must have a good understanding of their capabilities, put effort in understanding requirements and specifications, be prepared to accept responsibility and have adequate skills. For E&Y, projects should enjoy an adequate level of commitment and an appropriate vision throughout the organisation and leadership. For all the consultancies, the list of ISD factors and client assessment factors are a reflection of the importance of the client's contribution:

Client Assessment	ISD Outcome Factors	
• Identification of Risks • The future of the Project • The Organisation • Vision and Leadership • Formal Project Characteristics	• Involvement • Understanding Needs • Understanding • Organisational Culture • Communication • Understanding Technology	• Vision • Top Management Support • Management of Changes • Pressures • Teams

5.2.6 Emerging ISD Limitations

Although the ISD process reveals the complexity of the consultant's work and approaches have emerged to deal with this complexity, we do not see investment and effort in understanding and improving approaches in their own light. Approaches have evolved through trial and error and through significant influences by consultancies' directors. While there is considerable refinement of methodologies, there is no effort to look at approaches or place them under a more elaborate theoretical-philosophical analysis. Apart from ACL and HI who openly talked about their approach, the remaining firms largely ignore the concept. Although, they do recognize that methods alone can not ensure success, they have not developed a concept, a construct or a term for what we identified as approach. This means that when they try to improve things outside the boundaries of a methodology they might ignore the context of the approach. As we saw the approach does not ensure success in a piece-meal fashion but synergistically and holistically. Understanding the approach as a holistic concept allows to improve its effectiveness.

Another important issue is the pragmatic value set and market orientation of the consultancies. This translates in a tendency for the consultant to ultimately do what the client wants rather than needs. This is further complicated by the fact that the client emerges as the weaker part of the consultant-client relationship as being more likely to affect the project in negative way than the consultant. The paradox here is that the client has also more power than the consultant due to the fact he is financing the project and due to the consultant's pragmatic values. While for a number of projects this may not pose any problems, for more complex projects, situations or clients this can be a very ineffective balance of power and roles. One area of complexity, as we have seen is when there is a discrepancy between actual and felt needs. HI's experience is that consultants

always identify needs that the client has not thought about and only a very small percentage of projects proceed with a match between actual and perceived needs. Although the rest of the firms did not appear to be as pessimistic this shows that HI's investigative and holistic intervention model can not operate effectively in pursuing inappropriate needs. For the rest of the firms the same phenomenon is not as critical for their approaches to work. For all firms, this type of complexity can only be resolved through an effective consultant-client relationship. The consultant appears unable to carry out an effective political intervention that will take advantage of the consultant's own power and address the client's power. The strategies followed by our consultants may show the need for process/political intervention and skills, but there are all largely simplistic and not guarantied to work.

While process, intervention, and change elements exist in ISD they are seen as unnecessary side-effect or out-of-scope activities and phenomena. This means that the level of intervention is rather "shallow" and its main function is not to manage organisational and behavioural change, but to remove problems from projects. As ISD emerges as a complex and deeply social process a more sophisticated level of understanding and analysis is needed. Especially, while it appears that clients too lack such expertise as they almost impel consultants to operate in a "get-in do work and get out" mode.

5.3 Theoretical Connections

While consultants in our firms appear up-to-date with methodological advances, it seems ISD professionals within large organisations still operate under the traditional ISD (functionalist) rationality. In characteristic fashion we saw how ISD staff lacked initiative and facilititative skills. For ISD to respond to the pressures for a more participative-collaborative approach to development, a more in-depth intervention and process management model will need to emerge. This is not enabled by the fact that ISD is not an open field, but is rather esoteric in terms of using theories and techniques from other specialized disciplines. We saw how, not only OD, but Gestalt theory, Archetype theory and Structuration theory are key theoretical fields that directly explain some of

the fundamental ISD processes. While we have used them for explaining certain aspects of the ISD process, they can also be used to improve the effectiveness of ISD.

5.3.1 Structuration Theory

Giddens' structuration theory has been suggested as a suitable theoretical framework for understanding the complexity and social nature of IS development and information systems practice in organisations, (Walsham & Han, 1991; Walsham, 1993; Kawalek, 1997). Our findings provide opportunities to link our analysis to structuration theory and make observations that highlight the deeply social nature of the ISD process.

Reviewing the ISD process that emerged from the analysis of the data, we note that there are two different types of categories: ones which are dynamic in nature and constitute integral parts of the ISD process and ones that appear to be static in nature but are nevertheless critical in determining the functioning of the ISD process and its elements. For the first type client assessment is one example, and approach is an example of the second type. Approach is not an integral part of the process as a particular phase, but helps determine the consultant's methodological approach and conduct towards his client.

These two types of categories can be contrasted to the notion of structure and interaction in structuration theory, (Giddens, 1984). The dynamic categories represent elements of interaction and the static categories represent structures. Approach is such a structure which consultants draw upon to make methodological decisions and to manage their relationship with the client. As we have seen already, consultants give feedback on their project experiences which can lead to the improvement of the approach. As long as the approach is seen as appropriate and useful to consultants it remains unchanged. We see therefore the duality of structure and interaction, and the production and reproduction of the approach-structure from interaction.

Furthermore, we see that the three dimensions of Structuration can be also traced in our categories. Specifically, the *signification / communication* dimension, can be traced in our discussion about the diagnostic scheme embodied in every approach. The

consultant, while communicating with the client and in his effort to understand the client system and situation, utilizes an diagnostic scheme embodied in his approach. This scheme is consistent with a structure of values and guides the consultant in making interpretations of key aspects of the client, his situation and of the project's process. This diagnostic scheme has emerged out of years of evaluating outcomes and the interaction between consultants and clients. The diagnostic scheme links consultant-client interaction with structures of signification which consultants further draw upon to make sense of what occurs during their relationship with the client and during the project experience. The structures of signification and the diagnostic scheme in the approach may change if they become repeatedly inappropriate in guiding interpretation in practical situations. Consultant feedback and monitoring allows for new structures and schemes to be produced.

In the *domination / power* dimension we see the interplay of power between the consultant and the client. As we have seen in project start, the client is in control of the project's initiation and ultimately has the last word in the handling of every issue. We also saw how consultants are constrained by this reality when attempting to do what they think is best for the client. The strategies employed by consultants are varied but, to their admission, of questionable effectiveness. The client's power emanates from the facility of resources and financial support of the project. This means the consultant will always do what the client wishes him to do. This typical interaction reproduces the structure of the client's domination over the project's activities and decisions. The consultant may occasionally challenge this domination by using considerable interpersonal skills and charisma to convince the client. This challenging however does not challenge the domination structure, but it reinforces it because not all consultants have such skills.

We can also identify support for the *legitimation / sanction* dimension in our analysis. One area of support is the question of the consultant's process or backstage activity. Given the domination of the client and the consultant's intent to help the client, we identify a legitimation structure which create a norm allowing consultants to assist the client even if the client disagrees or does not known it. This backstage activity is sanctioned because often the client ignores his own abilities, what is best for his

organisation, what constitutes benefit, and what are his actual needs. As we have seen clients may pursue their desires to be fashionable and technologically advanced or may even manipulate consultant to achieve a secret agenda. These weaknesses emerging from the consultant's interaction with clients, help produce and reproduce legitimation structures which in turn organise norms which "call upon" the consultant to intervene and do something about it. Thus backstage activity is sanctioned and is not seen as unethical by consultants.

Another area relevant to this particular dimension is the area of client preferences towards structured or evolutionary development. Client organisations have a tradition of development, usually structured but also pragmatic. This is a reflection of a deeper structure of assumptions on what constitutes good IS development practice. However, out of "unintended consequences of intentional human conduct" these structures may be changed, (Giddens, 1984). For example, we saw how the client organisations in our sample decided to try a radical new methodological approach that would "simply" enable them to develop systems faster and cheaper. These "simple" projects, however, resulted in introducing cultural and organisation wide change and certainly challenged the traditional structures and norms of legitimate development and pushed the formulation of new structures. This is characteristic of human agency as we see it only took one small project to create a huge impact on the existing structures.

From our discussion on the role of approach and the unfolding of the ISD process we witness that human actors are both enabled and constrained. The set of structures underlying the ISD process are not easily influenced by the individual and there is an effort to maintain consistency and uniformity of approach. However, we also saw the possibility of human actors introducing change through simple but powerful interaction patterns. As both consultancies and clients are organisational entities that must be commercially effective, the main drive behind incremental change may be the economic principle. However, fundamental change to social structures also occurs when new patterns of interaction are enabled that challenged the effectiveness of existing ones. If these patterns, i.e. group development, facilitation, participation and empowerement are not enabled existing structures are reproduced. We saw that interaction did produce new structures.

Through structuration theory's dimensions and dual modality, ISD process emerges as deeply social where simply focusing on structural or interactional elements may not provide the complete picture. Dynamic and static categories interact and are deeply inter-linked to produce the richness of the overall process.

5.3.2 Archetypes

Another theoretical area relating to our discussion is that of Archetypes, which have been used in organisational strategy and design. Archetypes allow a more holistic examination of organisations beyond traditional bi-variable relationship models which are limited in expressing the complexity of organisations:

> "Archetypes are defined as clusters of prescribed and emergent structures and systems given order or coherence by an underpinning set of ideas, values and beliefs, i.e. an interpretive scheme.", (Hiwings & Greenwood, 1989:22).

> "an archetype is the most symbolic, universal psychological image of a character type known", (Mittroff, 1983:84).

Given these definitions, the concept of approach can be analyzed in terms of archetype. In the above definitions we can substitute organisational structures and systems for methodological, project and process support structures and systems, and instead of a psychological image we can have a metaphorical image. The links with our previous discussion are apparent. Archetypes are fundamental entities that are determined by a system of values and assumptions. We have already talked about the role of the diagnostic scheme within the approach and the fundamental metaphors behind each approach. We have also noted how each approach comes across differently projecting to the outsider a different symbolic image. As the classification of structures and systems within archetypes are not seen as neutral but embodying intentions, aspirations and purposes we too have noted how different diagnostic schemes mean different use of the same method. Thus it is useful to try to identify archetypes of approaches in order to examine the notion of approach from a holistic perspective.

There are three fundamental consultancy approach archetypes that can be identified from our data:

a) The Advocate,
b) The Marketeer, and
c) The Investigator.

The Advocate archetype is based on the similarities between WS and Olsy. The main uniting feature is that both firms are strong advocates of a particular philosophy of IS development. WS are proponents of structured development and Olsy are strong proponents of evolutionary development. Both firms view each philosophy and practice as the "best" way to develop systems and have been involved in the development of methodologies within each philosophical paradigm. Being however pragmatists, both undertake all forms of IS development, even if this appears paradoxical. For example, we have WS using DSDM and Olsy undertaking waterfall projects. Advocates, view their role, not only as developers, but as promoters of the particular philosophy and methods through their high profile involvement in discussion groups, seminars and conferences.

The Marketeer archetype is characteristic of E&Y, Link and ACL. All three firms show a strong customer focus and aim to deliver value. The fundamental metaphors reflected in their approaches towards IS development are variations of the same theme: "Software product" for E&Y, "Product Delivery" for Link and "Adding Value" for ACL. The common theme is that of "selling product" to the client. The product may range from being a methodology or a service. Central to all three firms is a components repository which supports standardization of high value delivery to customers. Even junior or inexperienced consultants can use the repositories to provide good quality service to the client. The main currency sought after is knowledge which once captured is recorded in the repositories and made available to future projects. Keeping the repository up-to-date and as extensive as possible are important tasks for these firms. As other firms compete for knowledge and thought leadership it is crucial to maintain a head start in all areas of IS development. The firms maintain this lead the same way a software developer maintains market innovation: by continuously providing new features and new versions of products to clients. Underlying all these firms is an understanding that methodologies are but tools or known components that can be combined to facilitate IS development activities. The overall approach however is responsible for ensuring the delivery of value and customer satisfaction.

The Investigator archetype is solely characteristic of HI, who differ significantly from the other consultancies in our sample. Their diagnostic scheme is truly adhering to the interpretive paradigm. Like an actual investigator, nothing is taken for granted and the cause of action is determined only after the collection and analysis of data from the client system. Neither the client's insistence on a particular solution, nor the existence of a prescriptive solution deter HI from carrying out their investigation. Only when this is completed a project can be initiated. Underlying the approach lies an assumption that reality is very complex, presenting a series of problems and distorted views of problems. To deal with the complexity the consultant uses a holistic, iterative, process-oriented and flexible problem solving approach in order to unravel intentions, responsibilities, causes, deeper issues, influences and conditions. During development significant process activity takes place as the situation remains complex and may need more than one attempts to deal with it.

The archetypes are important in indicating the holistic nature of the approach and show the importance of values in determining how methodologies are used and projects are organized. It is interesting to note that any consultancy could easily belong to another archetype. For example, HI could be Marketeers if they decided to take advantage of the prescriptive nature of quality standards' models. Link also could be Advocates if they decided to promote their in-house methodology.

Archetype analysis is useful in charting the conceptual level of approaches and facilitate their understanding and can offer a terminology that is suitable for analyzing meta-methodological concepts. Archetypes allow examination of a series of interacting elements that make up the approach without delving into the isolated examination of particular relationships between these elements. In doing so the context is always maintained. For example, tailoring can be studied non-holistically for its contribution to the success of ISD. However, without understanding values, core metaphors, tradition, culture and frameworks of choice we can not understand the role and function of tailoring. Approach ensures success, but it is not one single element of the approach that makes it able to do so. Archetypes can help understand how different approaches ensure success. For example, for the Advocates success relies in being as close as possible to

the favourite philosophical paradigm, for the Marketeers success relies on providing the appropriate features in the delivery of value to the client and for the Investigator archetype success relies on investigation and process consultation.

5.3.3 Gestalt Theory

Another, non-ISD, holistic perspective is that of Gestalt theory. The basic premise of Gestalt theory is that "complex human behaviour can not be explained as an additive building up of simple components" and "the true data of experience are organized wholes", (Nevis, 1987). As an approach to consulting Gestalt theory is closely aligned to the interpretive paradigm and as such most of IS development practice renders itself too functionalist in comparison. Like Archetypes, Gestalt theory offers a holistic theoretical framework which can enhance our understanding of approach which facilitates the process of dealing with complex human behaviours in the forms of the consultant-client relationship, project and development team management and creative processes of IS development. Approach fundamentally expresses the Gestalt theory's premise because it deals with the problematic situation in a sophisticated fashion. Although a range of methodological components are utilised, frameworks of choice and diagnostic schemes guide how these components can be put together to match the complexity of a situation. The emphasis is on the whole outcome and not just a particular tool or methodology. An important Gestalt theory notion applied to organisational consulting is the consultant's "presence", (Nevis, 1987):

> "The proposed framework considers presence as the living embodiment of knowledge: the theories and practices believed to be essential to bring about change in people are manifested, symbolised, or implied in the presence of the consultant. Assumptions about what to learn and how to learn in order to function more effectively are transformed into the behaviour of the intervenor as he or she takes on a helping role with a client system", (69).
>
> "Indeed it is possible to state that the way in which the consultant presents himself or herself to the client is a culminating statement of that person's view of the nature of good functioning", (70).
>
> Presence is defined as: "The living out of values in such a way that in "taking a stance", the intervenor teaches these important concepts. That which is important to the learning process is exuded through the consultant's way of being", (70).

Presence appears surprisingly analogous to Approach. It is too a holistic-emergent concept that is based on values and assumptions about effective functioning and

behaviour and is described as the "living embodiment of knowledge". This makes the consultant the focal point for providing access to knowledge, theories and practices. Furthermore, the consultant's presence depends on himself being consistent with a set of values and views, and helping others learn from his "way of being". While the latter is an aim pursued by the Gestalt approach to consulting, the remaining points could be easily said about Approach. Gestalt theory highlights the notion that the consultant's presence is the result of his adoption and following of an approach that is in parallel taught to the client by the consultant's enactment of it. This certainly provides theoretical coverage for the point made earlier that approaches come across differently to the outsider. It appears that presence and approach are but two sides of the same coin. The enactment of an adopted approach is a result of values which the client relates to. This also ties in with the notion of "personal chemistry" that develops between consultant and client. Again, the important point here is that the approach is a holistic entity where no specific element of it can be identified as contributing to the consultant's success or to successful IS development. The synergy of all the various elements, such as values, assumptions, culture, diagnostic scheme, framework, components range, tailoring criteria as well as the consultant's skills in using the approach, determine overall effectiveness and appeal to the client. Gestalt theory supports this notion through the concept of the consultant's presence which describes how the approach comes together for a particular consultant in his relationship with the client.

Another aspect of presence is that the consultant can not be easily trained to enact a prescribed presence. This is confirmed in our analysis of consultant recruitment practices which reinforce the organisation's culture by hiring compatible individuals or by hiring graduates who their professional cultural make-up is not fully formed. Furthermore, it is an established practice for consultant skills development to move consultants around through different positions in the organisation and through different project areas. This effort, apart from improving experience and skills, also aims in providing a holistic understanding of the field and of the consultancy's approach towards it.

Gestalt theory builds further on the viewpoints taken from structuration theory and archetypes. Interestingly, all these theoretical frameworks are non-ISD but originate in the wider field of social science. We do not seem to have in ISD equally sophisticated theoretical arrangements, perhaps due to the fact that in ISD we ignore the deeply social-organisational nature of ISD. Gestalt theory, structuration theory and archetypes are powerful theories, but nevertheless alternative theoretical viewpoints.

5.3.4 Other Studies

A survey confirms that nearly half of all ISD projects use no methodology, but a number of unrelated tools and techniques, (Chatzoglou & Macaulay, 1996). The same survey revealed that industry uses a methodology in only a 29% of projects, while consultancies and software houses use a methodology in an 80% of their projects. This confirms our observations of the role of approach and the actual status of ISD methodology. Further supporting the above survey's results, as well as our observations, a prominent ISD thinker, Claudio Ciborra has challenged assumptions about the centrality of methodology and its contribution to ISD's efficacy. While IS failures have already challenged the efficacy of ISD practice for quite some time now, Ciborra directs attention to the efficacy of ISD theory too. For Ciborra (1997) the basis of ISD ineffectiveness lies on the emphasis the ISD discipline places on methodologies:

> "The core, if not the identity of our discipline, has been revolving around such methodologies, or possibly, as I will argue below, around the very idea of 'method'; still we seem to be devoting much teaching to something which, to be generous, fails in 50% of cases. Systems design methods may be the most diffused methodology on earth accompanying the introduction of new technology. But they work only in part. There are various signs in this respect: major failures of system, in which the methodology has not been able to rescue the project; long delays and sky-rocketing costs of many applications, despite the use of methodologies; the alarming two-thirds failure rate of BPR initiatives; the level of effectiveness of CASE tools far below the one promised and expected, and so on.", (ibid:1550).

What emerges is that both the use and success of methodologies define an increasingly small area, while ISD still focuses on methodologies as the primary vehicle for successful systems development. Our research effort supports Ciborra's comments. As we have noted earlier methodologies can not ensure success and therefore can not rescue a project when they are used. Ciborra extends his analysis to propose alternative conceptions to the notion of method, in the forms of:

Care	how understanding is achieved by actors involved in ISD through the process of becoming intimate and familiar with concepts, models and systems themselves.
Hospitality	understanding implementation of an IS as hospitality: welcoming the stranger. Hospitality is the art of coping with the stranger while accommodating his entering the host system.
Cultivation	of an IS as something that is dynamic and growing rather than the construction of something that is static.

What Ciborra describes can be thought of archetypes of approach towards ISD. Indeed all three notions have their roots in fundamental and ancient metaphorical images of the processes of caring, hospitality and cultivating. Ciborra's arguments indirectly support the notion of approach as a concept based on such key images. His suggestions further find support in our call for a paradigm-shift in ISD thinking.

Departing from the premise that business requirements may change frequently, Gadner et al (1995), make the case for tailorable information systems. These systems allow tailoring not only to their interface, but to their essential functionality. This form of tailoring goes beyond parameter based customization to provide the user with control over the behaviour of the system. Tailorable information systems are contrasted to systems developed under the Fixed Point Theorem, i.e. the assumption that "there is some point in time when everyone involved in the system knows what they want and agrees with everyone else". For the authors:

> "This approach is typical of methodologies used for designing and developing information systems. These methodologies assume that user requirements can be known and agreed.", (ibid:183).

Our analysis confirms this weakness which consultancies overcome by tailoring their methodologies. The need for tailorable systems supports the need for tailoring. As these systems are not completely redeveloped each time requirements change, methodologies can not be used that operate on the full SDLC. The evolution of a tailorable system requires tailorable methodological approaches as the system is mostly in place. With the advent of RAD and its growing popularity the pressure for tailorable systems will increase and with it the pressure for tailorable approaches.

Standish Group Inc. is a market research and technical advisory firm that specializes in transaction processing and electronic commerce. The group, has published a list of success criteria for IS Development projects, Johnson (1995). These success criteria are quite similar to the identification of the ISD outcome factors highlighted in our analysis. Their list of criteria also transcends ISD methodologies and approaches, focusing on what is considered essential in every project.

Table 5.3: Comparison of factors

STANDISH GROUP *Success Criteria*	**OUR STUDY** *ISD Outcome Factors*
• User Involvement	• User / Client Involvement
• Executive Management Support	• Top Management Support
• Clear Statement of Requirements	• Understanding Needs / Communication
• Proper Planning	• Project Management
• Realistic Expectations	• Realistic Pressures / Expectations
• Smaller Project Milestones	–
• Competent Staff	• Teams
• Ownership	• Ownership
• Clear Vision & Objectives	• Vision
• Hard-Working, Focused Staff	–
–	• Client's Role
–	• Management of Changes
–	• Understanding Organisational Culture
–	• Understanding Technology

All the above studies confirm aspects of our research findings and they too call for a paradigm shift in IS development.

5.4 Organisation Development

While we have examined a number of theoretical perspectives, we now turn to Organisation Development which is an actual theoretical and practical field combining many different viewpoints and employing holistic conceptualizations in its practice. We contrast OD with the emergent ISD process theory in order to highlight a number of paradigmatic observations. What we wish to show is that the various approaches adopted by consultancies and organisations are ultimately limited when contrasted with the OD approach.

5.4.1 Values

The values that emerge in our ISD process are mostly (a) pragmatic values and (b) development effectiveness values. Our consultancies are predominantly commercial organisations that have to remain effective in the marketplace. Even when there are strong cultures showing preference for a particular methodological approach, (Advocates, Investigators), pragmatic values ensure what the client wants is delivered. Related to pragmatic values are development effectiveness values. These ensure that ISD factors aim to remove fundamental problems from the projects undertaken and ensure that no unexpected issues occur in any type of project: structured, evolutionary, or where no methodology is used. Development effectiveness values also permeate tailoring decisions where methodological approaches may be optimized to achieve fitness for purpose at an acceptable cost.

While each consultancy firm differs ultimately in its particular values the above two sets are common to all of them. In contrast both OD value sets are lacking. We see that humanistic, democratic and "people" values are not a fundamental concern of ISD consultancies and neither of the client-organisations. We see this characteristically in RAD's popularity. The motivation for developing these approaches is speedy development, increased user acceptance, incorporation of changes and increased business benefit rather than pursuing principles of empowerment of users, participation, ownership and team development.

The lack of humanistic values implies that the wider impact of IS development is not examined as it should. Beyond the immediate concern of the ISD problem the wider impact is felt only by the people who interact with the new system and its processes. We came across a mismatch between IT and Business rationalities which really reflect a fundamental misalignment of values. IT rationality is typical of ISD values which conflict with Business rationality focusing on business benefit. The above ISD values have been nurtured by a general functionalist organisational tradition within organisations.

Similarly, organisational effectiveness values are not a concern of ISD consultants. IS development is not seen in terms of delivering business benefit but in terms of a

technically superb solution. Our consultancies in our sample, also take a reactive view when it comes to issues of organisational development, effectiveness, and organisational change.

5.4.2 OD Approach and ISD

OD's approach towards change begins with diagnosis of the organisation and the situation. In our process, client assessment can be seen as a diagnostic process which is directed in examining the client's capacity for ISD. It is not a comprehensive diagnostic process aimed at unearthing most of the key issues and forces within the situation — although this may be the case with HI. However, along with project start, the opportunity arises for key issues to make their appearance and be addressed by the consultant before the project starts. In other words, although client assessment and project start are very focused diagnostic activities they have the potential to sensitise the consultant to the situation that must be addressed.

A second form of "directed" diagnostic activity is interpretation of the diagnostic scheme. Interpretation is a diagnostic activity because it involves collection and analysis in an intensive manner that goes beyond what is visible at the surface. The directed character in our case is not inhibiting diagnosis, but it provides a starting point. Assuming of course that the consultant has the necessary skills and qualities to take his understanding of key issues at the appropriate depth. From our data this would not seem possible with consultants sharing traditional ISD rationality, technical or training consultants. It should, however, be within the grasp of business and process IT consultants.

Yet another form of diagnosis is carried out when the approach is used to determine a suitable methodological system. The consultant, using data gathered from the initial phases utilizes his approach's framework to make choices from a range of alternative methodological and other components. The framework is a kind of diagnostic model for guiding the particular form of choice-diagnosis. The degree of flexibility and creativity in this form of diagnosis is determined by the particular approach. For example, less options may be available to WS than HI who have no preconceived ideas prior to

performing a thorough diagnosis of the client. For some firms, like E&Y, the range of components is exhaustive which makes this form of diagnosis essential for the whole approach to work.

A question arising at this point is whether the above forms of diagnosis are simply forms of assessment, which is a less thorough and exhaustive process. We believe they are forms of diagnosis because although they are directed to a particular area they are nevertheless the most creative aspect of an ISD project. The initial contact between the consultant with the client emerges in our data as the most critical and most complex period of the whole project. Consultants manage this initial situation without any prescribed methodologies, but rely on diagnostic models, like the frameworks and diagnostic schemes, and their own skills. They will also not engage in a project until they have a satisfactory understanding of who the client is, his likely contribution, the key concerns and the possible ways forward. This involves a thoroughness characteristic of a diagnostic activity. In OD, assessment is too a form of diagnosis, but it is not considered as thorough and exhaustive. Assessment is a response to the changing business environment which requires faster diagnostic cycles. We do not see the same sense of urgency in IT as projects undertaken are not always RAD projects. Therefore it is the norm for our consultants not to rush these initial phases which they regard as the most important.

In support of methodological decisions, approach may utilize component repositories. These can be contrasted to the "OD arsenal" or toolkit. Even for the firms that do not have a central library system, a shared conceptual collection exists in the form of experience and knowledge in consultant's minds. Consultants share their experiences and are monitored in all firms and important lessons are captured and disseminated. In HI's case this takes place through regional and other in-house conferences. Where they exist, component repositories are used in exactly the same way as the OD toolkit. We also have a combination of components, but more importantly we have tailoring of the components to fit the situation's requirements. Tailoring and customization of OD interventions is an important function of the OD approach as well.

Surprisingly, withdrawal emerges as important in the ISD process as it is in OD. The preservation and appropriate closure of the established consultant-client relationship is a common aim. Mainstream ISD and its tradition in organisations seem to completely ignore this phase of the project.

As we have presented in chapter 2, the OD model has a series of characteristics which we now contrast to the equivalent characteristics from the emergent ISD process, (Table 5.4 below). As we have mentioned, OD is a generic change methodology. ISD regards organisational change as an unavoidable side-effect. As we have seen, project management's popularity with our consultancies is due to its function in controlling the unwanted impact of change. Similar is the case of ensuring user involvement. The motivation for user involvement is not genuine democratic values, but to minimise resistance to IT-related change.

OD is an open and pluralistic field. A similar degree of pluralism is reflected in our ISD process. Consultancies specialize in most types of methodological approaches, techniques, tools and project types. However, there is little inter-disciplinary exchange of new theories and paradigms. E&Y's executive consultant commented on the lack of understanding interpersonal issues in development.

OD is an action oriented and data-based approach. ISD emerges as more information system oriented and utilizes significantly more surface data from the client system. While OD may address deeper issues of importance, ISD will not normally do the same. Under normal parameters and conditions the ISD consultant's deepest level data will be collected during client assessment and project start and in situations where there is political, interpersonal, or cultural complexity. Apart from HI who carry out diagnosis, the rest of the firms would not be "looking for trouble".

Systems thinking is at the basis of OD and one would expect the same for IS development. However, ISD appears to reflect limited systems thinking. In our emergent ISD process both project and information system are not seen as systemic. Soft systems approaches were also absent only used in one firm if the consultant wished to enhance

his own personal understanding. However, soft systems are collaborative methods not personal analysis tools.

While OD focuses on the total system this does not appear to be the case with ISD. The focus is limited on the immediate system under development. Once ISD factors are taken care of, during project start and project management, there seems to be little interest to review the wider ramifications of development and the system itself. This creates a paradox because our firms do recognize, indirectly at least, the systemic nature of the organisational situation. All agreed on the surface that a large number of projects are part of a larger situation and that some of the problematic projects have knock-on effects to other projects and to the organisation as whole. However, we do not see any evidence of genuine understanding.

OD is a collaborative methodological approach that requires the client to work with the consultant in bringing about change. In ISD the degree of collaboration depends on the particular situation, the desires of the client, the type of automation and the methodological approach followed. Our consultants would wish their clients were more involved and would try to involve the client as much as they can. In evolutionary development projects collaboration may be achieved if management and key stakeholders are involved throughout the project and along key users. Overall the requirements for collaboration are similar between the two fields.

OD is a systemic approach that places the consultant within the problematic situation. Apart from HI who practice a systemic approach, the rest of the firms show a pragmatic approach. This means that it is not important whether the consultant is part of the situation or external to the situation as long as his approach proves of value in dealing with the practical concerns at hand. During his intervention it is possible for the consultant to be accepted as part of the client-system and treated as a member of the organisation. Many client organisations do hire consultants to act as resources to development teams rather than develop something.

OD's approach views organisational reality as dynamic. The ISD model maintains a rather static view of organisational reality, unless specific issues arise that must be

resolved like politics. This is even evident in RAD-evolutionary projects where there tends to be surprise in confronting issues that "unexpectedly" arise for both ISD and business staff. In our organisational sample we saw how the need for facilitation arose with surprise. Characteristically of the ISD values we identified, DSDM did not necessarily cater for facilitation despite the fact it is by design an evolutionary-participative method where "users develop systems and analysts facilitate". The dynamic nature of organisational activities is nevertheless experienced by ISD professionals, internal or external. In AC's case we saw the inability of the MIS department to deal with requirements for a new type of development. As RAD becomes more popular ISD's static view of organisational reality is revealed.

While OD is founded on applied behavioural science, ISD relies on consultant skills and charisma in dealing with behavioural issues. This may be due to the traditional role of ISD which did not need to address interpersonal, group dynamics or organisational behaviour issues. Evolutionary development and RAD put pressure on IT staff to develop behavioural science skills and a suitable theoretical background.

Finally, both OD and ISD seem to reflect on process and elicit learning from project experiences. The difference however lies in the actual process which is the subject of reflection. In OD the process of intervention, i.e. how the consultant intervenes into the client-system to bring about change, is examined. In ISD the process of the project, i.e. how the project was managed, is examined. Again reflection seems to operate at a deeper level in OD than ISD. In OD the consultant examines his own assumptions and values and contrasts them with the effectiveness of his actions at different levels (content-process). In ISD's case the consultant examines the effectiveness of his skills, tools, methods and decisions, but does not easily question his assumptions, values and approach. Again the motivation behind this reflection is pragmatic/functional and serves the purpose to improve and refine approaches rather than advance understanding of problematic situations and how to intervene into them. In action research terms ISD ignore the research part, focusing mostly on action.

Table 5.4: Differences between OD and ISD model characteristics

OD model	*ISD Model*
Generic change methodology	Change is a side-effect
Open-pluralistic	Esoteric-pluralistic
Action oriented, data-based	System oriented, surface data
Systems thinking	Limited systems thinking
Total system focus	Immediate (sub-) system focus
Collaborative methodology	Depends on situation
Systemic approach	Pragmatic approach
Dynamic nature of organisational activities	Static unless issue resolution required
Applied Behavioural Science	Reliance on consultant skills
Reflection on process of intervention	Reflection on process of project

5.4.3 Skills

OD and ISD skills are contrasted in the following table:

OD Skills	*ISD Skills*
Intrapersonal skills	Personal Characteristics & Culture
Interpersonal skills	Political / Interpersonal
General Consultation skills	Managerial & Process
Organisation Development theory	Fundamental Knowledge of ISD & Technical

ISD intrapersonal skills do not emerge directly from our data. However, these are examined during ISD consultant recruitment which ensures that individuals with appropriate personality characteristics and culture are recruited. A main difference is that in ISD there is no consideration for the development of intrapersonal or interpersonal skills. Training focuses on the technical side of ISD and a richer experience is developed through moving positions and project areas. Intrapersonal skills represent esoteric skills that it seems ISD consultants ignore. Consultancies avoid the issue by hiring suitable people rather than attempt to train them. In HI's case only consultants that have a natural talent for process understanding are seen as capable of grasping the complexity of process consultation and only after a long period of time. In OD this view is challenged and skills development programmes can turn most open-minded individuals into an effective process consultant, (Atkins et al, 1994).

For the remaining skills areas it is obvious that the same skills are needed in both OD and ISD. Specifically, interpersonal skills are needed in both OD and ISD, with an emphasis on political skills for ISD. General consultation OD skills were reflected in

ISD in the form of managerial and process skills. Finally, as OD requires a fundamental knowledge of OD theory, so does ISD with the addition of technical skills.

Apart from the differing domain specific skills of OD theory and knowledge of ISD, the remaining skill areas deal with the complexity of the consulting profession. Both ISD and OD consultants have to posses the same set of personality and consultation skills. The point that is more and more reinforced is that despite the fact that the two fields approach their domains differently they are not really that different in terms of consulting processes. This point is further explored below.

5.4.4 Intervention, Consultation & the role of the Consultant

An issue that challenges our understanding about ISD methodologies and IS development in general is the degree of complexity the consultant's work entails that goes beyond technical and methodological expertise. This complexity is reflected in the sets of skills required by the consultant. The initial phases of the project are of significant complexity and anxiety for both consultant and client. Given that no ISD methodologies exist to guide these phases —indeed these phases may determine if a methodology will be adopted— the consultant has to employ more actively his process skills.

The relationship established initially will be used throughout the project to resolve issues and push the project forward. Therefore, maintenance of the relationship is an important parallel activity for the consultant as the client is not actively or consciously involved in its maintenance. The relationship is also challenged by the occurrence of out-of-scope or unexpected problems. From the consultant's point of view the relationship needs to be maintained and managed effectively even when the project ends, in order to ensure repeat business. We see the significant backstage-process activity required to maintain this relationship in cases where there is a disagreement as to which "needs" to pursue. We see that only inexperienced consultants would polarize an argument and insist the client changed his mind. Experienced consultants take great care not to antagonize the client and attempt a fine balance between raising an issue the client ignores and redirecting the client's attention. All the strategies employed by the

consultants in our sample show both the difficulty of the task, but also the requirement for persistence over a long period. The client may open up to another possibility only after an initial effort has failed requiring the consultant to persevere. This shows the intensity of the consultant's intervention, but also the two levels that he needs to operate at: (a) content-task and (b) process. The consultant is likely to carry out a process intervention because of his intent to help the client and because he "always knows more than the client". As we discussed earlier the consultant finds sanction to help the client as he best can, in the client's inability to help himself. The difficulty of maintaining an effective relationship is intensified by the client's tendency not be involved and share responsibility for the project. This makes the consultant-client collaboration problematic and weakens the relationship.

The project range taken up by consultancies spans from content-oriented to process-oriented projects. Process-oriented projects increase the client's ISD capability and self-sufficiency. Consultancies may help the client choose the most appropriate ISD strategy for themselves, although they may promote their own methodological products as well. However, their process orientation is more narrow in focus than process consultation. The main vehicle is an advisory-consultancy role where value is added, skills transferred and a certain "know-how" is passed on. This consultation has no wider extensions and implications into the way the organisation functions from a process point of view. Although projects may aim to improve the client's capability they do not aim to help the client improve his own capability himself. Thus process-oriented projects are more like training/reengineering projects. On the other hand, content-oriented projects are carried out with minimal client involvement. In these projects consultants "take full responsibility for the success of the project", in ACL terms. These projects are very technical in nature and have to be very well defined for the consultancy to proceed without the client's involvement.

The above picture implies that ISD consultants should be also process consultants. Apart from HI where process consultation is practiced, the remaining firms ignore this mode of consulting, despite the fact that they undertake projects which solely focus on improving the client's ISD capability. Process skills are not developed separately in their own right or as part of consultants' standard training. Moving consultants around is

an important way of building knowledge of different project situations. While this implies that project situations are seen as unique, where no standard training can be offered to cover all of them, it also shows ISD's inability to develop sophisticated consultation modes and intervention models.

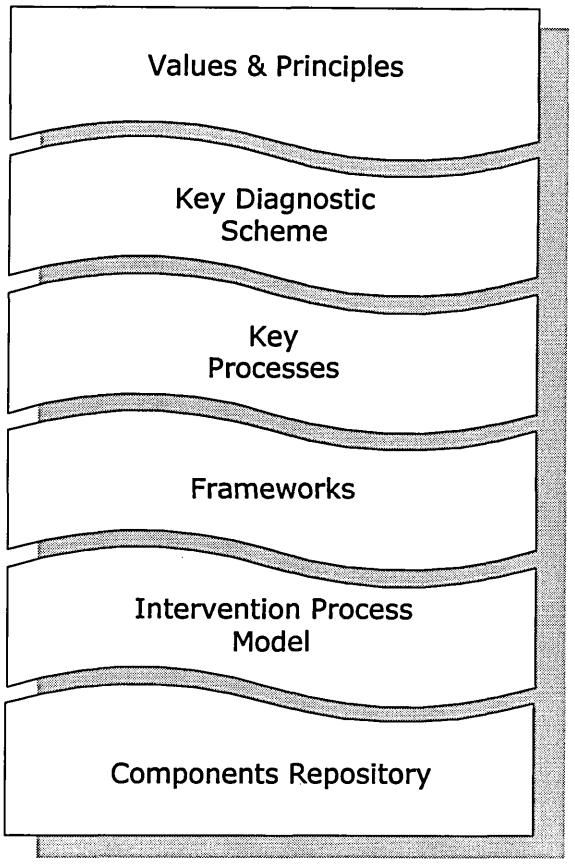
5.5 Discussion

In the discussion that follows we consolidate our research findings and examine their implications to IS Development.

5.5.1 Approach, Methodology & ISD

Our research and analytical activities have produced a different conceptual structure of importance in IS Development. *Approach* contains a number of elements that synergistically produce its overall character, flexibility and richness. The following diagram, (Figure 5.1), depicts the emergent structure of the approach, emphasizing the fluid and permeable boundaries between the various elements. As we saw, *values and principles* give the approach its individual character, while the *key diagnostic scheme* is a diagnostic model examined in every situation. Approach also relies on *key processes* such as diagnosis or assessment, choice and tailoring. *Frameworks* facilitate choice, while the approach's *model* represent the fundamental intervention process of engagement and change. Finally, a *components repository* facilitates the capturing of knowledge from experience. All the elements interact and their boundaries are much more flexible than a methodology's.

Figure 5.1: Structure and Elements of Approach



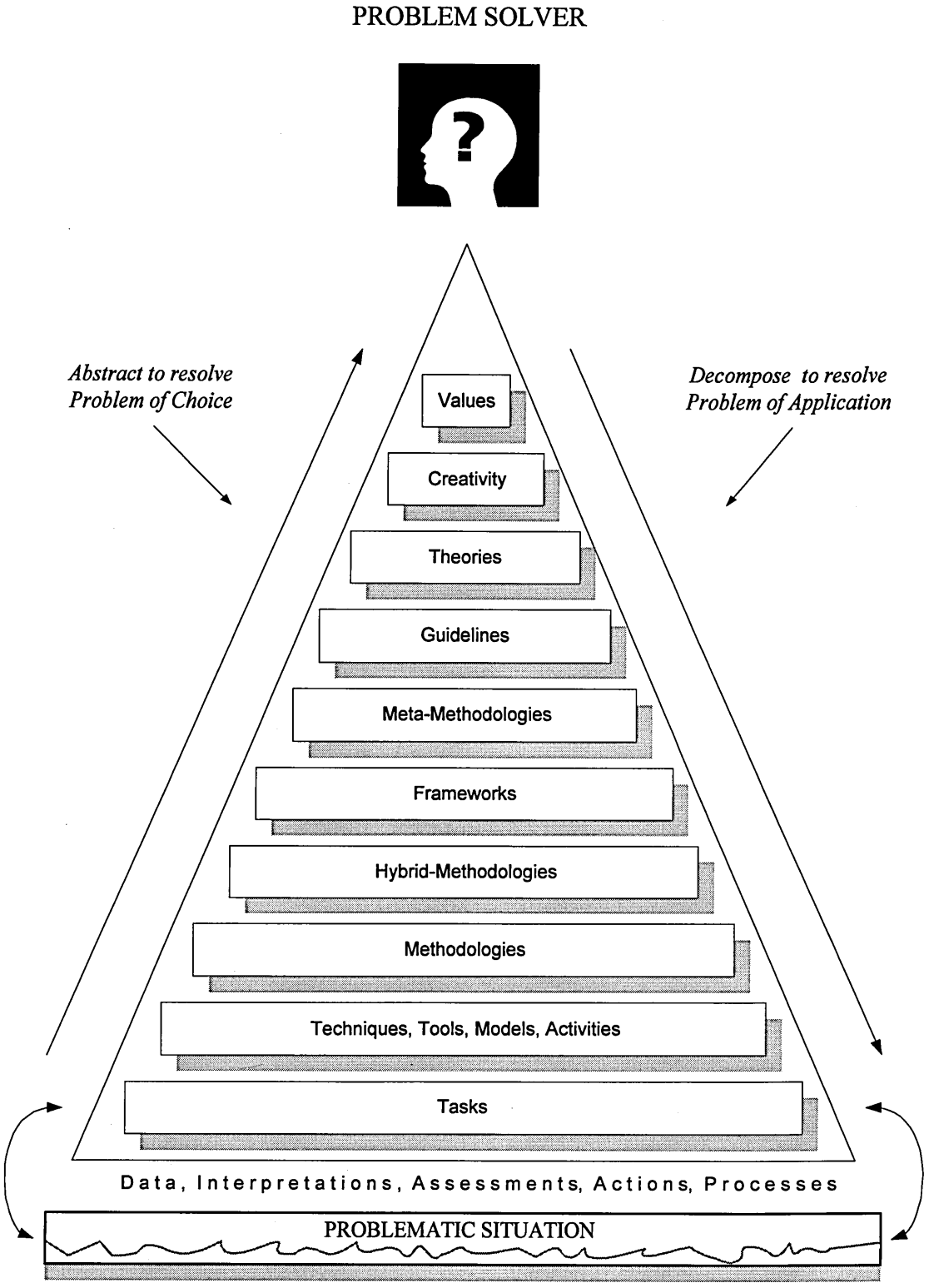
An important realization has been that ISD methodology is not always suitable or even able to solve ISD problems and is not in a position to determine a successful outcome. Instead this is achieved by the approach which provides the context of use of methods and guides the consultation effort. Approach directly matches the complexity of the situation and the uniqueness of every organisation and project. Characteristic of this property is the process of *tailoring*, which seriously challenges the structure of traditional ISD methodologies which assume there is largely one best way of developing information systems. Tailoring, along with a supportive framework and components repository, proves that there is no pure use of methods in practice and that the approach represents the element of craft or art associated with any prescription. This is because the enactment of each approach by a consultant, what is Gestalt Theory's Presence, depends on his skills, culture and abilities. Consultancies make sure they hire the right people from the start and immerse them in their culture and in "live" projects. The

element of craft is developed, not through extensive training, but by becoming a member of the particular organisation and buying into its particular approach.

Approach allows selecting the best way of developing ISs from a series of alternatives, optimizing the consultant's intervention under a variety of constraints, ensuring every project's success and offering support in resolving a series of issues that unavoidably arise in every ISD effort. Additionally, every approach is unique as it is determined by the consultancy's values, assumptions, culture and history. Despite their uniqueness, similarities in conceptual structure and process can be identified to inform their study and development. Indicative of the approach's role is the fact that all approaches, no matter how diverse, can utilize the same methodologies and tools, and even specialize in exactly the same development areas. However, actual use of components depends on the particular approach. For this reason clients too purchase an approach to ISD rather than an ISD methodology.

Despite its importance, there is little discussion in ISD about approaches or a discussion at their conceptual meta-methodological level. We feel there is a need to classify constructs in ISD at different levels to understand how they relate to each other. With the identification of approach and its respective conceptual level we need to examine how the transition is made between values, to frameworks, to methods, to components of methods themselves. It is not sufficient to include everything under the construct of a method, because as we have seen methods are only one part of ISD. The transition between the different levels also opens up a discussion about the key processes of problem solving in ISD: diagnosis-assessment, choice and application-action. As we saw in practice, each conceptual level of higher abstraction provides the context for the next level down allowing methodologies to be used under different principles or other methodologies. Additionally, approach provides the context of methods and method provides the context of data analysis techniques. We formulate the following model which shows a classification of the different levels of conceptual abstractions in ISD:

Figure 5.2: Conceptual Abstraction Levels



What the above diagram shows is a scale of abstraction levels. The higher up the scale, the higher the level of abstraction in focus. The levels are drawn in the shape of a

pyramid to denote that the less abstract levels are more populated with specific instances, than the more abstract ones. For example, at the level of values we may identify just two fundamental value sets. In contrast we can identify hundreds of methodologies and even more ISD tasks.

In the model, the problem solver may be the consultant, a manager, or a user. Staring from the top of the model and decomposing each level, his *values* are seen as reflecting what is important in ISD and provide the basis for reasoning and action. *Creativity* represents the efforts of the problem solver to deal with the issues at hand and the need to find a way of dealing with them. *Guidelines* represent advice and expertise that is potentially available from others in the field or from his personal past experience. *Theories* have been developed to explain and deal with problematic situations. *Meta-methodologies* organise and guide the use of different methods. *Frameworks* guide the choice of methodologies and other components, but are not themselves a methodology of any kind. *Hybrid-methodologies* are made up of a set number of key methodologies and attempt to offer the best of all constituting methodologies. *Methodologies* are organized sequences or key processes for performing ISD activities. They are made up of a collection of *techniques, tools, models and activities*. At yet another level these components too are made up of fundamental *tasks* that need to be performed as part of the desired action in the problematic situation.

The bottom-up view of the diagram shows the abstraction process in action. From the problematic situation the problem solver gathers *data* and observes *actions*, formulates *interpretations* about his data and puts *assessments* together. To decide on action the problem solver has to figure out what tasks to perform. Tasks however are part of techniques and techniques are part of methodologies or hybrid methodologies. To choose the appropriate guide for action he needs to reach to the next abstraction level and utilize a framework for looking at methodologies. If frameworks appear limited, he may further abstract his analysis and utilize a meta-methodology which is a more sophisticated way of making methodological choices. If that too does not resolve the problem of choice, the problem solver may search for guidelines or expertise. If again such guidelines are lacking the problem solver may utilize his creativity and heuristic ability. His creative attempt at choice will, at this level, be guided by his values. In the

instance where these values are rendered inappropriate the problem solver critically reviews them engaging in a paradigm-shift or a creative leap.

Once new values have been established the process of decomposition may start again. This way analytical cycles form until problems at various levels are resolved. The processes of choice and application shift problem solving from higher to lower levels of abstraction. Implicit in the diagram is the range between conceptual and physical foci. At each level a process of diagnosis or assessment determines choice and application.

In the above diagram we can conceptually locate approach, which relates to a particular path through the abstraction levels, starting with a particular mix of values. The width and height of the pyramid will increase for the most open and pluralistic approaches and decrease for the more dogmatic/prescriptive approaches. Along with this diagram we can also identify criteria for determining approach effectiveness for both clients and consultants, without focusing solely on examining methods and project characteristics. In the ISD literature the term approach is frequently used, but has only being termed as an entity by Earl (1992) who identified a number of approach archetypes in the area of strategic information systems planning (SISP). The author admits that SISP is a complex phenomenon where it is more appropriate to talk about a holistic approach rather than SISP methods. We have extended such analysis in mainstream IS development which is too a complex phenomenon. Like Earl we have produced a classification of different approach found in our sample and we have identified their conceptual structure. We studied their differences and defined archetypes that can serve as tools for studying other approaches. Clearly, a priority for ISD is now to study approaches more extensively in order to inform approach development and improvement.

Frameworks too can be thus developed independently of approach or method. An emerging discussion can be identified in this area through the work of Jayaratna (1986), Kumar & Welke, (1992), Jackson & Keys, (1984), Avison & Wood-Harper, (1990) and Olle et al (1988). To this body of work we could add the relevant discussion of paradigms in ISD, (Hirschheim & Klein, 1989). These meta-methods, frameworks and classifications do not prescribe a single methodological path but allow and support the identification of the most suitable one for the project. We will be looking at these

approaches in more detail in the next chapter, but clearly more are needed to support approaches.

Another supporting structure our consultancies utilize is the components repository which is an in-house classification schema and knowledge base. These are traditionally used by consultancies to offer support to technical development, but have emerged at the basis of their approach. Given their extent into areas other than code excerpts, ISD and their approach development can benefit from the study and formulation of classifications of components as well as classification of methodologies. Frameworks and meta-methodologies could be then applied to the collection of components. This effort will enable the identification of components that have an autonomous facility outside the context of a methodology. Additionally, it would allow the identification of component categories and structures for organizing repositories.

Methodologies as well will need to be placed in their appropriate context and frame of reference. To do so we need to re-examine the fundamental belief that methodologies are suitable to cover most ISD problems, SDLC phases and projects types. The model put forward above shows the variety of useful constructs besides methods. A discussion must now take place for reviewing the suitability of each methodology for certain types of projects, mode of ISD, skills, and ISD problems. Methodologies should be assessed on their strengths, weaknesses and suitability.

Another implication relates to tailoring and the need for a whole new range of methodologies to emerge as tailorable or modular. A few already make the move towards tailoring like SSADM's forthcoming version. The next step is to examine how these methodologies would relate to the frameworks of choice mentioned above.

5.5.2 Rethinking ISD Complexity

In our study IS Development emerges as a complex social process. The complexity is structured along a number of different levels: the ISD problem, the Project, the Organisation and the Situation. For the consultant the complexity extends to his own process intervention, the requirements for client management and the diversity of range

of project types. The multi-level complexity ensures that during IS development nothing can be taken for granted. The complexity of organisational life and activity appears to be such that politics, culture, change and unexpected issues arise to threaten both the success and future of a project. Given also the fact that not all organisations are fully prepared for IT related change the overall situation emerges of significant complexity. IS development emerges as a process which can not be addressed effectively by any single way or at any single level. The complexity increases for the consultant due to the power differential between the two parties. The client has the last word in issues resolution and consultant's pragmatic values do not allow a confrontational challenging of the client. Despite these constraining conditions the consultant tries to help the client through his backstage-process intervention.

- *The "Side-effect" Assumption*

Organisational phenomena are regarded largely as an unavoidable side-effect of the ISD process and project. While the situation is an organisational phenomenon and the organisation is seen as the locus of the most important sources for problems in ISD, we do not see an equally rich understanding of organisational issues or a proactive attitude towards them. The complexity and sophistication of the approach manages to deal with such issues, but only at a superficial manner. Given that current ISD operates at a mode that focuses on surface issues, the need remains for driving ISD intervention at a deeper level where it can be more effective in addressing change into the client system. Currently the consultant is significantly constrained by the power balance with his client which makes his intervention appear spasmodic and reactive. A more effective intervention will help readdress the power relationship and make it easier for the consultant to steer the project towards the right direction. An indication of the consultant's inability to address the power balance in favour of the project's success is that fact that the client does not immediately buy into the consultant's proposals. To do so the consultant must first challenge the client's assumptions and then bring about a change in the client's mind-set. This requires intervention to reach a deeper level where issues of assumptions, openness to possibility, resistance to change and readiness to change can be assessed by the consultant.

A direct result of the side-effect assumption is the lack of organisational "components" within ISD approaches. Organisational techniques, tools, models, theories and methods

can support consultants when dealing with organisational issues and the intervention process.

The above picture agrees with Willmott et al's, (1990) realization that organisational problems are seen to be soluble "without requiring any significant reform of the politico-economic structures through which organisational work is accomplished." Such value beliefs clearly need to be readdressed in the field.

5.5.3 A different SDLC?

From our analysis it is clear that an expanded SDLC is required to express the phases that emerge as crucial for success. The emphasis is placed at the start because at that point can the conditions be achieved to ensure the success of the project. Once IS development starts the faith of the project is largely determined for two reasons: IS development is based on initial conditions and preparation of the project, and IS development outcomes do not help assess the success of the project —even in evolutionary projects. Success is determined once the "dust has settled" as during IS development there is a commitment in producing the IS.

New phases for the SDLC are *Entry*, *Project-start*, and *Project-End*. The traditional life cycle focuses solely on development. An expansion of the SDLC would enable the study of how these new phases relate to the rest and to the ISD outcome. Perhaps then can ISD develop methodological approaches that would focus more explicitly on these phases. In the ISD literature there has been limited attention to pre-project period factors. Research includes the early assessment of the realism of user expectations of MIS implementation outcomes, (Ginzberg, 1981; Szajna & Scamell, 1993), user acceptance measures, (Davis et al 1989), and analyst's assessment of user expectations and the ISD process, (Lyytinen, 1988). Clearly similar research work needs to be continued in this area as these studies focus only on user-expectations.

5.5.4 Key ISD factors

Consultancies identify a common key set of factors that they feel need to be interpreted and addressed in every project and irrespective of methodology. These factors represent key aspects of the problematic situation and the complexity of IS development. Resolution of these issues, organised in an diagnostic scheme, determine the nature of

the ISD outcome. A discussion on such key schemes is needed in ISD to take the form of diagnostic models which can be used by consultants to determine the potential success of a project —not only in economic terms. Some relevance can be seen in the discussion of success factors in ISD, which however has focused on user involvement, (Ives & Olson, 1984; Tait & Vessey, 1988), situational factors, (De Brabander & Thiers, 1984), technical/project characteristics, (Brooks, 1975; Cerullo, 1980), organisational factors, (Land et al, 1992a). Our findings call for an expansion and integration of research efforts in this area as one factor on its own may not be studied appropriately. Characteristic evidence of this is the argument that user involvement is not found to be always appropriate, despite its wide-spread recognition as a success factor, (Newman, 1989). In our research we identified an diagnostic scheme which diagnoses a number of interrelating factors including the consultant-client relationship. More recent work has focused on more holistic sets of factors, (Whyte & Bytheway, 1996; Chu & Bannister, 1992; Johnson, 1995) that can be potentially turned into diagnostic models and frameworks.

5.5.5 Implications for ISD Values

ISD needs a reflective discussion in the field about values held by consultants, values reflected in approaches and values perceived by client-organisations. Our research data indicate overtly pragmatic and development effectiveness value sets. While these are not necessarily ineffective, they allow too much space for ineffective and substandard behaviour by consultants and ISD professionals. There are no values that act in a limiting capacity, drawing appropriate boundaries to pragmatic and effectiveness pressures. In other words, a conscious consultant is not hindered in his work by being pragmatic and focusing on improving the effectiveness of development. However, there is nothing to constrain consultants pursuing pure pragmatic and effectiveness interests at the expense of client needs. This is apparent in the uniform admission from our consultancies that they would always do as the client insists, even if they disagree strongly with him. They also noted that consultancies facing pressure skip activities that are not seen as developmental like testing —however essential.

ISD values could benefit from the addition of OD values. Primarily we believe ISD values could benefit from the addition of organisational effectiveness values and human well being values. Organisational effectiveness values would sensitise consultants and to view what is best for the organisation as a whole, rather than pursue what is best for successful completion and optimized development. These values would allow the resolution of conflicts and disagreements with the client under the basis that the nature of the disparity of views will eventually harm the organisation. The client may not understand the consultant's disagreement as IS development is not "marketed" as an organisational activity or an effort that has implications on the whole organisation. Consultants reproduce this situation by marketing ISD services and consultancy as products in their own right. This gives the client the sense that he can purchase an ISD product with minimal impact and responsibility.

Human well being values could also offer the necessary balance in the ISD value structure. Such values are even more important with the advent of RAD and evolutionary development. Effective management of issues such as participation, empowerement, group development and dynamics need a value set that is focused on people issues. Part of the complexity in dealing with these issues lies in effective management of relationships with users, management and key stakeholders. Humanistic values allow for a genuine role in forming and participating in effective relationships, where pragmatic or other values are totally inappropriate.

5.5.6 Implications for the ISD Consultant

Pragmatic values and tradition have carved out a role for the ISD consultant not allowing an appropriate self-viewing of his own role. ISD consultants take their role for granted and there is no shared discussion to review values and mind-sets. The paradox that emerges is that the skills consultants have do not constrain them to do so. With the pressures for consultants to become more process oriented, consultants need to review their values, roles and release their skills potential. Towards that end, training and personal development need to focus more on process consultation and organisation theory domains. During our research some expressed a belief that process consultation or even stronger intervention skills can not be taught to just anyone —only charismatic

individuals could learn them and only after a long time. This may be indicative of a wider belief in ISD, but this is not true. It is possible as we see in OD and other management fields to effectively train consultants and change agents alike in this mode of consultation and intervention, (Atkins et al, 1994).

5.5.7 Implications for Clients

Clients may setup projects that are destined to be problematic. The consultant spends significant amount of effort and time in assessing key ISD outcome factors that ensure success that the client has not thought about. The client emerges as the weakest party in the ISD process, i.e. being more in a position to contribute to failure of the project. Characteristic of this is that no successful project is free of having to solve minor or major problems. The primary sources of problems originate in the organisation rather than in technical, methodological or development staff areas. The client's role that emerges from the ISD process is one of ill-preparation for IT and ISD, of minimal involvement to the ISD process and presenting a risk factor. However, without the client's participation important issues that unavoidably challenge the project can not be resolved. In some cases changes to projects are difficult as the client is too close to the project to allow significant changes to it. Having full participation of the client from the start allows to keep the project on the right track.

Clients in ISD need to reassess their position towards the development process and consultants. They need to gain a better understanding of what ISD entails and help the consultant drive the project to the key issues. The consultant can not operate effectively without the participation and collaboration of the client-organisation. An awareness discussion must be raised to inform clients on their role in ISD and how to maximize its effectiveness. A belief that must be abandoned is that ISD is simply a product or a service that can be purchased and installed with minimum client involvement. To an extent, this logic is understandable because the client's priority is looking after the business and may not expect to commit significant resources to participate as he should. Given the consultant's power status in the consultant-client relationship, the above situation is reinforced rather than challenged by the consultant. However, the client is sensitive to developments in the market and the business environment. Examples of this

are BPR, DSDM and the adoption of standards. This makes it possible to raise awareness on the role of the client —provided of course consultants do so first.

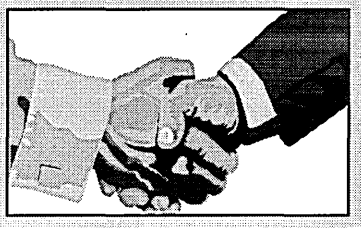
5.5.8 Similarities between OD & ISD

It emerges from our findings that ISD is in many ways similar to OD. ISD too is a complex social process and is based on a consultation model that can be understood and studied using theoretical frameworks such as structuration, archetypes and gestalt theory. The fact that these theories can be related to our research data shows that the ISD process has the qualities and properties these theories assume in their social science domain. However, in ISD this is ignored and no effort is made to develop the field's own theoretical frameworks. This void may be filled by OD which is a field that integrates and uses theoretical frameworks and conceptual constructs for managing the complexity of a similar consultation process. The similarities between the two fields make possible the sharing of an inter-disciplinary perspective.

5.6 Conclusions

Our research has revealed the levels of complexity associated with IS development and the significant level of the consulting intervention required by the consultant. The emergent ISD model appears to incorporate intrinsic limitations that challenge its ability to deal with the complexity it often faces. However, the dimensions upon such complexity is manifested are not unique to ISD. The need for an OD-informed perspective emerges even more imperative. In this chapter we have extended our analysis of the fieldwork to formulate a critical discussion that identifies the implications of our research findings to IS development, both as a paradigm and a discipline.

Chapter 6



How Can Organisation Development Ensure Successful information Systems Development?

6 - HOW CAN OD ENSURE SUCCESSFUL IS DEVELOPMENT?

6.1 Introduction

Our research effort departed from the observation that recent accounts of IS failure could have been avoided had an OD-informed perspective been incorporated into the mainstream ISD paradigm. We explored the ISD literature to identify the body of knowledge describing and explaining the nature of the field's ineffectiveness. As a result, the plausibility of an OD viewpoint was strengthened further. We then reviewed the OD literature in order to understand the differences in approach between ISD and OD. This review allowed us to contrast OD itself with the ISD paradigm and make the case for OD's feasibility as an ISD solution, especially given the fact that alternative ISD approaches seem not able to match OD's potential superiority. With chapter 3 we produced a more rigorous problem definition and a conceptual model that guided our research activities. Research and analysis activities produced a grounded process theory of IS development which addressed our original problem definition. The theory has an extensive number of implications for a number of ISD elements such as ISD methodology, the ISD consultant and client. Our critical analysis was extended to existing relevant theory and into exploring the role of the novel element of Approach in IS development.

Given the preceding work, we are able this chapter to examine the nature of the OD contribution to IS development from an informed and well founded position. Our discussion in this chapter examines previous suggestions for OD's contribution in ISD, before bringing together our understanding of the two fields, our research findings and our critical observations. Our aim is to work towards formulating an OD-informed ISD approach that would embody our research effort's insight. Given our research results we felt it was appropriate to term this approach **Total Systems Development (TSD)**. We explore how this approach can be used to ensure successful information systems development. As a part of this approach, we also put forward a proposal for an OD-informed Components Repository showing the direct application of OD interventions to various aspects of ISD. Additionally, OD's contribution extends to the formulation of a

diagnostic model of ISD practice. The chapter finally outlines a number of suggestions for undertaking further research and summarizes the thesis' contribution to knowledge.

6.2 The OD Contribution in the Literature

As we mentioned earlier, the usefulness of OD in ISD has been noted already by a small number of researchers and theorists. Although most of this literature takes the form of theoretical proposition, Loftin & Moosbruker (1982) describe an organisational change effort within a major data processing organisation which involved activities defined and implemented using OD methods. The authors argued for the importance of OD methods to IS managers as:

> "OD methods are powerful skills and tools for working change of the most important kind, namely change in organisation and group behaviour. As the primary agent for change in the corporation, IS managers can employ these methods to make the IS organisation more responsive to the needs of the business.", (ibid:15).

The authors summarize the usefulness of OD methods in the following areas:

- The IS manager is an agent of change and as such can be supported by OD methods,
- The IS manager can apply OD methods to help develop skills and abilities of other managers throughout the organisation,
- IS tasks require intense interaction with other departments and users. OD methods can be applied to ensure these interactions are supportive and constructive,
- OD methods can help IS managers focus their attention to decision making processes, information sharing and personal reward systems. These factors that relate to employee motivation, morale and productivity are unfamiliar ground for these managers who view the human as a component of systems.
- While the IS organisation tends to emphasize the mechanistic dimension, OD calls for attention to the human dimension. This will allow ISD to consider what humans can do as well as what machines can do.

- OD promotes a process oriented view as opposed to a content oriented view. The process of change is accommodated naturally and change management can be institutionalized.

From these observations the OD contribution emerges as transformational in nature: OD methods, principles and tools can be directly used to transform ISD's perceptions and practices concerning change and human issues. It calls for a paradigm shift and makes the key observation that development of systems is organisational change that needs to be managed effectively. The authors go one step further to observe that this change may be eventually institutionalized and pursued in ISD in a natural manner.

In another key article of the same period, Desanctis & Courtney, (1983), define more formally the OD contribution. Their overall viewpoint stemmed from proposing user-friendly MIS implementation. The authors recognize that the implementation of a computer-based information system involves change on the part of users and the whole organization. Furthermore, failure to institutionalize change has been one of the major pitfalls of implementation projects. Due to the lack of literature of implementation the authors propose that OD, which has a well-developed body of literature on implementing change in organisations, can be utilised to foster friendly interaction between users and implementers.

The authors develop their argument by focusing on the systems view of MIS implementation and noting that change in the MIS has repercussions on the operations of other organisational sub-systems:

> "When an MIS is installed or changed, the purpose is usually to improve organisational functioning, to make the transformation process in the firm more efficient, or to improve the quality of organisational outputs. A holistic view of the organisation thus requires that management consider more than the information system itself in MIS change projects, but rather to improve total system functioning", (ibid:733).

Additionally, it is recognised that MIS failures can be attributed to behavioural problems and unsuccessful attempts to incorporate the human dimension into information systems projects. IS professionals themselves may lack the skills necessary to do so. As MIS is evolving into new areas the pressures for taking into account behavioural change is increasing. The authors also note that OD and MIS have comparable concerns and goals, and may deal with the same issues when it comes to resistance to change.

Desanctis & Courtney, (1983), divide the OD contribution to MIS implementation into theoretical and applied. While OD is seen to have a primarily applied focus, a number of key theories are proposed such as Lewin's three stage change model, Likert's organisational change scheme, Bennis' integrated theory of change and Argyris' theory of the change process. While these theoretical contributions are geared towards understanding organisational and behavioural factors in implementation, the applied side of OD includes techniques and expertise for fostering organisational change:

Techniques	***Expertise on how to***
• survey feedback	• encourage creativity
• group diagnostic meetings	• utilize information resources for
• communication training	non routine tasks
• laboratory training	• develop norms that encourage use of
• training sessions	computerized information technology
• role negotiation technique	• improve relationships and communications
• organisational mirror technique	between users and MIS personnel

Source: Desanctis & Courtney, (1983).

The authors also identify a list of situational variable affecting the need for OD. These include: the extensiveness of the MIS, the attitudes of the users, the nature of norms concerning the MIS, the nature of MIS relations with general management and the nature of change concerning the MIS.

The article concludes with the suggestion that an OD consultant should be invited to work on MIS implementation projects and that responsibility for issue resolution should be delegated among the OD and MIS specialists. The OD specialist would focus on the social system and change issues.

A similar implementation oriented view is taken by Hirschheim, (1985b) and Willcocks & Mason, (1987). The first author argues for the use of OD models under the framework of Planned Change, such as Lewin's three stage change model and Kolb/Forhman's model, in the area of office automation implementation. The main motivation for using these models of change is to overcome resistance to change, although the author deems these models as too general, as assuming rationality on part of organisational members and as unable to take into account the plurality of the office. Along similar lines, Willckocks & Mason, (1987), argue for the use of OD as an implementation strategy and

contrast Lewin's and Kolb/Frohman's models with the Systems Development Life Cycle.

However, both these articles are based on as somewhat limited view of OD. The change models are not structured ISD methodologies that have to be followed in a prescriptive manner. If they were how could OD make its claim of understanding organisational and behavioural change? These models identify the essential elements of a change process for the purposes of awareness and effective management of change. The change process can depart from any point in the model as change may be already taking place when the consultant is invited to intervene. Additionally, the change process evolves in cycles until the desired changes are achieved and stabilized in the client system.

Another note concerns the addition of OD consultants to implementation projects. We agree with Willckocs & Mason (1987), that ISD professionals have to acquire the skills and humanistic values of OD consultant for themselves as ISD/IT is moving "into the core of organisational communication". However, for extremely large/complex projects ISD consultants with the necessary skills could be supported by OD consultants.

Another argument for the use of OD in ISD is made in the area of information resource management:

> "Paramountly, the goals involves creating "learning organisations" —with low defensiveness, persistent motivation, and so on— to more fully exploit IS technologies. OD has perhaps the most comprehensive track record in moving toward this ideal.", (Brown & Brudney, 1994:650).

Organisations have to deal with the uncertainties of IS projects by building trust and mutual respect between members. Furthermore organisations need to encourage professional development as technology threatens to surpass the ability of IT professionals to stay up-to-date with changes and developments. Finally, communications processes and team development are seen as crucial for IS projects. OD can be utilised towards the achieving the above goals.

While the above work originates in the ISD field, there has been a core of OD literature arguing for OD to become more familiar with ISD/IT. Traditionally, OD has focused more on the human side of systems development providing a limited view of technical issues.

Jelinek & Litterer, (1988), observe that IT is increasingly used throughout the organisation to automate manufacturing and support processes and ensure high quality is achieved through their precision and speed. For the authors, "computers permit organisations to embrace change where once they shunned it: programmable automation makes manufacture of variety inexpensive." However, for computers to be used effectively new practices and assumptions about information and communication are required. Although the OD consultant has long addressed the related issues IT-related change brings the difference is that in the new IT-enabled organisations the scope and intensity of organisational coupling is greatly increased. People, their decision and actions are more widely and densely connected to each other. This increases the necessity for OD's traditional emphasis on the value of the individual. The new focus in OD has to be "upon shared participation in a community of goals and effort, rather than the more traditional focus on the "individual as an abstraction or ideal".

Barry (1989) departs from the observation that IT requires a different treatment in OD than technology in general. He notes that:

(1) The conventional paradigm of technology in the organisational literature inadequately addresses information technology,

(2) Information technology needs to be conceptually disaggregated from the broad technology construct,

(3) Agents of change need to understand and master the threats and challenges posed by information technology to organisational development.

Traditional notions of technology focus on its role in the production process rather than its role in the managerial process and they focus on structure rather than multiple dimensions of organisational functioning. The implications for OD evolve around the risks IT poses for managers and change agents and the challenges for successful intervention into an IT-intensive organisation. Risks from IT stem from the transformation of the decision making process, the redistribution of power within the organisation, the transformation of the ways organisational members communicate, and the threat to worker satisfaction as a result of IT-increased work monitoring. Given the above risks, OD specialist have to reevaluate their individual theoretical perspectives on

the role of IT and technology in organisations adopting a more tailored view of different modes of technology. Diagnostic models and process theories have to be realigned to examine more closely organisational characteristics that affect information. OD specialists have to translate the above theoretical reorientation to "practical appreciation for the benefits and hazards of information technology in organisational settings". A final challenge for the OD specialist is that:

> "It isn't enough for the OD specialist simply to be technically proficient; the diagnostician armed with knowledge of information systems must also understand how the technology can be woven into these different fabrics of organisational life if a fully informed diagnosis is to ensue.", (ibid:228).

The latter challenge is important because IT may be both the focus of study and affect the reality experienced by organisational members and the change agents themselves. This duality of operation confirms the observations we made using structuration theory.

Thach & Woodman, (1994), also note the transformational character of IT to organisations and recognize that the introduction of IT is itself a complex process. Organisational change programmes for IT will require:

- *A flexible customized change model*, as IT implementations should be based on these models that can be adapted to different organisational settings. IT organisational change must be examined from a socio-technical basis and be customized to fit the social network of the specific organisation into which it is being introduced.
- *Less stress on structure, more emphasis on communication, rewards and policies*, as traditional structure is seen by many as becoming obsolete.
- *Conceptualized networks*, as the organisation of the future will resemble a less concrete and highly flexible conceptual network.
- *OD technology tools*, as IT will permeate OD practice new tools will be developed to assist in the change process.

(ibid:41)

The authors argue that OD practitioners need to learn technology-related skills and need to be aware of the "many nuances of information technology, since IT has a much broader impact than the traditional techno-structural intervention". The authors see OD

in a position to respond to the challenges concerning IT as the field has always exhibited the ability to deal with innovation and challenge.

The literature originating from OD call for the field to become more familiar with IT and develop new or customize existing models of change to take account the specific nature and impact of IT to organisations. While OD is not directly involved in IS development, it is interesting to observe how the field already is opening up to the possibilities and challenges of IT and ISD. As IT has an impact on organisations themselves, OD begins to take notice. Unfortunately, the same cannot be noted for ISD which still largely ignores what happens to organisations. From the above arguments the point arises that perhaps in the future the two fields could merge into one as both fields can benefit from each other. While for OD such integration is a futuristic vision that will be determined by the role of IT in the future, for ISD this integration is far more urgent and critical for the success of the field.

Linking the above arguments with the discussion developing in our study, as early as chapter 1, the potential contribution of OD emerges along three levels:

a) Supporting a new OD-informed ISD approach for transforming ISD, we term as Total Systems Development, (section 6.3),

b) Offering its knowledge repository and toolkit, for integration with the ISD repository, (section 6.3.8), and

c) As a diagnostic model of ISD practice and failure, (section 6.4).

6.3 Towards Total Systems Development

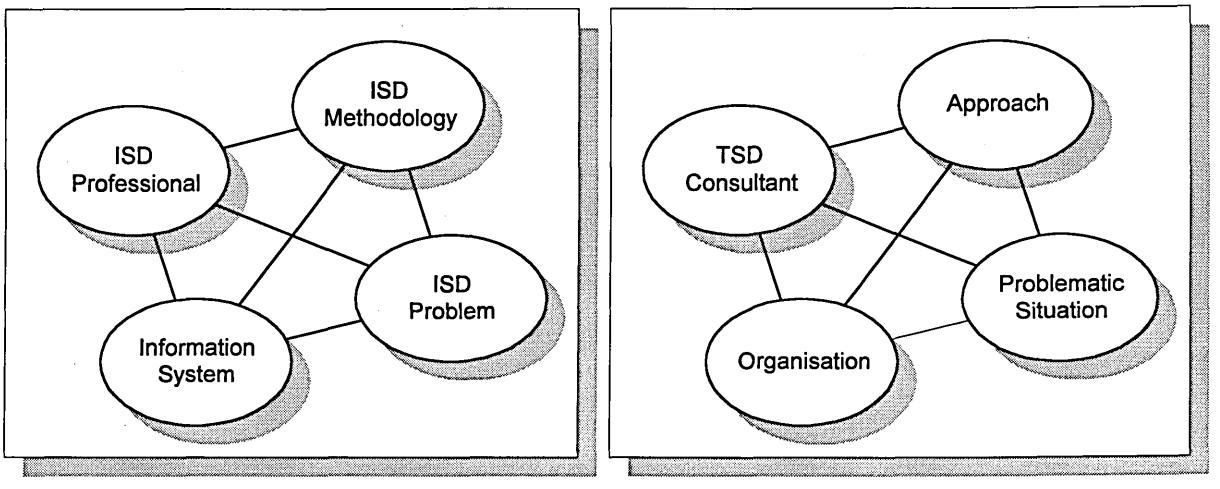
The main contribution, in our opinion, lies in the catalytic effect OD can have for current ISD thinking and practice. OD concepts can facilitate a change of values in ISD. We agree with (Desanctis & Courtney, 1983; Willcocks & Mason, 1987), that the utilization of OD theories and techniques is very useful and we deal with this line of thinking in the following two sections. We also extend their viewpoint as we do not narrowly consider OD only as an effective implementation strategy. Implementation assumes primarily structured development that occurs outside the organisation. New ISD methods and practices means that IT-related change occurs early on.

Another point of departure from the above arguments for using techniques from one field to the other, is for us the fact that what makes OD different than ISD is the way the vast array of theories and techniques are used in a situation/organisation-appropriate manner, rather than the content of the techniques themselves. If OD techniques were to be used directly in ISD under the current paradigm they would do little to improve the rate of failure.

Another point that ties in with the calls for OD to come closer to IT, is that so far we have not criticized ISD techniques, theories and methodologies per se, but their inappropriate use in organisational-problematic situations. As we saw earlier, one of the functions of the approach is to tailor a technique or a method to the requirements of the situation to enhance in that way its effectiveness. What then emerges as a requirement is OD-type thinking and not simply a toolkit.

To introduce OD-type thinking we need to depart from the traditional view of the ISD process as involving an ISD methodology, an ISD problem, an Information System, and an ISD Professional, because this process assumes a technical or computerisation effort. Based on our research results and the preceding discussion, we identify the need to move towards a Total Systems Development (TSD) process which involves an Approach, a Problematic Situation, an Organisation and a TSD Consultant:

Figure 6.1: ISD and Total Systems Development Processes



Operating within this process of development, a **Total Systems Development** approach can be examined along the following dimensions:

- Values & Principles
- Key Diagnostic scheme
- Frameworks
- TSD Framework
- Key Processes
- TSD Model
- TSD Consultant
- TSD Repository-Toolkit

6.3.1 Values & Principles

The starting point for an ISD paradigm shift is the issue of values. As we discussed already, OD values could enhance ISD's overtly pragmatic and development effectiveness values. Apart from the particular value sets, ISD lacks an in-depth discussion and reflection on its own values. Such a discussion, and in some cases an intense argument, has been characteristic of the OD field. A similar discussion in ISD is now appropriate and needed. Like OD, ISD too has to respond to the developments occurring in the general business environment affecting organisations. In all recent developments, (RAD, BPR), organisational effectiveness is the primary driver, but to secure it and minimise its impact to the organisation people issues are now equally important. ISD has responded with the development of methodologies in the above areas. While these may help ensure organisational effectiveness they are totally ignorant of the humanistic issues involved. As we saw in the RAD projects in our sample, facilitation and group dynamics are an issue not handled by the method used or by the ISD professionals involved. While in the ISD model these issues are treated as side-effects of development they have the capacity to stall the ISD process, rendering a RAD project anything but "rapid". For ISD to remain relevant to organisations a discussion and an expansion of values is needed.

A second area where paradigm change has to occur in ISD is the principles of Systems thinking. While surprisingly it is considered one of the foundations of OD, (French &

Bell, 1990), this is not the same with ISD. The Organisation is the total system and as such is made up by a number of interrelated, interconnected, interdependent, and difficult to separate interacting components. Due to these characteristics, change initiated in one sub-system affects the whole system with an immediate effect. In systems thinking, the system is a whole which is more than the sum of its parts and exhibits emergent properties. These properties are not characteristic of any of the parts. Soft Systems thinking has raised awareness, but genuine systems thinking has not been placed at the basis of the field. OD's viewpoint in relation to Systems thinking is quite focused and practical. In OD understanding of organisations as systems is at the basis of the field's viewpoint. Transferred to ISD, such a viewpoint could introduce systems thinking in a pragmatic rather than a theoretical manner.

Re-introducing Systems thinking in this way has a better chance to be largely accepted as more relevant. The consultancies in our sample recognised the importance of organisational issues and organisational change, although they lack the in-depth understanding and social technology to deal with them. Systems thinking is important because it relates to organisational (systemic) change. In such a fashion the introduction of systems thinking, that views organisations as dynamic systems, can be not only feasible, but also desirable. IT-related change is seen as unavoidable and as such OD can open a series of possibilities for dealing with organisational change issues in a much more proactive manner. The process of client assessment can be enhanced by assessing issues of change as early as possible and so not allowing them to become "unexpected".

Another principle is ISD Intervention. Due to the systems nature of organisations, any improvement effort (internal or external) introduces change and therefore it is a systems intervention. As such it has the potential for disrupting the organisation and highlights the need to manage interventions in terms of their implications. As intervention has system-wide implications it needs to be also managed at the **process** level: "*how things are done*", as well as **content: "***what is done*". The OD consultant establishes and maintains a relationship with the client, which becomes a vehicle for managing the process of intervention.

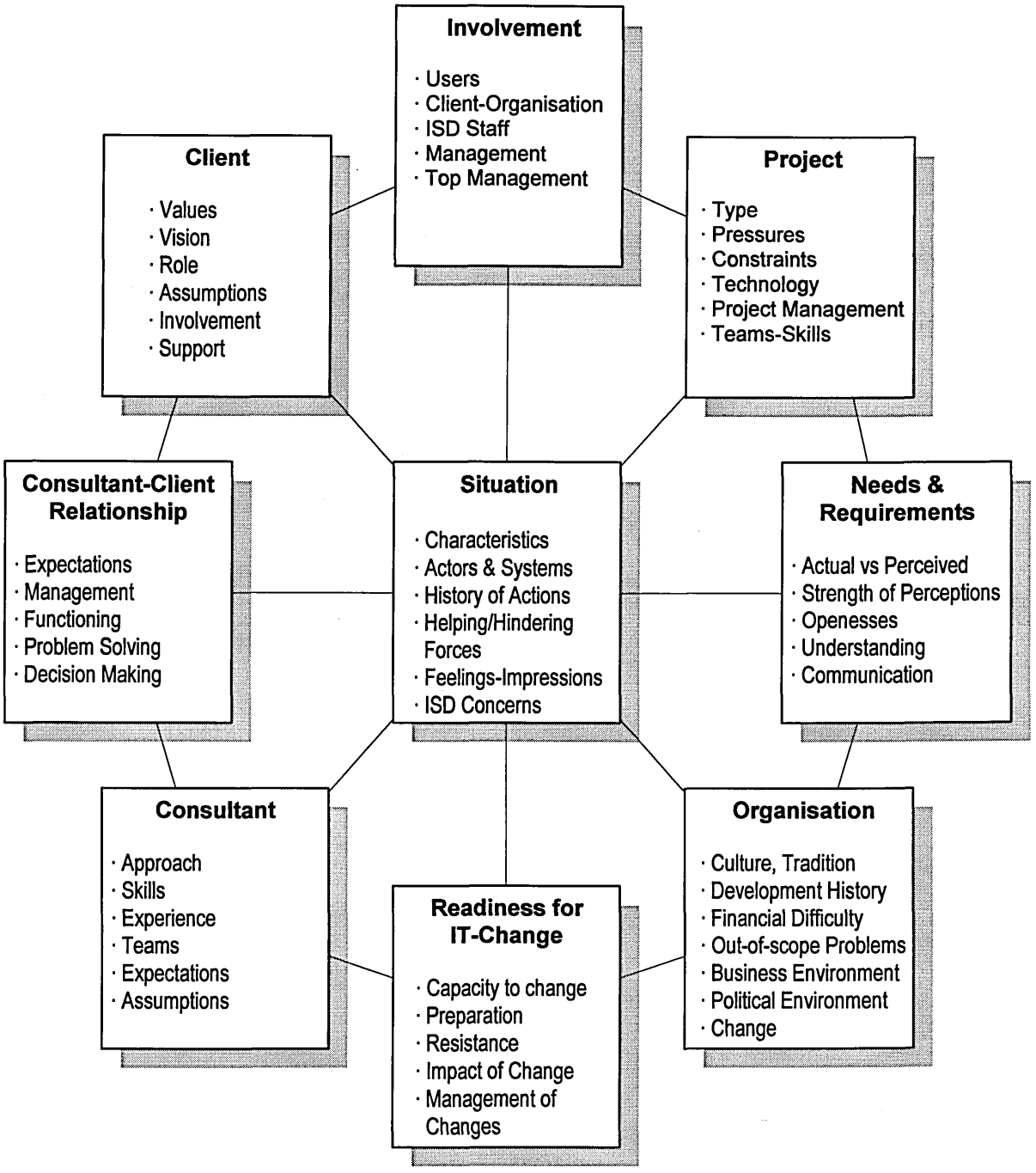
Table 6.1: Summary of TSD Values & Principles

• Total Systems Development	A holistic approach to systems development, that can facilitate development of any type of system.
• ISD Values	Reflecting a pragmatic interest & pursuing the effectiveness of systems development processes, procedures and technical excellence.
• Humanistic Values	Focus on democracy, fulfillment in the work-place, the well-being of human actors, and the development of people in relation to systems development.
• Organisational Effectiveness Values	Focus on what the organisation on the whole is trying to achieve —not only on the problem the IS is solving.
• Systems Thinking - Total System	Viewing the organisation as the total system that is developed through systems development. Focus on the systemic nature of organisational reality.
• Intervention & Change	Taking into account the disrupting effect of development activities have on people and organisations. Focus on managing organisational change.

6.3.2 Key Diagnostic scheme

As we saw in chapter 4, a diagnostic scheme is part of an approach. Using our research findings and OD we can formulate a diagnostic model, as part of the TSD approach, to assess the client-organisation's **Capacity for Systems Development**:

Figure 6.2: Capacity for Systems Development Model



The model integrates our research findings, such as critical ISD factors and client assessment criteria, with fundamental OD elements for diagnosing resistance to change and organisational effectiveness. The starting point in the diagram is of no significance. As with any diagnostic model initial data ground the starting point for the investigation. The elements in the above model have been drawn from our research findings and from OD. Walking through the diagram, the client element examines the characteristics and intended role of the client. These include the client's values and assumptions about his

own role, the vision he has about the project and the ISD effort, the assumptions he is or is likely to make, amongst other things, about the consultant, the IS and the ISD process, and what his position is in relation to his involvement and his support of the project.
The Involvement element examines the involvement of all possible stakeholders. The project element examines the project's characteristics. As we saw in our analysis, projects range in type and as such create different requirements on the consultant and his approach. A very well defined content-task project carries less risk than a project that aims to develop strategic ISD capability. Projects may also face pressures and constraints that may not be acceptable. The nature of technology is also important as very new technology or certain types of technology may prove problematic. Project management is also an important facet. Examining how the client wishes to manage the project is important. Finally, the skills of people and the capabilities of teams are also important. People with questionable skills pose an additional risk that the consultant or client may not be able to minimise.
The Needs and Requirements element in our model represents the core ISD question: What does the client really needs and how his needs compare to the requirement raised initially. If there is a big gap between the two the project may suffer and the consultant may not be willing to collude if the project is to fail. If there is a smaller discrepancy it may also require significant backstage effort by the consultant.
Coming to the Organisation, the consultant has to assess the culture of the particular organisation as for example there might be a strong preference for structured development, the historical background of developing systems and in doing projects in general, whether the organisation faces financial difficulties that will affect the project, the potential for out-of-scope organisational problems and issues influencing or stopping the project's progress, the various pressures the organisation faces in its business environment, its internal politics and the pressure for organisational change.
Adapted from OD, the Readiness for IT-Change element examines whether the client-system ***is*** in a position to undergo the desired change. As we saw, often an organisation may desire IT but may not be fully prepared for the changes that comes with it.
The consultant element is again informed from an OD viewpoint. The consultant diagnoses or assesses a client and his project, but he has to assess his own position in relation to the project. He does so by being clear about his own values, assumptions,

skills, capabilities, experience, and expectations. He also needs to be aware of his approach and how it is appropriate for the particular project and client.

The consultant needs to examine the feasibility of his potential relationship with his client, as it becomes the main vehicle for problem solving and decision making. As walking out of a project that has started is not desirable, the consultant has to assess how the client cooperates and treats consultants. This is obvious early on as the consultant approaches the organisation initially to find out more about the project and the client. At that point the consultant would examine the clients expectations about the relationship, its management and how problem solving and decision making will be facilitated between the two parties.

Finally, we come to the Situation element. As we saw in our data and as it is supported by OD, problems and issues need to be examined holistically to capture their synergy and emergent properties. The Situation element looks at the characteristics of the whole situation the consultant will find himself if he undertakes the project, the actors he has to interact with, the role of other systems in the organisation, the effect of previous actions and parallel actions that will be carried out once the project starts, the various forces, (political, cultural, structural, managerial or other), that are likely to hinder or promote change and the project and the nature of the wider ISD concerns that may reveal what is the real interest behind IT, i.e. what is the organisation as a whole trying to achieve with the project. Finally the consultant needs to be in touch with his own feelings and impressions that arise as a result of his encounter with the particular situation. Things may seem right, but they may not feel right.

This diagnostic model is itself a systemic model which works not only by examining each appropriate element on its own, but by also contrasting the understanding from one element against the rest of the elements or by re-focusing the investigation in another element. For example, the client's vision about the project may be contrasted to the organisation's readiness for change. Readiness may also focus the analysis to the history of previous project efforts. Again we need to note that there is no sequence in examining the above elements and their relationships. Diagnosis is a creative process which involves many iterations. These iterations being characteristic, as we saw earlier, of the initial phases of the consultant and client's involvement.

Having used this model the consultant may have a number of options:

- The client has the required capacity for SD —the project is undertaken,
- The client's capacity is problematic but sufficient —the project is undertaken after the client is informed of the potential risks,
- The client's capacity is below the required level, but can be increased —the project is undertaken if the client agrees to deal with certain issues first, and
- The client totally lacks the required capacity for SD and for his own improvement —the project is not undertaken.

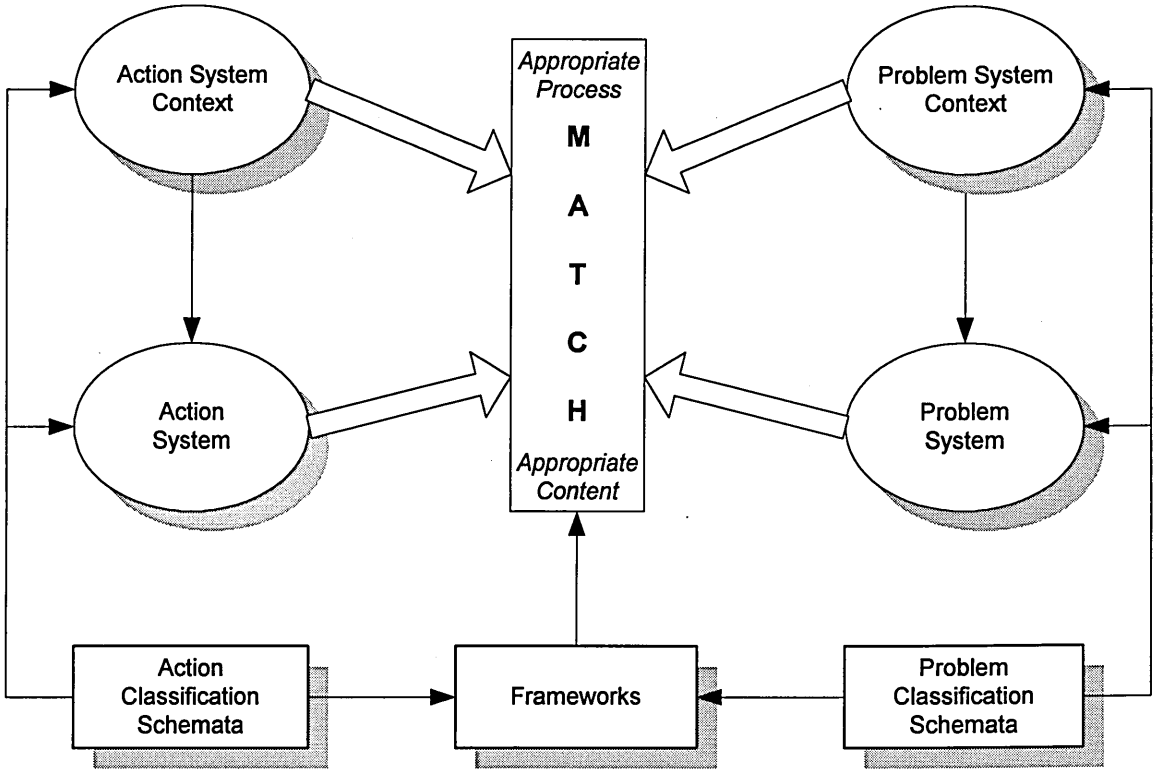
This model represents a guide for the key diagnostic scheme that the consultant employs in every project to determine its feasibility and ultimately its success or failure. In OD fashion this model is presented as diagnostic guide that helps the consultant read the situation in a consistent and focused manner, rather than relying on general guidelines such as "involvement is important in every project". Such guidelines can be better organized through the function of this model and indeed such is also the role of diagnostic models in OD.

6.3.3 Frameworks

From our research findings frameworks emerge as important for facilitating choice as part of the approach. Frameworks are meta-models that facilitate a match between what is required by the problematic situation, represented by the Problem System and its Context and the possible courses of action, represented by the Action System and its Context of application, (Figure 6.3, pg.206). Frameworks exist to facilitate choice of the appropriate process and content of intervention in the problematic situation. As problematic reality is complex the problem system is also made up by many elements and their relationships. Furthermore the problem system is influenced by its wider context. To match such complexity, the action system offers a great number of options that can be applied in a number of different contexts. A match between the action system context and the problem system context determines requirements for appropriate process of intervention. A match between the problem system and the action system determines requirements for the appropriate content of the solution to the problem. In

other words, a framework facilitates the decision of what is an appropriate solution to the problem and what is the appropriate way or process for implementing the solution. This function of frameworks can be seen as at the basis of the complexity and richness of the approach. For example, it is possible for an IS acceptance problem to arise in an overtly formal organisation. The formal context requires a formal solution that could be provided by a structured methodology. However, through tailoring user involvement activities and techniques can be combined to deal with the actual problem of ensuring IS acceptance without disrupting the organisational climate.

Figure 6.3: Frameworks and Classification Schemata - A conceptual map



Frameworks utilize a number of classification schemata. These schemata organise components along several dimensions and criteria. They primarily analyse the characteristics of various components, their differences and similarities, and their strengths and weaknesses. One such schema is the Action classification schema which organizes ways of dealing with problems in different contexts. In this schema we may find methodologies themselves, techniques and activities. A Problem classification schema organizes different types of problems and their contexts. Frameworks may employ multiple schemata as a schema organizes its members using a set of criteria. Different sets of criteria define different compilations of the same components. The

framework is a diagnostic model for making choices and matches between actions and problems. In other words it links action options with problem options and helps explores their match. However, the framework does not determine the sequence of action. Once a problem is identified as suitable action can be selected.

6.3.4 A TSD Framework

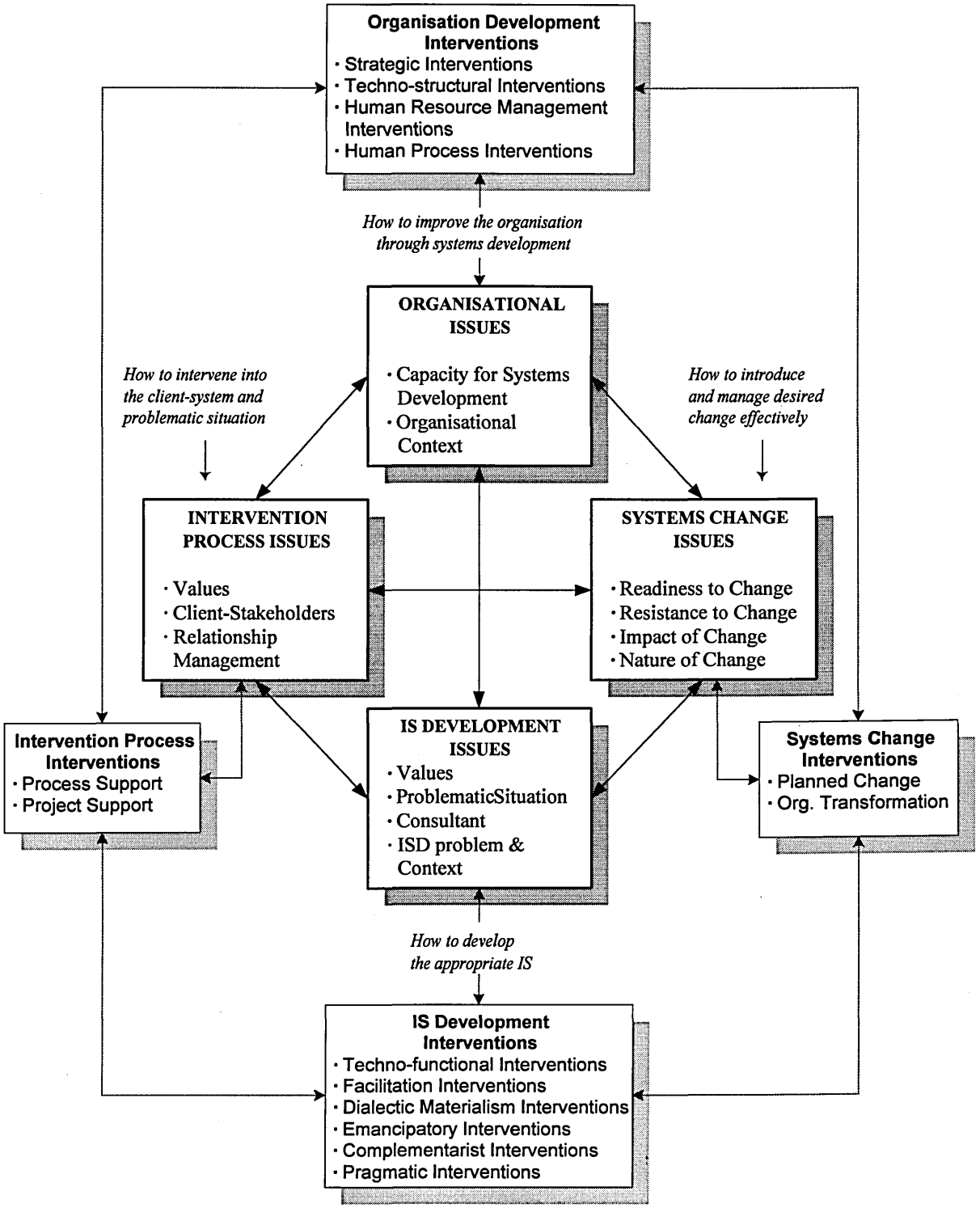
Frameworks and their classification schemata are important for the function of an approach. Using the experience from OD we can build on our research findings to define a TSD framework. The framework is organized along four major dimensions:

Dimension	*Emphasis*
• IS Development	Development of appropriate, (needed & desired), information systems.
• Organisational Development	Development of the organisation as a result of systems development
• Intervention Process	Appropriate intervention into the client-system and problematic situation
• Systems Change	Management of systems change

The framework links the action and problem systems by means of the relationship between issues and interventions. We employ here the OD notion of an intervention to denote a programme of action. By our research terms interventions are components used in projects and change efforts. In our framework interventions may range from practical action, for example a complete change programme, (e.g. Grid OD), a meta-methodology, (e.g. TSI), a methodology, (e.g. SSM), to conceptual action, for example, a framework for methodology choice, (e.g. NIMSAD), a model, (e.g. Seven "S" Systems model), or a technique, (e.g. structured walkthrough). The abstraction/decomposition levels of the framework are depicted in our conceptual abstraction levels model, (Figure 5.2). Each intervention is a purpose-built programme of action and as such it has by design certain characteristics and addresses specific issues. For example, a strategic organisation development intervention was designed to address a strategic issue, e.g. how to gain competitive advantage, (Cummins & Huse, 1989). As our research shows this may not be fully the case with ISD "interventions", as ISD methodologies are largely considered as panaceas and universally applicable, (Malouin & Landry, 1983). However, we extent the discussion of ISD paradigms, from chapter 1, to use these paradigms as dimensions along which we can classify ISD

interventions. In doing so, not only methodologies can be placed within these dimensions, but individual components like ISD frameworks, techniques, tools, advice, guidelines, and learning. This way we can define an "ISD toolkit" that can be related to the remaining OD-informed dimensions in our framework:

Figure 6.4: TSD Framework



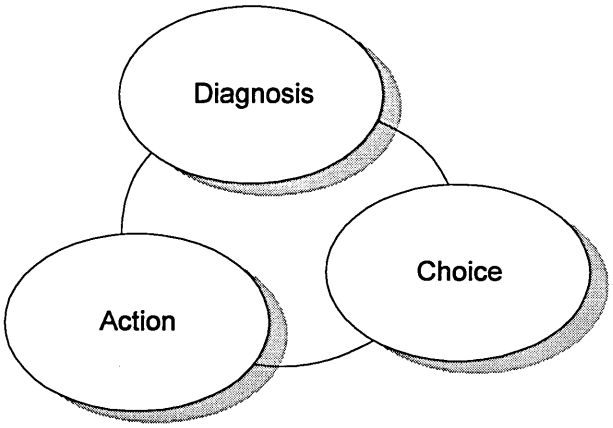
Both issues and interventions are linked in the framework. This means that all choices have to take into account issues and interventions in all the dimensions of the framework. This gives this framework its total systems development character.

The Interventions boxes in the above diagram represent parts of the overall action classification schema employed in the model. OD interventions are further organized in the dimensions proposed by Cummings & Huse, (1989). The Intervention Process area organizes interventions that cover support for process and the project and are derived in part from the repository components identified in our study. The system change interventions involve all systems change approaches and models that guide action which aim to bring about desired change. More detailed examples are given later in this section when we discuss the TSD components repository.

We also need to note that the classification schemata in the above framework are not given in a prescriptive manner. Indeed within the above framework, frameworks and approaches can be evaluated at the levels depicted by the abstraction levels model. The TSD framework can be used to choose another more suitable framework if it is necessary. The dimensions do not focus solely on IS development or on methodologies.

6.3.5 Key processes

The discussion about frameworks is not complete without a discussion on the key processes that utilize them and make the overall approach work. The danger is that a framework may provide a prescription for making choices. In reality this is not the case as a framework is used iteratively to produce choices and help determine action. The key processes that enable this are adopted from OD intervention:



- *Diagnosis*

Diagnosis is a key process because without some form of diagnosis any approach could not function. For example, frameworks would remain static models incapable of creating links between what is required in a situation with its solution. In the Greek language *Diagnosis* aims at producing a thorough understanding of a subject under investigation. Literally *dia-gnosis* means complete-knowledge and its dictionary definition stands for the formulation of opinion and judgment. Diagnosis of some form is important in every approach, be it ISD, OD or TSD. The aim of systems development is to turn visions of people about problems or future states into reality. This aim can not be realized without an adequate understanding or thorough knowledge or judgment of the task. For an approach, rather than a methodology, this is more important as an approach allows the making of choices between alternative courses of action. Diagnosis allows choices to be made and indeed Choice is too a special form of diagnosis.

In our study so far we have encountered the notion of Diagnosis in our discussion about the OD approach in chapter 2. Diagnosis, in the OD sense, intervenes into the client-system in order to discover causes of organisational problems and identify forces that hinder or assist change, gaining understanding, and problem solving. While change issues may not be immediately at the heart of the particular problem investigation, they are needed in determining the ability of the system to undergo the changes necessary for its improvement. In OD the client-system's readiness to change is not taken to granted. Change issues involve examining readiness to change, resistance to change, capacity of change, and the impact of change. Diagnosis is a systemic process, because it is something the client-system does in collaboration with the change agent —internal or

external. Within the context of the proposed TSD approach we adopt largely the OD viewpoint on diagnosis.

Diagnosis may vary in focus, ranging from the investigation of process to the examination of content. Diagnosis may also have an analytic focus on "how to do diagnosis", what models to use, and a practical focus on using diagnostic models to produce a diagnostic "reading" of the situation.

- *Choice*

Diagnosis relies on the selection of appropriate mental constructs, (metaphors, models, theories), that can be applied towards the solution of problems and for gaining better understanding. In OD's case, the huge array of OD theories, tools and techniques provides the source for such constructs. In the discussion about the TSD components repository we extend the OD arsenal to include the ISD toolkit.
Choice is an analytically focused form of diagnosis that helps make decisions about what action system instances to use and how. Choice is inextricably linked with diagnosis of the problem system and its context, but we can distinguish between the two as choice supports the use of frameworks. Choice can produce a number of outcomes:

Table 6.2: Outcomes of the Choice Process

• Selection of an existing component
• Mixing of existing component(s)
• Tailoring of existing component(s)
• Creation of new purpose-built component(s)
• No selection or creation of required component(s)

The last outcome represent cases were the required component either cannot be specified in the necessary detail, is too complex or too time consuming to create. The case might also be that the situation is so complex that adequate understanding of the problem system and its context is not yet available. In some cases this is not a weakness of using a framework. As Lewin has argued: "if you want to find out more about a system try changing it". The last outcome may represent the option of introducing change into the client-system and problematic situation in order to understand them better.

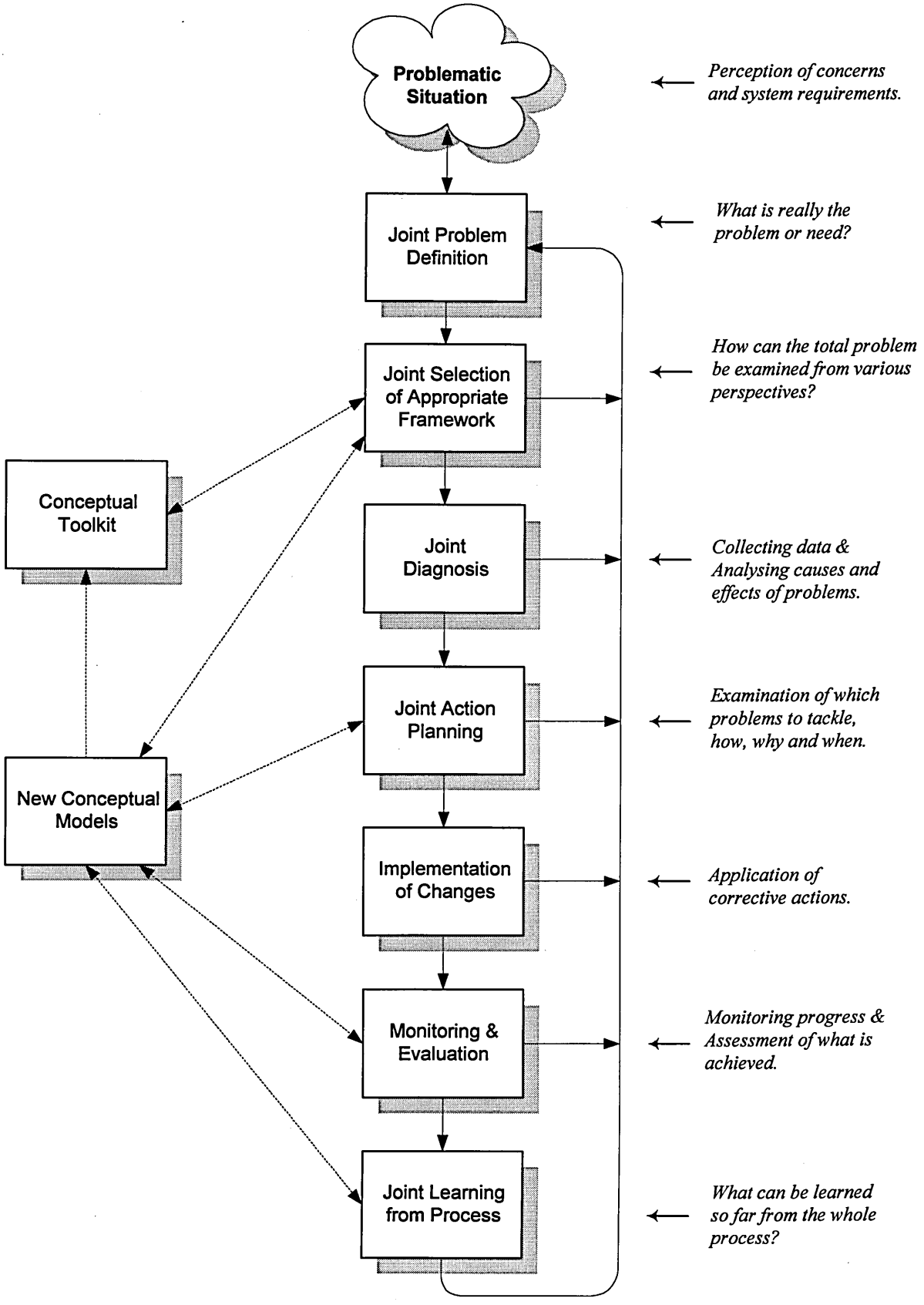
- *Action*

Once diagnosis has raised diagnostic issues which can be contrasted against possible interventions, and once choice has produce a particular action system, the Action process makes the designed changes to the client-system, situation, problem or its context. Action too is inextricably linked with diagnosis and choice. From an OD perspective, diagnosis is too a form of action as diagnostic inquiries disrupt the flow of functioning in the client-system and the situation. Often the presence of an outsider in the form of an external consultant enhances this effect. Due to systemic change, diagnosis is another intervention, (an action system), into the client-system. The Action process takes this into account and so monitors and evaluates the changes carried out. Diagnosis, Choice and Action form an iterative analytical cycle which may start at any stage.

6.3.6 TSD Model

Action research (AR) is central to OD and is the most commonly used OD approach, (Figure 2.1, pg. 40). At the basis of AR lies the requirement for collaboration between the change agent and the client-system. Diagnosis, action planning and action are activities done collaboratively. AR is also an iterative approach which cycles until no further improvements or actions are seen necessary. Through AR the client-system is participating in the improvement process and so it is so much easier to facilitate change. In ISD clients spend a long period of time on their own, analyzing and developing a vision of the system. Once that vision is established they may bring-in a consultant to deliver it. An ineffective organisation would have created the vision of its desired system using ineffective processes. Not involving the change agent early in the process, and involving a change agent with ISD-type thinking may result in systems that meet the specification but are otherwise failures. An overall approach based on principles of AR can facilitate learning and development of the field and of ISD professionals. This is why we wish to base the proposed TSD approach on the AR model of involvement between the client and the consultant.

Figure 6.5: The TSD model based on Action Research

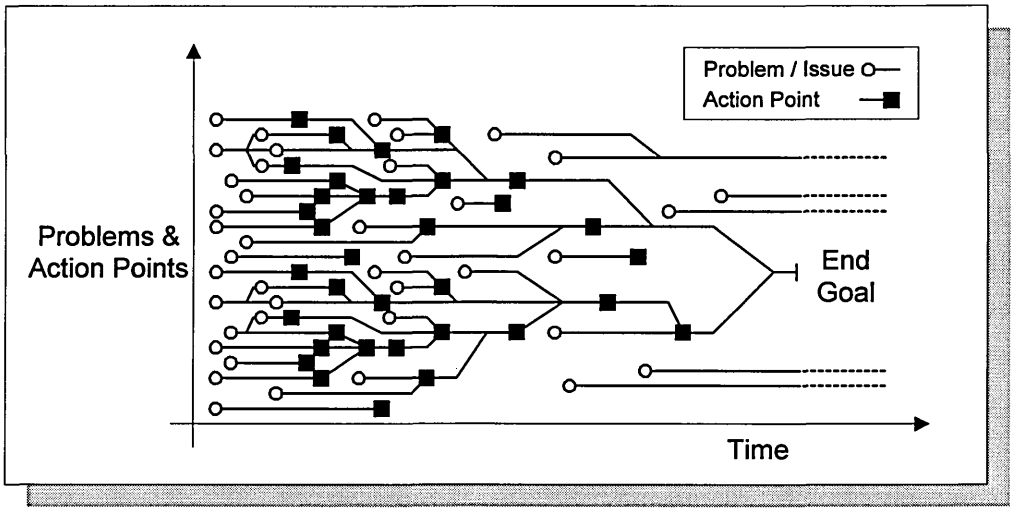


Based on Warmington, (1980:27).

- *TSD and SDLC*

An important question concerning IS development is how the TSD model, based on action research, combines with the Systems Development Life Cycle and whether there are any conflicts in doing so. As we have seen in our research results, various activities take place and issues are resolved long before IS development actually starts. In some cases, after ISD ends there are still issues that need attention. The TSD model covers and guides these activities from the actual beginning of the consultant's involvement with the client, until the client is satisfied that all end-goals have been achieved. Within this broader scope the SDLC is more limited and narrower in focus. As we mentioned, the TSD model we propose is based on action research and as such we move away from phase-logic to issue resolution-logic in ISD projects, (Figure 6.5, pg.213). This means that the aim is not the completion of a phase, but the addressing of problems. This makes it possible to deal with problems that persist from one phase to another or recur in later stages. The AR model allows problems to be addressed in both sequential and overlapping phases in structured and evolutionary projects respectively. As figure 6.6 shows, a project begins with a number of problems/issues that are required to be addressed. Over a period of time a number of them is addressed. As AR is an iterative process not all problems are resolved immediately, nor are they resolved sequentially. Furthermore, problems that appeared to be resolved may reappear or may become part of other problems. The complexity of the problematic situation is such that certain problems may persist even after the end goal has been achieved.

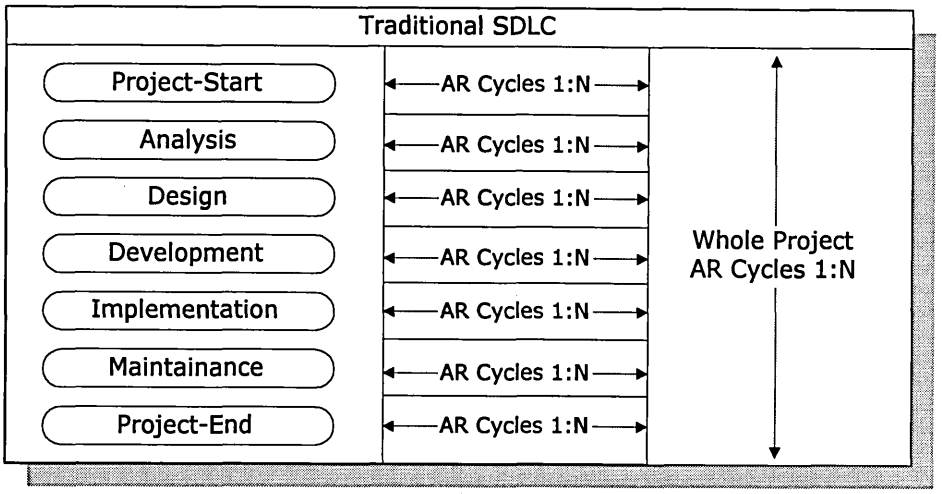
Figure 6.6: Issue and Action Paths



Within this issue-resolution logic phases are merely organizing concepts. Action research addresses the problematic situation within which ISD takes place. The problematic situation is messy and complex, requiring continuous effort to resolve problems. By the term problem throughout our discussion, we do not only mean a requirement for a corrective action, but also an issue that needs to be explored, a goal that needs to be achieved, a vision to be realized or simply to fulfill a void in knowledge and understanding. All these are "problems" because they involve a gap between actual and desired states. They are resolved through problem solving actions which integrate the appropriate content of the solution and the appropriate process of achieving it. In AR a kind of problem that may arise is whether to resolve a particular problem or not. The gap mentioned therefore is not defined in economic terms, in terms of a performance differential, but it may be conceptual, knowledge, or consensual. Through AR-iterations the understanding of the problem itself may be examined and challenged, redefining completely the problem under the light of new data and past actions.

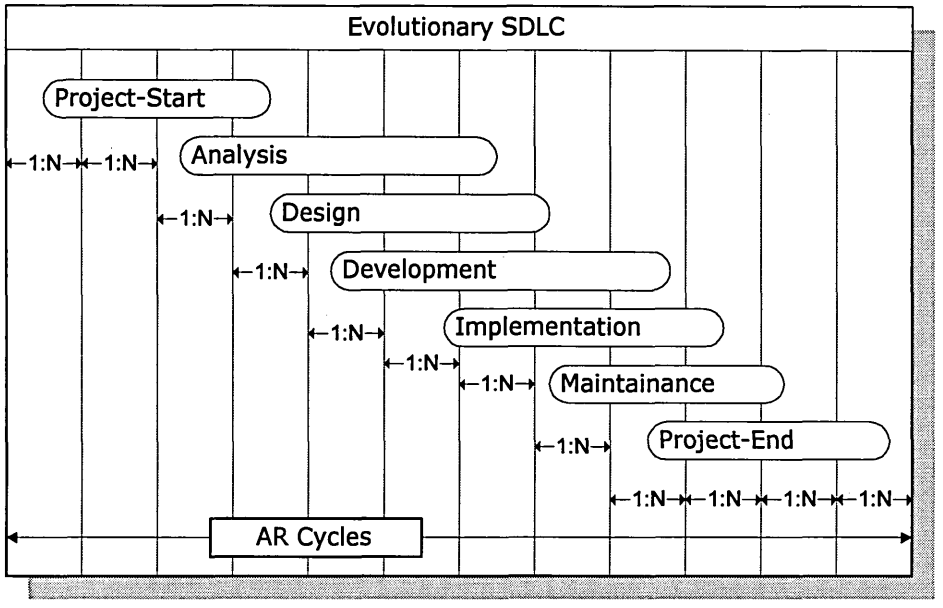
Each stage of the SD life cycle, (traditional or evolutionary), has requirements for an appropriate approach that manages the problematic situation. ISD does not occur in isolation and a successful approach much take this into account. Action research can be adopted without conflicting with the phase-logic of ISD efforts as one property of approach is to provide context and meaning to action. For example, each stage of the traditional SD life cycle can utilize a number, (1 to N-many), of AR cycles which will persist until required issues are resolved, (Figure 6.7). The action research approach also allows for concurrent or parallel tracks to be employed. For example, the whole project may need to address issues of a strategic nature, while within each phase smaller cycles may be employed to resolve more tactical issues. At the whole project level we need to note that once ISD has ended the particular project may lead to follow-up project in which case the action research-based model would keep the common thread to the new project.

Figure 6.7: Action Research & Traditional SDLC



In evolutionary life cycles, action research is employed in more natural manner as AR itself is an iterative approach. Additionally, at any point in time more than one phases can be pursued.

Figure 6.8: Action Research & Evolutionary SDLC



6.3.7 TSD Consultant

OD thinking applied to ISD presents the opportunity to view the consultant as an enabler of total systems development. The analyst is not simply a process facilitator or a content expert. He utilizes both of these modes to enable the development of the total system. He may also help the organisation develop systems in general not simply information or computerized systems. As shown by our research results, the consultant's responds to the multi-faceted demands of his role by becoming partly an agent of

change, partly a focal point for the development efforts, partly an assumptions challenger, partly a trainer and partly a manager of resources and people. Furthermore, as the problematic situation is of considerable variety and complexity the consultant's viewpoint is analytically shifting from the inside to the outside, from the macro to the micro, from the extensive to the narrow and from the hard to the soft. In this effort the consultant utilizes his approach and the approach elements as long as they are appropriate. If they become inappropriate his ultimate guide is his set of values and assumptions that helps him clarify conceptual boundaries and provide him with an interest for improvement. At that point, were even his approach appears to be challenged, any other interest would and does create problems. OD has developed such a set of values and interest, and ISD must too. Through our proposed TSD approach we have put forward values and principles that the TSD consultant should adopt.

As we saw in our research, the OD and ISD consultants are not that different, apart from their values and approach. The skills are present in both types although in ISD's case the opportunity to use them is rare. While an experienced and aware ISD consultant could easily become a TSD consultant, the same can not be said for the majority of ISD professionals. As we saw IT staff within organisations are lagging behind developments even within ISD. These professionals destine themselves to become marginalized as technical personnel led by TSD consultants. To an extent this already happens now as business consultants lead projects with technical consultants in a support role. However, we wish to see a change occurring within organisations with the recruitment or development of TSD consultants to lead IT staff and departments. As we saw in our analysis, the link between business and IT staff is of crucial importance to the proper functioning of new facilitative-participative approaches like RAD. TSD, through action research is too relying on meaningful and adequate involvement on behalf of the actors within the problematic situation. Where TSD of course differs from RAD and evolutionary methods in general is that these links can be built at the beginning of the project as a result of the problem / issue oriented logic of the action research model.

Concerning TSD skills and their development we need to note that consultants should be trained to understand and command a variety of consultation modes, should understand and have knowledge in the areas of organisational change, frameworks,

classification schemata, and diagnostic models. The skills required are not different than OD skills, but are integrated with ISD skills, (Appendix 4).

6.3.8 TSD Components Repository

The TSD repository is a fusion between the OD arsenal, the components repositories identified in our research and the general ISD toolkit containing ISD approaches, methodologies and techniques. The TSD repository contains both action and problem classification schemata and as such is organised along the following dimensions:

- Change Agent
- Organisation
- Approach
- Problematic Situation

These dimensions are selected as much for the simplicity as for their relevance. Within each dimension there a number of levels of further categorization. Alternative dimensions could be adopted and indeed it is possible to apply a number of different schemata to the same collection of components. This would be desirable, in our opinion, as adopting different perspectives to examine the same material can stimulating creative thinking.

Within the discussion that follows we show the direct contribution that many OD interventions and theoretical components have to ISD. In each dimension and level we highlight the ISD application of these components. The following table summarizes the various families of components. Methodological, Process, Project and Training support component families support the total systems development process and represent the learning that has been gained from past experience. The Action and System component families represent interventions and ways of understanding problems. The repository offers full support of a total systems development effort and could be automated using an electronic library or knowledge-based system.

Table 6.3: Types of stored components.

Methodological Support Components	***Action System Components***
• information on components	• paradigms, theories, models
• approach & framework guidelines	• guidelines
• techniques with narratives	• interventions - change programmes
• tools with descriptions	• approaches
Process Support Components	• frameworks
• experiences on method use	• classification schemata
• how-to-do advice	• meta methodologies
• lessons learnt	• hybrid methodologies
• tips and hints	• methodologies
Project Support Components	• techniques
• case studies	• tools
• contacts	
• templates	***Problem System Components***
Training Support Components	• diagnostic theories & models
• training interventions - programmes	• diagnostic techniques & tools
• theories & models	• IS failure models
• case studies	• classification schemata
• experiences on training sessions	• case studies

A. Change Agent dimension

This dimension, (see table below), organizes components that have to do with the role and effectiveness of the change agent, be it a consultant or a manager. These issues cover intervention, choice of the appropriate mode of intervention and consultation, determining the appropriate level of intervention and establishing and maintaining effective relationships. This dimension also organizes required skills for the change agent to be effective. The main area of ISD application is the management of relationships within the client-system, minimization of the disruption to processes and the informal system, and the development of consultant skills.

Relevant Criteria	Components	ISD Application
• How to Intervene • Process vs Content • Depth of Intervention • Change Agent Skills • How to establish & manager effective consultant-client relationships • How to improve the client's role	• Models of Consultation • Intervention Theory • Process Consultation • Coaching & counseling • Role Negotiation Technique • Gestalt OD • Transactional Analysis • Third-Party Peacemaking • Process Support (*) • Project Support (*) • Training Support (*)	• Minimise disruption & resistance to ISD and to the IS • Management of relationships • Training & Development of Skills

* *see Table 6.3, pg.219*

B. Organisation dimension

The components in this dimension are further organized at different sections according to their focus on a particular organisation level. These levels are: the individual, the group, the inter-group and total organisation levels.

- *Individual level*

At the individual level components have to do with improving the effectiveness of individuals within the organisation. The organisation under focus could be the client-system or the consultant-system. The performance of certain individuals is key in IS development. Such individuals are key stakeholders, key users, experts within the organisation, different types of managers and key ISD professionals. Due to the importance of these individuals certain programmes can be devised by the change agent to maximize their effectiveness and usefulness to the project. For example, Role Analysis Technique could be used to clarify roles of individuals within a mixed development team. As we saw earlier in one of our case studies confusion was experienced by ISD and business staff as to the nature of their role within a RAD project. The focus in this area of interventions and components is however on key individuals rather than the whole group. In our example, a key user and key analyst could have been targeted specifically.

Relevant Criteria	Component	ISD Application
• Individual Performance	• Life & Career Planning • Role Analysis Technique • Coaching & Counseling • Education & Training Transactional Analysis • Gestalt OD • Behaviour Modeling • Grid OD phase 1	• Users-Managers (MIS) • Experts • Project Sponsors • Project Managers • Head Analysts & ISD professionals

- *Group Level*

The performance of teams in ISD and OD are very important. The components in this level focus on improving group functioning and performance from the point of forming a team to the point of team members returning to their normal positions. A number of teams can benefit from OD interventions and theoretical components which have represented OD's legacy of Group Dynamics. Such teams range from Project and Development to teams of diverse ISD professionals working on the same project. In fact the components below can be applied wherever there are requirements to establish an effective working team.

Relevant Criteria	Component	ISD Application
• Group Effectiveness	• Team Building (Task or Process directed) • Family T-group • Responsibility Charting • Role Analysis Technique • Education & Training • Sociotechnical Systems & Quality of Work Life • Quality Circles • Force Field Analysis • Grid OD phase 2	• IS Development Teams • User Groups • Mixed Development Teams • Project Management Teams • Team of Programmers

- *Intergroup Level*

This level deals with the performance of inter-group relationships. The application to ISD focuses on the relationship between local-organisational groups and external ISD professionals groups. Another area of application is organisational as groups within the client-system may resist IT or there may be conflict between various groups as to the nature and control of information systems. We came across issues in this area in one of our case studies but also when we examined the TAURUS failure. In both instances

different interests represented by different groups pulled the project in different directions.

Relevant Criteria	Component	ISD Application
• Integration, cooperation or conflict among groups	• Intergoup Activities (Task or Process directed) • Organisational mirroring • Third-party peacemaking • Survey Feedback Structural Interventions • Process Consultation • Grid OD phase 3 • Power & Politics • Culture Change	• User-Development Teams • Organisational groups - development groups • Internal-External teams • Business-Support Analysts Teams

- *Total Organisation Level*

This level organizes components that relate with improving the effectiveness and performance of the whole organisation. It is a more strategic level and it involves examination of issues in relation to the emergent properties of the organisation. For ISD the application is to the way organisations approach ISD themselves. One model we have mentioned within the TSD approach is capacity for systems development. This model would be classified in this category as it examines the ability of client-organisations to develop systems of any nature —not just computerized information systems. At this level components can be used to assess the general abilities of the client and assess the potential risks before undertaking an ISD project.

Relevant Criteria	Component	ISD Application
• Total Organisation Effectiveness	• Organisational Theory • Systems Models (Seven 'S', Open Systems) • Metaphors • Organisational Learning Contingency Theory • Physical Settings theory • Likert's System 4 • Grid OD phase 4,5,6	• Other ISs & Systems • ISD Resources • ISD Competence • Project Management Practices • Systems Development Capacity • Involvement • Sponsorship

C. Approach dimension

This dimension organizes components that focus on improving the effectiveness of the change agent approach. To facilitate approach development and improvement the necessary elements that are part of an approach have to be organized together in this section. Apart from these components the research effort has identified, OD components can be also of assistance. Such components like action research, process consultation and action science among others can be used to clarify assumptions about approach and

its effectiveness. This area is of particular interest to change agents who need to be aware of their approach and process in order to conduct themselves appropriately within a problematic situation.

Relevant Criteria	Components	ISD Application
• How to determine an effective and appropriate approach	• Socio-technical Approaches • Action Research Normative Approaches • Process Consultation • Action Science • Gestalt OD • Methodological Support (*) • Process Support (*) • Project Support (*) • Training Support (*) • Value Statements & Code of Ethics • Frameworks & Diagnostic schemes • Classification Schemata (Action-Problem Systems) • Change Models	• Approach Development • Appropriate Choice of ISD components • Effective communication & challenging of values • Appropriate conduct within an organisation • Appropriate handling of Problematic Situations

* *see Table 6.3, pg.219*

D. Problematic Situation dimension

This dimension represents a problem-system oriented classification schema and is further divided into four levels of issues adopted from the TSD framework presented earlier. These levels are: the Strategic level, the Techno-structural level, the Human Processes level and the Human Resources level.

- *Strategic Level*

At the strategic level issues that pertain to the organisation's effectiveness are examined. This level is equivalent to the total-organisation level in the organisation development dimension. The focus is on strategic issues rather than any particular organisational issue. The relationship of the organisation to its environment is thus examined and its effectiveness is considered against other systems. From an ISD point of view these components help examine the strategic nature of IT and ISs within the organisation and their role in ensuring a competitive advantage.

Relevant Criteria	Components	ISD Application
• How to optimize the potential of the organisation in its environment • What values, visions & functions are needed • How to gain competitive advantage	• Open Systems Planning • Transorganisational Development • Culture Change Strategic Change • Self-designing Organisations	• IT Strategy • Vision of IS • How the IS will ensure competitive advantage • How the IS will achieve organisational goals

- *Techno-structural Level*

Information Systems have implications for the nature of work within an organisation. These components adopted from OD examine work related issues such as structure, systems, procedures, job-design and the quality of work life. The application to IS development is direct as ISs and ISD often change the way people work and the way in which processes are organized throughout the organisation. With the advent of Reengineering, Downsizing, Client-Server, & Workflow the impact of IT has been transformational for the work-place, but the new approaches lack the ability to effectively integrate technology with organisational structure.

Relevant Criteria	Components	ISD Application
• How to optimize the potential of technology, structure and systems • How to co-ordinate • How to divide labour • How to design work	• Work Design • Quality of Work Life • Formal, Collateral Structures • Differentiation & Integration	• Integration of IS with other systems • Division of work among development teams • Design of jobs needed by the IS • Improving the effectiveness of BPR, Client-Server, Workflow, Downsizing approaches

- *Human Processes Level*

The human process level represents another area of legacy for OD. This level focuses on improving the effectiveness of processes rather than elements of the situation that represent various tasks. Process is important to any human activity and as such it is important to groups, the organisation, consultants and managers. Within this area issues of communication, problem solving, decision making, leadership and interaction are also relevant. The ISD application is improving the functioning of various group and organisational processes and supporting the consultant's intervention process.

Relevant Criteria	Components	ISD Application
• How to do things right • How to communicate • How to solve problems • How to make decisions • How to lead • How to interact	• Team Building • Process Consultation • Survey Feedback • Intergroup Relations • Third-Party Intervention • T-groups • Confrontation Meeting	• Development Teams processes • User Groups & Involvement processes • Organisational Groups process • Organisational processes • Consultant Intervention

- *Human Resources Management Level*

As human activity systems development requires the recruitment of effective people, these components deal with these issues and can be applied in ISD to maximize the effectiveness of various teams, motivate them and develop their skills.

Relevant Criteria	Components	ISD Application
• How to maximize the potential of people • How to attract competent people • How to set goals and reward people	• Goal Setting • Reward Systems • Career Planning & Development • Stress Management	• Development Teams • User Groups & Involvement • Organisational Groups

Concluding the presentation of the TSD repository it is obvious that a number of dimensions and components overlap, (table 6.4). This is built in the repository as alternative schemata can be employed to provide alternative viewpoints into the same components. It is also a natural consequence of the systemic nature of the repository's dimensions: no dimension operates in isolation as the issues it grapples with are part of a wider more complex problem system. Pluralism in the repository is thus enabled as the requirement is not to select a single component, but many. The overlapping dimensions facilitate this as the most appropriate viewpoint to the components is adopted.

Table 6.4: Shared components between dimensions

Dimension	Levels		I	G	IG	TO	S	TS	HP	HR	CA	AP
Organisation Development	**I**	Individual						■		■	■	■
	G	Group					■	■	■	■		■
	IG	Inter-Group						■	■			■
	TO	Total Organisation					■	■	■			■
Problematic Situation	**S**	Strategy		■		■						
	TS	Techno-Structural	■	■	■	■						
	HP	Human Processes		■	■	■					■	■
	HR	Human Resources	■	■							■	■
Change Agent	**CA**	Change Agent	■						■	■		
Approach	**AP**	Approach	■	■	■	■			■	■		

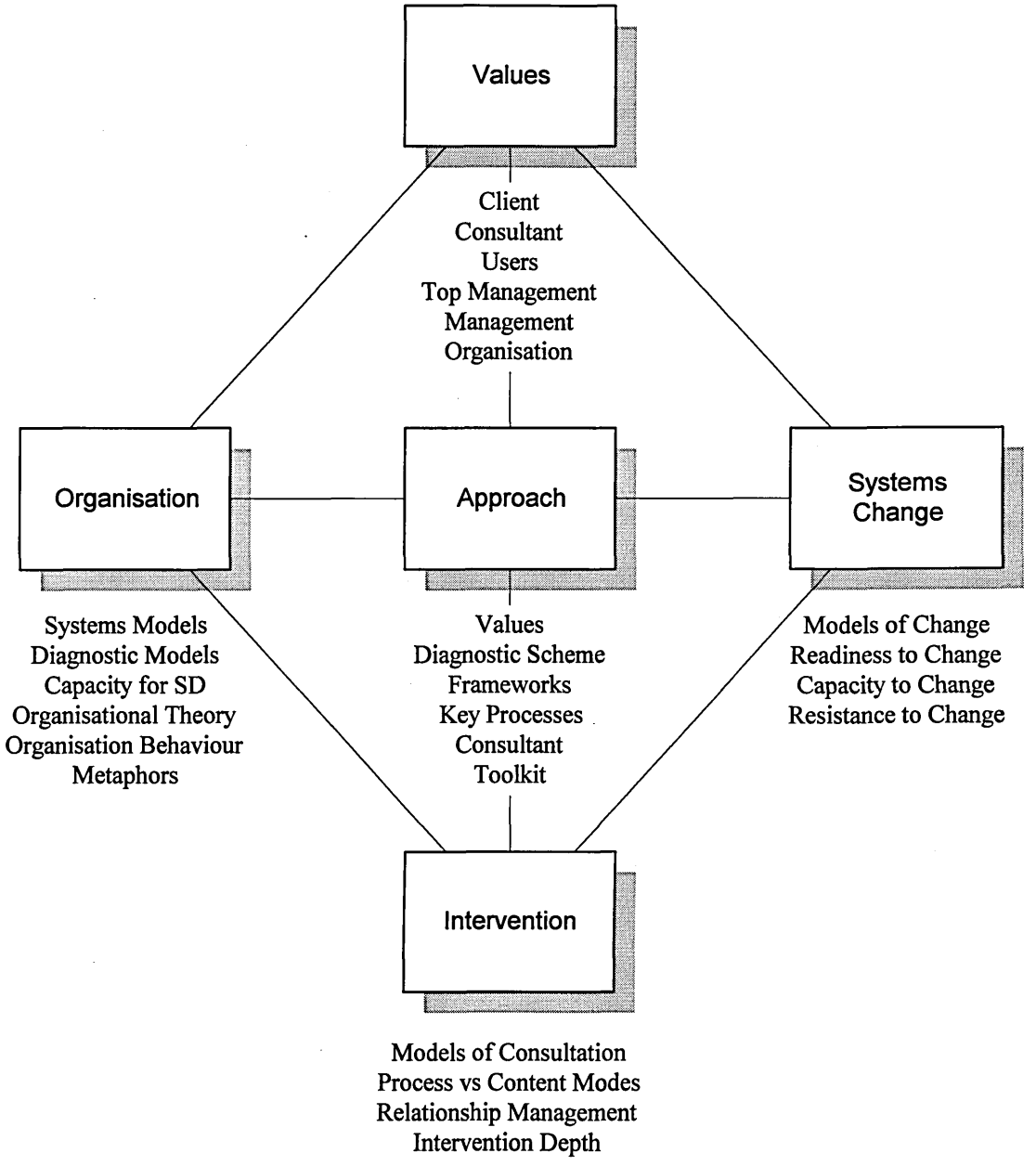
The above table shows where there is a direct link between dimensions in the repository. The ticked dimensions share components between them. For example, process consultation can be selected under a group perspective or under a human processes perspective.

As we have mentioned, the role of the components repository is to support the TSD framework and the process of choice in determining an appropriate process and content of intervention. As choices are made over time the repository grows and is refined through Action Research. Its role is invaluable in capturing knowledge and learning, and making it available to a number of professionals and development situations. Its central character ensures that its various users maintain a consistent approach.

6.4 OD as an ISD diagnostic model

This is another area of OD contribution combined with our research findings. The main elements of OD are part of a model, (Figure 6.9), which can be used as a diagnostic guide for analyzing ISD assumptions and practice —either before, during or after a project. As this model focuses on approach it can be used irrespective of the use of ISD methodologies. The model can also serve as a framework for examining IS failure. This model represents a more static application of OD in ISD. It does not for example guide action or development activities.

Figure 6.9: OD as a Diagnostic Model



The model's elements cover similar issues with the TSD framework elements presented earlier, as both models are OD-informed and based on our data and emerged analysis. The differences here are in the Values and Approach elements. Values cover issues that are concerned with the nature of beliefs and assumptions held by actors within a particular situation and examine how these values influence the ISD process. Approach covers the issue of the overall adopted approach by the change agent and how effective it was in guiding the ISD process. Both the above two elements are necessary to understand an ISD effort and raise diagnostic issues that can be related to particular ISD outcome. The model also provides links to further theoretical models for understanding organisations, how to intervene, and how to manage change. The model is a systems model which means that the relationships between the elements must be also diagnosed. In doing so the model can be used to put together a diagnostic map of an ISD effort over a period of time. The model has two implications for ISD:

- *Approach Development*

Given the emergence of the approach as a more important construction than a methodology, support is needed in ISD for the development of approaches. OD is much more mature in this area. What is required for approach development is sets of values, frameworks and key diagnostic schemes that guide effective intervention into the client-system. Action research as a model based approach can utilize the above model to raise data and issues at the necessary level of depth and level of abstraction that approach development requires.

- *IS Failure*

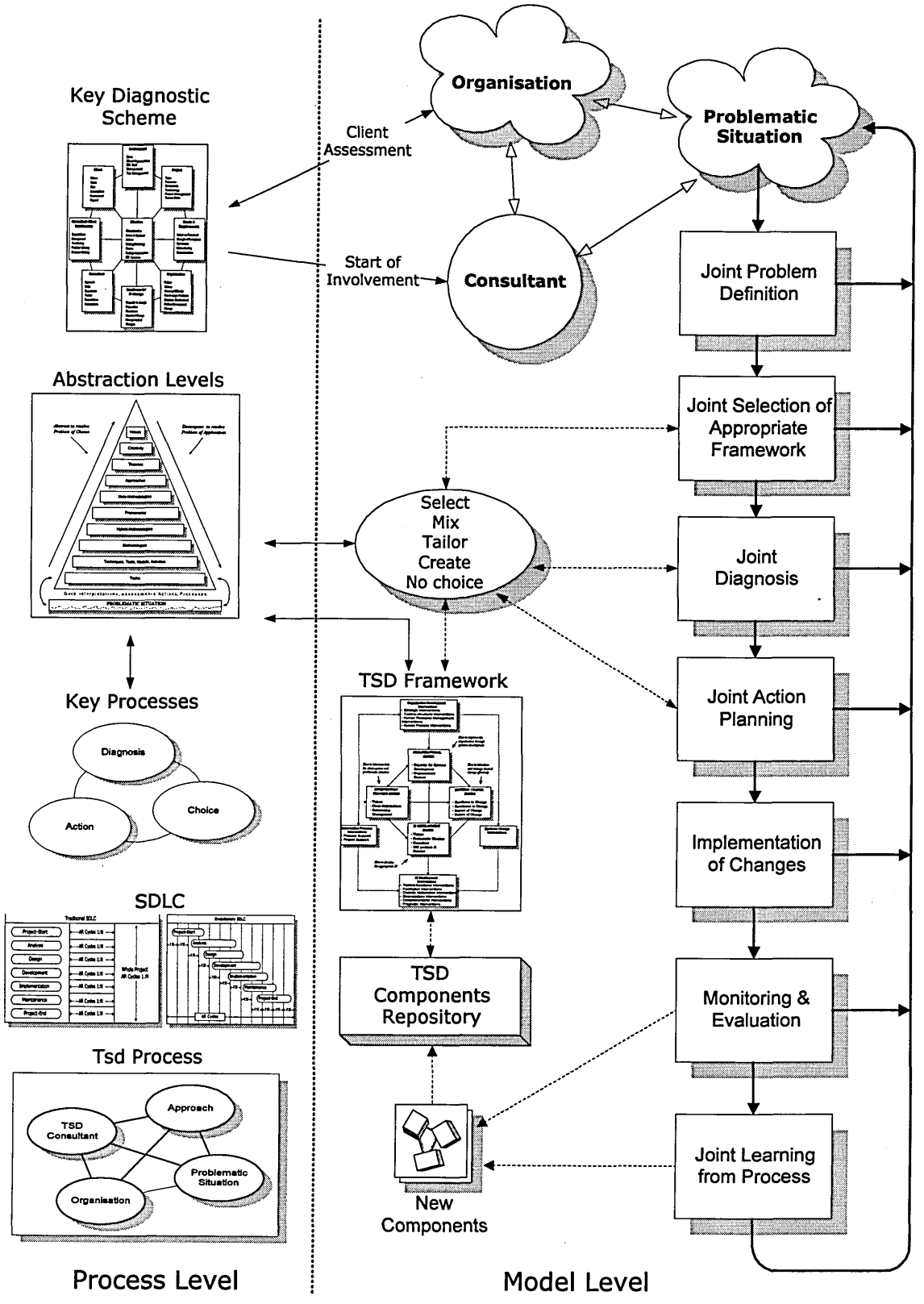
As a framework for examining IS failure, the OD diagnostic model can help understand IS failure that occurs as a result of organisational failure or failure of the ISD process within the organisational context. As our research shows, the client and his effectiveness becomes an important issue for a number of projects. In these cases, the OD diagnostic model can offer access to further diagnostic models and interventions designed to improve organisational effectiveness. The ISD consultant currently takes a reactive stance towards out-of-scope organisational issues, but he could adopt a more proactive approach in order to help the client deal with these issues before the become disruptive and unexpected.

6.5 Discussion

We now examine how benefits can be realized through the adoption of the TSD approach for facilitating a new paradigm of ISD thinking and practice. Figure 6.10 provides an overview of the approach's elements presented above.

The TSD approach meets the requirements for the Total Systems Development process which includes the ISD process, (Figure 6.1). Within this process the TSD approach aims to offer a way of dealing with problematic situations that occur within the organisational context. The first implication for ISD thinking is that ISD's focus is extended from only computerized information systems to systems in general, from an ISD professional to a consultant-change agent, from a narrow ISD problem to a wider Problematic Situation and from using an ISD methodology to using an Approach. This does not mean that every small ISD problem and case is made into a big crisis. What this means is that when issues arise, as they frequently do in IT, that have wider organisational implications the consultant and IS development are in a position to offer effective help. What is thus extended with the TSD approach is the scope of ISD application. Such extension allows ISD efforts to be placed in their appropriate context within a wider organisational effort. Our research shows that IT and ISD are not isolated phenomena, but are often part of a wider situation.

Figure 6.10: Overview of the TSD Approach



As it emerged from our research the consultant's involvement begins with the use of a key diagnostic scheme. This model or framework encapsulates the essence of what is important in every project situation. It is a basic guide for interpreting the key factors that represent indicators of how a project may develop. It helps examine not only the feasibility of a project, but also the capacity of the client-organisation for systems development.

Once the key diagnostic scheme has been used to assess the nature and future of the potential involvement of the consultant and the client, the consultant enters the client-system, (the organisation), and the problematic situation. Within the client-system he is confronted with his client contact, with the wider organisational system with its people, groups, norms, procedures, systems and practices. Within the problematic situation the consultant comes face to face with the areas of concern, the actors and systems within it and experiences the symptoms and expressions of various issues and problems. As the client-system is an on-going working system that does not stop its operation for the purposes of the project, the consultant's presence may have a disrupting effect on it. The consultant manages his intervention in order to minimise disruption and control change that is a natural consequence of systems development. However, to do so the consultant has to find out enough about the concern at hand, the problematic situation and the client-system. To manage this process effectively the consultant utilizes his TSD approach which is based on the Action Research model. This TSD model of involvement allows him to make the client part of the problem solving team while he himself is gradually immersed in the total situation.

The complexity of the situation and his intervention is such that the consultant has to operate on a number of different levels of abstraction and has to switch between carrying out tasks and looking after process. The key processes the consultant adopts to manage multi-level operation are diagnosis, choice and action. These form a cycle that helps explore an issue, determine a suitable option for its resolution and taking action to apply such option to the issue. The nature of issues determines the conceptual level that becomes the focus of this analytico-practical cycle.

Many of these cycles may be carried out during a project. The TSD action research-based model allows for as many cycles as are needed. It too directly involves the process of diagnosis, choice and action, and it complements them with evaluation and learning. The latter processes aim to determine the need for continuing the cycle and for capturing new learning. This means that the more the TSD approach is used the more learning and knowledge emerges out of project experiences. New learning is stored in the components repository which makes it available in subsequent instances.

In support and in relation to these processes the consultant utilizes the TSD framework, or other similar frameworks that provide access to suitable components within the TSD components repository. The framework provides a model for linking action system classification schemata, i.e. organized collections of systems of action for addressing a range of issues, with problem system classification schemata, i.e. organized collections of systems of problems for understanding and representing a range of issues. The term problem system is used to denote that a specific issue/problem exists in relation to other related problems and to relation with its wider problem context. An action system is an organized series of actions designed to deal with problem systems. The action systems also exist in relation to their action system contexts which determines the action system's suitability. For example, a particular programme of action is not applicable in all situations.

Through the process of diagnosis and choice, the framework helps produce certain options. These may be the choice of an appropriate component, the appropriate mixing of various components, the tailoring of a number of components to the requirements of the problem system, or the creation of the required components. It is possible for choice not to produce one of the above outcomes, in which case the consultant initiates change in the situation and client-system in order to learn more about it.

Through action research, the TSD approach provides a model of involvement that has the client working in collaboration with the consultant. As systems change is required by TSD, the meaningful involvement of the client serves the purpose of enabling desired change to take place. A disassociated client is not in a position to enable change,

allowing for resistance to emerge out of ill preparation, ill communication and mistrust of the "external" consultant.

Another implication of action research is the problem/issue-oriented logic it introduces to systems development projects. This logic can transcend phase-oriented logic of the traditional and evolutionary SDLC. This allows for the TSD approach to provide the appropriate context for any component, (e.g. methodology, framework or technique), without changing basic development cycles. As such the TSD approach can be used in both structured and evolutionary project SDLCs although the latter agree more with the approach's iterative action research model.

The proposed TSD approach has been a direct result of the implications our research findings have on ISD. Retracing the implications we identified at the beginning of this chapter, the TSD approach is an expression of the value sets we identified are needed in ISD. While it is not a pragmatic approach it does not add an overhead whenever a more rigorous approach is not desired. Two notions separate the TSD approach from pragmatic development: *Awareness* and *Reflection on Process*. Approach can be as flexible as pragmatic development and as rigorous as structured development. The TSD approach acts on what is appropriate, but in being extremely flexible nothing is lost as learning is elicited from the whole process. Those of us who have participated in pragmatic development become often exhilarated by the speed and flexibility of development but also very frustrated by the repetition of exactly the same errors over and over again in exactly the same situations. My experience has been that people in pragmatic development always forget the encountered crises once they are over. The main goal seems to be resolving the immediate practical concerns rather than improving ISD. With the TSD approach, and via its action research-based model of involvement, improvement of the process becomes an important goal as well.

The approach does not impose the need to follow its "letter" as it expresses what consultants do naturally in a situation. It builds however on that by making the consultant aware of his process, assumptions and effectiveness. The elements presented earlier were not presented in order to offer an elaborate prescription or a methodology replacement. Our effort aims to contribute to the discussion needed in ISD on

approaches, frameworks and total systems development processes. The aim is to present a proposal for a new kind of approach that could stimulate development of similar approaches.

Through the TSD approach a paradigm shift can be facilitated as a complete approach is offered as an alternative option to ISD methodology —without discarding ISD methodology. It also enables the study and development of elements of approach like frameworks, key diagnostic schemes, choice models, and classification schemata. The SDLC and the whole project life cycle can also be reexamined to take into account the full range of activities undertaken by consultants and change agents.

Another important implication of the TSD approach concerns the role of the organisation in ISD. Through TSD, organisational issues are not considered a side-effect of the ISD process, but part of the ISD process. Towards this aim OD has contributed to the approach through its extensive arsenal of OD interventions and components that have a direct, in many cases, application to ISD.

Concerning the implications to consultants and clients, the TSD approach completely redefines the consultant-client relationship. The first issue is the role of the client that changes from being an observer of the development activities to being an active participant in the development process. The consultant also has to develop and refine their skills to drive their intervention deeper into the client system as the TSD approach puts diagnosis, intervention and systems change high on the agenda.

In contrast to alternative ISD approaches TSD also emerges as a more appropriate way forward in the field. However to be fair, most of these approaches are not really "approaches", as we have defined the term in this study. They evolve around methodology and are oriented towards methodology based development. This makes them applicable to about half of all systems development, (Ciborra, 1997; Chatzoglou & Macaulay, 1996). Additionally, such analytical approaches should be 'agnostic' and not limited to a particular situation or types of problems, (Stowell & West, 1994). We believe they remain essential for developing a wider discussion on approaches like TSD, frameworks and paradigms.

Concluding our discussion, OD has helped built on our research findings and put forward a plausible proposal for a new approach. The approach takes advantage of OD's strengths like values, action research, key processes, components and framework dimensions. The OD approach has also influenced various models in the approach by supporting the areas of organisation, intervention and systems change which are also important within OD itself.

The TSD approach, although paradigmatic, does not come to contrast with the way consultants and organisations operate. OD itself is a consultancy field popular to many organisations. The basic action research-based model of the TSD approach is already in use by numerous OD consultants and the flexibility inherent in the approach allows for it to be compatible with a number of situations. Contrasted also to our analysis about alternative approaches in ISD, our proposed TSD approach appropriately addresses the heart of the critique and fundamentally does not exclude other approaches from its frame.

6.6 Suggestions for Further Study

Due to our qualitative framework a number of opportunities emerge for further research. At the centre of our research findings is the notion of Approach. As a next step, it is important to produce field-wide taxonomies of different approaches in the wider IS development field. Our research sample was small and therefore generalization is difficult. Support and confirmation of our findings on a wider scale could be achieved by a quantitative study collecting data about a number of different approaches and correlate them with different company size, domain area and approach effectiveness. Related research should focus on developing frameworks of choice between different classifications of components, and for exploring the extent of tailoring throughout the field. Both of these can be carried out under a quantitative framework.

Another area of further research should deal with exploring how clients relate to different approaches given our observation that clients choose an approach rather than simply IT / ISD expertise or methods, which are readily available. Such a research could

be based on a small number of initial case studies and could be followed by a survey among users of consultancy firms. Related conceptual models can be found in the study of culture and service perception in marketing research. An interesting secondary research path is also to explore to a fuller extent the link between organisational failure and IS failure. Again a case study approach followed by a survey of client-organisations would be an appropriate approach.

Finally, a future study effort should focus on testing in practice the effectiveness of our proposed TSD approach through the use of selected case studies. Similarly, and as part of the approach it would be interesting to test the effectiveness of OD interventions in suitable ISD situations.

6.7 Conclusions

ISD began life as a very technical field. However, as IT improves it becomes closer to business concerns. Like OD, ISD too depends very much on what happens to client-organisations. Nowadays, IT is key for most organisations and ISD has stopped being a technical activity for the experts, as paradoxically the more ISD improves technologically the more it hides its technical complexity from its users. This will render ISD another social-organisational activity —ISD will have dissipated so much into organisations and society in general that we will stop thinking of IS development as a separate technical effort, but as organisation development. This is evident today as advances in IT are transforming organisations and introducing new organisational forms. ISD practice is currently lagging behind the technological advances and ISD's efficacy is continuously challenged by cases of IS failure.

Through the notion of approach and through the proposed total systems development approach we have addressed the need for a paradigm-shift in ISD. OD's contribution has been instrumental in defining the TSD approach which meets requirements for transformation. OD principles, values and approach have provided the missing context for IS development. Combined with our research results, the proposed TSD approach is not replacing or discarding ISD's strengths in terms of methodologies and technological expertise, but maximizes their strengths. Clearly the effort to develop technical and

methodological expertise must continue. However, the understanding must be that it is only one part of the wider picture.

OD has also been very useful and unique in providing a diagnostic model to inform and elicit learning from ISD practice and support approach development. This model can be the basis for diagnosing organisational failure in ISD. Finally, an array of OD models and components have been identified for their direct application to ISD.

We hope this thesis becomes the stepping stone for future work in the area of the IS development process and its complexities, of approach development and of studies arguing for transformation in the field. We feel that, through our work, opportunities arise to explore a number of understudied issues in some detail, such as approaches, tailoring of approaches and methodologies, development of frameworks and component repositories. While this represents exciting possibilities, we feel that challenging ISD values should also be a top priority amongst academics and practitioners. We are satisfied that our thesis has prepared the ground for more detailed investigations and theorizing at a meta level that helps envisage solutions independently of methodologies and IS technology that dominate the field and its discussions.

We believe the thesis makes a number of key contributions to existing ISD knowledge. At one level we believe it contributes in rectifying the lack of research in the area of the "whole process" in IS development. In doing so we feel we have provided a basis for exploring aspects of the ISD process in more detail. The emergent ISD process theory itself confirms arguments that ISD is a complex socio-technical and organisational process. It highlights aspects of development that have been traditionally outside the ISD paradigm. Our process theory helps readdress and challenge a number of elements. The notion of Approach emerges as much more suitable for solving ISD problems than methodology. From our data we have identified the structure, key elements and role of the approach and we have studied its function in IS development. Another key finding focused on the role of the ISD consultant which emerges as requiring a range of appropriate consultation modes to deal with the total intervention complexity. Similarly, our findings show that the role of the client as well is much more involving and demanding than previously assumed.

Another key contribution is the formulation of the TSD approach which places a new focus on the *total system*: the organisation which develops through IS and system development activities. The approach put forward is holistic, iterative, allowing flexible problem-solving, collaboration and focuses on change, intervention and reflection. A number of elements of TSD are important in their own right, such as the capacity for systems development model, the TSD framework and components repository. We believe that such novel formulation of an approach for ISD can be a part of a discussion about the nature of approaches and their importance for IS development as a field.

A final area of contribution is in establishing a link between Organisation Development and IS Development. Apart from the TSD approach which introduces the OD philosophy and process in ISD, we have identified the applicability of OD interventions in ISD situations. Another link between the two fields, supported by our research findings, was the formulation of a diagnostic model for diagnosing ISD practice. Such model is useful for assessing and preventing cases of organisational failure capable of causing IS failure.

Finally, this thesis shows that both Organisation Development and IS Development are comparable activities that can establish stronger links. We hope that our thesis is a first step towards that direction. For ISD, we hope our thesis contributes ultimately in making successful IS development the unquestionable norm.

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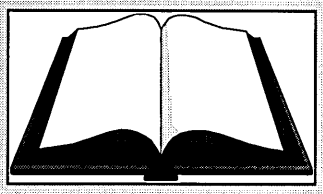

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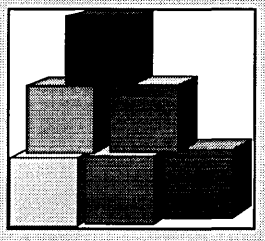
Appendices



APPENDICES

APPENDIX 1 - Research Methodology

Schematic List of the Stages in the Development of Grounded Theory Extracted from Glaser and Strauss (1968) and refined by Turner, (1981).

Stage	Main activity	Comment
1.	*Develop Categories*,	Use the data available to develop labelled categories which fit the data closely.
2.	*Saturate Categories*,	Accumulate examples of a given category until it is clear what future instances would be located in this category.
3.	*Abstract Definitions*,	Abstract a definition of the category by stating in a general form the criteria for putting further instances into this category.
4.	*Use the Definitions*,	Use the definitions as a guide to emerging features of importance in further field-work, and as a stimulus to theoretical reflection
5.	*Exploit Categories Fully*,	Be aware of additional categories suggested by those you base produced, then inverse their opposite, more specific and more general categories.
6.	*Note, Develop and Follow-up Links between Categories*,	Begin to note relationships and develop hypotheses about the links between the categories.
7.	*Consider the Conditions under which the Links Hold*,	Examine any apparent or hypothesized relationships and try to specify the conditions.
8.	*Make Connections, where relevant to Existing Theory*,	Build bridges to existing work at this stage, rather than at the outset of the research.
9.	*Use Extreme Comparisons to the Maximum to Test Emerging Relationships*,	Identify the key variables and dimensions and see whether the relationship holds at the extremes of these variables.

- **Data Management Outline**

1. *Raw Material*: field notes, tapes, site documents.
2. *Partially processed data*: write-ups, transcriptions, (initial, cleaned-up, commented versions, with marginal or reflective remarks).
3. *Coded Data*: write-ups with specific codes attached.
4. *The coding scheme or thesaurus*: with iterations.
5. *Memos or other analytical material*: the researcher's reflections on the conceptual meaning of the data.
6. *Search and Retrieval records*: information showing which coded chunks or data segments the researcher looked for during analysis, and the retrieval material; records of links made among segments.
7. *Data displays*: matrices, diagrams etc. with analytical text.
8. *Analysis Episodes*: documentation of what you did, step by step, to assemble the displays and write the analytic text.
9. *Report text*: successive drafts of what is written on the design, methods, and findings of the study.
10. *General Chronological log* or documentation of data collection and analysis work.
11. *Index* of all the above material.

Source: Miles & Huberman (1994)

APPENDIX 2 - Questionnaire

1. Which of the following best describes your job?

☐ Senior Consultant	☐ Analyst	☐ Analyst-Programmer	☐ Manager
☐ Consultant	☐ Business Analyst	☐ Programmer	☐ Project Manager
☐ Senior Analyst	☐ Technical Analyst	☐ Technical Support	Other :

2. Which of the following do you use when developing information systems (*tick all that apply*)?

Methodologies	*Development Tools*	*Stand alone Techniques*	*Organisational Analysis*
☐ Structured	☐ CASE	☐ Normalisation	☐ Group Sessions
☐ RAD	☐ 4GL	☐ Process Modelling	☐ Team Building
☐ Evolutionary	☐ RDBMS	☐ JAD Workshops	☐ Brainstorming
☐ DSDM	☐ ODBMS	☐ Prototyping	☐ Off-site Workshops
☐ BPR	☐ Knowledge Base	☐ Data Flow Diag.	☐ Diagnosis
☐ Project Mgmt	☐ Visual Tools	☐ Rich Pictures	☐ Surveys
☐ Quality Mgmt	☐ Configuration Mgmt	☐ Walkthroughs	☐ Process Consultation
Other:	Other:	Other:	Other:

3. Rate the following statements according to how closely they express your view of Information Systems Development?

	Strongly Agree		Neither Agree or Disagree		Strongly Disagree
Information Systems support people in their work and should be practical and developed using flexible development tools and techniques.	5	4	3	2	1
Information Systems are complex objects and should be properly structured and well engineered using proven methods and techniques.	5	4	3	2	1
Information Systems are different things to different people. They should be developed incrementaly using facilitation to ensure acceptance and business benefit.	5	4	3	2	1
Information Systems support organisational effectiveness. They should be developed using a collaborative problem solving approach which helps manage change.	5	4	3	2	1

4. What type of projects do you undertake? Distribute 100 points among the following categories:

Doing something specific for the client	
Developing the client's IS development capability	
Improving the client-organisation	
Delivering training to the client	
Helping the client achieve something on their own	
	100

5. Rate the following criteria in terms of their importance in determining your approach in a project:

	Very Important				Not at all Important
What I believe are the best methods or tools	5	4	3	2	1
What the client wants	5	4	3	2	1
What I know works best in practice	5	4	3	2	1
What the client uses already	5	4	3	2	1
What is appropriate for the particular client	5	4	3	2	1
What is used by the consultancy I work	5	4	3	2	1
What is the industry standard	5	4	3	2	1
What is required by the nature of the	5	4	3	2	1
Other	5	4	3	2	1

6. What percentage of the projects you undertake require tailoring of your approach to suit the situation's requirements? _____%

7. If you do find it necessary to tailor your approach which criteria do you use in determining your tailoring decisions?

8. Rate the following statements according to how closely they express your view of the client's role in Information Systems Development:

	Strongly Agree		Neither Agree or Disagree		Strongly Disagree
The client is an expert on his business	5	4	3	2	1
The client is a sponsor of developers	5	4	3	2	1
The client is a sponsor of users	5	4	3	2	1
The client-organisation is developing the	5	4	3	2	1

9. What percentage of projects you undertake is Information Systems Development part of a larger problematic situation? _____ %

10. What kind of problems do you encounter that are not directly part of your job but may influence the outcome of your work?

11. Rate the following sources of problems according to their importance for a successful outcome:

	Very Important				Not at all Important
The organisation	5	4	3	2	1
Management	5	4	3	2	1
Users	5	4	3	2	1
Technology	5	4	3	2	1
Organisational environment	5	4	3	2	1
Development staff	5	4	3	2	1
External to business pressures	5	4	3	2	1

12. How important are the following strategies when dealing with organisational issues and problems that are not directly your responsibility?

	Very Important				Not at all Important
I let the client deal with them	5	4	3	2	1
I provide information to the client	5	4	3	2	1
I try to understand and facilitate a solution	5	4	3	2	1
I work together with the client to resolve them	5	4	3	2	1

13. Why do you think Information Systems Failures occur?

14. What percentage of clients you encounter are ready for IT related change? _____ %

15. Please allocate 100 points to indicate what percentage of the clients you encounter fall in the following categories:

Excellent to work with	
Easy to work with	
Difficult to work with	
Impossible to work with	
Would never work with	
	100%

16. What criteria determine whether you can work with a particular client?

17. What percentage of your clients are repeat business? _____ %

18. What factors ensure repeat business?

19. Please, indicate how frequently you assume each of the following roles in your every day consulting experience:

	Very Frequently				Very Rarely
coach	5	4	3	2	1
catalyst	5	4	3	2	1
doctor	5	4	3	2	1
technical expert	5	4	3	2	1
trainer	5	4	3	2	1
adviser	5	4	3	2	1
facilitator	5	4	3	2	1
problem solver	5	4	3	2	1
organisational expert	5	4	3	2	1
manager	5	4	3	2	1
psychoanalyst	5	4	3	2	1

20. Which are the most important characteristics of a successful consultant?

21. What characteristics should a consultant try to avoid?

22. What percentage of projects you have worked on fall in the following categories?

A total success	
A success with minor problems	
A success with major problems	
Never completed	
A total disaster	
	100%

23. Rate the following in terms of measuring the success or failure of the above projects:

	Very Often				Very Rarely
Success that led to other successful projects	5	4	3	2	1
Success that improved organisational	5	4	3	2	1
Completed successfully but not used	5	4	3	2	1
Completed successfully but not accepted	5	4	3	2	1
Caused problems to other projects	5	4	3	2	1
Caused problems to the organisation	5	4	3	2	1
Canceled half way through	5	4	3	2	1

24. What is needed in your opinion to improve Information Systems Development?

- Cummings & Huse (1989), Classification Schema for OD Interventions

Human Process Issues	**Human Process Interventions**	
Communication, Problem Solving, Decision Making, Interaction, Leadership	T-groups Process Consultation Third-Party Intervention Team Building	Survey Feedback Confrontation Meeting Intergroup Relations Normative Approaches
Technology / Structure Issues	**Techno-structural Interventions**	
Division of Labour, Coordination, Production, Design of Work	Differentiation & Integration Formal Structures	Collateral Structures Quality of Work Life Work Design
Human Resource Issues	**Human Resource Interventions**	
Recruitment, Goals, Rewards, Careers	Goal Setting Reward Systems Stress Management	Career Planning & Development
Strategic Issues	**Strategic Interventions**	
Competitive Advantage, Functions, Products, Services, Markets, Relation to Environment, Values	Open-Systems Planning Transorganisational- Development Culture Change	Strategic Change Self-designing Organisations

- French & Bell (1990), Typology of OD Interventions

Target Group	*Types of Interventions*	
Individuals	Life & Career Planning Role Analysis Technique Coaching & Counseling T-group (sensitivity training) Education & Training Grid OD phase 1	Some forms of Job Enrichment Gestalt OD Transactional Analysis Behaviour Modeling
Dyads / Tryads	Process Consultation Third-party Peacemaking Role Negotiation Technique	Gestalt OD Transactional Analysis
Teams & Groups	Team Building - Task or Process Oriented Grid OD phase 2 Family T-group Responsibility Charting Process Consultation Role Analysis Technique "Start-up" Team-Building	Education & Training Some forms of Job Enrichment and MBO Sociotechnical Systems Quality of Work Life Quality Circles Force Field Analysis
Intergroup Relations	Intergroup Activities-Task or Process Oriented Organisational Mirroring Structural Interventions Process Consultation	Third-Party Peacemaking Grid-OD phase 3 Survey Feedback
Total Organisation	Collateral Organisations Sociotechnical Systems Organisational Restructuring Confrontation Meetings Strategic Planning / Management	Grid-OD phases 4, 5 ,6 Survey Feedback Contingency Theory Interventions Likert System 1-4 Physical Settings

- Choice Criteria for OD Interventions

Intervention	*Client System*	*Analyst*
Characteristics	Readiness	Experience
Conditions	Change Levers	Preferences
Compatibility	Culture	Knowledge
Strengths & Limitations	Situational Characteristics	Skills

- Beer's, (1980), Customization criteria for OD interventions

1. Maximize diagnostic data to facilitate subsequent interventions choice,
2. Maximize the effectiveness of the interventions,
3. Maximize efficiency in the use of organisational resources,
4. Maximize the speed of bringing about organisational improvements,
5. Maximize relevance to immediate issues, and
6. Minimise psychological and organisational strain.

APPENDIX 4 - OD Consultant Skills

1. *Intrapersonal skills*, are esoteric abilities and competencies that the practitioner utilizes in order to deal with the complexities of effecting change. Skills include: conceptual & analytical ability, active learning skills, personal centering (staying in touch with ones own purpose and values), a rational-emotive balance, and personal stress-management skills (maintaining one's own health and security).

2. *Interpersonal skills*, for creating effective helping relationships in the client-system requires interpersonal skills like: establishing trust & rapport, listening to people, giving & receiving feedback, ability to speak the client's language, ability to model credible behaviours & roles, counseling & coaching skills, ability to negotiate roles and manage expectations.

3. *General Consultation skills*, practitioners must be able to carry out an organisational diagnosis, design and execute an intervention.

4. *Organisation Development theory*, practitioners should have a general knowledge of the OD Approach, OD Theory, Change & Action Research models, and be familiar with the range of available OD interventions.

(*Compiled from: Cummings & Huse, 1989; Shepard & Raia, 1981; Eubanks et al, 1990*).

APPENDIX 5 - Case Studies - Consultancy Sample

The 6 Consultancies

Before we explore the ISD process as it emerges from the experiences of six leading consultancies we are going to examine how each consultancy addresses IS development. This discussion will provide the context for understanding how and which ISD process unfolds from the consultant's point of view. Each case is structured along key categories grounded in the data.

1. HORWOOD INTERNATIONAL (HI)

HI primarily helps clients to achieve quality using the generic and all encompassing holistic models of the various quality standards. These holistic models define sets of ideal goals, characteristics, and benchmarks for organisations without imposing any specific way of achieving them. The models are flexible enough to be split into various self contained components. HI uses combination of these components to form the most suited approach for addressing clients requirements. Even though these models provide the opportunity to be very prescriptive -like ISO9000- HI adheres to an in-house "holistic" approach, which is a synthesis of best practice rather than a documented-structured method. HI's approach is to decide which would be the most appropriate methodology or tool for a particular project and organisation. HI's approach is also used in technical IS development.

- *Diagnosis*

HI's approach starts with diagnosis where consultants look for diagnostic issues while not limiting themselves to any prescribed or expressed ones. Their aim is to produce a list of diagnostic issues that require attention, decide which parts of the holistic model to be followed and examine various cost implications. Diagnosis is considered by HI as "a totally creative step which relies completely on the skills of the consultant". HI believes there is no prescription or method that consultants could use to perform effective diagnosis. Due to HI's holistic approach diagnosis is carried out even when fairly prescriptive quality models are used.

- *Project-Start*

Once a list of diagnostic issues is produced it is the client's responsibility to prioritize them and decide which to pursue. For HI, the client has to recognize the need to address these issues, whether he can afford the project and whether there is willingness to do something about the raised issues. Several iterations between diagnosis and feedback to the client may take place before a decision is made, by the client, to commit to a project.

Before the project actually starts, the client considers who is going to carry out the project. The client may decide to handle the project either internally without consultants, externally by another consultancy, or by extending HI's involvement. In HI's experience the latter is the norm, as a "personal chemistry has developed between the client and the consultant up to that point".

- *Facilitation*

Throughout their involvement with their clients HI adopt a facilitative role. One of the modes of consultancy styles for supporting this role is Process Consultation:

> "The consultant in this process and facilitation role, takes a step back from the expressed problem to discover the causes of certain problems and not the other way around, for example answers in search of solution. Throughout the project technical expertise is brought in on a need-to-basis."

HI believe that a successful approach is one where facilitation is used to bring technical expertise on a need-to-basis to a project. HI see an overtly technical approach at the heart of many problems in projects, but recognize its strength due to:

> "a big pool of narrow minded consultants who have spent time and effort in increasing the depths of their specialisations."

- *Incrementalism*

HI's approach very often develops incrementally, not only at the beginning of a project, but throughout the project:

> "A client, up to now, came to the consultancy looking for help in achieving or implementing a recognised national or international quality standard. This request would be of a quite narrow subject. The consultants then would, through their diagnosis, come up with the ideal solution for that organisation. Such a

> solution is most times unattainable for a number of reasons: cost, lack of resources, fear of change. Therefore the alternative is to follow an incremental model of small changes and improvements that overcome resistance and fear of change, yet are in the direction of the ideal - unattainable solution. It is also important to do that in such a way as to make these small incremental deliveries self-funding. i.e. one improvement pays for the next. It is sufficient for the organisation to be seen to be on the road towards ISO9000 for it to gain new orders."

The pragmatic-business pressures that organisations face means that many times the solutions that are or suitable for them are simply not attainable. Apart from high costs and resources scarcity due to production pressures, a solution may require extensive change and transformation. Incremental changes pay for the next set of changes have the benefit of working at the problem while slowly overcoming resistance in "boiling the frog" fashion. For HI an evolutionary model is more economical and can support change management as long as the final goal is kept in sight.

2. WS ATKINS MANAGEMENT CONSULTANTS (WS)

WS's approach IS development along the levels of project management, and of ISD methodology. For WS, project management plays a very central role in ensuring the success of the project. ISD methods are not seen to cause project failure, but cannot also ensure success. WS favour the use of PRINCE for project management and of SSADM. For certain types of projects other methods like DSDM, package selection models, cash-flow analysis are also used.

- *Values*

Values are seen as important by WS primarily because of the belief that: "clients ultimately purchase a set of values". WS consultants communicate their values to their clients and make sure they are clarified at the beginning of a project. WS emphasize to clients their engineering background, their technological basis and their particular preferences "in doing things". This enables clients to understand who WS are and how to relate to them.

Values are also communicated and shared between consultants within WS. New consultants join the company only if they can be compatible with WS's values and existing culture which is carefully protected against "contamination" from foreign cultures:

> "Even in takeovers of IT departments from different consultancies there is attention to values, culture compatibility and potential for mutual adjustment."

This ensures that WS's values and culture is preserved despite the large size of the company and the large number of specialisations.

- *Project Management*

Through project management WS is able to:

- manage client expectations,
- determine involvement of resources,
- consider change issues,
- assess the impact of change,
- understand the affected parties, and
- help balance changes introduced by IS Development.

WS's viewpoint towards project management is very much oriented towards the management and impact of ISD related change:

> "every computer system development effort requires change and management of change is very important."

Clients may not realize this and for WS it is important to look at the way the organisation approaches project management in IT and in general. One example of ineffective client behaviour is to appoint a new project manager solely for the duration of the project and expect timely completion and no budget overruns. In WS's experience effective project management requires project managers to be familiar with the organisation and its culture long before the project starts.

Indicative of the importance of project management for WS is the development of the PRINCESS 2 software application which is a "product based approach to planning" a project and has been developed using WS's past experience and "track record in project management".

- *Use of ISD Methods*

While SSADM is not mandatory any longer for central government projects it remains, with PRINCE, WS's favourite method. WS has strong links with the development of both SSADM and PRINCE through discussion groups, and has particularly participated in the development of PRINCE. Both methods are also well known to WS's customers. WS realize that SSADM is not applicable to all projects. WS would never use SSADM for Spreadsheet Development, Executive Information Systems (EIS), and very small systems or clients. In such cases use of DSDM is preferred.

Certain types of projects, like package selection, require a collection of procedures, weighted evaluation models and cash-flow analysis, instead of an ISD methodology. The ultimate check however, of any instrument, is the consultant's expectations. These types of projects vary considerably in complexity and may range from examining a great number of options which have limited impact, to examining a few options of significant implications.

However, even in SSADM projects WS recognizes that every new system the organisation wishes to develop is functionally new. This means that method customization may be required on a need-to-basis. The increasing need for this is reflected in changes made to the latest version of SSADM (4.2) which is designed to be a tailorable methodology. Tailoring decisions are made usually according to the following criteria:

- what is considered to be best practice,
- what is used already,
- what is appropriate to the client,
- what is WS's standard,
- what is the industry's standard, and
- what is the type of project (i.e. procurement or IS development)

WS would consider the possibility of developing a completely new method if it was seen as necessary, but so far it has not been the case. In one case, however, the Business Management Unit reviewed all BPR methods and produced a hybrid, but again did not develop one from scratch.

3. ERNST & YOUNG (E&Y)

E&Y's approach is based on an: "integrated, multidiscipline service philosophy and 'best team' approach". Consultants from various disciplines are pulled together to work on a particular project. They are supported in their work by comprehensive automated methodologies that capture knowledge gained from best practice. E&Y's aim is to be in a position to offer value to clients. For this reason methodologies are extensive and systematically constructed. Various frameworks and criteria guide selection, modification and application of methodological components to match a specific situation.

- *Methodology*

For E&Y a methodology is considered a "Risk Strategy Management Framework" and as such is communicated to clients. A methodology is seen to provide an "audit trail" leading back to the framework. It is also considered a "process template which facilitates risk management thinking" by helping consider all the "might dos against the will dos." A methodology is preferable instead of a "no-recipe" approach for ensuring consistency of approach and communication.

The need for consistency of approach and communication arose in E&Y out of very pragmatic reasons. In the past, every E&Y discipline had its own methodology and techniques, both across different divisions and internationally. Even between similar divisions there were differences in the use of tools and techniques. For example, there was a Process Innovation method, the IS Navigator method, the BU effectiveness method, and a Change Management method. All used different constructs and terminology, even for identical things:

> "This created problems for diverse and multinational projects where every consultant brought together a different methodology to the same project."

The decision was taken to create a common integrative framework in the form of the FUSION methodology. FUSION addresses the issues of consistency of approach and communication both across different disciplines and different countries.

- *Performance Support*

An important theme behind E&Y's methodological approach is Performance Support. This is the provision of a complete description of all the steps needed to complete a task or to achieve an outcome. Performance Support has its origins in production and it is designed to achieve consistency of approach and delivery. This allows less experienced consultants or clients to carry out the right sequences for complet-

ing the necessary tasks. However, even in the case of Performance Support a fundamental understanding and knowledge of IS development is necessary in "...the same way a cook that knows how to cook follows a recipe."

- *Methodology Tailoring*

As a framework the methodology allows for tailoring. For example, if a process requires a certain deliverable to be produced before moving to the next process, the consultant might move to the next process if he sees no need to capture that particular information, that information may be easily available. The consultant would perform a risk analysis to determine whether to capture such information or not. When tailoring the methodology the consultant takes into account:

- the skills of the people involved (client's staff - E&Y's staff),
- the client's context,
- the level of experience,
- the risks associated,
- where the emphasis is on the system and project, and
- the content of information.

E&Y's methodologies have an in-built form for guiding tailoring. E&Y views every situation encountered as unique:

> "... provide creative and innovative solutions which not only meet the immediate needs but also enhance the client's ability to manage future change and growth. Such solutions are always individual, based on a particular situation and a specific response..."

However, this form of tailoring, called "Project Support" is the default operation of the methodology. Methodology tailoring described above involves by-passing or modifying Project Support steps. For this type of tailoring the consultant relies on his skills and his assessment of situation and context.

- *Methodology Development*

Comments and information from projects are fed back to the methods development team who are responsible for capturing knowledge and value. E&Y's method also develops in response to a market opportunity. A recent example has been the development of a Reengineering method. Another source for methodological development is large projects. In such cases method development consultants are directly involved, through engagement teams, in high visibility projects gathering experiences and knowledge that develop or extend the method.

- *Knowledge Base*

Methodology use is supported by the Automated Methods Environment (AME), which is a knowledge based system and:

> "covers the full range of activities your project teams might perform on a wide variety of projects. This knowledge base contains proven techniques used by our practitioners, successful practices drawn from across industries, and pragmatic "tips" that help you avoid potential pitfalls. We call this knowledge Process Support."

The consultant is supported by AME in everything from establishing the requirements of the project, estimating risks, through managing changes, to the automated production of project charters and plans. All the deliverables generated are based on the knowledge base and the electronic capturing of elements and rules. The knowledge base contains an extensive range of methodological components and allows appropriate choice, because:

> "...all of this knowledge isn't needed on every project.
>
> Therefore, the Automated Methods Environment guides the project manager through a process that filters out inappropriate components while focusing on the specific needs of a project. We call the result Project Support—knowledge that provides context-sensitive guidance throughout the project."

It is recognised that no methodology can cover everything, therefore it is seen as important to get feedback from consultants on methodology use. This way new knowledge can be continuously captured and reflected in subsequent methodology versions.

- *NAVIGATOR Systems Series*

Navigator is an information engineering-based approach to software development that includes a project

and quality management overlay and several computer-aided software engineering (CASE) tools.

> "Navigator Systems Series provides the user with a comprehensive methods knowledge base. This repository integrates the "what to do" during a project life cycle with the "how to do it" —techniques and tools guidance. The repository also contains requirements for effective project and program management. By integrating all of this information into one methods knowledge base, Navigator Systems Series provides a single project planning and management process for the rapid and effective development of business solutions."

The series consists of a methodology and a training program. Users can license the entire series or purchase certain services. Navigator has been described as "a step-by-step guide for building a system based on a model of a user's business enterprise". As such, it is aimed at the entire life cycle, including both front-end analysis and design as well as back-end generation, implementation, and maintenance of code. The role of quality management offers a standard approach to building information systems and implementing software packages, as well as managing these efforts effectively.

The methodology is organized around the following logical paths called Route Maps:

1. Accelerated System Development,
2. Business Process Reengineering,
3. Client/Server Development,
4. Package Selection,
5. Application Improvement, and
6. Custom-Bespoke Development.

The international team that developed Navigator involved more than 100 professionals along with input from clients throughout the world. The methodology, in non-automated form, takes up no less than 97 A4 size volumes.

A typical use of the method would involve the consultant entering the organisation in order to collaborate with the client to produce "value propositions concerning the systems needed". During this period the client infrastructure is examined by the consultant in order to identify actual needs and resources. At this phase, the consultant presents his approach. The client may decide to be trained on the methodology and to become part of the system developing team. In some cases the client may wish to build the system himself under the guidance and help of the consultant. During the initial identification of value propositions the consultant uses AME's expert system interface. The interface contains selection lists from various alternative options and techniques stored in the knowledge base. The interface changes according to the requirements:

> "For example, when estimating organisational changes a special questionnaire comes up. The consultant then has to answer as many questions as possible. Also a number of tips and on-line help are available for reference. From the selection of options and answers supplied, the system generates a project charter, which is a kind of contract for communicating expected responsibilities, changes to scope of the project, and expectations. However, this is not a legal contract. According to the estimations carried out, this charter contains sections identified various levels of expected risk. This is done to communicate to the client the various risks involved and their implications for the project. This process is iterative and the charter may be generated many times until both client, (project sponsor), and consultant are satisfied. Also, additional charters are produced as the level of engagement increases. Finally, the project plan is generated and if agreed the parties commit themselves fully to the project effort."

AME supports the consultant and speeds up tasks such as the drafting up documents. Although the methodology seems very prescriptive, the initial collaboration between consultant and client is an iterative and creative process. The project will not start until the client agrees to the project plan produced. Navigator is a focal point of the consultant's engagement and the consultant may do very little without the methodology as various instruments determine what the next steps would be. E&Y argue, however, that there is a room for the consultant's to use his cognitive processes. For example, the consultant is required to assess the quality of the development staff and input his assessment into AME which estimates how long the project would take given the particular assessment. Overall, Navigator seems to make the consultant's job much easier and straight forward.

Navigator has a strong Project Management dimension with a well defined and supported role for the Project Manager. Integrated in the methodology is a project management approach: the Objectives-

Deliverables-Workplans (ODW) model:

> "It starts with examining WHY (the business Objectives), then WHAT (necessary Deliverables), before moving on to HOW (Work plans and tools)."

This model reveals some flexibility in the methodology and the potential for creative application of skills. However, it too can be used as a procedure for deriving at work plans based on what has to be produced..

4. OLIVETTI SOLUTIONS (OLSY)

A firm advocate of evolutionary development methods, Olsy recognizes the importance of user involvement and the necessity for management to have a business overview of the ISD process. Structured methods are still considered relevant for certain types of projects and clients, but even in those projects evolutionary principles are pursued. Evolutionary methods are seen as a modern approach which does not jeopardize project or quality management, while allowing a number of independent techniques to be used.

Evolutionary Development (ED)

Evolutionary Development is seen by Olsy as "the right way to develop systems". Due to this belief, Olsy has helped develop SystemsCRAFT method and is also a founding member of the DSDM consortium. ED is seen to have several implications for ISD:

- ED views IS development not as a sequential process but as a cyclical process where various steps may overlap.

- ED changes the roles and the relationship between consultants and users placing greater importance in the participation of users:

  > "Underlying evolutionary development is the principle that users are developing the system while the consultants are enablers. Consultants are needed to facilitate teamwork and exchange of ideas"

  The traditional role of the users is to provide some initial information to analysts and then use the system once it was installed. In ED users are part of development not as information providers but as developers. Consultants are primarily facilitators and catalysts enabling teamwork and communication between users and technical specialists. Towards that purpose in ED methods the consultant runs various workshops (JAD, walkthroughs).

- For ED to work user involvement is not only necessary but an imperative:

  > "user involvement is far more critical with this approach than a traditional approach"

  However, if there is inadequate user involvement in a project any approach followed will be problematic because:

  > "Drawing users in the development process is a critical success factor"

In some cases clients revert to a more structured approach due to lack of user involvement. This shows that structured approaches help avoid the question of involvement and can produce deliverables without it. It also shows that management prefer to get on with the project rather than explore the reasons behind low user involvement.

- Waterfall approaches have been very well established to the extent that new approaches, like Object Orientation, adopt a waterfall-like structure. Olsy regards this as "old fashioned practices for a state of the art approach". The strength of waterfall is also evident in the reluctance of managers to adopt ED approaches:

  > "There is however a small amount of challenging existing practices and traditional structured ways of working. This can make people resistant in adopting such approaches. For example, the fact that a program spec is no longer needed makes managers feel slightly uncomfortable."

Managers seem to prefer structured approaches in general and have a tendency to avoid change and situations where they give up control of the project, (e.g. program spec). This is further complicated by the fact managers are not as involved in development as users or development staff are. Managers also tend to have little technical competence. This situation may have led to a view that in ED projects management practices suffer. Olsy realizes that "project managers may feel frightened by evolutionary development", but argue that ED approaches "are professional methods of working" which do not jeopardize

project management.

- ED reduces delivery time-scales and costs associated with development making it possible for organisations to undertake more projects than before:

> "Adoption of evolutionary approaches in customer organisations has been enabling them to carry out projects that would otherwise be low in the priority list or would be too time consuming and expensive to do"

- *DSDM*

DSDM is a non-prescriptive framework containing sections on techniques consultants can use according to the needs of a project:

> "DSDM is purposely set at a high level, leaving developers with the freedom to select and use their preferred development practices"

The whole framework is covered in just one manual in contrast to voluminous structured methods.

- *SystemsCRAFT*

SystemsCRAFT is a "fourth generation method" for ED that has been designed to take advantage of modern development tools like 4th generation languages and CASE. Proven structured analysis techniques are used in the method but in a simplified business oriented manner. The method can be customized to suit various projects involving small system requirements, GUI systems, work group computing, object orientation, package evaluation and corporate-wide development. SystemsCRAFT also ensures compliance with DSDM principles and is a method that can be applied under the DSDM framework. The method distinguishes between the *Base Method* and the *Additional Toolbox Techniques* which ensure the method can provide support for unique characteristics in each development project.

- *Method Selection*

While the systems division in Olsy undertakes half a dozen large projects a year where more traditional approaches are still used, there is an effort to introduce DSDM in all future projects. This however, will not eliminate completely the use of waterfall:

> "Of course evolutionary methods, like DSDM, are not a panacea. DSDM for example, is a framework which means the consultant has to use his own skills and cognitive processes to make choices and decisions. This might even mean that he can decide on using a more structured methodology or technique in a project, without being restricted by DSDM."

Indeed Olsy argue for the appropriate selection of a method for a project:

> "a substantial number of ASIS Division's staff are professional project managers. Considerable experience has been gained on different types of project over the years. The optimum approach and appropriate techniques are determined in relation to the nature of the project and the culture of the customer organisation. The traditional life-cycle, while still relevant for some projects, is giving way to an evolutionary approach with innovative workshop techniques."

The selection of methods is determined by the experience of the consultants, the nature of the project and the culture of the client-organisation. An effort is made to select the optimum approach and the appropriate techniques. An expression of values is revealed in the last sentence where it is obvious that evolutionary development is seen as modern and innovative.

5. LINK ASSOCIATES (LINK)

Although Link have developed their own method, the company uses a variety of structured methodologies and RAD. The in-house methodology is not prescriptive and allows the use of industry standard techniques. Link compliments the use of methods with a central library which organizes learning and experience gained from projects in the form of templates.

Methodological Choice

When choosing a methodology Link examines the stage of the project, whether considerable investment has been made already using a specific approach, and the company's relationship with the client. For example:

> "in a previous project the customer had already spent a big deal of money and effort in producing a functional specification using Method I before inviting

companies to bid for the completion of the project. In that case Method I was chosen for completing the project"

When Link has the freedom of choice they use their own methodology, except for RAD projects where DSDM is used. Link are also a member of the DSDM consortium. Structured methods are seen more appropriate for certain types of projects, like safety critical systems, where RAD can not provide the rigour needed. However, irrespective of the methods used Link value user involvement because:

> "without adequate user involvement the suitability of any methodology is questionable. Even in structured methods, users have to be involved at regular instances"

Templates Library
Link maintain a "library of templates" which offers support to projects and consultants. In the library expertise is recorded and various components are made available to consultants. The library includes:

- expertise
- skeleton code
- quality guidelines
- plans
- documentation
- pilot system guidelines
- method support

Templates on methods focus not so much on the use of a particular proprietary methodology, but on the context of the methodology i.e. how and when to use the methodology. The library is seen to pave the way towards Object Oriented Analysis methods, allowing the re-usability of various components across projects. The library is updated through customers and consultant feedback. The Customer Development Services division is responsible for updating the library.

6. ADMIRAL COMPUTING LIMITED (ACL)
ACL admit following an approach towards ISD that is more than an IS Development methodology. "The approach allows the project to map onto the organisation and take into account the customer needs". ACL's describe their approach as "structured and disciplined, fit for purpose and aims at delivering simple and reliable systems". Essential components of ACL's approach are an overall framework, a methodological components library and support for consultant problem solving. The framework is not made up by particular methodologies and there is no preferred in-house or other proprietary method as part of the approach. The approach is flexible and applies to a wide variety of projects and organisations.

Skills exist and are developed in a wide variety of methodologies, which cover both Structured and RAD. Using the framework, the library and by assessing the situation a value-adding method is formulated to guide development. Assessment of the client, the project and the method already used helps optimize the particular method to fit the situation's requirements. ACL aims at achieving a fit between their own expectations, the customer's expectations and expectations arising from the project. Towards that end clarifying expectations and achieving the right kind of communication are seen as important values. If such expectations cannot be met there is no development.

ACL encourages mixed project and development teams, and actively aims at adding value to customers. Every project experience is used to elicit learning and evaluations of project experiences are recorded in the library. There is company wide support for consultants in what they do even when problems are encountered.

- *Framework*

ACL's framework is fairly unique in allowing the project plan to map onto the organisation and take into account the customer's needs, without being based on any methodology:

> "Methodologies do not make ACL's framework. The framework expresses a continuous process improvement cycle. Every project must have:
> a Formal Start-Up,
> a Review, and
> a Close-Down phase."

The overall framework, (others also exist in the library), expresses best practice guidelines, rather than detailed prescriptive phases, that every project must follow. These guidelines place emphasis on ensuring a substantial start to a project, a continuous reviewing process and a withdrawal phase where the client is gradually left to cope on his own. This cycle may be also supported by automated tool-sets (e.g. automated testing). The framework's focus is on ensuring successful Project management and not by using

particular methodologies. Project management is seen a "key discipline", i.e. another key value that is respected by the framework and throughout ACL.

The framework is a key expression of ACL's overall approach. ACL utilizes a number of methodologies which are considered more or less tools employed in development. The continuous improvement cycle is followed in every project —structured or otherwise. In practice methodologies are, in ACL terms, "streamlined", i.e. optimized for best performance.

- *Components Library*

Supporting ACL's framework which allows choices, the components library reflects best practice and provides a repository of methodological components for supporting the consultants work. The components library covers the whole SDLC and includes everything that might be needed in a project:

- information and experiences on method use
- references of consultants for contacting purposes
- information on: techniques, prototyping, case tools, and methodology support tools
- tips & hints, lessons learned
- how to do: analysis, design, testing, measurement, and documentation
- sets of guidelines and frameworks
- information on deliverables
- pieces of code

The library facilitates organisational learning that allows ACL to improve its expertise and abilities. The information is collected by the support-technology group which captures the metrics from the projects and records observations made of good practices. Projects and project management guidelines are also reviewed regularly especially when projects reach critical paths.

APPENDIX 6 - Case Studies - Organisational Sample

1. LARGE INSURANCE COMPANY (IC)

IC is a leading insurance company and provides a comprehensive service for all forms of general insurance and life assurance business. In the UK it employs nearly 10,000 people servicing about 4.5 million customers ranging from individuals to large multi-national companies. The system developed is a workflow system that deals with image and mail handling. It enables the electronic capture of mail, routes the work around the administrative office and provides management information. The system links to the company's legacy systems which run on Unix. The motivation for the project came in response to the increased competitiveness of the business environment. The overall budget for the project is 15 million pounds. Phase 1 cost around 4 million.

DSDM was seen suitable because of the collocation of users and IT staff, and because it fitted well with the overall BPR methodology. Prior to the project starting some pre-work was done to identify all the necessary stakeholders such as the key users and directors. The project then started with a four day kick-off meeting which looked at BPR principles, RAD principles, the DSDM approach and JAD workshops. A core set of full time users were taken out of production. Occasionally other users were invited to participate and update the core users with what was happening in the business.

Initially the plan was based on three week iterations. During these the main methodological vehicles was the BPR methodology and the JAD workshop, which was used a lot. While that was suitable in the beginning, the project reverted to a waterfall type approach during the build of the system. This was primarily due to technical complexities and the lack of a suitable middleware solution in place. Despite the more traditional approach, DSDM principles were maintained. Every time the project reached at a natural end part of the build process users would validate and assess the fitness for purpose achieved so far. Key directors were also involved up front and during validation sessions. The project is now in phase 2 which involves continuing the reengineering of internal processes. Lasting lessons identified from the whole project have been organised into different groupings and a list of actions has been produced to feed into phase 2. So far the project has implemented more and delivered cost and time savings compared loosely with a similar effort done in the insurance side which implemented and Echo type system. It took them 4 years while it took 7 months for the administration side. The comparison may not be exactly accurate as their system was more complex and the administration project used a lot of the insurance side's buildings blocks. The project has achieved increased user acceptance and improved organisational effectiveness by achieving fitness for purpose.

- *DSDM Principles*

IC emphasize that development teams must be empowered. However, in some occasions decisions were taken from the teams as the project director had different ideas on certain issues. It was proven, however, that on all decisions the teams have to be empowered and not just those that the project director may see as suitable to be empowered. The teams on the project were empowered significantly, but for more critical issues there was pressure for doing something "quick and dirty" than a proper IT solution.

Frequent delivery of products this was also not achieved due to the technological complexities of the project that forced falling back on a more traditional approach. DSDM principles however, provided the context in which waterfall was used. Iterations also did not go as planned because business people leading the project lacked an appreciation of the detail they had to get to, the project stayed at a high level for far too long. Once this was realized they did get down to the necessary detail. Then the project stayed too long in the detail, which shows that it was a case of finding the right medium up-front for driving the project down into the detail needed.

While the reversibility of all changes was a principle adopted in practice nothing had to be discarded. Fitness for purpose was ensured through inviting users and directors to validate results when the project reached certain stages. While the aim was on achieving the 80/20 solution this was not successfully achieved. The business manager was instrumental in drawing attention to the fact that the project can not and should not cater for absolutely everything.
The high level baseline of requirements was managed in relation to time constraints. While the project was largely autonomous, there were internal pressures from within the team to meet deadlines. The problems encounter with technology and unfamiliarity with the new approach pushed deadlines back.

- *The two "Camps"*

When the project started business people and IT people represented two very different camps. Never before had these two camps collaborated on an IT project. Business people lacked an understanding of what IS development involves and what problems should be addressed. On the other hand, IT people lacked an understanding of the business and were reluctant to use their interpersonal skills. IT people overall were also technically oriented, very into their "relational" speech, wanted all the requirements up-front and were concerned about documentation.

- *Need for a Facilitator*

Due to the existence of two different sets of people, who had never worked together before, and because of the completely new method, there were some initial problems with the collaboration. JAD workshops suffered from lack of clarity in for the roles business and IT people should assume. Business people lacked an understanding of ISD which caused them to stay too long at a very high level while expecting IT people to "drive them down" to a more detailed level. This did not happen immediately because IT people in return expected business people to lead the project. This was perceived by business people as a reluctance of IT people to participate and created some confusion as to what the IT people were up to. This was not helped by inexperience in doing JAD workshops. People from both sides were on one hand trying to understand Joint Application Development and on the other clarify whose role is what, what expertise and skills are needed, whose providing support and what should everybody's contribution be.

Another complication was that the teams has no dedicated expert facilitation as the focal point for resolving these issues. The team members facilitated amongst themselves, which meant that eventually people with the appropriate skills emerged to take on that role. Due to these problems an external facilitator from DSDM was consulted and some issues were clarified. Once these initial issues were addressed and once the teams progressed to the point were facilitation from within emerged, the project moved forward. This allowed IT people to help business people get into more detail as to what is exactly required. Reaching that level caused respect between the two camps to develop. In a way a new shared language was established through common understanding. A few IT people that could "speak English" to users emerged as well and helped drive the project forward. While they would probably say they did not understand the business their communication skills helped put things into the right context for business people.

The need for a facilitator or a consultant on facilitation, (process consultation), is something that has been seen as important. According to the business manager leading the project, just talking to occasionally was not sufficient. It was expressed that someone, perhaps from DSDM, needs to come in and challenge people, audit what is happening and make sure things are done properly, either on a full time or occasional basis.

- *Achieving the 100% Solution*

One of the issues that created some diversity during the project was achieving fitness for purpose. Business people were used to well planned projects that covered all aspects. Additionally IT people have always gone for technical excellence and achieving the 100% solution to problems. In contrast, the business manager driving the project was sensitive in focusing on what can achieve fitness for purpose. The difference between the two orientations needs to be clarified in an DSDM project. DSDM requires to focus on the 80/20 solution. This sits more comfortably perhaps with business people as long as what is delivered matches what is needed. It is more of a challenge to IT people's beliefs. The 80/20 solution means that the system is not going to be technically excellent and the high quality system IT people want to provide. However, pursuing the 100% solution is problematic itself. Experience in IC has shown that systems developed with that approach in mind end up not suiting everybody in the end and require huge amounts of money to add the final "bells and whistles". DSDM suits everybody because everybody is part of the development process. Although not all users are directly involved the core group of users become the link with the wider user community and represent their concerns.

Moving away from the 100% focus requires challenging cultural norms at different levels. On one level IT and business people have to learn to focus on milestones and be sensitive on what is or is not delivering business benefit. At an organisational level there is a need to change the way commitment is escalated down a particular path of development. In IC there is still some reluctance to realize that if a particular path followed is not working there is a need to start again on a different direction. Once a path has been selected people are naturally inclined to make it work.

2. VEHICLE MANAGEMENT COMPANY (VM)

VM provides vehicle management services and has an established network of vehicle suppliers. The new MF system automates links between VM, insurers and repairers. The goals of the MF project was to replace the old tactical platform developed in Access with a strategic platform that would scale up to handle larger volumes of incidents (10,000/week). The strategic platform was developed on Sybase and was written in Powerbuilder v4. The project budget was around £250,000 for just pure man-power costs and in terms of equipment the costs came to half a million pounds. The project was deployed in a 6-months time frame and was under budget. The project also delivered the system on the week it was planned to do so and met exactly fully user-expectations.

- *Breaking the barriers*

When the development manager took over his position 18 months ago he felt there was a good opportunity to bring about changes to address difficulties with delivering projects. While projects were completed successfully there did not achieve their maximum potential, while there were also a couple of failed projects. The difficulties experienced were due to political issues. Politics meant that wrong people were assigned on projects or people (both IT and business) were motivated in the wrong way. The development manager decided to deal with politics by removing the traditional barriers between IT and business people. This was achieved by doing two things:

The first thing was to introduce DSDM, more as an approach that helps develop systems in a less adversarial way rather than a rapid development method. With the use of DSDM, the development manager saw the opportunity to move away from hand-offs and the need for having an interface between systems development and users. IT people and users could now develop the systems needed together.

The second thing done was the introduction of internal account management. Each senior project manager and business analyst now faces off a key line manager from the business. In contrast, the traditional approach was to "throw" together a project team which included users and expect the two to gel in order to produce requirements within a two month time frame. This approach however rarely worked because analysts lack an understanding of the business, its direction and the day to day issues. It was also difficult for them to gain a deeper understanding because the had no kind of a relationship with the business before a project came along. Within the two months time frame it was further difficult to force the relationship that was needed. With account management that relationship is already in place and it is maintained for a long period of time without the need of a project. It is established whilst there is no pressure for developing a system and that makes this relationship genuine and effective in maintaining trust between the business people and IT people. When a system does need to be developed there are already two key players behind the project with the understanding that is needed of the business issues. This provides a sound foundation from which to start any project.

- *The traditional approach*

While structured projects in VM delivered eventually, they ignored the amount of business change that occurred during the long duration of development. This created a "nightmare" situation because there was a lot of change coming into projects. This created an adversarial relationship between users and IT staff and resulted in lowering the motivation and commitment behind projects.

- *Getting the Right People and Team*

As MF was a trial case the manager wanted to make sure that the project would start with the best conditions possible. One of the most critical issues was choosing the ambassador user. The project manager new exactly who that should be, however the project sponsor would not like to release him because he was too important for the effective running of the business. Effective political conduct however, in this case won the participation of a key individual who knew both the insurance partners very well and the operational area. The team also included two of the best developers, an experienced project manager, two advisor users that were chosen by the ambassador user and carefully selected external contractors.

The project sponsor, visionary and development manager formed the project board which dealt with high level issues that the project manager could not resolve. As it turned out the Project Board's role was quite effective in letting the project team to get no with their work, rather than being involved in detail. This enabled the development team to be truly empowered to make decisions and solve problems.
Once the individuals were carefully chosen they had to become an effective team. To enable this the team was collocated in a room close to the operational area —instead of the development area. Initially however, the team did not "gel" together very well. This was partly due to the learning curve concerning the

toolset used and the new approach. Once the new toolset was understood and people settled into the new arrangements, the team formed into a coherent entity driving development forward at a phenomenal speed.

- *Empowerement*

Empowerement led to the personal development of people —both developers and business people. This was reflected in the increased commitment to the project by the team's members. Whilst traditionally people involved in projects left 5 o'clock sharp, MF's people felt happy to carry on until late.

- *Culture Change*

DSDM introduced cultural change at many levels. While IT professionals were skeptical of the new way of developing projects, they were also unwilling to leave their familiar offices to move to the "unfamiliar location" of the users. However, the satisfaction they experienced from working closely with the users and delivering business benefit overrode, in the end, every other consideration. For the business people DSDM redefined their relationship with systems development staff who now shared their concerns. DSDM was instrumental in braking the barriers between IT and the business.
While in VM not all projects are suitable for DSDM, such as too technical-back office type systems, the principles and learning from DSDM can be still applied in other areas. DSDM has helped change attitudes towards information systems development itself.

- *Implementation*

While the development iterations of the project went perfectly well, when it came to managing implementation DSDM was not as effective as expected. It did not seem to manage effectively the issues of transition, moving data across, getting support documentation in place —areas where a traditional method is suitable.
Additionally, once the DSDM project is over and the system is operational, development staff move to other projects and support people take over the maintenance of the new system. The support staff, however, are not involved with the users to the extent that the development staff are. Business people found it difficult to relate to the new set of IT professionals. In a way the traditional lack of relationship and barrier becomes again an issue.

- *Dissolving the Team*

Related with culture change is the realization that once the project is over the team that was so carefully put together must be suddenly dismantled for people to return to their normal duties. This closing down period is not explicitly addressed in DSDM and is something that is expected to be an issue when the overall project reaches its final stages. The disengagement of people from the project is an important phase that has to do with managing change and maintaining the quality relationship between development and business. One of the problems is that people from both sides will not be willing to give up the relationship they have established and let go of the team they were part of. Already following completion of stage 1, users call upon development staff for maintenance issues and not support staff, and development staff have expressed their dissatisfaction with non-DSDM projects. These are early indications that the decoupling of the people that participate in a DSDM project needs to be managed as effectively as development itself.

- *Comments about DSDM*

One of the strengths of DSDM is that it is a framework. and not a prescriptive methodology. Loosing that framework character would have implications for its effectiveness. As a framework it allows principles and key processes to be appropriately applied even to non-DSDM projects.

DSDM created a lot of satisfaction because it enabled the creation and development of an effective team. The team's effectiveness was partly due to having the right kind of people and partly because the team was properly empowered. People draw meaning and fulfillment by being members of an empowered team. Being part of an empowered team serves psychological purposes as well as practical —for example the elimination of paper as a means of communication. In MF, business users and IT people enjoyed being part of the team and draw satisfaction from it when they realized the benefit their work generated. This could only be possible with an approach like DSDM which values collaboration, empowerement and facilitation.

- *Delivering the Business Benefit*

One of the key drivers of the project and of the Business Systems group is the delivery of benefit. VM has an internal system for measuring projects along the dimensions of timeliness, quality, involvement opportunity and benefit delivery. Using DSDM allowed MF to score high on involvement opportunity, as users where involved directly, and on benefit delivery (85%-90%), as assessed by the customers themselves.

Nothing delivered in the system was considered as redundant and every piece of functionality is fit for purpose. MF met exactly what the business users wanted.

3. LARGE AIRLINE (LA)

The motivation for considering RAD in LA came due to the time certain projects took to complete and the fact that projects that were delivered in time and within budget did not fit business requirements. RAD has managed to improve development times, reduction in budget and achieve systems that serve the business needs. Figures for such improvements are available through the Delivery Improvement Programme (DIP). LA has undertaken 12 small RAD projects that have all been successful as shown in the Post Implementation Reviews (PIR). RAD requires change in thought patterns, collaboration, and high customer involvement. Customers in LA are other departments and units from LA requesting information systems development or improvements.

RAD-DSDM has been used along with the in-house waterfall approach to perform exploration of issues, feasibility studies or to carry out smaller parts of an overall waterfall project. LA recognizes the need for both waterfall and RAD. The main reason is the cultural predisposition of managers driving information systems development. There are managers that have a soft spot for waterfall methods and the outcomes these methods provide. In one project the method of development changed during a project from RAD-evolutionary to Waterfall, when a new manager took over the project. LA makes sure to select methods that are culturally in-tune with the management context.

In all cases where RAD-DSDM was used it has achieved high user enjoyment, high customer satisfaction and has reduced development times and costs. It has help deal with all the weaknesses of waterfall methods such as lack of user ownership, low user input in the development process, and lack of clarity. The analysts now have to be more visible to the customers, in contrast to waterfall where there is always the danger of the analyst hiding behind the methodology tasks and outcomes. Indeed it is possible for the analyst to go away and develop the system and never talk to a user after some initial collaboration. The delivery of certain standard outcomes ensures the analyst is seen as fulfilling his obligations. However, it was argued that good analysts would make sure they secured a satisfactory level of user involvement in any case.

Waterfall methods have further problems since the business legitimately changes during ISD and ISs developed in long sequences end up misaligned with the emergent business requirements. To cater for this problem waterfall development aims at specifying more than what may be needed in order to be prepared for any contingencies. In practice the RAD approach is better in dealing with contingencies since the aim is not to achieve the 80/20 situation, but deliver essential functionality of what is needed when is needed. This allows for development to start from fresh if business requirements suddenly change drastically.

RAD is expected to generate more work for the analysts as customers realize ISs previously impossible to develop are now feasible. This suggests a bottom-up approach that is already evident in some cases where staff themselves have put pressure on their manager for a RAD project.

RAD-DSDM adoption in LA is currently at an early stage. The majority of customers ignore the benefits of this new way of development. It is expected it will take at least a couple of years of project experience before introducing RAD-DSDM to the rest of the organisation. Currently the Corporate Information Management unit is supporting early adopters —managers that are sympathetic to RAD and to new ideas. However, most managers are risk averse and 'latest fashion' victims which means they prefer waiting for others to try it first.

Since in LA there is culture of pressure to deliver results there is a question whether staff would be willing to give up their time to be involved in development of the ISs they need. This is important because user involvement is a risk factor. LA's experience has shown that even 1/2 a day a week of undisturbed attention by the users can be sufficient. Additionally, once customers are involved in development they like it, own the system and participate more willingly.

Currently systems developed using RAD are developed collaboratively, but the analyst operates remotely. Eventually, the aim is for total development to take place at the customer's location. Implementation is also better facilitated with RAD than waterfall. In the latter, due to the lack of user ownership, systems implemented that require changes in working practices are not supported by users. In contrast, even if a RAD project requires changes to the working practices users find it easier to accept these changes. RAD's flexibility means that if development gets it wrong the system can be changed or even scrapped and redeveloped from scratch. This provides an emotional factor for staff as undesirable changes can be always reversed.

DSDM has been a success in LA as all of the expected benefits of evolutionary development have been realized. However, we need to bare in mind the small size of projects and the fact that only early-adopters have been involved in them. For LA, persuading their (internal) customers to adopt DSDM is the main obstacle in fully realizing the method's potential.

4. AMERICAN CORPORATION (AC)

AC is a large organisation which sells computers. The requirement for developing the CV system was part of a project aiming to improve service to customers. CV allows easy access to data held in organisational divisions by providing a single interface. CV did not replace existing systems, but provided another layer of collecting and presenting information to customers.

The CV project had an intense project history. A first area of contention was introduced as divisional managers felt threatened by the quest of data and feared for loss of jobs and status. This meant that "back door" data collection methods had to be employed instead. These involved hacking, networking, and collecting small amounts of data from a variety of covert sources. Despite data collection problems development was rapid and the development team was able to start demonstrating the system very early on. While the system was not perfect, it did encompass significant functionality that showed it was on the right track. The main principles that made this possible were identified as:

- "Follow 80/20 rules; put effort where greatest return can be found,"
- "Early success,"
- "Continuous improvement,"
- "Participation / distributed ownership,"
- "Senior management support from across all functions,"
- "Unbelievable optimism,"
- "Set expectations."

The new way of developing information systems, based on these principles, created a second area of contention, with the MIS organisation. The project presented a serious challenge to their traditional structured way.

The system reached its introduction stage in just three months. Customers of the system and other organisational members could now install the internet browser and gain access to CVIS. This created a third area of contention. The divisional data that made it to the CVIS data warehouse enabled field users to root requests for more information and assistance back to the divisions. The divisions saw a de facto expansion of their user base and were overwhelmed by requests for more information. As the program manager put it "users where braking the walls". As CV is expected to move in the Internet site it is expected that external customers will brake the walls surrounding divisional information and systems as well.

- *Diagnosis of Needs - Formal Organisational Rationality*

The initial identification of the problem was consistent with the senior management's role of identifying strategic directions and systems. The initial problem statement was communicated to other senior management who helped develop the initial vision by identifying the three areas of attention. This initial vision made its way down to the rest of the organisation. The divisional layer were involved in further clarification and development of the vision. At this point it was made clear that the People issues would involve workshop style group interventions, Information issues would be addressed with the development of the CV information system and that Communication issues would be examined at a comprehensive manner. However, the dissemination of the vision started braking up when it was time to consider the Field layer, representing the strong sales organisation. The field was neither informed properly nor made part of the visioning process before actions were decided. The vision, although still vague, was more or less predetermined.

This lack of involvement of the field may be explained in terms of a gap between the top and the bottom of the organisation. As the program manager noted, top management perceive their role as determining strategic directions and systems requirements while expecting the rest of the organisation to "do as they say". On the other hand, the field, being closer to the customer knows what is required by the organisation. This may be in contrast with what top management identify as needed and this creates the potential for conflict. The middle divisional layer quite often intervenes between the two to keep the right balance. Formal organisational rationality expects ideas and visions to flow from the top downwards, although it may be also effective to let them rise from the operational layer. As ideas and visions flow down they become less and less susceptible to influence and reshaping until they take the form of prescriptions.

- *Project Start - Creation of Space*

While the organisation created and communicated visions, no project was properly put together. Divisional management were confused and there was no clarity concerning their role towards the effort. The project was born when the appropriate set of activities took place in order to create the space for the project. These activities involved: clarification of management and ownership of the project, full time allocation of resources, and securing of minimum political support. Clarification of management meant the assignment of the program manager. The space created initially was fundamental in allowing the project a chance to succeed. The creation of space also involved a number of tolerances. One was allowing experimentation. For example, there was no pressure to adopt the MIS approach or develop the system via them. There was also no pressure to produce excessive plans despite the fact this was the norm for every project undertaken previously. The utilization of resources was again completely entrusted with the program manager. Finally, people were allowed to innovate and try out new things without fear of punishment for their mistakes.

- *Managerial Rationality*

The managerial rationality exhibited by the senior management and the program manager highlights a number of attributes:

Concern for Results

There was clear commitment for success and producing results. This led to the adoption of the 80/20 rule which meant that effort was put where the greatest return could be found. The focus was also on early success. Waiting for a system to be developed completely was unacceptable and could not provide any indication of its success until it was implemented. The intensity of this concern was apparent in the program manager's decision to arrange for a first demonstration before development even started:

> "Almost immediately, before starting to develop the system, I pushed to set a date to demonstrate this to a senior VP (number 2 at the company at that time)."

The focus on early success in practice resulted in keeping momentum in the development team and ensuring the needed level of senior management support. Early successes removed also the opposition of affected parties like the MIS and divisional managers.

Concern for Cost

The program manager was convinced that CV could be developed inexpensively despite technical expertise indicating otherwise. The drive to reduce costs enabled the team to search for cheaper alternatives and find ways around problems.

Controlling the Situation

The continuous improvement cycle adopted allowed anxiety to be managed because the project could quickly recover from any problems encountered. It allowed the manager to keep control of the project situation as development delivered manageable chunks of functionality. He also made himself part of the development team by understanding database tools and the technology.

Understanding of Power and Politics

The program manager had an appreciation for the internal political arena: the main players, the cultural norms, and understood well the sources of power. This allowed him to manage the complexity of the political situation and carry out a successful intervention. From the beginning he focused on the protection of the project's space. Situated at the divisional layer himself, knew very well he had to raise support for the project both vertically and horizontally across all functions. The process of communicating the vision and the focus on speedy early results were employed as strategies to achieve this. Both were successful. In fact the effectiveness of the systems demonstrations were such that there was a danger of resentment from senior managers who may sometimes suffer from a "not invented here syndrome".

Successful political management was required to work around the resistance put up by divisional management who did not allow access to their data. Here significant backstage activity was employed. In every case the anonymity of people who helped was preserved and they were requested to supply only small amounts of data to avoid raising suspicion.

- *ISD Rationality*

Both the MIS organisation and the technical specialists brought in, exhibited what we can term ISD rationality which is characterized mainly by Technocratic Utopianism: a belief that technology only can be used to provide solutions to problems. The main concern is how to get the most out of the technology. ISD

rationality is also characterized by Functionalist values through the adoption of structured, well planned, long term and comprehensive development sequences. The existence of this rationality within AC is consistent with the cultural norms relating to projects in general. The leader-founder of the company was responsible for introducing the "the program of the year" legacy. This was a scheme for selecting best project ideas for implementation. In order to allow evaluation, projects had to be well structured and planned.

- *Mismatch of Managerial and MIS Rationality*

During the project managerial and ISD rationality completely clashed. In the case of the MIS organisation, the program manager from the outset felt he could not use them at all. External technical and data specialists also completely missed managerial concerns and focused only on the technological requirements. Having a soft spot for a technologically excellent solution meant that these possibilities were not examined. Managerial rationality placed importance on organisational effectiveness criteria and on a process that could support problem solving. ISD rationality placed importance on the feasibility and optimization of the technological solution. The difference between the two rationalities was such that the gap could not be bridged. As mentioned earlier the program manager set a demonstration date for the system before it was even developed. This is something unimaginable for those exhibiting ISD rationality.

- *Radical Improvement Approach*

A particular methodological approach was not adopted, but a number of RAD-like principles guided development.

Continuous Improvement

Radical improvement required an evolutionary cycle of development to facilitate problem solving in the organisational situation. As the program manager put it: "Every activity was a battle to complete" requiring "continuously chipping away at the problems". In CV's case development started with a vague vision which was continuously refined:

> "We have always planned to make the results of the program available on a continual drip-feed basis. For two reasons: first the development proceeds in that manner. Second, it keeps the project in the public eye for longer and maintains interest."

The second reason was due to the fact CV aimed to deliver radical improvements. To do so it had to challenge traditional processes of developing systems, assumptions about the location of data, and assumptions about sharing and accessing the data. CV was a cross functional system affecting all the divisions and impacting field staff. It was a unique project never before attempted in this fashion. The continuous improvement cycle matched the problem solving complexity of the situation. The development team had to deal with a number of unexpected problems. For example, resistance surfaced when the attempt was made to get the data.

Frequent Delivery of Major Functionality

From an approach point of view this requires a change of focus from achieving the perfect solution (which is unattainable in many cases) to focusing on what can be pragmatically achieved. This focus commits resources to areas which can deliver gains even if the immediate result is not perfect. It is easier to refine and perfect the right solution.

Management of Expectations

Success depended on the goals set and the results promised. The program manager from the beginning let everyone know that CV was a long term (5 years) project. When the project started producing results within a few months everyone was pleasantly surprised. Focusing on the 80/20 solution the development team never promised something they could not achieve. Management of expectation is also needed within the development team itself as the phenomenal success of the project placed the team and the project on "an explosive peak". The lesson was to down-play the peak in order to minimise the effect of coming down to earth among the team members.

Diagnosis and Management of the Political Situation

Because of the radical nature of the CV project a diagnosis of the political context proved to be essential. Without a thorough understanding of the internal power structure the project manager would not have been able to manage his political intervention which run almost parallel to development. In CV's case IS development could not be separated from the political context. IS development activities had a clear political colouring and created contentions in many areas. CV disrupted the political scene and it did that with phenomenal speed and conviction. Without the significant political management CV could easily have lost its space and support joining the list of projects not executed.

The program manager has a background of training in organisational change management. It was his sensitivity to change issues that enabled him to diagnose the situation and identify change levers. He admits that while he did not consciously utilised his theoretical understanding, on reflection his training did play an important role in reading and managing the situation. Understanding change also helped him to extract learning out of the project experience.

Focus on Organisational Effectiveness

CV aimed at delivering great benefit to the organisation at the lowest possible cost. There was also an interest to minimise the technological impact. For example, the choice of client-server implementation demanded significant reconfiguration of existing systems and required specialist installation at the users PCs. The Intranet installation was straightforward and its hyper-text metaphor was very easy to understand. This minimized the length of training sessions significantly.

"Problems can be solved"

One theme that was evident was the belief that problems can be solved. This attitude allowed the challenging of existing norms (e.g. MIS rationality). This willingness to overcome problems and find innovative solutions separated CV from other automation projects. This attitude was expressed as:

> "Unbelievable optimism. To have passion, confidence, attitude. Walk the talk, can-do stuff. This in many ways requires that we are honest and open, have contingency plans and understand the requirements of our customer (the organisation)."

Management of Vision

In order to maintain high levels of support, the program manager made sure the CV vision was communicated to appropriate key people. This process took the form of using appropriate language, "planting seeds" and revisiting them to see how they develop, clearly articulating and labeling concepts relating to the system, and supplying the vision to others that could themselves become owners of it.

Appropriate Involvement

The project underwent an opening-up phase, where there was wide participation in order to identify the business need, followed by a closing-down phase during which the CV team withdrew to proceed with the development, which was further followed by another opening-up phase to allow users to comment on the system and feedback their comments. The project proceeded through these revolutions of opening up to allow participation and closing-down to allow development. This implies that involvement had an associated cost in terms of delaying development activities.

Problems with Approach

While this has been a successful project there is no indication this style of working will be adopted in other projects in the company. This style of development is upsetting, creates multi-level contention and is largely out of formal control. It has also the potential for people's personal agendas to crop up and pull parts of the organisation in a separate direction.

- *Nature of Organisational Situation*

The development of CV showed that a radical effort is embedded in wider organisational concerns. CV was part of a larger effort that would introduce people and communication change. It was not an isolated automation effort. It did not automate existing processes within well defined boundaries. Although simple in principle it affected the whole of the organisation showing the organisation's systemic nature. CV's development team was also confronted with a problematic situation and not a single IT problem. This situation included a variety of affected parties some of which engaged in resistance and conflict. A variety of problems had to be solved: a political problem, an informational problem, a technological problem, and a development problem. Another characteristic of the situation was its unpredictability. The remaining two streams of the overall project, (people and communication issues), did not make it as planed and are currently suspended. This shows the value of short evolutionary development cycles —whether IT or otherwise. Despite its success there are no plans to extend this way of developing systems to other projects.

5. LUBRIZOL (LB)

Lubrizol is an advanced chemicals company producing additives for fuels and lubricants. For many years it enjoyed a steady growth and a niche market. This has changed in the 1980's with the entry of new competitors and with the imposition of independent standards that must be now met. The new CEO appointed from within the company noted the need for change and the improvement of effectiveness.

The Electronic Document Management System (EDMS) project has been active for 3 years but is currently on hold as company wide change is taking place. Its focus is on providing electronic document search and retrieval and workflow. The intended overall process of implementation covers the following areas:

1. Propose Product Standard,
2. Define and scope pilot work, the pilot would test performance, capability and process in order to confirm the company wide standard. The emphasis in on early success criteria:

   > "What constitutes a successful pilot will be established prior to setting up the pilot, i.e. the success criteria by which it will be evaluated. Success is not return on investment, it is not about productivity gains as the time-scale is too short, it is about information capture, storage, retrieval and sharing, and about building a process that may be used for creating information management systems that will ensure a consistent approach organisation wide. This latter point is an essential requisite for establishing a quality system."

3. Agree process methodology
4. Establish implementation process
5. Define vendor relationship
6. Establish user-community ownership
7. Study human factors of implementation, this was seen as important as:

   > "I have a view that so little attention has been paid to this area which in part explains why IT has consistently under-delivered over the last twenty or more years. Hence my earlier point about these projects being user-led."

8. Assumptions, behind identifying the above areas were characteristically clarified as follows:

   > "I am assuming here that the only system anybody wants installing is one that works every time and gains a reputation for reliability.
   >
   > The task will be incremental and will take a considerable amount of dedicated effort by means of teams over several years; from that point on it will need to be adapted to user demands.
   >
   > Ownership of the project must be by the user community within the organisation.
   >
   > Provision, installation and maintenance will remain the responsibility of MIS.
   >
   > That there are project management systems in place to ensure such an initiative is managed.
   >
   > It is the management and migration of information that is key, not the hardware or software in and upon which it resides.
   >
   > The EDMS vendor should support the company's requirement to evolve a system in such a way that the system grows in capability and coherence so that it may eventually offer the organisation a company-wide solution.

Traditionally systems are developed in LB in response to the identification of a need from management or company segments. The IT/MIS department fulfills these requests. In many past cases, there has been an felt inability from the side of management to adequately express exactly what it is they want. The IT dept. dealt with this by developing systems regardless and by delivering them irrespective of whether they were what the customer actually needed. IT will always fulfill any requests. Their focus is mostly mechanistic and technical, but it is up to the managers to determine what they need. In the past some managers have revealed a poor understanding of what technology can do demanding some times unfeasible or impractical systems.

Concerning EDMS, while a long time has been devoted to examining the suitability of technology, there was an appreciation of the importance of human factors. Significant effort has been put in involving other managers and preparing the organisation for change. Management are seen to have a clear focus on the management of change and understanding of culture. In pursuing the new vision IT people and management will be working together. The new IT head is also keen in providing a service organisation to internal customers and is keen on change and people issues.

Concerning the selection of a vendor, LB criteria included, apart from product specifications, a cultural dimension. The two short-listed firms are seen to "have cultures with which Lubrizol has considerable empathy." The rejected supplier had instead the "culture of a 'big' company."

LB sees EDMS as an opportunity to pursue its visions and objectives to remain a market leader in an increasingly competitive business environment. When the EDMS project gets its final go-ahead it is expected to introduce a "significant impact to many areas in the organisation", both in terms of organisational and cultural change. By the manager pushing for its implementation EDMS is seen as an opportunity for "organisational learning and strategic capability building."