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Defining discourses:
discourse and the organisational adaptation of information systems

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ABSTRACT

The focus of this thesis is on the constitutive role of discourse in the organisational adaptation of information systems, an important aspect, although not often explored and relatively neglected in the literature, of the information systems development process and, beyond that, of the role of information systems in organisations within a constructivist and dialogical perspective.

The thesis explores the dual aspect of how, on one hand, professional discourses define 'worldviews' over information systems and their organisational adaptation and, on the other hand, the premises around which these discourses are constructed and deployed, both in the literature and through an inductive and qualitative case study, based upon Grounded Theory principles.

It analyses how different professional discourses explored tensions in the management of the information environment articulated around three major categories of issues, which acted as interpretative repertoires and discursive resources:

i)   representations of the information environment, expressed through the tension between information centripetalism and information centrifugalism;

ii)   models of information management approaches, expressed through the tension between a focus on process and a focus on meanings;

iii)   and, underlying the previous elements, assumptions about the nature and complexity of the environment, strategies for dealing with uncertainty and correlated models of learning and sense-making.

These different categories of issues embody different tensions between forces that, it is argued, shaped the particular context of the University environment. In negotiated interaction contexts, different actors made claims to power by exploring different discursive practices leading to the organisational adaptation of information systems. But, while making use of these discursive resources, different actors also established contacts between forces and, agentically shaped different realities, forming new organisational identities and, in doing so, acted as a vehicle for the social re-shaping and adaptation of the organisational role of information systems.

Table of contents

iii

List of Figures

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Foreword: Background to the research – timelines and time frames

This study was developed in part-time mode, throughout a series of phases marked by several interruptions of differing durations. The understanding of the situation under study and the focus of the research have evolved significantly over these years, since its original inception. This Foreword aims to explain the timeline and time frames at work in this thesis and, through this, the rationale for its focus and a preview and explanation of the content of the thesis.

This research was to a large extent prompted by a previous study (Vasconcelos, 1992, 1994), where, in the context of the planning of an integrated library information system for INETI (the National Institute for Industrial Technology and Engineering in Portugal), issues of organisational culture and politics, rather than technical capability or process design, were found to be the key driver (and inhibitor). The rationale for this research, its aims, objectives and research design were initially articulated around the inter-relations between power and legitimation processes in information systems implementation and presented as research in progress in 1996 (Vasconcelos, 1996).

The research approach has always been acknowledged as emergent and it was decided at a very early stage that the focus of this study would, to a large extent, be derived inductively from the empirical work that was to be undertaken, leading to the adoption of an emergent research design. The implementation, at the time the search for an empirical ground for the study had began, of a new set of management information systems at a University where this study was then registered (herein

1

referred to as 'the University'), provided a ground to explore the topic that was being developed. The implementation of these systems was part of a national initiative called the MAC (Management and Administrative Computing) Initiative, funded by the UK University Grants Committee (UCG), aimed at introducing common administrative software to allow data comparability across the sector. It seemed at the time an interesting and fortunate opportunity, especially as it was accompanied by a complete restructure of the units that were in charge of both administrative and academic computing into a centralised Corporate Information Department.

The MAC systems were part of a very large IT project, coordinated initially by the UCG and including most Universities in the UK. Its Management Team at the National level was created in 1988 and a well known management consultancy was appointed to generate the top level requirements analysis of all the universities in the UK. The resulting blueprint was delivered in January 1989, proposing the formation of families of Universities with similar functional requirements. The following August the migration strategy to articulate the blueprint with the requirements of the different groups was delivered. The development of the systems started in January 1990 under the cooperation between a very well known software developer and an umbrella company set up the represent the various universities, Delphic Ltd. The deadline for the delivery of the final applications was set to August 1993. However, in January 1993, after many delays and problems, well detailed by Sillince and Mouakket (1998) and further discussed in Chapter 4, this was changed to January 1996, with the beta testing of the various sub-applications set to occur between 1994 and 1996. The Administrative Central Office at the University that was studied was involved in the testing between 1993 and 1995 and the end-users were involved in late

2

1995. The initial packages, targeted at student administration went live at the University at the end of the first quarter of 1996, when the interviews started with several middle managers at the different levels of the administration and administrative and academic computing services. The interview period went on until October 1996 and the first stages of analysis occurred simultaneously and lasted until early 1997. The main analytical categories that are analysed in Chapters 5 and 6 were identified by then.

This initial stage of revealed that much more was at stake than the introduction of a new set of management information systems and that the MAC systems were part of a wider process of change, not just at the University, but across the whole Higher Education sector in the UK. In effect, the sector had been marked by an increasing expansive movement, often dated back to thee Robbins report (Robbins, 1963), aiming to widen the sector. The election of the conservative government led by Margaret Thatcher in 1979 brought accelerated changes, with the decision to cut back public expenditure, which affected severely the funding and recruitment models for the Higher Education sector, within what resembled a market model. Simultaneously, the Jarratt report (1985) represented a turning point towards a new management style, changing the traditionally established governance structures at Universities. This was a long process and at the University that forms the empirical ground for this study it culminated with wider changes in its administrative structure, specifically, the abolishment of the Faculties and the clustering of the Faculty administration at the Centre, which occurred as the interviews were being conducted. The abolishment of the Faculties was a most significant step because it moved the *locus* of the decision-making processes at the University from academic committees to line management

structures. This was accompanied by an emphasis in a stronger managerial ethos and discourse, which is explored in the thesis. By the time this research was being concluded, in 2005, the Faculties had been reinstated, albeit in a different *guise*.

An emphasis on performance measurement and on financial and administrative accountability, as well as a stronger managerial ethos, implied an increased focus on strategic planning and the on formulation of goal driven strategies, which in turn required data comparability across the sector to support funding by performance targets. The MAC Initiative is a direct consequence of these changes. By 1995, it was reinforced by the initiation of the JISC (Joint Information Systems Committee) Information Strategy Programme initiation.

This forms the background to the study that is presented here. This evolution is discussed in more detail in Chapter 4. As mentioned above, the initial stages of analysis were concluded in 1997. After a period of interruption, the study was reinitiated in May 2000, following its registration at Sheffield Business School, Sheffield Hallam University. Further stages of analysis were conducted, influenced by an evolved theoretical framework which forms the pre-understanding to this study and is presented in the Introduction. These stages of analysis have focused on further exploring the categories and inter-relationships between:

- centrifugalism and centripetalism, the focus of Chapter 5, articulated around changes in professional arenas at the University administration (Spring and Summer 2002);

- process versus content and their relationship with information centripetalism and information centrifugalism and underlying models of complexity, the

focus of Chapter 6, articulated around the correlated changes in its information arena (Spring and Summer 2003).

A major revision of this work (Spring 2004) and related chapters led to a firm focus on the role of discursive practices in the organisational adaptation of information systems, also influenced by other research that was being carried out simultaneously, in different contexts and topics (Kirk and Vasconcelos, 2002, 2003; Ellis, Oldridge and Vasconcelos, 2004). This required the introduction of Chapter 2, revising literature on discourse studies, with a focus on disciplinary and professional discourses and the complete revision of the material presented in Chapter 3 (which had been initially written in 1996) into analysing the literature of information systems development from the perspective of the discursive characteristics of different research traditions (Summer and Autumn 2004). The final model, exploring grey areas and nuances in the tensions and contacts between different discursive categories and how these are constitutive of the organisational adaptation of information systems was developed throughout the Spring and early Summer of 2005, leading to the final revision of the thesis and its submission in December 2005.

Introduction

Focus of the research and aimed contribution

> *"(...) the analysis, design, construction, and implementation of information systems. These together constitute what we understand to be* <u>*information systems development*</u>*"* (original underline).
>
> Hirschheim, Klein and Lyytinen (1996:2)

Information systems development is often defined through a classic 'waterfall' and life-cycle model in terms of analysis, design, building and, finally, implementation, as expressed in the well known definition above by three key authors in this field, Hirscheim, Klein and Lyytinen. In contrast to this position, this thesis argues that implementation is not the end of the process and may even in many cases constitute a beginning in the organisational role of information systems, as these, if not adopted as originally planned or rejected, can be organisationally adapted, as part of wider circumstances in the social and information arenas they belong to. It is argued that the organisational adaptation of information systems is an important aspect, although not often explored and relatively neglected in the literature, of the development process and, beyond that, of the role of information systems in organisations within a constructivist and dialogical perspective. It is further argued that the constitutive role of language and discourse is fundamental in the organisational adaptation of information systems in that it not only reflects but also shapes different mindsets.

6

Post-implementation studies and approaches are not new and various examples can be found, especially in the literatures of social informatics (Kling, 2000), social shaping of technology (Fleck, 1994), but also in the information systems literature (Kwon and Zmud, 1987; Cooper and Zmud, 1990; Saga and Zmud, 1994; Orlikowski, 1992; McLoughlin, 1999; Doolin, 2004; Pollock and Cornford, 2004), to be explored in 3.3.

Cornford (1995:45) points out that the term implementation is used with different meanings: "To a programmer or software engineer it means taking design specifications and writing programs. To an information systems analyst it means taking the programs and other components and setting them to work in the real world". Magalhaes (2004) argues that its understanding should go beyond that to encompass an ongoing process of organisational learning and it is longer term perspective that is adopted in this thesis.

The particular focus that this thesis brings to this topic is an emphasis on the constitutive role of discourse and discursive practices in shaping the process of organisational adaptation of information systems. This is studied in the context of the implementation of a new set of management information systems, through the perspectives and discursive practices of a group of middle managers at the administration and computing services within a University in the United Kingdom.

The focus of the research is on the dual aspect of analysing how professional discourses define 'worldviews' over information systems and their organisational adaptation, from the perspectives of different research traditions, and defining the

premises around which these discourses are built and deployed, both in the literature and through a case study.

The original aims of the investigation, although open-ended, were placed firmly in a discrete field – Information Systems – and had a clear systems centric focus, by aiming to investigate organisational issues in information system development, with a particular emphasis on organisational culture and political issues[1]. An initial set of interviews was conducted in a British University, within the context of the introduction of a completely new set of management information systems, part of a national initiative called the MAC (Management and Administrative Computing) Initiative, funded by the UK University Grants Committee, which had the aim of introducing common administrative software to allow data comparability across the sector. It became, then, quickly apparent that the rhetorical strategies articulated by the interviewees made appeal to wider issues in the process of change underwent by the case study University, leading to a focus on the broader environment in which information systems are implemented and adapted and to a view of the information environment at the organisation that considered its multidimensionality, rather than pursuing the initial systems centric perspective that had been envisaged.

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[1] These original aims had been largely prompted by a previous study (Vasconcelos, 1991, 1994), where, in the context of the planning of an integrated library information system for INETI (the National Institute for Industrial Technology and Engineering in Portugal), issues of organisational culture and politics, rather than technical capability or process design, were found to be the key driver (and inhibitor) in the process of implementation, leading to, in this case, limited adoption beyond the central library services.

In parallel, the exploration of the literature relating to different research traditions in the field of Information Systems (IS) suggested that issues related to this wider perspective of the information environment were not often explored, as will be detailed in Chapter 3.

This thesis sets out, then, to explore what is perceived as a relative neglect of certain themes by the IS research literature – the exploration of information systems development beyond a unidimensional and process oriented perspective, where implementation does not constitute an end and may even be a beginning in the organisational role of information systems, and a consideration of the complexity of a wider information environment, of which information systems as IT artefacts, as well as the context of their immediate and proximate use, form only a part. It aims then to explore the theme of organisational adaptation of information systems and of the role of discourse in that by

(i)   analysing perspectives on the relationship between the management of information systems and of the wider social and information environments they belong to, through the discursive practices of organisational actors involved in that,

(ii)   defining the premises around which these discourses are constructed and deployed and, simultaneously,

(iii)   how, in turn, they inform worldviews on the information environment and on information systems.

Assumptions, choices and "limitations of perspective"[2]

This thesis builds upon an emergent understanding of the issues surrounding the organisational adaptation of information systems, brought by theoretical influences, methodological choices and by its empirical context. These three orders of influence introduced a particular perspective which is acknowledged and explained in this section.

Theoretical influences

The thesis owes, in effect, great intellectual debt and builds on the work carried out by several authors, in particular: the work carried out by Anselm Strauss and his colleagues (Strauss *et al.*, 1964, 1981) in psychiatric institutions in the 1960s leading to the notion of the 'negotiated arena'; the subsequent development of this concept in work carried out by McAuley and some of his colleagues (McAuley, 1994; Cohen, Duberley and McAuley, 1999; McAuley, Duberley and Cohen (999); Darwin, Johnson and McAuley, 2002), particularly in the context of centre-periphery relationships in public sector research institutes; the work by Mintzberg (1983) on the key tensions that influence the principles that affect organisational structures; and finally, but not least, the notion of the organisational coexistence of two disparate effects of IT systems, framed in terms of centrifugal and centripetal effects, proposed by Ellis (1986). Together they formed a theoretical framework that has introduced a particular perspective in this thesis.

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[2] From Becher, 1988:6

Strauss *et al.* (1964, 1981) proposed, in the 1960s that the concepts developed by traditional organisational theory were inadequate to represent and discuss how professional organisations work. They developed a conceptual model to characterise professional organisations, particularly psychiatric institutions, around the notions of:

- **arenas,** as organisational (learning) locales;

- that embrace different **mindsets** (ideologies);

- and express them through different **professional discourses** that form the basis for the negotiation of power relationships.

The key point made by Strauss *et al.* (1964, 1981) is that relationships between professionals are regulated trough processes of negotiation, rather than being focused on explicit coercive, sanction backed management. Hackley (2000), in the context of the study of the discursive practices of another professional organisation, the advertising agency, refers to the power of implicit discursive management. *"In this situation, power comes from the ability of one rhetoric (the expression of the mindset) to dominate another"*, note Darwin, Johnson and McAuley (2002: 75), who have established the link between the seminal work developed by Strauss and his colleagues around the concept of arenas and the more recent work on communities of practice, after Lave and Lave and Wenger (1991). These principles could be, as proposed by Strauss *et al.* (1981:376), extended to other professional contexts, namely Universities, which they refer to as "[...] *an outstanding example* [...]" of the professional organisation. This famework has been extended by Clarke (1991, 2005) to include other elements, such as external perspectives, implicated actors and non-

11

human actants, such as technologies, as well as a more explicit connection with power and discourse. Section 2.1 will discuss this framework in more detail. From these various works we also took the view that exploring the role of discursive practices would be of interest to further explain interaction within and across social worlds in the context of information systems development.

In effect, the concept of the negotiated arena has been further developed by a series of studies (McAuley, 1994; Cohen, Duberley and McAuley, 1999; McAuley, Duberley and Cohen (1999); Darwin, Johnson and McAuley, 2002), with emphasis on the relationships between professionals and professionals and management, especially in public sector scientific research institutions. They propose that the concept of duality of structure and agency by Giddens (1976;1984) further extends that of the negotiation arena by Strauss *et al.* (1964, 1981), as it is through negotiated interaction that social structures are reproduced and transformed. These have been framed by these authors under the umbrella of Centre-Periphery relations, where Centre is referred to as *Deus ex Machina* (McAuley, Duberley and Cohen, 1999), where privileged knowledge and an *"entitlement to control"* lies and the *"experience of peripheralness"* is an attribute of the operating core and often division headships, where local knowledge and an *"entitlement to autonomy"* are the drivers for action (McAuley, Tietze, Duberley and Cohen, 1999). Framing the reference to social structures within Centre-Periphery relations became especially significant in the analysis of the empirical data that was undertaken, as most interviewees referred to most of the administrative head offices at the University as "The Centre" and to most of the other departments as "The Departments", often with a marginal involvement in decisions that emanated from "The Centre".

Other important influences that form part of the pre-understanding of this research relate to the notion of tensions generated through social interaction, by two other studies.

The first is the proposition by Mintzberg (1983) that key tensions influence the principles that rule organisational structures and that the interplay between these different tensions leads to different organisational configurations. These tensions are identified with different organisational groups: the *strategic apex*, where authority and control conflate, drives towards centralisation; the *technostructure*, often in charge of defining the rules and procedures, as well as the systems that regulate the organisation, is concerned with the establishment of standardisation; *support structures*, often constituted by the administrative infrastructure are driven by collaboration; the *operating core*, where the key activities and performance take place, which, in the case of the professional organisations, is constituted by its professionals and is driven by a sense of professionalism; finally, *divisional heads* and *heads of department* seek autonomy. Throughout this thesis this terminology will be adopted to refer to the different structural elements of the University.

Secondly, in addition to the tensions identified by Mintzberg (1983), this research draws influence from the proposition by Ellis (1986:116) that the widespread use of IT leading to the proliferation of computer based information systems in organisations has led to the concurrent development of two opposite effects in organisations: *"the centrifugal effect of the rapid, but often uncoordinated growth in the use of"* computer

based information systems and *"[...] centripetal efforts to coordinate and control the information handling function [...]"*.

From these key theoretical influences, a framework was drawn that included: exploring the world of the chosen case study within the framework of the professional organisation, where multiple arenas, representing different worldviews coexist, within negotiated interaction, which in turn further reproduces social structures. Negotiated interaction is also marked by tensions introduced by the focus and interests of these groups and by technological developments, amongst others, and expressed by professional discursive practices. These discursive practices, by framing the world through particular discursive resources, lead to the reproduction of particular worldviews and behaviours.

Methodological choices

The aims of the thesis were articulated around the role of discourse in organisational adaptation of information systems, by analysing perspectives on the relationship between the management of information systems and the wider information environments they belong to, through the discursive practices of organisational actors, by defining the premises around which these discourses are constructed and deployed and, simultaneously, how, in turn, they inform worldviews on the information environment.

14

Its purposes, following the categorisation proposed by Marshall and Rossman (1989) are both exploratory, while trying to identify perspectives on the management of information systems and of the wider information environments they belong to within the context of social interaction through discursive practices, and explanatory, as it attempts to explain how and why these relationships take place by defining the premises around which these discourses are constructed and deployed and, simultaneously, how, in turn they inform worldviews on the information environment.

Three main approaches to research design have been traditionally followed in information systems research: survey methods, laboratory experimentation and qualitative case study (Gable, 1994).

This study focuses on the mediation between human behaviour and its context. The manipulation of variables in studying this type of situation is neither feasible, due to the complexity of issues involved in the situation, nor desirable, as it would provide a limited view on theses issues. Also, generalisations tend to decay in dynamic situations (Patton, 1990). Therefore, a naturalistic inquiry approach seemed more appropriate to the research aims, where minimising the manipulation of situations was sought, in order to study comprehensively the complexity of issues involved and to avoid prior closure and constraints to the outcomes of the study.

A case study approach was adopted, as it was considered adequate to a study where there is the need to explore in-depth information and to adopt a holistic view considering the complexity of issues existing in an operational environment (Diesing, 1972). The case study was based upon an inductive approach to the research,

grounding the research findings in the context of a specific empirical environment, where existing patterns and their relationships were analysed. The adoption of this largely emergent research approach (Lincoln and Guba, 1985) led to successive reformulations of the focus of the thesis, supported by, often *post-hoc*, analyses of the literature of which the key influences were acknowledged and presented in the previous section.

The design of the research was based upon some of the general principles of the Grounded Theory Methodology (Glaser and Strauss, 1968). Although, as referred by Brown (1990:9), grounded theory can be shaped and used as *'a fully fledged methodology replete with a method of analysis'*, it is above all a *'particular style'* of research, consubstantiated in characteristics such as theoretical sampling and the use of constant comparisons and, sometimes, of a coding device in data analysis (Brown, 1990). Chapter 1 explains how some of these principles were used to inform what is essentially an emergent research strategy.

The empirical context: the case and its sources

Another 'limitation of perspective', which follows the methodological choices that led to the research approach that was adopted, lies in the characteristics of the empirical context chosen for the research. This study took place within a UK University. The intention was to use this organisation as an initial exploratory ground for the research.

It is one of the Civic Universities founded in the United Kingdom in the beginning of the 20th century, following the amalgamation of several local Colleges in the later part of the 19th century, and therefore it is a particular type of higher education institution. It is therefore not suggested that it represents higher education institutions, but that it exemplifies some of the effects of the process of change underwent in the in the Higher Education sector in the UK during the 1980s and 1990s.

This institution was chosen partly due to ease of access (the researcher was then a part-time research student at the University), but also – and more importantly - because it represented what seemed to be a very interesting opportunity, as at the time interviews started it was implementing a large scale management information system – the MAC system – and, simultaneously, changing its administrative and technical structures, leading to the centralisation of the control over its 'corporate' information processing activities under a new department, the Corporate Information Department. The various interviewees represented different sectors of the Administration and of Technical services that were involved with the implementation and use of the new systems and their selection will, again, be further discussed in chapter 1. The world of the University is thus explored through their accounts and discursive practices and represents therefore an interpretation of their particular worldviews and discursive practices.

The building of the argument

This Introduction attempted to explain the rationale for the largely emergent nature of this research. There is, therefore, an implication that the various elements of the argument that is presented here will unfold as the thesis develops and come together at the end. It seemed, however, important to give the reader a preview of several milestones in the argument, together with a chapter structure.

The main text of the thesis starts with Chapter 1 – Methodology, which provides the rationale for the research approach and design, by discussing and justifying its key methodological influences and foundations. It then explains how the study was conducted in action and, in particular, how generic principles of Glaser and Strauss's (1967) Grounded Theory approach were adapted in practice. This chapter concludes with a discussion of the implications of chosen approach, in terms of evaluation.

Chapter 2 - Academic discourses provides an overview of academic discourses as defining academic disciplines and fields. It proposes that there are three main areas that are of interest to explore, while analysing discursive and research traditions in the field of Information Systems (IS): issues surrounding the emergence of discursive traditions, particularly roots for disciplinary convergence and divergence; the

identification of the attributes of different discursive traditions from a perspective of recontextualisation and of interpretative viability; the formation of boundaries and of grey areas and gaps around boundaries. It is argued that the view of academic and disciplinary discourses as simultaneously ideologically shaped and shaping has explanatory power in discussing the roots and emergence of different discursive traditions.

These issues are then explored in relationship to the analysis of different research traditions in IS, from a discursive perspective in Chapter 3 - Discourses in Information Systems. This chapter analyses debates around the definition of the nature and focus of Information Systems (IS) as a subject area and field; it discusses different frameworks that have been devised to identify and categorise different research traditions in IS and, finally, analyses different discursive traditions on the central theme of 'information systems development' in terms of recontextualisation of concepts from other disciplines and of the interpretative viability of the concepts adopted in IS. It concludes that there is often polarisation of perspective in dealing with key aspects of the theme of 'information systems development', namely around conceptualising the nature of the development process, of its organisational context and of the role of the users. It is argued here that the roots for polarisation of perspectives brought about by different research traditions can be retraced to and explained by the use of different discursive resources and specialised vocabularies and are more ideologically than philosophically founded (Allen and Ellis, 2000). This chapter also concludes that there are themes in the study of information systems development that require further exploration in the literature of information systems development. These themes include the organisational adaptation of information

systems, beyond their implementation, and the need for a multidimensional perspective of both users and information, which are usually implicitly, rather than explicitly addressed in the information systems development literature.

The issues that this thesis then sets out to explore focus on the role of discourse in the organisational adaptation of information systems. The perspective that is adopted is based on a view of the development process that emphasizes post implementation issues (Hirscheim, Klein and Lyytinen, 1996), adopts a socially oriented and multidimensional view of the actors involved (Lamb and Kling, 2003) and of the wider information environment to be analysed (Wiggins, 1988; Ellis, Allen and Wilson, 1999).

Chapter 4 – The University and its restructure within a climate of change in the UK Higher Education sector - sets out the context for the research in terms of the general characteristics of the process of change in the UK Higher Education sector and introduces the context for the case study, following an initial set of interviews. The analysis of these interviews revealed the complexity of organisational context, where far beyond changes of formal structure, issues related to informal organisational arenas could be found. In parallel, the introduction of the new MAC systems also corresponded to wider changes in the information environment where we could identify the coexistence of different arenas that expressed different worldviews. These changes were also reflected in the discursive strategies adopted by different organisational groups and the chapter refers to the clash between different discourses. These issues, relating to the changes in the social and in the information spheres, are then further explored in Chapters 5 and 6, respectively.

Chapter 5 – Changes in the University administrative arena: the tension between centrifugalism and centripetalism - further explored elements of social interaction and change in organisational arenas, following the restructure of the university and coinciding with the introduction of the MAC systems. It explains how this reorganisation of arenas was both mediated and reproduced by the newly introduced information systems which constituted an "*institutional map*" (Strauss *et al.*, 1981:354) and a discursive resource. Its conclusions point towards a tension between centripetalism and centrifugalism both in the social tissue of the organisation and in the discursive representations of the information environment.

Chapter 6 – The information arena and the discursive exploration of tensions in the management of the information environment - further explores the discursive enactments of the information environment, by looking at how centripetalism and centrifugalism were represented and manifested. It concluded that information centripetalism was manifested through an emphasis on process as a model for information management: the definition of a blueprint view of the organisation, introduced by the Information Strategy and implemented through the new management information systems as a means to create an "*institutional map*" (Strauss *et al.*, 1964, 1981); the definition of a corporate image and identity through the formulation of rules to guide the monitoring and policing of the generation, dissemination and use of corporate information; and, crucially, the attempt to define meaning, through the corporate data model as a key to the production and manipulation of new resourcing models and correlated coding structures, which allowed the reorganisation and redistribution of resources, particularly financial

resources, across the University. Centrifugalism, on the other hand, was articulated around the attempts to negotiate or dispute these practices and the pursuit of local practices, through the asserting the criticality of local knowledge in establishing the accuracy of representations of the University situation expressed in the information provided by the University to the funding boards. This chapter concluded that together with a tension between centrifugalism and centripetalism as representations of the information environment, a tension between a focus on process and a focus on sense-making based upon the negotiation of meanings could be found as representing two different models of managing the information environment. These tensions were related to different assumptions on the complexity of the environment, the uncertainty it entailed and to different learning strategies to deal with it.

Chapter 7 – "Synthesis and discussion: The role of discourse in the organisational adaptation of information systems - the discursive exploration of tensions in the management of an information arena" - attempts to bring these issues together and discuss them under the negotiated arena umbrella. It proposes the notion of "information arenas" as an enactment of social interaction, as well as a representation social interaction, marked by *"dialogic contacts and tensions"* (Andrade, 1999: 1) between different forces. Information arenas are seen to inform approaches towards sense-making of the University 'realities', both expressed and constituted by particular discursive practices that made reference to different interpretative repertoires and resources. In negotiated interaction contexts, different actors made claims to power by exploring different discursive practices leading to the organisational adaptation of information systems. The discursive practices that constituted and embodied the information arenas were articulated around the three

major categories of issues identified in the two previous chapters, which acted as interpretative repertoires and discursive resources: representations of the information environment, expressed through the tension between information centripetalism and information centrifugalism; models of information management approaches, expressed through the tension between a focus on process and a focus on meanings; and, underlying the previous elements, assumptions about the nature and complexity of the environment, strategies for dealing with it and correlated models of learning and sense-making, expressed through exploitation as a complexity reduction strategy and exploration as a complexity absorbing strategy. These different categories of issues embody different tensions between forces that, it is argued, shaped the particular context of the University environment. But, while making use of these discursive resources, different actors also established contacts between forces and, agentically shaped different realities, forming new organisational identities and, in doing so, acted as a vehicle for the social re-shaping and adaptation of the organisational role of information systems.

Chapter 1 - Methodology

1.1 Research approach and design: key methodological influences

This thesis focuses on discourse and on how the interplay between discourses plays a critical role in the organisational adaptation of information systems. Potter and Wetherell (2001) state that the adoption of a perspective of discourse that emphasizes its constructive and constitutive nature implies the abandonment of a realist perspective and requires a focus on discourse as a topic in its own right, whereby the role of the discourse analyst is to uncover how the discourse about situations, events, beliefs or attitudes is constructed: *"Take the idea of attitudes. If someone espouses attitude x on one occasion and the contradictory attitude y on another, the analyst clearly cannot treat the existence of attitude x or y as an unproblematic guide to what the person actually believes. But it is possible to treat the account containing the expression of the attitude as the focus itself, asking: on what occasions is attitude x rather than attitude y espoused? How are these attitude accounts constructed? And what functions or purposes do they achieve? It is questions of this kind that are at the heart of discourse analysis"* (Potter and Wetherell, 2001:200). The emphasis taken in this study is that discourse plays a constructive and constitutive role, rather than just merely a representational role. This focus, as mentioned in the Introduction to this thesis, was, following the categorisation proposed by Marshall and Rossman (1989), both exploratory, trying to identify discursive practices on the organisational adaptation of information systems and on the wider information environments they

belong to within the context of social interaction, and explanatory, as it attempted to explain how the premises around which these discourses are constructed and deployed and, simultaneously, how, in turn they inform worldviews on the information environment.

According to Gable (1994) three main approaches to research design have been traditionally followed in information systems research: survey methods, laboratory experimentation and qualitative case studies. This study focuses on the mediation between human behaviour and its context. The manipulation of variables in this type of study is neither feasible, due to the complexity of issues involved in the situation, nor desirable, as it would provide a limited view on these issues. Also, as stated by Patton (1990), generalisations tend to decay in dynamic situations.

Therefore, a naturalistic inquiry approach seemed more appropriate to the research aims, where minimising the manipulation of situations was sought, in order to study comprehensively the complexity of issues involved and to avoid prior constraints to the outcomes of the study. The emergent trajectory of naturalistic inquiry is often, as proposed by Lincoln and Guba (1985: 203), "[...] *'played by ear'; it must unfold, cascade, roll, emerge"*. It can, nevertheless, follow principles that are sound and adequate to its nature. This study is based upon five methodological foundations, adapted from Bryman's (2001) categorisation:

i)   An inductive (Rudestam and Newton, 1992) view of the relationship between theory and research, whereby theory is the outcome, rather than the guide for research;

ii)   An interpretive (Von Wright, 1971) epistemological position, by aiming at understanding situations through the analysis of the interpretations made by their participants;

iii)   A constructionist (Lincoln and Guba, 1985) ontological position, by perceiving these situations are outcomes of the interactions between the participants;

iv)   A case study (Yin, 1989) approach to research design following interpretive and constructionist principles;

v)   A qualitative research strategy in data sampling, collection and analysis (Glaser and Strauss, 1967; Patton, 1990).

The limited number of studies in the field of information systems that attempted to explore issues around the focus of this research suggested that an inductive approach to the research strategy and design would be appropriate in order to avoid excessive pre-determination of the various issues to be explored. An inductive approach to the research design was therefore adopted, grounding the research findings in the context of a specific empirical environment (Glaser and Strauss, 1967; Dey, 1993), where social patterns and their relationships were analysed. Gill and Johnson (1997) suggest that a strength of inductive approaches lies in the progressive development of a framework that involves learning and reflecting on the initial stages of the research.

A case study approach, based on interpretive and constructionist principles, also seemed adequate to a study where there was the need to explore in-depth information and to adopt a holistic view considering the complexity of issues existing in an

empirical environment (Diesing, 1972). Yin (1989:23) defines case study research approaches in terms of:

'(...) an empirical inquiry that

- investigates a contemporary phenomenon within its real-life context; when

- the boundaries between phenomenon and context are not clearly evident; and in which

- multiple sources of evidence are used.'

Although the case study approach that is adopted by Yin is often seen as closer to a positivist paradigm (Walsham, 1995), his view that case studies are most adequate to answer research questions that aim a exploring the 'how' and 'why' of issues of concern would, as argued by Walsham (1995), be adopted by researchers that claim an interpretive stance. Although survey methods appear to predominate in IS research (Orlikovski and Baroudi, 1991; Chen and Hirscheim, 2004), interpretive case studies have long been adopted in IS research, as exemplified by a number of seminal studies (Markus, 1983; Suchman, 1987; Zuboff, 1988; Boland and Day, 1989; Orlikowski, 1991; Walsham, 1993) and its adoption has increased significantly in more recent years, as uncovered by the survey and analysis of the literature undertaken by Chen and Hirscheim (2004).

The design of the research was largely based upon some of the general principles of Grounded Theory (Glaser and Strauss, 1967). Grounded Theory, originally developed and proposed by Barney Glaser and Anselm Strauss, is largely influenced by the symbolic interactionist sociology, also known as the Chicago School, and was devised

to address what was referred to as an "[...] *embarrassing gap between theory and empirical research*" (Glaser and Strauss, 1967:vii), by advocating the need to "[...] *generate theory which is fully grounded in data*" (Dey, 1993:103). In addition, they aimed at providing grounds for legitimating research based upon principles that differed from the then predominant functionalist and structuralist approaches (Howcroft and Hughes, 1999), by promoting thorough and sound principles for qualitative research. Länsisalmi, Peiró and Kivimäki (2004:242) refer, in effect, to the distinction between 'Grounded Theory' as theory derived from data that was collected and analysed within an empirically driven study and 'Grounded Theory Methodology' as a "[...] *style of conducting qualitative data analysis*".

It should be stressed in this chapter that the development of this thesis was based upon generic principles of Grounded Theory, rather than a following step by step adoption a particular version of the grounded theory methodology. In effect, although, as referred by Brown (1990:9), grounded theory can be shaped and used as *'a fully fledged methodology replete with a method of analysis'*, it is above all a *'particular style'* of research, founded in generic principles, such as theoretical sampling and the use of constant comparisons as a basis for analysis and, in some versions (Strauss and Corbin, 1990), of a coding device in data analysis. It can also be said, as noted by Bryman (2001:391) that, although in effect Grounded Theory is by far the most cited methodological approach to qualitative research, it "[...] *may have been honoured more in breach than in observance*" and has been deployed in many different ways. Partington (2000:93) reinforces this view, by stating that "[...] *grounded theory is much cited but little understood*". In fact, after the publication of the original book on Grounded Theory – *The Discovery of Grounded Theory*, by Glaser and Strauss (1967)

– its authors went on to develop it in separate ways and have diverged upon what should constitute the focus and essence of Grounded Theory (Glaser, 1992).

In its original formulation (Glaser and Strauss, 1967), it was intended as a flexible approach to generate theory from data, based upon three generic principles:

i)   Theoretical sampling, defined as a process of data selection and collection that is dictated by the emerging theory, where the results of each stage of data collection and analysis determine the choice of what data to collect next and where to find it; this approach to sampling is geared towards discovering the significance of analytical concepts and categories and their inter-relationships into theory, rather than to obtaining evidence of the distribution of populations among verifications;

ii) Constant comparison method of analysis, ensuring the close relationship between data and conceptualisation, by consistently and systematically comparing incidents in the data, leading to the development of key analytical categories;

iii) Theoretical saturation, as an indicator that theory has been clearly delimited and achieved when: a) no new data regarding a category is found; b) a category has well developed properties c) and the relationships between categories are clear.

The subsequent reformulation of Grounded Theory by Strauss and Corbin (1992) placed strong emphasis on its proceduralisation and formalisation into a series of techniques, arguing the need to "[…] *spell out the procedures and techniques* […] *in*

greatest detail [...] *in step-by-step fashion*" (Strauss and Corbin, 1990:8). Their approach placed greater emphasis in the codification of data, defining three different phases of analysis:

i)   Open coding, consisting of an initial labelling of data as an indicator of concepts;

ii) Axial coding, aggregating this data into broader categories in terms of the conditions or dimension values that cause it;

iii) Selective coding, selecting a category that acts as the core category and relating it to the other categories as a means to explain their inter-relationships.

Core to this version of Grounded Theory is what Strauss and Corbin (1990) refer to as the 'paradigm model', defined as a systematized cause and effect schema to explain the inter-relationships between broader categories and sub-categories. It involves the following elements:

i)   Causal conditions – events that lead to the occurrence of a phenomenon;
ii) Phenomenon – a central idea, or event, that a set of interactions relates to, or is managed by;
iii) Context – a specific set of properties/conditions pertaining to a phenomenon along a dimensional range;
iv) Intervening conditions – the conditions on the interaction strategies pertaining to a phenomenon;
v)   Action/ interaction – strategies to manage or respond to a phenomenon;
vi) Consequences – results of actions.

The linearity of this approach is well expressed in the following diagrammatic representation adapted from Bryman (2001:394).

Processes and tools   Outcomes

Research problem
    ↓ ↑
Theoretical sampling
    ↓ ↑
Collect data
    ↓ ↑
Coding ——————————————————————————→   Concepts
    ↓
Constant comparison ————————————————→   Categories
    ↓
Saturate categories
    ↓
Explore relationships between categories ———————→   Constructs/Hypotheses
    ↓
Theoretical sampling
    ↓ ↑
Collect data
    ↓ ↑
Saturate categories
    ↓
Establish relationships between categories ————————→   Substantive theory
    ↓
Conduct research in other settings ————————————→   Formal theory

Source: Bryman (2001):394

Fig. 1 – A diagrammatic representation of processes, tools and outcomes of Grounded Theory Methodology. Source: Bryman (2001:394).

The publication of this version of Grounded Theory by Strauss and Corbin led to a divergence of perspectives regarding the nature of the methodology between its two original authors, as Glaser (1992) considered that the new version (as outlined in Strauss and Corbin, 1990) was too prescriptive and emphasized too much the role of coding, whereas the original essence and intention of Grounded Theory was to focus on theory development: *"Anselm's methodology is one full of conceptual description and mine is grounded theory. They are very different, the first focusing on forcing and the second on emergence. The first keeping all of the problems of forcing data, the second giving them up in favour of emergence, discovery, and inductive theory generation "*(Glaser, 1992:122).

Despite this schism, Grounded Theory has been widely cited and adopted in many fields. There are many examples of its adoption, or claimed adoption, in IS research (Toraskar, 1991; Calloway and Ariav, 1991; Pidgeon, Turner and Blockey, 1991, Pries-Heje, 1992; Orlikowski, 1993; Baskerville and Pries-Heje, 1995; Fitzgerald, 1997; Hughes, 1998; Howcroft, 1998;Gala, 2001; Kirk and Vasconcelos, 2003; Doolin, 2004). Howcroft and Hughes (1999) comment, however, that, as happens in other fields, it has been more often adapted than followed in its original formulation. For example, many of these studies (Calloway and Ariav, 1991; Baskerville and Pries-Heje, 1995; Fitzgerlad, 1997; Hughes, 1998; Howcroft, 1998) used seed categories or initial categories to inform their analysis, which seems to counter the essence and fundamental principles of the original formulation of Grounded Theory. Howcroft and Hughes (1999) offer different explanations for this: they argue that novice researchers are more likely to follow methodologies prescriptively than experienced researchers; researchers are influenced by their own mental constructs and reinterpret the research process in action; finally, they propose that methodologies can be used as a "comfort factor" (Howcroft and Hughes, 1998:38), especially for novice researchers. While some of their arguments are not entirely convincing, namely, the relationship between the degree of experience of the researcher and the likelihood of prescriptive adoption of a methodological approach, the view that the research process is reinterpreted and reconstructed in action seems to be particularly congruent with studies that are largely inductive and emergent in their development.

The approach to Grounded Theory adopted in this study is more aligned with its original formulation than with Strauss and Corbin's subsequent reformulation. The particular principles that influenced this study were:

i) The notion of theoretical sampling, by using the analysis of an initial set of interviews to determine the choice of subsequent interviewees and to decide what further information was necessary ;

ii) The inductive derivation of the key findings through constant comparison of interview data;

iii) An attention towards theoretical saturation to decide the delimitation of the three key categories of findings and the inter-relationships between them, which forms the basis for the argument of this thesis.

However, there are some differences between the approach adopted in this thesis and other approaches to Grounded Theory and certainly from those heavily influenced by Strauss and Corbin's version. A mentioned above, the emergent nature of the study, leading to various reformulations of focus, meant that this study was far less linear than the representation of Grounded Theory reproduced in Fig. 1, by Bryman (2001:394), which is more congruent with Strauss and Corbin's proposition. A more adequate representation can be found in the diagram below, which superimposes the process of research into Rudestam and Newton's (1992) research wheel.

Inductive

Conceptual
framework

Relating categories

Constructs

Axial-coding, constant comparison

Data analysis

Categories

Open-coding

Concepts

Empirical observation

Research question

Deductive

Theoretical sampling

Data collection
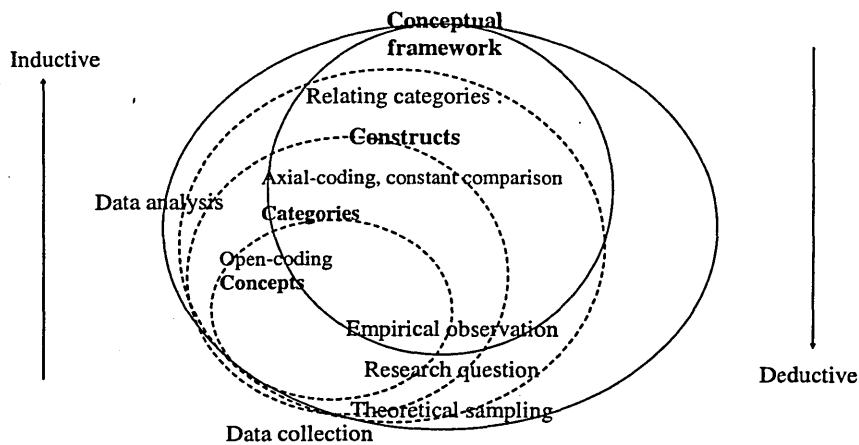
Fig 2 – An alternative diagrammatic representation of Grounded Theory, superimposed to Rudestam and Newton's (1992) research wheel.

As this diagram attempts to express, the process that was undertaken was rather circular in the inter-relationship between different phases of research and in the use of the literature to help illuminate and discuss the implications of the findings. The circles that represent these processes are not concentric and should be seen rather more as rotating ellipses that form contacts with each other at different points in the research in action. For example, constantly revisiting the data led to reformulations of both key categories of findings and of how the more specific and detailed concepts fitted with them, as well as to reconceptualising the relationships between findings. This often led to *post hoc* explorations of different strands of the literature prompted by new findings and constructs. At points, this process resembled 'going around in circles' although the important aspect of this was that, each time a circle was completed, the research arrived at a different point and advanced towards what seemed a clearer outcome in terms of the interpretation of the inter-relationships

34

between different elements of the argument. There were other areas specifically in the

process of data analysis that are particular to the process undertaken in this research.

The following section explains in greater detail this process in action.

1.2 The study in action: the empirical environment, data collection and analysis

The case study took place in a single organisational setting and was centred on the implementation of a corporate wide management information systems at a University, part of a national initiative called the MAC (Management and Administrative Computing) Initiative, funded by the UK University Grants Committee, which had the aim of introducing common administrative software to allow data comparability across the sector. This institution was chosen partly due to ease of access (the researcher was then a part-time research student at this particular University), but also, and more importantly, because it represented what seemed to be a very interesting opportunity, as at the time interviews started, it was implementing the MAC system and, simultaneously, changing its administrative and technical structures, leading to the centralisation of the control over its 'corporate' information processing activities under a new department, the Corporate Information Department. It therefore appeared a particularly suited environment to explore in depth particular issues related to what was seen as the focus of the research.

The principal vehicle for data collection was qualitative interviewing, supported by the analysis of some internal documentation, as well as official reports on the higher education sector in the United Kingdom. The type and style of interviewing that was conducted followed a relativist and constructionist stance, rather than a realist one, as defined in the categorisation of qualitative interviews by King (2004), whereby the interview is seen as an example of the constructive nature of language (Wetherell,

2001a; King, 2004), rather than as an expression of "[...] *'real' experiences in the world, outside the interview situation*" (King, 2004:12), as happens in realist interviews. Interviews, in a constructionist context, are seen not just as an expression of mindsets, but also the contexts where particular mindsets are constituted. They are discursive practices which are seen "[...] *not as a means of gaining insight into the 'real' experience of the interviewee, but as an interaction in the particular context of the interview*" (King, 2004: 13), where particular *"expressions of self"* (Goffman, 1956) are articulated.

In this context, there is no presumption of veracity, but there is a view that the various ways in which particular expressions of self are constructed and articulated are significant in themselves. There is also an understanding "[...] *that every text has an indefinite number of possible interpretations, and no interpretation can be seen as superior to others*" (King, 2004:13).

The case study that was explored in this thesis is based upon two main types of data: primary data collected through interviews, and secondary data, in the form of official reports on the Higher Education sector and University documentation available through its website. These two types of data had different aims and served different purposes. The primary data collected through the interviews formed the main basis for the empirical study and is analysed in Chapters 4, 5 and 6. This led to the development of the conceptual framework presented in this thesis around discursive tensions which is presented in Chapter 7. The secondary evidence provided by the official documents on the sector and University documents was used to set up the background and context to the case study and is analysed in detail in chapter 4. The

context provided by it also helped to a great extent to interpret the primary data. The following paragraphs provide additional detail on this material.

The interviews were carried with a group of twelve middle managers at the University Administration and at Academic and Administrative Computing Services in the University chosen for the case study. It is acknowledged that this could be seen as a relatively small number of interviewees. However, Dick (2004: 207) shares with King (2004:207) the understanding that in the constructivist style of interviewing tends to typically involve a small number of interviewees: *"This is because the focus is on the text, not the individual and because the aim is to provide an in-depth analysis that is focused on explanation, rather than generalization"*. She does, nevertheless, state that in trying to identify and define particular discursive practices, it is important to establish and demonstrate that they *"[...] exist as a set of regulated statements"* and that *"if this is to be achieved through examining what respondents say, then it is advisable to use a grounded theory approach to sampling"* (Dick,2004:207).

This stance influenced the process of data collection in both the style of interviewing and in the selection of the interviewees in this thesis. McCracken (1988: 17) states, when referring to sampling in in-depth interpretive approaches, *"The first principle is that 'less is more'. It is more important to work longer, and with greater care, with a few people than specifically with many of them. For many research projects, eight respondents will be perfectly sufficient. The quantitatively trained social scientist reels at the thought of so small a 'sample', but it is important to remember that this group is not chosen to represent some part of the larger world. It offers, instead, an opportunity to glimpse the complicated character, organisation and logic of culture"*.

This has got to do with the essence of interpretive qualitative research in terms of focus, depth and what it is representing. Goulding (1998), in effect, argues that the focus of qualitative studies of interpretive nature based on Grounded Theory is on behavioural patterns, not personal or individuals patterns. Similarly, we can consider that in interpretive and constructivist discourse studies, the focus is on the characteristics and patterns of discourse and on the premises upon which they are constructed, as well as on the meanings that emerge from the interplay between different discourses. As Coyne (1997) argues in the context of Grounded Theory research, "[...] *the aim is to achieve depth in the developing categories*". Representativeness in interpretivist and constructionist qualitative research is focused on the data, not on sampling units or numbers of persons (de Ruyter and Scholl, 1998). Curtis et al. (2000: 1002) add *"qualitative samples are designed to make possible analytic generalisations (applied to wider theory on the basis of how selected cases 'fit' with general constructs), but not statistical generalisations (applied to wider populations on the basis of representative statistical samples)"*. This study aimed at depth in explaining and exemplifying how the interplay between discourses plays `a role in the organisational adaptation of information systems, in a focused case study, rather than spread across many individuals in different case studies.

This does not mean that the body of evidence of this type of study is necessarily limited. As stated by Curtis et al. (2000:1002), in qualitative research, samples are "[...] *small, are studied intensively and each one typically generates a large amount of information*". The study undertaken in this thesis involved the in-depth analysis of twelve interviews which were fully transcribed generating a volume of text just short

of 70000 words. As mentioned above, McCracken states that "[...] *for many research projects, eight respondents will be perfectly sufficient*" (McCracken, 1988:17).

This approach is congruent with the principle of theoretical sampling adopted in this study: "[...] *at the beginning of the study, there are no limits set on the number of participants, interviewees or data sources. The researcher continues selecting interviewees until they are saying nothing new about the concepts being explored. Thus the selection of participants (and other sources of data) is a function of the emerging hypothesis/hypotheses and the sample size a function of theoretical completeness*". Riley (1996) and Goulding (1998) add that theoretic saturation in analysis is achieved between eight and twenty four interviews depending on the study and its context.

The decision to base the empirical ground for this research in a focused sample of twelve interviews, rather than a larger spread with maximum variation, had also to do with the perspective of discourse that was adopted, that of discourse as meaning making and as constitutive, in that it "[...] *construct*[s] *versions of the social world. The principal tenet of discourse analysis is that function involves construction of versions, and is demonstrated by language variation*" (Potter and Wetherell, 2001: 199). It is also coherent with the proposition by Potter and Wetherell (2001) that such perspective of discourse requires studies that depart from realist stances to focus on interpretation and meaning. This study is concerned with the situated and contextual nature of discursive interaction. This required the choice of individuals with close and direct experience of the implementation of the MAC systems at the University. Hence, for example, the choice of its project manager as the first interviewee, as she

was seen a privileged 'gatekeeper' (Cutcliffe, 2000) for the research context. Glaser (1978) refers that Grounded Theory research, based on theoretical sampling, usually starts with the contact with the most knowledgeable individuals, who in turn lead to other individuals that can supply rich information on the context of the study: *"Groups are chosen as they are needed, rather than before the research begins"* (Glaser, 1992:102); *"The analyst who uses theoretical sampling cannot know in advance precisely what to sample for and where it will lead him"* (Glaser, 1978: 624). This is because data collection is determined by the emerging theory, rather than a pre-conceived calculated decision of what specific data to collect and where to look for it.

The individuals that composed the sample which emerged had in common the fact that they were middle managers in the administrative and technical services of the University, located in different departments, who were either directly involved in the implementation of the MAC system or for whom the MAC system had directly impacted on the way they carried out their work. The choice of middle managers was deliberate, as it was considered that it could lead to particular insights, due to the mediating role between the core and the periphery of organisations that middle managers often carry out (Clegg, 2003; Clegg and McAuley, 2005). In effect, Clegg and McAuley (2005) have identified four dominant discourses in the literature of the concept of middle managers:

- middle managers as representing core organisational values;
- middle managers as self-interested agents of control;

- middles managers as key actors in the development of the managerialist discourse;

- middle managers as mentors, coaches and guides in the diffusion of core strategic values.

These perspectives of middle managers in the literature concur with the view taken that these individuals could act as important gatekeepers to particular insights on the process of systems adaptation that was under study, mediating between the strategic apex and the academic core at the University.

The present study is snapshot of a situation that exemplifies how the interplay between discursive practices plays a role in the organisational adaptation of information systems – that is all it is claimed. It was carried out over a period of around one year, where the issues surrounding adaptation became evident and the conceptual framework that emerged around the tensions between key discursive categories was clearly defined. Sampling ended when the tensions around the key discursive categories that were identified and are discussed in chapter 7 could be characterised and explained clearly and a coherent and consistent conceptual model emerged.

It should also be noted, as mentioned above and will be expanded in 1.3, that this study makes no claims to veracity, rather it aims at interpretation and exemplification, which Potter and Wetherell (2001) suggest should be the aim of discourse studies. This approach to sampling is congruent with the overall methodological approach

taken in terms of a discourse based study with the particular epistemological underpinnings that were adopted.

As mentioned in section 1.1, the aim of the research was both exploratory, trying to identify discursive practices on the organisational adaptation of information systems, and explanatory, as it attempted to explain how the premises around which these discourses are constructed and deployed and, simultaneously, how, in turn they inform worldviews on the information environment. The combined nature of exploratory and explanatory research required a flexible and open ended approach to data collection. This is the rationale for undertaking theoretical sampling, which in turn, due its nature and outcomes, is often combined and perfectly congruent with open ended data collection tools. As Coyne argues, "[...] *theoretical sampling according to the developing categories and emerging theory means that different questions may be asked of a sample in a particular setting.*" (Coyne, 1997: 626).

The interviews were conducted in a flexible and relatively unstructured way, as they did not follow an interview guide in the strict sense of the term, because the intention was that the data collection process was intended to be interviewee led, although with particular boundaries formed by the key topics that constituted the focus to the study. The various interviews were relatively unstructured in their style, in that they did not follow particularly prescribed formulations of questions or even a formally defined guide, although there were particular issues that were set as important to explore, albeit in a non-prescriptive manner allowing, thus, the exploration of unanticipated avenues:

i)   The first issue concerned the expression of the roles and of perceptions of these roles of the different interviewees;

ii)   A second area for discussion related to perceived difficulties expressed by the interviewees in undertaking the activities required by their roles;

iii)   Views regarding the restructure undertaken at the University were explored in particular depth;

iv)   Another theme included the use of information within their professional activities and the role of the newly implemented information systems within that, as well as issues of control and ownership over different areas of information management;

v)   Finally, activities and options regarding the planning, implementation and use of these systems were also discussed.

The intention in each interview was to ensure that these five key areas were covered without introducing particular constraints on how the interviewees talked about them and allowing them to introduce other relevant themes and issues. For example, although the first question was invariably formulated around asking interviewees what their role was and what were the responsibilities that this entailed, the second question was prompted by the first and could be different in each case. Examples of this are the interviews with respondents ASO.1 and ACS.1 where the second questions were, respectively:

"So the information strategy in the university concerns what resources are available?" (ASO.1)

"Where would you consider that you have been very bold and where would you consider that you have been very cautious?" (ACS.1).

As mentioned above, this is consistent, not only with the exploratory and explanatory nature of the research, but also, and more importantly, with the principle of theoretical sampling that was adopted, where the researcher does not over determine the direction of the research and is open to new avenues and to an element of serendipity in knowledge discovery. As stated in the Introduction to the thesis, the specific focus on discourse and on adaptation was prompted by the initial data analysis that was undertaken, rather than part of the initial objectives of the research. This focus and the framework it has led to have emerged from this open ended and flexible approach to data collection.

The use of the secondary literature was, as stated above, essentially geared towards the provision of context to the case study, around the wider processes of change that the Higher Education sector went through before and during the case study, allowing to explore issues of structure in the discursive practices of the interviewees, related to the broader contexts (social, political, cultural, historical) of the meanings that were constructed. This material is explored in more detail in Chapter 4.

The interviews were, as mentioned, conducted with twelve different professionals belonging to the University administrative and technical structures. As suggested by Dick (2004) it seemed particularly pertinent to use the principles of theoretical sampling by Glaser and Strauss (1967) to select both the interviewees and the various topics to be explored. In this case, the results of an initial set of interviews, mainly at

the Registry, a structure heavily involved in the definition and formulation of the information strategy and in this context representative of the strategic apex at the chosen University, and at the newly founded Corporate Information Department, in charge of implementing the information strategy and of defining the systems that would regulate it, so as such, acting as a technostructure, provided initial clues to important issues to explore and led to the decision to interview other individuals from central and local support structures, for example. This process was partly guided by critical incidents (Chell, 2004) referred to and discussed by different interviewees. For example, initial references to the decision by the Finance Department, fully supported by the strategic apex at the University, to defect the MAC systems and implement its own systems, led to the view that it was necessary to interview the administrator in charge of the information systems at this department and to further explore this issue within interviews at the Registry and at the Corporate Information Department. Similarly, references to the merger between the Corporate Information Department, in charge of administrative computing, and of Academic Computing Services, in charge of academic computing and closer to the academic operating core, led to the decision to interview at Academic Computing Services and at two different academic departments, related to academic fields involving different degrees of computer literacy, where the merger was actively portrayed and referred to as a take-over.

The key and more important defining factor for the process of sampling was however driven by the theoretical constructs that derived from the initial stages of analysis. In effect, tensions related to information centrifugalism and information centripetalism and to a focus on process and on meanings and content were identified in the discursive practices of various respondents and led to an emphasis in trying to explore

and understand the premises upon which these discursive practices were built. In this context, the empirical data collection was driven by the emergent theoretical framework that underpins the thesis, which was supported by, often *post hoc,* explorations of the literature. This is not to say that this thesis was not influenced by a pre-existing understanding formed by different theoretical influences. These have been acknowledged in the Introduction to this thesis and Glaser and Strauss, themselves, state that Grounded Theory "[...] *will tend to combine mostly concepts and hypothesis which have emerged from the data with some existing ones that are clearly useful"*. What it does not do is to commit research to "[...] *one specific preconceived theory"*. As stated by Dey (1993:65) "[...] *there is a difference between an open mind and an empty head. To analyse data, we need to use accumulated knowledge, not dispense with it"*.

As this study was based upon the text of the interviews and focused on discursive practices, tape recording and subsequent full transcription of interviews was carried out in order to ensure the complete capture of this data.

The data analysis process was, as mentioned above, inspired by general guidelines of the constant comparative method of the grounded theory methodology by Glaser and Strauss (1968). The constant comparison method differentiates itself from other qualitative analysis methods, such as analytical induction, as it does not attempt to establish a theory of causes which are universally accepted to explain a problem, but is a way of generating theory which is grounded on the in-depth analysis of data (Glaser and Strauss, 1968). In this sense, it does not aim at the collection of the total data on the subject, but its purpose is the exhaustive analysis of the collected data on

the problem. Therefore, its use is adequate in case studies as these *"[...] are generalisable to theoretical propositions and not populations or universes"*(Yin, 1989:21).

The use of the constant comparative method for data analysis is based upon the constant comparison of incidents applicable to categories, the delimitation of the properties of these categories, the derivation of coded categories and the emergence of an explanatory theory. Through the constant comparison of data applicable to each category to the point of analytical exhaustivity, the similarities and differences of the categories are assessed, as well as the degree of consistency of each category (Brown, 1990; Ellis, 1993). Thus, constant comparison should also provide the basis for verifying the derived categories, their interconnection and the emergent theory, through an iterative approach.

The first step of analysis involved a familiarisation with the data. For that, it was important to review interview transcripts as soon as possible after the interview and to note concepts and themes that became immediately apparent and cross-referencing them to their occurrence in the interview transcripts. Then the interview transcripts were marked and annotated with these concepts. At this stage, referred to as open coding in the constant comparative method, these were rather loose and spontaneously generated concepts – they were a first approach to identifying topics without being driven by too much concern with formalization, at this stage. These different concepts seemed, at first, disparate, with loose connections and, in some cases, some potential overlaps. A large number of open concept were initially defined and examples

include, for instance, 'resistance and buy-in [to the systems]', 'accuracy of local data', 'sensitive data', 'access', 'user participation'

The next stage involved the comparison each of these concepts with the data that they relate to. This often led to the observation of certain patterns in the data – for example, it became apparent that various open coding concepts belonged to a broader conceptual category and by analysing the data they relate to we could identify similarities. A difference from the original proposition of Grounded Theory and the process that was undertaken in this research is that, although the derivation of categories is described both by Glaser and Strauss (1967) and by Strauss and Corbin (1990) as a sequential, although iterative, process, moving from open concepts to key categories, some of the final categories of the findings in this study, such as the tensions between centrifugalism and centripetalism and between a focus on process and a focus on meaning, for example, were patent quite early on in the analysis of the interview data, although their detailed characteristics only emerged later on, as the process of analysis developed. Further analysis of the interviews, as represented in Fig. 2 in the previous section, led to a deeper understanding of the relationships between these tensions. As mentioned above, the process of constantly revisiting the data led to reformulations of both the characteristics of key categories of findings and of how the more specific and detailed concepts fitted with them, as well as to reconceptualising the relationships between findings, which ultimately led to the framework that underlies the argument presented in this thesis.

In this thesis three key categories of issues were identified:

i)   models of the information environment, expressed through the tension between information centripetalism and information centrifugalism;

ii)   models of information management approaches, expressed through the tension between a focus on process and a focus on meanings;

iii) and, underlying the previous elements, assumptions about the nature and complexity of the environment, strategies for dealing with uncertainty and correlated models of learning, expressed through exploitation as a complexity reduction strategy and exploration as a complexity absorbing strategy.

These acted as interpretative repertoires and discursive resources, around which the discursive practices that constituted and embodied the information arenas were articulated and, in doing so, played a significant role in the organisational adaptation of information systems.

The approach adopted in this thesis also differed from many applications of Grounded Theory (for example, Kirk and Vasconcelos, 2003; Länsisalmi, Peiró and Kivimäki, 2004), and certainly from Strauss and Corbin's version, in that, although interviews were initially marked with open concepts and constant comparison led to define the characteristics of key categories of findings, the approach to data analysis was rather more loose than those approaches that place emphasis on the formal and detailed process of data codification and did not apply the cause and effect schema included in Strauss and Corbin's paradigm model, discussed above, to formally delimit the properties of categories, sub-categories and their inter-relationships. Glaser and Strauss (1967:31), in their original formulation of Grounded Theory state, themselves,

50

that theory generated through its principles can be presented "[...] *either as a well-codified set of propositions or in a running theoretical discussion*".

As mentioned above, there was attention towards theoretical saturation to decide the delimitation of the key categories of findings and the inter-relationships between them, which forms the basis for the argument of this thesis. In this case, this involved:

i)   firstly the analysis and discussion of the nature of the tensions between discursive practices articulated around information centrifugalism and information centripetalism and between a focus on process and a focus on meanings, which were explored in Chapters 4,5 and 6, where the data related to the case study is analysed;

ii) further than that, explaining how these two different tensions can be in turn inter-related and how they relate to broader discourses and perceptions of learning and sense-making and uncertainty and complexity, which were discussed in the summary of chapter 6 as an outcome of the analysis and form the focus of chapter 7, Synthesis and Discussion;

iii) and finally, how these inter-relations can be understood within the interpretative framework of information arena and the particular aspects of interaction and negotiation within that characterises it, as a means to explain the role of discourse in the organisational adaptation of information systems, which again is the focus of chapter 7, Synthesis and discussion and of chapter 8, Conclusions.

The presentation of the findings was organised around the issues that emerged from the various themes that were explored, leading to the definition of the key categories of issues that are defined in sections 5.6 and 6.5, which present the 'Summary and implications of the data analysis. The presentation of findings included the interpretation of the data, exemplified by interview quotations and discussed against the literature, as outlined in the excerpt below.

'Ownership' was, in this case, related to control over processes and procedures, defined in terms of 'how things should be done' rather than in terms of control over the meaning of information itself. This emphasis on processes and procedures rather than on the information content of the system itself seemed to characterise administrators across some of the areas of the University, regardless of whether they worked at the Centre or at academic departments.

"I don't feel that there has been has been so much possessiveness about the information or over the functions that goes in it - some of it is over how things are going to be introduced and sense of "this is my area because I know how I want to do [things] regardless of anybody else". (CI.1:29)

"I think they are finding it a little bit hard to let go of what they have been doing. Some people can cope with it - they like the idea of it all being centralised like it was before." (CI.3:24)

The implications of the new system of ownerships were twofold: at one level, it allowed a redistribution and reorganisation of people, through the redefinition of arenas and associated ownerships; at another level, it placed and introduced new restrictions to the diffusion of information. It is interesting to note that the effort in standardising and in codifying administrative procedures, which, in theory would have increased the likelihood of the information associated with them to be more widely diffused - as noted by Boisot (1998)

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abstraction and codification of information tend to reinforce each other and to reinforce diffusion

-, was, in effect, associated with a deliberate decision to restrict the diffusion of information by

defining levels of responsibility and access, characteristic of bureaucracies, as defined by Boisot

(1998). This occurred both with the new central administration system and with the new

(independent) financial system. Control of processes was vital for the central administration,

because it allowed the redefinition the different levels and dimensions of responsibility which, in

effect, could control what people did, because different types of responsibility would have

different practices associated with them.

As can be seen in the example above, each interview quotation was coded in relationship to the department the interviewee belonged to (ex: CI), to each interviewee (ex: CI.3) and to the paragraph of the transcript of its location (ex: CI.3.24).

1.3 Summary and implications: issues of evaluation of the research approach

The above section represents one example on how qualitative analysis using Grounded Theory principles was conducted in this study. As stressed by Glaser and Strauss (1967), the approach itself was originally conceived as a flexible way to generate theory grounded on qualitative data, rather than a prescriptive set of steps. As mentioned above, there is a general acknowledgement that this approach has been deployed with many different nuances (Howcroft and Hughes, 1999; Partington, 2000; Bryman, 2001).

Grounded Theory has raised some criticism throughout the years, of which the main points are summarised by Bryman (2001:395-397). Alvesson and Sköldberg, 2000:12-36) are amongst the more recent fierce critics and their main argument against Grounded Theory is that it advocates a 'theory neutral' approach to research, which is seen as unrealistic, and that what they see as the separation between theory and empirical data "[...] *overlaps with positivism in regarding empirical data as (relatively) theory-free*" (Alvesson and Sköldberg, 2000:32). It is argued in this thesis that this constitutes, however, a misreading of its original principles, as they did not advocate that pre-existing theory should be ignored, but that it should not predetermine the development of new theory and should not lead to the disregard of data that does not concur with it.

The focus on codification that is found in very structured and formal applications of the methodology may lead to overemphasizing the process of codification and to a resulting fragmentation of data, in detriment of keeping an overview of the context and of the interpretation of situations, as stated by Coffey and Atkinson (1996), which is in line with Glaser's criticisms of developments subsequently led by Strauss.

This raises the issue of how to define evaluation criteria of inductive, constructionist and qualitative approaches such as Grounded Theory and of how to argue for the legitimacy of its findings.

Different approaches have been advocated. As reviewed by Gill and Johnson (1997) and by Bryman (2001), one approach might involve adapting the traditionally adopted criteria of validity (often differentiating between internal and external validity) and reliability from quantitative studies to qualitative studies (generalisability being commonly accepted as not applicable to qualitative research).

Other approaches, as advocated by Lincoln and Guba (1985) and Guba and Lincoln (1994), propose the development different criteria that are presented as specific to qualitative studies. They distinguish between trustworthiness and authenticity. The latter is composed of several dimensions (fairness, ontological authenticity, educative authenticity, catalytic authenticity and tactical authenticity) that are related to the wider political impact of research and, as argued by Bryman (2001) present some similarity with action research concerns, but have not been widely adopted in discussing qualitative studies, as their emphasis on practical outcomes is not always

the focus of other types of approaches. The other set of criteria proposed by these authors are presented under the umbrella of trustworthiness and include:

- Credibility, referring to the relationship between what is what is observed and the theoretical constructs that are developed;

- Transferability of findings to other contexts;

- Dependability, relating to the degree of consistency in generating the findings and their justification;

- Confirmability, referring to the degree of neutrality demonstrated by the researcher in not allowing personal or theoretical bias to interfere in the derivation of findings from the research.

As noted by Bryman (2001), we can, however, establish some similarities between these latter criteria and some of the criteria mentioned above and adapted from quantitative studies into qualitative studies – namely, between credibility and internal validity, transferability and external validity, dependability and reliability and, finally, between confirmability and objectivity.

In this thesis, it was accepted that although a straightforward transfer of quantitative evaluation criteria to evaluate qualitative research is neither feasible, nor desirable, some of its criteria can be reformulated in order to address the nature and essence of qualitative research, while other criteria may be specific to qualitative research.

Hammersley (1992), for example, considers validity to be a relevant criterion for qualitative research, if reformulated to reflect its nature, and relates it to the use of

evidence in making claims to knowledge. It could be added that, although validity is often equated to veracity in positivist research, taking broadly in consideration the etymological meaning of the word *valid*, it means '*well grounded*' and '*sound*'. It could be argued that validity, in qualitative approaches, such as Grounded Theory, does not presume veracity and is dependent upon the extent to which the theoretical or conceptual constructs that are derived can be exemplified by the data that was collected and analysed. Validity, in this context, refers therefore to the degree of integration between data and theoretical constructs. This does not imply necessarily the adoption of a realist stance, as it is accepted that each account of research is "[...] *one of a number of possible representations* [...] (Bryman, 2001:276) and interpretations and constitutes itself a particular text constructed in a particular set of interactions and context.

This is, in turn, related to the thoroughness in which research is conducted and to how interpretation and subjectivity play a role in that. Reliability can be seen to refer, in Grounded Theory, to the degree of consistency in the derivation of the analysis categories and depends partly upon the extent to which the process of analysis is transparent, consistent and plausible and to whether the key categories of findings are externally discrete and internally consistent. It also can be related to how theoretical and other influences are acknowledged and discussed and to a degree of reflexivity displayed in the account of the research process. McAuley (2004) refers to the interweaving of the personal experience of researchers, which forms a pre-understanding in hermeneutic studies, with the ways in which the subjects of the research develop and present understandings of the situation under study. Interpretation, as he proposes is viewed in hermeneutic traditions, often implies an

understanding of *"common humanity"* (McAuley, 2004: 196) and the notion of the professional observer as a *"privileged raconteur"* (McAuley, 2004:201): *"Lying at the heart of the hermeneutic approach is this notion of openness to the data, the artful development of the interplay between the intuition of the researcher, the data (text or whatever) of the subjects of study, the interpretative frameworks that are brought to bear on the analysis of the text and, ultimately, the reader. If this openness is undertaken in good faith then the product of the research is on the one hand truthful (authentic) to the data but is, on the other hand, not the only truth (authentic account) that could be produced"* (McAuley: 2004:201).

As mentioned above, qualitative data does not aim at the establishment of generalisable constructs or to provide evidence of the distribution of populations among verifications. Generalisation is a criterion that does not apply to the discussion of what legitimates qualitative research. We can however discuss qualitative research in terms of extrapolation. Extrapolation refers usually the extent to which a study can be replicated in a different social setting, depending upon whether it is methodologically sound. It can also refer to the extent to which its results can be extrapolated to different contexts. Although this is not a requirement for many qualitative studies, due to the diversity of human activity contexts they address, in some cases, results have been demonstrably extrapolated from one study to another, as demonstrated by Ellis (1989) and Ellis, Cox and Hall (1993) in a series of studies that identified the similarity of information seeking patterns in a variety of academic and R&D contexts. No one can claim that their findings are generalisable to the whole of the academic community, but they can assert that it has been demonstrated that

they could be extrapolated to different academic communities, which constitutes an entirely different statement and stance.

Chapter 2 - Academic discourses as defining discourses

2.1 Arenas, clans and tribes

The introduction to this thesis discusses the linkages that Darwin, Johnson and McAuley (2002) have established between the negotiated arena model, developed by Strauss *et al.* (1964, 1981), and more recent work on communities of practice (Davenport and Hall, 2002), after Lave and Wenger (1991). These authors suggest that organisational arenas can also be understood as learning locales, after the work developed by Nonaka and Takeuchi (1995) and Brown and Duguid (1998), and that these learning locales exhibit different ideologies (or mindsets, according to Darwin, Johnson and McAuley, 2002, or shared meanings, according to Wenger, 1998) that regulate the practices of the various groups of professionals. These ideologies are articulated through different professional rhetorics that form the basis for the negotiation of power relationships: *"In this situation, power comes from the ability of one rhetoric (the expression of the mindset) to dominate another"* (Darwin, Johnson and McAuley, 2002: 75).

In the Introduction, it is suggested that the negotiated arena model has interest and is of usefulness as an analytical framework to apply in other contexts. One such context is academic disciplines and how different professionals interact within and across disciplines and domains. Likening disciplines to something that resembles an arena is not unusual and Diesing (1971) and Becher (1989) use respectively the analogies of a clan and of a tribe. Diesing (1971:22), in the context of discussing social sciences

methods, asserts that the social sciences are a *"doubly segmented society, divided by two principles of grouping that cut across each other"*, in a similar way to how some American Plains Indian societies, such as the Cheyenne, are organised. He comments that the members of these societies tend to be organised both into clans and into voluntary soldier communities. He suggests that social science communities resemble these societies in their principles of organisation in that their members belong both to a clan (the professional field) and to what resembles the voluntary soldier community (the method or methods they adopt in their work): " *A method provides opportunities for achievement and influence, while a field with its primarily ascriptive values provides financial and emotional security, official advancement, power, and personal identity"* (Diesing, 1971: 22).

Diesing suggests that there is a tension between the two principles of organisation in that, while both are necessary, as achievement is required for membership, and professional advancement and financial security are also required to work and live, strengthening one comes at the expense of weakening the other, because they both *"cut across each other"* (Diesing, 1971:22). In the context of the social sciences, tightly knit fields decrease the potential for collaboration with other communities that use the same methods and, vice versa, wide ranging interdisciplinary collaboration across fields based on method will increase the awareness towards methodological differences and divergence within each field. This is, as will be explored in the next chapter, of special relevance towards the discussion of Information Systems as a field.

Similarly, Becher (1989) uses the notion of a tribe to qualify academic disciplines. He contends that academic disciplines have two dimensions: a cognitive component,

61

consisting of subject and specialisms, and a social component, comprising a disciplinary community and a network. He states that a "[...] *discipline is defined by its intellectual content, as much as by its adoptive community*" (Becher, 1989:151). Becher also proposes that each component can be characterised by two different dualities that qualify their properties. The cognitive component can be described, after Biglan (1973), in terms of whether its subject is hard or soft (i.e., whether it is driven by contextual imperatives and its methods determine the problems or it is driven by contextual associations and its problems determine the methods), pure or applied, also characterised in terms of being driven by self regulation or by external influence. The social dimension can be categorised in terms of the degree of convergence or divergence of its community (i.e., whether it maintains relatively uniform standards and control by a stable elite or whether it accepts a degree of heterogeneity and deviance) and by whether it exhibits urban or rural patterns in terms of the ratio of distribution of people to problems – this relates to whether a field and its community focus on a narrow area of intellectual inquiry or whether they span across a broader area.

Becher warns that these dualities should not be seen as opposite and exclusive poles, but rather as part of *continua*. He also proposes that the characteristics of each discipline are likely to change over time and space. He gives, as examples, economics, which was at its origins relatively soft and has become increasingly more theoretically oriented and reliant on complex mathematical modelling, and physics, which looks predominantly urban in countries such as the USA, but takes on a more rural profile in Latin America, for instance. He also warns that there are very complex inter-relations between all these categories and no automatic interdependencies. For

example, although hard subjects can be seen as amenable to convergence and soft subjects amenable to divergence in their social dimensions, a field that is hard and pure, such as chemistry, can be divergent, whereas a soft and pure subject such as history was seen as convergent within the communities studied by Becher.

Both authors comment that fields (Diesing) and discipline (Becher) imply the notion of boundary. Becher (1989:19) refers that disciplinary boundaries often depend upon "[...] *how leading institutions recognise the hiving off* [...]" in their organisational structures, as well as other factors, such as how disciplines are represented by an international freestanding community. He also asserts that disciplines can be characterised by distinctive identities and particular cultures. Diesing refers to methods as subcultures, within a culture of social sciences, belonging to communities. While interaction is intense within each community, boundaries are "[...] *marked by noninteraction, and more definitely by interminable polemics and unresolved misunderstandings. Examination of the polemics reveals differences in beliefs, goals and values that make rational discussion and collaboration difficult or even impossible.*" (Diesing, 1971: 18). Again this is of particular relevance for the analysis of Information Systems as a field and of its relationships with conjunct subjects (Ellis, Allen and Wilson, 1999), as will be discussed in the next chapter.

Boundaries, therefore, reflect both a sense of identity and distinctive cultures: "*Disciplinary cultures imply a certain degree of interdisciplinary diversity and a degree of disciplinary homogeneity.*" (Hyland, 2000:10). Becher (1989) refers that identity and sense of belonging manifest themselves through idols, artefacts and, above all, through language. Hyland (2000:8), who borrows Becher's analogy of tribe

63

to refer to academic discipline, states that each discipline possesses " [...] *particular norms, nomenclature, bodies of knowledge, sets of conventions and modes of inquiry, constituting a separate culture*" and requires the existence of "*specialised discourse competences*" from its members to communicate with each other. These discourse competences are fundamental, as they are as much constructing of social practices and social interaction within disciplinary communities, as they are constructed by them (Candlin, 1997).

Both Hyland (2000) and Candlin (1997) highlight the relationship between academic discourse, discourse communities and communities of practice. Hyland (2000) comments that a discourse community sets its members in contexts and relates their rhetorical strategies to particular aims, whereas the notion of community of practice emphasizes the view that learning occurs within situated practices and situated interaction. In effect, Gerholm (1985) states that the process of socialisation of new members into disciplines involves two types of tacit knowledge: one of collective nature, referred to as practical knowledge that is generated from long experience and that is mastered by the *élite* of the discipline, the other, of individual nature, generated by each individual as a means of sense-making of own experiences. Both act as guides for action and as means to identify and diagnose correctly different situations and to use appropriately the discursive strategies required in each situation.

The analogies of the Indian society clans and voluntary soldier communities by Diesing and the concept of academic tribes by Becher display therefore interesting similarities with the model of the negotiated arena proposed by Strauss et al. (1964, 1981) to characterise professional environments. All share the characteristic of acting

as learning locales (Nonaka and Takeuchi, 1995; Nonaka, Toyama and Konno, 2000; Brown and Duguid, 1998), as suggested by Darwin, Johnson and McAuley (2002), that embrace particular ideologies, expressed through specialised discourses. In effect, according to Hyland (2000), what distinguishes academic discourse from other forms of discourse is the embracing of a specific ideology that views the role of science as adding to a body of knowledge that is certified by peers.

In effect, as noted by Darwin, Johnson and McAuley (2002) in relation to the role of professional rhetoric in the negotiated arena model, academic and disciplinary discourses also serve as a basis to negotiate relationships of power. This has interesting implications for this study, which are twofold:

i.   The study of different disciplinary traditions in information systems development research from a perspective that emphasizes the ideological role of discourses, which constitutes the focus of the literature review (Chapters 2 and 3);

ii. The study of the interplay between professional discourses and its role in the organisational adaptation of information systems, which constitutes the focus of the empirical work (Chapters 4,5,6 and 7).

Clarke (1991, 2005) builds the original framework by Strauss and his colleagues and extends it, by including elements developed by other authors from the Chicago symbolic interactionism school (Shibutani, 1955, 1962, 1986; Becker, 1974; Clarke and Montini, 1993, Clarke and Casper, 1996; Fujimura, 1988, 1996, amongst others), such as the roles of external perspectives, of implicated actors and actants and of

boundary objects, and by establishing links between these and Foucault's work on discourses and power (Foucault, 1980).

Clarke (1991) notes that while the arenas framework has similarities with other frameworks such as resource dependency and mobilisation, population ecologies, and organisational fields and network theories, in that they all share an interest in environments and in the relations between the organisational entities within them, there are also some important distinctions, as they frame these elements in different ways and place their units of analysis differently.

Resource dependency and mobilisation theories (Pfeffer and Slancik, 1978, Pfeffer, 1979) place the unit of analysis on focal organisations and their resource dependencies and mobilisation requirements, in face of changing environmental conditions that require them to adapt in order to survive. The focus is on a focal organisation rather than on its interaction with other organisational entities or the environment itself or on social worlds that cross cut the environment, whereas the arena framework has an explicit focus on social worlds such as groups of professionals that cross cut arenas, for example professional fields and disciplines.

Population ecology (Hannan and Freeman, 1986) focuses on populations of organisations and their ecological mutations and behaviour. The emphasis is on competitor behaviour for survival, rather than other forms of action that are also important and emphasized in the arenas theory, such as cooperation and negotiation.

Organisational field and network theories, on the other hand, focus "[...] *not on single or aggregate populations of organizations, but instead on larger, overarching fields of organizations and other related collective social units*" (Clarke, 1991: 125), such as geographical communities and functional fields, where geographical boundaries give place to different types of specialised fields (the mental health sector is an example). Network theories focus on the relationships and exchanges between entities, including human actors and non-human actants. While the arenas framework had its origins in an areal field model, the Chicago community and social ecology, it does not focus on geographical boundaries. It also proposes that the distinction between the organisation and the environment should be eroded through its focus on the broader organisational processes and the social groups that cross-cut organisations.

Clarke (1991: 128) defines an arena as "[...] *a field of action and interaction among a potentially wide variety of collective entities*". Its analytic focus is on action, in terms social processes such as "[...] conflict, competition, cooperation, exchange, and negotiation". Action is, in effect, central to much of the work of Strauss (Corbin, 1991) and is seen as constitutive of the construction and participation in arenas and social worlds. It is, according to Clarke (2005) underpinned by a tacit view of conflict as ruling social interaction within arenas. This is embedded in the coexistence of social worlds that cross-cut different arenas. Social worlds were explicitly referred to only in Strauss's later work (1978), although they were implicit in his original study of psychiatric institutions (Strauss et al., 1964, 1981), according to Clarke (1991), and are defined as "*universes of discourse*" (Mead, 1938:518, referenced in Clarke, 1991: 130) and as "[...] *groups with shared commitments to certain activities, sharing resources of many kinds to achieve their goals, and building shared ideologies about*

how to go about building their business" (Clarke, 1991: 131). Social worlds are composed by individual actors who also bring personal interests and commitments to action, although, as Clarke (1991) notes, in the arena framework they are essentially seen as representatives of their social worlds.

Clarke has further extended the original Straussian framework by considering other elements far more explicitly. Whereas the original formulation of professional arenas by Strauss *et al.* (1964, 1981) was essentially an internally focused perspective on organisations (the psychiatric hospital as an arena), Clarke considers the role of external perspectives and, in her approach, arenas and social worlds are not just the outcome of professional training, but result from wider perspectives and attitudes, such as worldviews, ethical concerns, the espousement of faith and beliefs. In more recent work (Clarke and Montini,1993; Clarke, 2005) she also includes implicated actors, "[...] *silenced or only discursively present - constructed by others for their own purposes"* (Clarke, 2005: 46), as a means to analyse the presence of less powerful actors, as well as implicated non-human actants, which can be physically and/or discursively present in a given arena. Technology, for example, can be considered a non-human actant and can both be discursively constructed and physically present in particular arenas. Information systems or information strategies, for example, can act as implicated actants in particular information related arenas and, through the discursive constructs of actors in the situation, have an impact on actions taken by individuals as well as being the result of actions. One could add that they are constitutive and informing of new understandings through the interplay between discourses that refer to them and constitute them. This study illuminates how a clearly

defined group – middle managers in academic computing and administration - viewed information systems and reconstructed their organisational role through the interplay of discourses that explored particular tensions.

Bourdieu, Passeron and Saint Martin (1994) stress the relationship between the use of specialised codes and languages in academia and the establishment of relationships of power, through the distance they introduce between the uninitiated and the expert. Assimilating the 'right' discourse is part of a process of initiation and has a direct relationship to the establishment of academic standing. As such, academic and disciplinary discourses have multiple roles and are not neutral: *"To a large extent, disciplinary discourse has evolved as a means of funding, constructing, evaluating, displaying and negotiating knowledge"* (Hyland, 2000: 5). They are also the vehicle for the expression of divergence and conflict within and across disciplines. In effect, Hyland alerts towards the dangers of emphasizing the degree of consensus and homogeneity in disciplines, highlighting that these are characterised by multiple and conflicting beliefs and practices: *"Most disciplines are characterised by several competing perspectives and embody often bitterly contested beliefs and values [...] Disciplines are the contexts in which disagreement can be deliberated."* (Hyland, 2000:11).

It is proposed in this thesis that, as well as the relationship established by Darwin, Johnson and McAuley (2002) between the negotiated arena model and the more recent work on communities of practice (Davenport and Hall, 2002), we can also, as Clarke (2005) suggests in her most recent work, explore potential linkages between the negotiated arena model and other more recent work on discourse, especially

academic discourse and professional discourse. A further extension of the original arenas framework that is particularly relevant to this study, is the establishment of an explicit focus on issues of power and of a link between the work of the Chicago symbolic interactionism School and that of Foucault on discourse and power, previously also discussed by Castellani (1999). Clarke (2005:52), in effect, states that "*If action is at the heart of Strauss's project and power at the heart of Foucault's work, they meet in related conceptualizations of practices as fundamental processes of action and change* [...]". She stresses that concepts of practice, which include on Foucault's part, discourse/discipline and regimes of practice, and on Strauss's part, social worlds/arenas and negotiated orders, are not equivalent, but, rather, related. These issues are further expanded in section 2.2.

In effect, while both authors emphasized discourse as being constituted through interaction (Clarke, 2005), Strauss seeing social worlds as "*universes of discourse*", Foucault placed discourse far more explicitly in frames of power, seeing discourses as "[...] *effected by disciplining practices that produce subjects/subjectivities through surveillance, examination, and various technologies of the self* [...]" often through the influence or the imposition of social groups (Clarke, 2005: 54). Clarke further suggests that both authors view action as interaction, Foucault defining it in terms of regimes of organising practices and Strauss in terms of the negotiated arena model, where action and practice are negotiated.

Cohen, Duberley and McAuley (1999) suggest that the concept of duality of structure by Giddens (1976;1984) further extends that of the negotiation arena by Strauss *et al.* (1964, 1981), as it is through agency and negotiated interaction that social structures

70

are reproduced and transformed. Negotiation in this case, as they suggest, comprises two distinct dimensions: one, located within each discursive regime and defined by its structural and agentic dimensions; the other, defined by the interplay between different discourses. Interestingly, as noted by Clarke (2005), Foucault's later work (Foucault, 1988) also places more influence in agency, by noting that while individuals constitute themselves by adopted practices, these practices are constituted by dominant discourses in society, and in turn, reproduce them.

Processes that are viewed over time, as with the organisational adaptation of information systems, need to take into account an analytical framework that looks into how *"Structures are translated through personal and collective experiences into meanings that shape individual identities and actions. Individual and collective action also, in turn, shape social structure"* (Fujimura:1991:236).

The next section explores ideas around the notion of discourse and academic discourse, as well as the relationship between academic discourse and power, in more detail.

2.2 Discourse and academic discourse

2.2.1 Approaches and foci in discourse studies

There are many different notions of discourse, as well as multiple approaches and potential *foci* to its study. Wetherell (2001a:27; 2001b) suggests that we can consider three potential scopes in boundary definition when referring to discourse: discourse as 'talk', as 'language in use' and as 'human meaning-making activities', each scope increasing in broadness.

'Discourse as talk' is referred to as a rather tight concept in its boundaries, limited to very specific areas of study and to what Thomas (2003:776) refers to as "[...]'close-up' study of micro-discourse [...]" – for example: *corpus* linguistics, the linguistic analysis, often computer-assisted, of specific texts or *corpora* (such as the ones reviewed by Flowerdew, 2002, and exemplified by Swales, 2002, in the context of the contribution of *corpus* based techniques to the pedagogy of English for academic purposes); it can also be exemplified by some very specific areas of application more recently developed, such as contrastive rhetoric, comparing discursive and cultural variation in texts written in different languages by native and non-native speakers (reviewed by Ostler, 2002, and exemplified by the work of Yakhontova, 2002, on cultural variation in conference abstracts in Ukranian, Russian and in English written by Ukranian and Russian native speakers, to assess the differences between styles in the native and the non-native languages).

A broader focus is exemplified by 'discourse as language in use', which is still specifically focused on spoken or written language and often involves the careful notation of documents and of transcripts. Conversation analysts, such as Schegloff (1991, 1992) clearly place the emphasis of their analyses upon the "[...] *nature and sequence of activities in talk* [...]" (Wetherell, 2001b:388) and place the boundaries of their work on the proximate context of discourse interaction, which they understand as the immediate features of the interaction, the sequence of talk, and the roles and capacities of its actors, as opposed to the distal context of interaction, which includes broader social dimensions, such as class, institutional background, politics, culture or ethnics. This kind of approach is exemplified by Silverman (1997), in the context of the conversational interaction between counsellors and patients during HIV testing, leading to the construction of "*delicate* [rhetorical] *objects*" around the representation of sex and death, and by Kittzinger and Frith (1999), who use conversational analysis to provide a feminist approach to critique rhetorical strategies used in the training of young women for the prevention of rape, consubstantiated in the phrase 'just say no'. It could also be considered that some of the work on genre falls into this category (Bhatia, 1993, 2002, provides respectively a framework for and a review of research on genre; Bunton, 2002, provides an example by analysing different genres in the Introduction chapters of PhD theses).

Other studies present a different concept of discourse and place boundaries for its analysis in a far broader way, in that they are concerned with modes of representation, meaning and the semantic context of discourse. The focus of these approaches is on why discourses are articulated and what do they represent in terms of the identities that are developed and the broader contexts (social, political, cultural, historical) of

the meanings that are constructed. 'Discourse as meaning-making activities' is qualified by Wetherell (2001a, 2001b) as a very broad and almost all-encompassing concept, in the sense that it goes beyond the scope of language in use, whether written or spoken, to include other dimensions in situations where there may be even be very limited use of spoken or written language. The examples forwarded by Laclau and Mouffe (1987) of building a brick wall or playing football are well known and striking, as these authors argue that although they appear at first glance rather physical and non-discursive situations, both involve discursive activities in the interaction between its actors and culturally constructed notions (the game of football, rather than a number of players; a brick wall, rather than a collection of bricks). Wetherell (2001a) discusses these ideas rather suggestively in relationship to Diana, Princess of Wales, as a mediatic phenomenon. While her analysis initially focuses on extracts of the Panorama interview, she comments: *"With Diana, much of our information is visual. We have very few of her words. As Geraghty argues, 'for much of her married life, Diana was literally speechless; it was clearly her person, her body which was the news' [...]"* (Wetherell, 2001a: 27). This example raises interesting points, as it draws attention to the sense making potential involved in non-verbal activities, such as the 'signalling-off' of information to an audience through body language or dress code, explored through the seminal work undertaken by Gofffman (1956, 1981).

'Discourse as meaning making activities' is often seen (Hall, 2002;Thomas, 2003; Dick, 2004) as strongly influenced by the work of Foucault (1972;1980), although it is not limited to research following a Foucauldian tradition in a strict sense and includes some of the critical discourse analysis work that has been heavily influenced by Fairclough (1992).

The exploration of the relationships between discourse, knowledge and power owes, in effect, much to research based upon both the Foucauldian and the critical discourse analysis traditions and is especially relevant to the study of academic discourses. Hall (2001) states that Foucault advanced two novel propositions in the relationship between discourse, knowledge and power:

i)   The first relates to the fact that while knowledge is constructed through discourse and is a form of power, power in turn influences the way knowledge is deployed; knowledge related to power assumes the form of legitimate truth and societies operate within different 'regimes of truth';

ii)   The second novel proposition refers to a concept of power as a circulating phenomenon, involving all social actors, rather than as something that is possessed or monopolised by singular actors *"Power must be analyzed as something which circulates, or rather as something which only functions in the form of a chain. It is never localized here or there, never in anybody's hands, never appropriated as a commodity or piece of wealth. Power is employed and exercised through a net-like organization... In other words, individuals are the vehicles of power, not its points of application"* (Foucault, 1980:98).

Foucault shifted the focus of discourse from language *strictu sensus* to a system of meanings and representation. Hall (2002) notes that Foucault's approach to discourse attempts to bridge the distinction between language and practice, between what is said

75

and what is done. Foucault also viewed discourse as the production of knowledge. His can be seen as an all encompassing view of discourse as he considers that nothing has meaning outside discourse (Foucault, 1972). His argument is that since meaning is defined by discourse and we can only have knowledge of things that have a meaning, knowledge is created by discourse not by things themselves. In his discussion of mental illness (1972) and of sexuality (1978) he asserted, for example, that neither constituted objective facts, and that some modern notions around madness and around the regulation of sexuality could be seen as constructs that are constituted within particular discursive practices at specific historic contexts in Western societies. Darwin, Jonhson and McAuley (2002:152) refer, in this context, to the *"linguistic turn"* introduced by post-modernists such as Foucault in that they assert that knowledge is "rhetorically produced" and since discourses express power–knowledge relations, learning a discourse structures our experiences.

The notion of discourse that is espoused in this thesis focuses on the broader view of discourse as a representation and as a meaning making activity. This perspective emphasizes the notion of discourse as being constructive and constitutive of social life, as emphasized by Candlin (1997) and by Wetherell (2001a). In this sense, as Wetherell (2001a) argues, discourse is productive and not just a mere representation – it creates things. Potter and Wetherell (2001:198) propose in effect that *"people use language to do things"* [original emphasis] and for a variety of functions in the sense that, as they add, it *"[...] construct[s] versions of the social world. The principal tenet of discourse analysis is that function involves construction of versions, and is demonstrated by language variation"* (Potter and Wetherell, 2001: 199). Language variation means that each situation can be described in a variety of ways and, as such,

they propose that it is not possible to determine whether accounts of given situations are consistent or true. Therefore, it is often not possible to distinguish between accurate and rhetorical or misleading accounts. They hence propose that discourse should be a study topic in its own right and that it should depart from realist perspectives of study to explore its diversity of meaning and interpretation.

This perspective is, as mentioned, strongly influenced by the work of Foucault and his proposed shift from language *strictu sensu* to a system of meanings and representation. Here we can see the relevance of the inter-relations suggested by Clarke (2005) between the work of Foucault, in terms of discourse, discipline and regimes of practice, and that of Strauss, in terms of the negotiated arena, in that both authors see discourse as being constituted through interaction, although Foucault further elaborates this by emphasizing the constitutive nature of discourse and its relations with power and knowledge.

A further influence in the perspective of discourse that is herein adopted is provided by the work of Bakhtin (1984, 1986). Bakhtin was an early proponent of the view of language as rooted in social interaction, rather than being an abstract and politically neutral system of signs. In contrast, language is often framed, in his view, within social struggles. This was represented, in his work, through the tension, expressed in the form of a conflict, between centripetal forces, focused upon the production of standardised and codified meanings expressed in dogmas and accepted views of universal truth, and centrifugal forces that promote diversity and variation consubstantiated in different discursive genres. This tension relates to another proposition made by Bakhtin that meaning is dialogically constructed, as utterances in

discourses are produced in relationship and as a reaction to other utterances (Maybin, 2001). Meaning is dialogically created in ideological contexts.

A further extension of this perspective is suggested by Cohen, Duberley and McAuley (1999) who refer to the concept of duality of structure by Giddens (1976; 1984) as constitutive of the reproduction and transformation of social structures, through the interplay between the structural and agentic dimensions of each discursive regime, on one side, and through the interplay between different discourses, on another. Discourse analysis, in this context and within a dialogic perspective, aims at identifying and unfolding the interplay between the structural and agentic dimensions of discursive regimes, as well as the interplay between different discursive regimes.

These views of discourse have significant implications for this study, as if we accept them, we can propose that social interaction in the context of situations concerning the implementation and post implementation of information systems informs the meaning that is attributed to the systems and their organisational role through the interplay between the different discursive practices of the various actors in the situation. Information systems become, in this context, "*implicated actants*" (Clarke, 2005) whose meaning is constructed through these discursive practices, but that also, at the same time, are constitutive and informing of new understandings through the interplay between discourses that refer to them. More so, as meanings are reconstructed and evolve through discursive variation, information systems are organisationally adapted.

The tension between centrifugalism and centripetalism, between standardisation and diversity, is especially significant to the discussion of the findings of the case study

explored in this thesis, as is patent in Chapters 5, 6 and 7. It has interesting parallelisms with the proposition by Ellis (1986:116) that the widespread use of IT leading to the proliferation of computer based information systems in organisations has led to the concurrent development of two opposite effects in organisations: *"the centrifugal effect of the rapid, but often uncoordinated growth in the use of"* computer based information systems and "[...] *centripetal efforts to coordinate and control the information handling function* [...]", which forms part of the initial theoretical framework that has influenced this thesis. Yates and Sumner (1997) also stress, in effect, that centrifugal forces tend to be triggered by both social structures and technological evolution.

The production of meaning through discourse is also understood to occur through social interaction. Here we can see the inter-relations suggested by Clarke (2005) between the work of Foucault in terms of discourse, discipline and regimes of practice, and the work of Strauss, in terms of negotiated arenas. It is argued in this thesis that these views of discourse and of action as negotiated interaction are especially relevant when analysing both academic and professional discourses and particularly pertinent when placed in the context of viewing both disciplines and professional fields and practices as negotiated arenas. In this context, disciplines can be seen as social discursive practices that evolve through interaction and negotiation. As Hyland (2000:10) stressed, *"Irrespective of whether we choose to label disciplines as tribes, cultures, discourse communities or communities of practice, these concepts move us from a concern with the abstract logicality and substance of ideas of academic writing to the world of concrete practices and social beliefs [...] and*

understand the fact that disciplinary discourse involves language users in constructing and displaying their roles and identities as members of social groups".

2.2.2 Features in academic discourse

Hyland (2000) distinguishes between two main approaches in the study of academic discourses: those that are based upon models of actors and those that are based upon models of social structures. The first of these approaches tries to link the construction of texts and linguistic choices to assumptions that writers make about the beliefs and expectations of their readers. It has found expression in studies that are based upon the politeness model of interaction developed by Brown and Levinson (1987), following Goffman (1967). These authors see academic writing as driven by the desire to 'save face' of both writers and readers and position academic discourses in a social context, rather than seeing it as impersonal, neutral and autonomous. This type of approach is seen however as limited, as it neglects various dimensions of social interaction. Hyland (2000) and Fairclough (1995) argue that approaches based on the politeness model of interaction emphasize collaboration too much and neglect the fact that the distribution of social and discursive rights is asymmetric in society. They see greater potential in the tradition of research that focuses upon the relationship between discourse and social structures (seen as ideological and power driven). They argue that language reproduces existing social structures within asymmetrical relations of power.

Fairclough (1992) developed a framework that assumes that discourse constitutes respectively the identities of individuals, the relations between individuals and the ideological texture of society. Based on this, he proposes that the analysis of discourse should focus upon three dimensions of discourse: the identity function (to be studied through text, focusing on how texts are constructed and on what aims are they trying to achieve), the relational function (to be studied through discursive practices, which are understood as the context of text production) and the ideational function of discourse (to be studied through social practice, focusing upon the ideological propositions made by text).

Dick (2004) stresses that there are clear underpinnings of Foucault's concepts in the critical discourse analysis framework by Fairclough, namely, in terms of the relationships between discourse and power and in the notion of discourse as productive. Other authors, such as Wetherell (2001b) and Darwin, Johnson and McAuley (2002) argue, however, that there are important distinctions between the two discourse traditions, namely in that whereas Foucault embraces an all encompassing vision of discourse, whereby reality is discursively constructed and nothing exists outside discourse, many critical discourse analysts differentiate clearly between discursive practices and other social practices, focusing on discourse as text, and establish the difference between discourse and an external real material world, embracing therefore a more realist ontological position.

Some authors, however, have attempted to bring together different aspects of both traditions. In this context, Hyland (2000) mentions the usefulness of the concept of 'orders of discourse' (from Foucault, 1971, and Fairclough, 1992) to the study of

disciplinary discourses. 'Orders of discourse' refers to relatively stable clusters of discursive practices and conventions that are an attribute of social situations. He proposes the notion of disciplinary orders of discourse which are "[...] *ideologically shaped by those in authority, power brokers and gatekeepers in the field, and serve the interests of the powerful within the discipline.*"(Hyland, 2000:157)

This notion has interesting potential to further explore the linkages between the negotiated arena (Strauss et al., 1964, 1981), clan (Diesing 1971) and the tribe (Becher, 1989) models and how disciplinary discourses are generated, regulated and subject to change. The following subsections will discuss the linkages between and the regulation of relationships within disciplines and across disciplines. This discussion will include the following elements: the ideological role of specialised discourses and its contribution to the formation of the identity of intellectual arenas as learning locales; modes of regulation and of control of these arenas; deviance and change; the establishment of pecking orders; finally, the management of boundaries and of grey areas around boundaries.

2.2.2.1 Identity and the ideological role of academic discourse

Bourdieu and Passeron (1970) note that language is the most effective, yet supremely subtle, mean of establishing distance that academia, as an institution, offers to its agents, as, unlike space and regulations, language does not appear to be intrinsic to the institution itself. If on the one hand, the possession of skills in a specialised

language establishes the cultural privilege of its agents (Bourdieu, Passerin and Saint Martin, 1994), the language of academia is different from the languages spoken by different social classes (Bourdieu and Passeron, 1970)[3]. Aronowitz (1988, cited in Hyland, 2000:159) states: *"Science is a language of power and those who bear legitimate claims, i.e., those who are involved in the ownership and control of its processes and results, have become a distinctive social category equipped with a distinctive ideology and position in the post-war world."*

The reasons for this are diverse, but interconnected. The authority of academic discourses stems partly from the element of neutrality that is often accorded to them. Neutrality works in two ways: on the one hand, there is an assumption that scientific knowledge is objective and disengaged from social and ideological constraints, which, on the other hand, as stressed by Bourdieu and Passeron (1970), has also the effect of 'neutralising' its agents, of portraying them as independent from these constraints. This allows them to speak about subjects that in other social circumstances might be considered sensitive and 'delicate' (Silvermann, 1997). In this sense, disciplinary discourses have, as Hyland (2000:162) asserts, a dual ideological role of constituting *"powerfully authoritative accounts of human and natural phenomena"* and of *"desensitising"* people towards the socially constructed nature of these accounts. Another source of authority stems from the nature of academic discourse as a truth claiming discourse through its relation to the production of knowledge, as knowledge

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[3] Yet Bourdieu and Passeron (1970:144) also note that the asymmetric distribution across social classes of a "linguistic capital" of effective usefulness in the educational environment is one of the most hidden mediators between social origin and educational achievement, even if it is just one of a set of complex relations.

can be seen as legitimated truth (Foucault, 1980). Hyland asserts that, in this sense, academic discourses are "[...] *ideological as they obscure the contradictions between material and social processes [...] they embody a rationality apparently free from vested interest, emotional conviction or political and economic values*" (Hyland, 2000: 159).

2.2.2.2 Modes of regulation of academic arenas

The ideological 'force' of discourse serves as a way to regulate the arenas that are formed around it, as it supports the definition of identity and the definition of difference. Bucher and Strauss (1961) refer to the analogy between professional identity and the ideology of political movements, in that both involve the formation of a 'brotherhood' of colleagues, forms of leadership and the development of strategies to implement and consolidate the positions of the community, although they warn that not all professional segments display the same characteristics. Becher (1989) states that the culturally constitutive role of professional and academic discourses works through the establishment of common symbolisms and conventions, as well as through the creation of specialised terms, that are beyond the grasp of the uninitiated. The fact that access to different specialised discourses is not immediately available to everyone reinforces group membership and the exercise of power by those that control the process (Becher,1989; Bourdieu, Passeron and Saint Martin, 1994).

The internal regulation mechanisms that ensure the preservation of identity are referred by Diesing (1971), Bourdieu (1984) and Becher (1989) as being under the control of a disciplinary *élite*. Diesing refers to these actors as 'field elders', whose

84

role is to control the identity and cohesion of the discipline through the job-placement system, by continuously networking, refereeing and exchanging information about job applicants and opportunities. The role of the *élite* in regulating the field is also manifesed through the control of the process of socialisation of new members, often working under powerful patrons (Bourdieu, 1984). Part of this socialisation involves the assimilation of the 'orders of discourse' that express and reproduce ideological positions. The focus on the development of a shared discourse (Strauss *et al.*, 1981) and a shared interpretative repertoire (Potter and Wetherell, 1987; Hackley, 2000) can be seen as a vehicle for reproducing ways to control events and situations, of establishing 'the right way to do things'. This theme is explored by Hackley (2000:246) in the context of a knowledge intensive organisation, the advertising agency: "*Assimilate the right discourses in the right way* [...] *and a credible professional identity could be constructed through momentary authoritative expressions of them*". In effect, intertextuality in academic interaction, through the interweaving of different texts from a variety of sources and contexts, serves as a means to construct meaning and to develop disciplinary cultures (Hyland, 2000). This implies that while individual discourses take meaning in relationship to other discourses, change is also possible through the combination of different ideas and discursive traditions.

There can be, in effect, as mentioned previously, the risk of over emphasizing consensus and identity when discussing disciplinary interaction. As noted above, Becher (1989) proposes that we can categorise disciplines through their degree of convergence (the maintenance of relatively uniform standards and control by a stable elite) or divergence (the acceptance of a degree of heterogeneity and deviance) and

Hyland defines disciplines as the locales "[...] *in which disagreement can be deliberated.*" (Hyland, 2000:11). Change and deviance often occur through openness to outside values (Becher, 1989) and the exposure to different ideologies and discursive constructs.

2.2.2.3 Change and deviance in academic discourse

Diesing (1971) identifies different types of deviance and deviants and relates them to the importation and exportation of different ideologies by deviant members of a field. One stems from the influence of members that are marginal, in the sense that they have assimilated ideologies that are different and belong to other disciplines and, as a consequence, have a diffuse sense of identity. These individuals can become mediators and boundary spanners between different fields, if they are accepted and followed. A different type of deviance may be characterised by developing variants of work in one field that becomes a new area in another field. Finally, a third category of deviance refers to the work of individuals that move, stage by stage, into new fields, if they are accepted as legitimate members - part of the role of the field elders is, in effect, to defend their intellectual arenas and to guard them against "*illegal immigrants*" (Becher, 1989:24).

Change in academic disciplines has recently been studied through the fashion perspective, especially in the context of management sciences, after Abrahamson,

(1991, 1996)[4] Becher (1989) notes that change often involves the re-labelling of areas of work and the redoing of their history. Becher refers to various examples where different fields have re-labelled themselves in an attempt to assume a more attractive identity – for example, functional morphology turned into biomechanics; in mathematics, analysts became successively, classical analysts, functional analysts and hard analysts. However, as he notes, what is at stake is often more than terminological change and may involve a change in focus or even a shift in paradigm. Bourdieu (1984) refers, for example, to how philology was overtaken by linguistics, representing a shift in thinking in the study of language. More recently, the emergence of knowledge management has raised an interesting to debate on how it may relate to pre-existing fields and schools of thought, as exemplified by Wilson's (2002) discussion of its relationship with information management and Scarbrough and Swan's (2001) discussion of its relationship with research traditions on the learning organisation.

Thomas (2003) argues that fashion based explanations of change in schools of thought in academic disciplines have several limitations, as they often postulate an assumption of commoditisation of academic knowledge, as well as the division between discourse producers and consumers and, finally, they neglect the role of ideology and power. He proposes that change can be identified through the discursive practices of disciplines, which embody ideological processes. He uses the concept of recontextualisation (from Bernstein, 1996) to analyse the discursive interaction between different arenas (academic, consultant and practitioner) in management. He identifies rhetorical

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[4] Although significant previous studies of fashion in the context of science can be found, as exemplified by Fell (1960) and Crane (1969).

strategies around intertextuality (inter-relations between discourses), technologisation (the standardisation and specialisation of discourse, leading to the emergence of discursive experts) and hybridity (the merging of discourses emanating from different areas).

It could be argued, though, that there are relative merits in the fashion based approach to change in schools of thought within academic fields, especially in management related subjects, where these approaches have been more commonly used, in that they alert towards the fact that fashion movements represent *"powerful rhetorics"*, with *"enduring effects"* (Newell, Robertson and Swan, 2001:5) and, more importantly, that changes in dominant rhetorics have a cyclical pattern. Moreover, they have the merit of allowing change through the re-establishment of past ideas that have become unfashionable but offer something that current thought may lack (Benders and Van Veen (2001). In effect, there could be potential for combining critical discourse analysis frameworks based upon the concept of recontextualisation, such as the one above by Bernstein (1996), followed by Thomas (2003), in the analysis of discursive practices in management, with frameworks developed under the management fashion tradition of research, such as the one adopted by Benders and Van Veen (2001), based upon the notion of 'interpretative viability' (originally coined by Ortmann, 1995) to illustrate how concepts that are open to multiple interpretations often display characteristics of broad dissemination, because *"[...] their users can eclectically select those elements that appeal to them, or that they interpret as the fashion's core idea, or that they opportunistically select as suitable for their purposes."* (Benders and Van Veen (2001:37) and therefore, they often attract a wide user basis because *"[...] different parties can each 'recognize' their own version of the concept."*

(Benders and Van Veen, 2001: 38). As such, many concepts adopted in management and social sciences are open-textured (Waismann, 1951), as they are amenable to multiple reformulations, in accordance to different understandings arising from social and technological evolution, for example. An integration between the concepts of recontextualisation, of interpretative viability and of open-texture can serve as a basis for explaining issues around how different research traditions in the same field – and indeed different fields - claim the same concepts as part of their intellectual arenas and how, despite this, they form different rhetorical approaches towards them, both issues of critical importance to discuss the theme of 'information systems development', as will be discussed further in chapter 3.

Nevertheless, a relevant point of the critique of fashion based approaches raised by Thomas (2003) relates to the relative neglect of issues surrounding the role of ideology and power in explaining change in discursive schools of thought in academia and in the establishment of 'pecking orders' across different schools of thought and different academic fields.

2.2.2.4 Pecking orders and discursive practices: 'the conflict of the Faculties'

Bourdieu (1984)[5] has approached the subject of the formation of pecking orders within and across academic disciplines from a perspective of power and ideology and refers to two different sources of power in academic institutions:

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[5] Although Bourdieu developed his work within the context of French university system, his categorisation presents some similarity to the model by Gouldner (1957) on the contrast between locals

- on one hand, a locally based source, that derives from the domination of the systems and instruments that allow the perpetuation of the order, emanating from the constitution of University committees and Boards in charge of selecting and promoting members, as well as of deciding upon the general regulation of the University order;

- on the other hand, an external source of power, based upon scientific authority and intellectual prestige, which is based upon external peer recognition, often of international scope, and often expressed through the citation and translation of the work developed by these academics, whom he labels *"consecrated heretics"* (Bourdieu, 1984: 140).

The implication is that the first source of power is based on and aims at the regulation of the order and social relations within the academic system, whereas the latter is founded upon the freedom from institutional constraints and formal discipline and allows the pursuit of new subjects. Both 'orders' possess their own hierarchy and are represented differently across disciplines, in the communities studied by Bourdieu. His assertion that the different orders are represented asymmetrically across various disciplines raises an important point here, as Bourdieu also argues that different disciplines take different positions in the pecking order of the University. He distinguishes between *"socially dominant"* faculties or disciplines - such as Law and Medicine – and *"temporally dominated"* faculties or disciplines - such as Sciences and, to a lesser degree, Arts - (Bourdieu, 1984:62, our translation), borrowing from

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and cosmopolitans and to the model by Birnbaum (1998) on the duality of sources of academic powe, both in the context of Anglo-Saxon higher education institutions.

Kant the distinction between temporally focused disciplines, representing a *"science of order and power, which aim at the rationalisation [...] of the established order"* and disciplines that are free from worldly limits and represent a *"science of order and power, aiming, not at the order of public issues, but at reflecting upon them as such"* (Bourdieu, 1984: 96, our translation). He asserts that temporally dominated disciplines, through their subordinated status, could afford a degree of "irresponsibility", allowing them to question the *status quo* and to be more permeable to change, deviance and heretic movement than order oriented disciplines. This is illustrated by his account on how philology was overtaken by linguistics in France, whereby he contends that this has partly stemmed from the distancing of the a philology old guard, safely entrenched in positions of power within the University administration, from new developments that were taking place, largely abroad, but also in France, that were imported by "marginal" members that often originated from subordinate disciplines, such as modern languages, thus, resembling some aspects of Diesing's models of deviation, referred to above.

Becher (1989) also approaches the subject of the establishment of pecking orders in academic disciplines, although working within a very different context (Anglo-Saxon universities, in the United Kingdom and in the USA), using completely different frames of reference and reaching different conclusions. His contention is that the existence of 'pecking orders' within and between disciplines is based upon how the differences between the cognitive and social dimensions of academic disciplines are perceived. He argues that disciplines that are convergent, hard, pure and urban tend to be regarded as having a privileged status: *"[...] good standing accrues on each scale at the end which emphasizes the theoretic, the quantitative and the sharply defined"*

(Becher, 1989:160). Members of convergent disciplines are in a better position to advance their common interests, by keeping greater cohesion and a common understanding of their mutual concerns than divergent communities. He argues that fields that share the characteristics of convergence, pureness, hardness and an urban distribution of people to problems, such as theoretical physics, demographic history or physical chemistry, will tend to command greater status, with inherent consequences, such as the possibility of attracting higher amount of funding, than fields that do not share these attributes, such as literary history, sociology or plant physiology, although he warns that there is an element of variation introduced by national cultures and values, referring to differences between criteria for establishing pecking orders, between the British and Continental European contexts, for example.

If we accept the arguments forwarded by Becher, it would seem reasonable to assume that, in the context studied by Becher, disciplines that present greater homogeneity and few elements of deviance in terms of discourse traditions would be in a stronger position to make claims to power. Similarly, the strengthening of discursive strategies that make appeals to the theoretical underpinning and the degree of hardness and pureness of a subject may be seen as part of rhetorical approaches to increase the perceived status of members of a community – this, again, will be of interest to the discussion of different discursive traditions around Information Systems.

It is argued, in this thesis, that notions on change, deviance and the status of academic disciplines have evolved to a large extent in the last few decades and require different conceptual frameworks than the ones originally considered by Becher and Bourdieu. The consideration of the status of interdisciplinary and transdisciplinary work and of

grey areas around the boundaries between different fields and specialisms introduces, in effect, further complexity to the discussion of competing discourses and deviance, as although it would appear logical that new discursive practices and discourses that exhibit elements of hybridity would be less likely to be accepted, it is also the case that discursive innovations occur, not only through the influence of successful marginal members, but also through changes in the conceptualisation of a field, sanctioned by its influent members.

Notions around interdisciplinarity, transdisciplinarity and the nature and status of academic disciplines have been reconceptualised by Gibbons *et al.* (1994), following social, scientific and technological developments since World War II. They propose a taxonomy of knowledge production systems based upon the distinction between two different organising frameworks and correlated agendas. The first of these frameworks, referred to as mode 1, is mainly driven by academic agendas and categorised by academic disciplines, implying the distinction between fundamental research and applied research and regulation is operated by an elite of gatekeepers, as also characterised by Diesing (1971), Bourdieu (1984) and Becher (1989). In contrast, a different organising framework, referred to by mode 2, is fundamentally based upon trans-disciplinary collaboration, whereby the main driver for knowledge production is the context of its application and diffusion occurs within the process of production, leading, thus, to a more socially distributed form of knowledge production.

Tranfield and Starkey (1998) and Tranfield (2002) have integrated the Gibbons *et al.* (1994) taxonomy with Becher's (1989) conceptual schema of academic disciplines, in the context of a discussion of the nature of management research, following Pettigrew

(1995). They argue that mode 2 is clearly more congruent with the soft and applied cognitive dimensions and the divergent and rural social dimensions of Becher's conceptual framework, as it emphasizes the focus on the synthesis of a diversity of approaches, where knowledge discoveries develop in a non-linear way. In this context, transdisciplinary work that follows a mode 2 framework tends to be associated with a higher tolerance of deviance and the absence of a dominant ideology (Tranfield and Starkey, 1998; Tranfield, 2002).

We can also argue that competing orders of discourse may coexist through complex negotiation activities. Returning to the negotiated arena model, Strauss *et al.* (1964, 1981) referred that notions of deviance traditionally accepted in sociology were over simplistic, due to their reliance on the assumption of homogeneity in social and organisational settings, whereas often these are characterised by different and contrasting sets of ideologies and values that coexist under a regime of constant negotiation.

Bourdieu (1984:150, our translation), in effect, also concedes, in this respect, that the different institutional orders identified by him are not necessarily monolithic in their opposition, but are bound by relationships of complementarity and complicity, referring to them as *"complicitous opponents"*. In this sense, different academic arenas will be defined by the interplay between complementary or contrasting orders of discourse, depending upon their degree of convergence and divergence. Strauss *et al.* (1964, 1981) assert that, often, status determines who defines a problem, how the problem is defined and who discusses (or negotiates) it with whom and to what extent: *"In these terms, what really counts is the ability of one mindset to assert*

control through the definition of the situation, and then the capacity to regulate the ways in which interaction takes place [...]" (Darwin, Johnson and McAuley, 2002: 75).

2.3 Summary and implications for research

This chapter proposed that there are linkages that may exhibit special synergy between the negotiated arena model developed by Strauss *et al.* (1964, 1981) and other work produced in different contexts, which are worthwhile to explore in the context of this thesis. In addition to the synergies observed by Darwin, Johnson and McAuley (2002) between the negotiated arena model and the notion of community of practice (Davenport and Hall, 2002), we can consider that this offers potential interest to explore academic and professional fields as social contexts, as learning locales, where different ideologies, expressed through different rhetorical practices interact through sets of practices of negotiation.

There is also further potential in establishing synergies between the negotiated arena model and more recent work on discourse, particularly academic and professional discourse. This thesis focuses on a notion of discourse as a representation and as a meaning making activity. This perspective emphasizes the notion of discourse as being constructive and constitutive of social life, as emphasized by Candlin (1997) and by Wetherell (2001a). In this context, academic discourse is not seen as neutral, but as integrated with social practices and beliefs. It is the currency through which social actors make claims to knowledge and define identities and roles.

It is proposed that there are key issues that are of usefulness in attempting to explore contrasting discourses in Information Systems research traditions around the notion of information systems development, which will be developed in the next chapter.

The first relates to the identification of different discursive traditions on Information Systems as an object of study and as a field, in terms of whether they exhibit degrees of convergence and of divergence. Diesing's distinction between collaboration through subject or method is seen as potentially useful, in this context, as his definition of tightly knit fields, through subject based collaboration, would appear to reinforce the notion of convergence and interdisciplinary collaboration on the basis of method, would appear to increase the degree of internal divergence.

It is also suggested that an integration of the concepts of recontextualisation (Thomas, 2003, after Bernstein, 1996), of interpretative viability (Benders and Van Veen, 2001, after Ortmann, 1995) and of open-texture (Waismann, 1951) can be of usefulness to characterise discourse traditions. Furthermore, it can serve as a basis for explaining issues around how different fields and different research traditions in the same field claim the same concepts as part of their intellectual arenas and how, despite this, they form different rhetorical approaches around them, both issues of critical importance to discuss different views on information systems development, as proposed above.

An important point to retain from issues of difference, change and deviation within academic discourses is that they appear to relate to underlying power struggles and to the interconnections between competing discourses and rhetorical strategies: *"Disciplines are the contexts in which disagreement can be deliberated"* (Hyland, 2000:11). The formation of pecking orders around these competing discourses is of interest in this context and, more importantly so, the discussion of potential reasons for that. It is also of importance to consider, in this context, new perspectives around

notions of transdisciplinarity, where divergence and non linearity are seen as an integral part of academic knowledge production.

The idea proposed by Diesing (1971) that while interaction is intense within each community, boundaries are "[...] *marked by noninteraction, and more definitely by interminable polemics and unresolved misunderstandings. Examination of the polemics reveals differences in beliefs, goals and values that make rational discussion and collaboration difficult or even impossible.*" (Diesing, 1971: 18), is important to further explore how, in the differences between different discursive traditions, potentially, some subjects in their boundaries may become clouded or subject to unilateral observation or even neglect, where sometimes there could be potential for convergence and complementarity. An important point to retain about discursive practices is not only what they allow to express and reproduce, but, often more crucially, what they do not allow to express. Identifying what is silenced is also of importance in the study of discursive practices (Ellis, Oldridge and Vasconcelos, 2004) and it is suggested that it may illuminate issues underlying differences in discursive traditions in Information Systems. In this context, the view of disciplinary discourses as simultaneously ideologically shaped and shaping has explanatory power.

These issues are of significant relevance for the study of discourses, both academic, professional and lay, on information systems development, and will be explored in the next chapter and further discussed through the empirical findings of this thesis.

Chapter 3 – Defining discourses in Information Systems

The previous chapter discussed the potential synergies between the negotiated arena model, by Strauss *et al.* (1964; 1981) and work related to academic and professional discourses. It was proposed that there are several areas that are of interest to further explore in the context of discursive approaches to Information Systems (IS):

- The issues surrounding the emergence of different discursive traditions, especially in what concerns the relationships between the roots for convergence and divergence (after Becher, 1989) and subject based collaboration and interdisciplinary method based collaboration (after Diesing, 1971); it would appear that subject based collaboration would reinforce convergence in a field and interdisciplinary method based collaboration would increase the potential for divergence;

- The identification and discussion of the different attributes of different discursive traditions could be assisted by an integration of the concepts of recontextualisation (Thomas, 2003, after Bernstein, 1996) and of interpretative viability (Benders and Van Veen, 2001, after Ortmann, 1995), in explaining how, although claiming territory over the same subject, different traditions may exhibit entirely different rhetorical strategies and reveal contrasting mindsets over the subject; issues around claims to power and the and the ideologically shaped and shaping role of

disciplinary discourse may help to illuminate the root causes to some of these differences;

- The formation of boundaries and of gaps and grey areas around boundaries are, in this context, significant and the exploration of subjects and themes that may become clouded or object of unilateral observation may be of usefulness to resolve particular tensions or gaps across boundary areas.

This chapter attempts to further explore these issues, as mentioned. A first section will introduce a background to explore discursive traditions in IS debates around the definition of the nature and focus of IS as a discipline. This will lead to a discussion of different frameworks devised to characterise research traditions in IS. Although these frameworks were not originally developed to explore discursive differences as such, it is argued that they can be helpful in doing so, as they point out to different ontological and epistemological assumptions of these traditions and represent themselves discursive accounts of these traditions. These different frameworks, which are by and large theoretically driven and developed on the basis of pre-determined constructs, will then be discussed in the light of practical survey studies of work that published in mainstream IS journals, in order to assess potential overlaps theoretically derived frameworks and practical analysis of published work.

A key theme across discourse traditions, information systems development, will be discussed against issues of recontextualisation and interpretative viability. Particular emphasis will be placed on what research traditions assume and propose about the nature of information systems, the nature of organisations, the nature of

information systems work and of the actors that are involved and their inter-relationships. The relationship between discourse traditions in Information Systems and other conjunct subjects, such as Information Studies, will also be discussed in this context, particularly around the reasons for the view that although they seem to focus on the same subject, they form around different communities and use different discursive *foci*. Special emphasis will be placed in themes around the boundaries of these subjects that are ignored or subject to unilateral observation.

3.1 Discursive traditions in Information Systems

3.1.1 The debate on the nature and focus of IS as a discipline

Theory and practice in information systems development foster implicit assumptions on what is the nature of the information system, of the development process and of their organisational context. Some authors (Hirschheim and Klein, 1989) propose that these assumptions are at the centre of what distinguishes different research traditions and different approaches to practice.

Avison, Fitzgerald and Powell (2001), in their Editorial of the 10th anniversary of the Information Systems Journal, one of the most influential European based Information Systems (IS) journals provided a reflection upon the changes in the subject since its inception from the points of view of practice, education and research. They refer to the field of IS as originating from an area of applied computing work, proposing a perspective over its subject that was different from a pure computer science one. In establishing the differences between the two, they proposed the suggestive image of two different communities standing next to a computer: "[...] *and we took the view that we, in IS, stood with our backs to the machine and looked outward towards the world at large, whereas computer science stood in much the same place but looked in. For us, the context was broad and included important issues beyond the technology, including business, organizational and social impacts*" (Avison, Fitzgerald and Powell, 2001: 3).

This broadness has had implications on the definition of the nature of what information systems constitutes and on the formation of an identity across the various research communities that claim 'information systems' as their object of study. Hirschheim, Klein and Lyytinen (1996:2) comment that although there is general agreement that IS is a broad field, comprising many different subfields and themes, there tends to be "[...] *far less agreement about what the field actually includes or does not include and what are its core features*".

This element of ambiguity is reflected terminologically and the designation 'information systems' has been used interchangeably with others, such as management information systems (MIS), executive information systems (EIS), decision support systems (DSS) or strategic information systems (SIS) (Boaden and Lockett, 1991; Farhoomand, 1992; Tricker, 1992), although Boaden and Lockett (1991) suggest that some of these terms (DSS and SIS) tend to be increasingly considered as designating a subset of others (MIS). Nevertheless, IS - the most commonly used term (Boaden and Lockett, 1991) - or MIS, another broadly adopted term, tend to be used to refer to either *"an organizational function"* in itself (Boaden and Lockett, 1991: 29), *"an organizational subsystem"* (Culnan, 1987:347) or a tool designed to support organizational functions: *"MIS is an integrated, user-machine system for providing information to support operations, management, analysis and decision making functions in an organization."* *(Farhoomand, 1992: 98).* Other authors do not revert to the mandatory inclusion of an IT artefact to define an information system. In effect, early definitions, such as the following, by Mason and Mitroff (1973: 475), although focused on a functional and instrumental view of information systems as means to achieving ends, do not bound the notion of an

information system to an IT artefact : *"An information system consists of, at least, a person of a certain psychological type who faces a problem within some organizational context for which he needs evidence to arrive to a solution."* This diversity of views on what constitutes the meaning of the term – and even on what is the adequate term – reflects itself on the variety of views on what the focus of IS, as an area of study, should be.

The discussion of the epistemological status of IS research has been for a long time considered a central topic for debate as is patent in many contributions in the literature (Lyytinen,1987a, 1987b; Kwon and Zmud, 1987;Banville and Landry, 1989; Orlikovski and Baroudi, 1991 Galliers, 1992; Landry and Banville, 1992; Hirschheim, Klein and Lyytinen, 1995, 1996; Mingers and Stowell, 1997; Lucas, 1999; Baskerville and Meyers, 2002; Varey, Wood-Harper and Wood, 2002;Chen and Hirschheim, 2004). Other authors debate whether IS should, in fact, be considered a discipline (Jones, 1997). It is important to note a general consensus regarding the diversity and fragmentation in IS research.

The hybrid nature of IS as a field - described by Avgerou and Cornford as *"[...] 'dubious' academic field at the margins of engineering and business studies[...]"* (1993:287) and by Banville and Landry (1989, following Whitley's model of cognitive and social institutionalisation of academic disciplines, 1984a,1984b) as a *"fragmented adhocracy"*- has been pin-pointed as a main cause for the lack of conceptual clarity regarding the nature of information systems (Checkland, 1988; Hirschheim, 1992). In this context, many authors advocate the need to arrive to some consensus on what should be the fundamental concepts of the discipline and how to

define them (Benbasat and Weber, 1996; Checkland and Howell, 1998; Benbasat and Zmud, 2003) and to map the intellectual antecedents of IS (Checkland and Howell, 1998).

References to a crisis in the discipline have been abundant and reflected recently in the titles of workshops of professional organisations (UKAIS, 2004) and publications (Benbasat and Zmud, 2003). The notion of identity crisis associated with the field appears to stem from the plurality of view on what constitutes the focus of the discipline. The relationship between information technology and its human and organisational context seems, in fact, to be central to the debate on the epistemological status of IS research and the diversity of views and assumptions regarding the nature of information systems. Klein and Hirschheim (1987) propose a model for mapping the basic views of information systems, through the distinction of two ontological dimensions: one regarding the nature of information systems themselves, the other concerning the nature of their implications. This model allows to distinguish approaches which are basically technical in their view of the information systems, but consider social or socio-technical implications (as is the case of socio-technical approaches), from approaches based essentially on the social nature of information systems or approaches that are technically focused in their assumptions on both the nature of information systems and of their implications.

Views on what constitutes an adequate focus have varied considerably throughout the years. As noted by Kling (2000), most of the work related to computerisation in the 1970s and 1980s focused on the deterministic impact of technology. Yet, a focus on the technical dimension of information systems, rather than on the human and

organisational dimensions, was pointed as a constraining factor in IS as a field and as an impediment to the successful implementation of information systems as far back as the 1960s, and many authors, throughout the 1970s to the 1990s argued for a refocus of IS work, both academic and as practice, on the social dimension of systems and of organisations (Lucas, 1975; Kwon and Zmud, 1987; Checkland, 1988; Hirschheim, 1992; Tricker, 1992; Hornby et al. 1992; Avgerou and Cornford, 1993): *"Analysts do not claim to have knowledge or understanding of human and organizational issues in IT systems and there is no evidence that they are encouraged to, or rewarded for, considering such issues. In fact it could be said that the reward and control systems within which analysts work actively encourage them not to consider them. They are rewarded, in the main, for delivering technically sound systems on time and to budget."* (Hornby *et al.*, 1992, p. 165*)*. In effect, the two-phased study conducted by Culnan (1986, 1987), aiming at the mapping of the intellectual structure in IS (or MIS, the term adopted in these papers), referred to a growing emphasis in organisational and managerial issues, and less so in technically focused studies in the period covered by the study (1972 to 1985).

More recently, an opposite trend appears to begin populating the literature. Orlikowski and Iacono (2001), following an analysis over the set of papers published by *Information Systems Research*[6], arguably a very influential journal in the area, over a period of ten years, refer to a lack of engagement with what they consider its core subject, the information technology artefact, and an over emphasis on contextual

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[6] The choice of this journal is significant, as in another recent study of the literature over a ten year period, Chen and Hirschheim (2004) refer that interpretative studies in this journal are virtually non-existent, with an overall 94% of studies being classed as positivist.

issues. They propose that IS researchers need to start theorising about the IT artefact, if the discipline is to be seen as making a significant contribution of its own. This point was also picked upon by Benbasat and Zmud (2003), who argue that IS is facing a deep crisis in its identity, which they attribute to the under investigation of issues that are closely related to IT and the over emphasis of issues that are distantly related to IT, by different IS research communities. They propose a nomological net for the IT artefact, composed by: the artefact itself; its managerial, methodological and technological capabilities; its managerial, methodological and operational practices; its usage and its impact. They assert that IS scholarship should focus strictly on issues that are core to the IT artefact nomological net and that editors should act as gatekeepers of work that falls within this area: *"We should neither focus our research on variables outside the nomological net nor exclusively on intermediate-level variables, such as ease of use, usefulness or behavioural intentions, without clarifying the IS nuances involved."* (Benbasat and Zmud, 2003:1993).

The arguments around what should be an adequate focus for IS, and the fact that it appears that there have been different trends at different stages, raise interesting issues. It would also appear that, in common with many social sciences and management concepts, notions around information systems are "open textured" (Waismann, 1951), in the sense that they are not only open to different interpretations, but they are amenable to adjustment, correction and amendment, depending upon changes in the wider social, historical, economical, technological environment: *"Open texture is a very fundamental characteristic of most, though not all, empirical concepts"* (Waismann, 1951: 121). Ellis, Oldridge and Vasconcelos (2004) note this in relationship to different notions of community and virtual community and to how

wider changes in the nature of society may be reflected in the understanding of community. Another inter-related issue relates to the notion of "interpretative viability", a term originally coined by Ortmann (1995) and used by Benders and Van Veen (2001), in the context of explaining elements of fashion in management concepts, to illustrate how concepts that are fashionable tend to be open to multiple interpretation and to wide dissemination, because "[...] *different parties can each recognise their own version of the concept*" (Benders and Van Veen, 2001: 38), by selecting elements of the concept that appeal to them or with which they identify. It could be that, in this sense, the notion of information system has appealed to a variety of communities from a diversity of backgrounds that bring different understandings to the term and that the term itself is open to changes in the understanding of its core features. It could be that successive trends in the literature may relate to aspects that were neglected in the previous trend (Benders and Van Veen, 2001) and, hence, following an initial focus on technical aspects of information systems and widely reported failures in information systems, the literature in the 1980s to the mid 1990s, especially, advocated the need to address a relative neglect of the human and social context of information systems, whereas, more recently, the argument that the IT artefact has been neglected and that this is at the roots of an identity crisis in IS, may be seen as a counter reaction to the focus on the human and social context. Scarbrough and Swan (2001) found a similar pattern in different stages of development of notions around Knowledge Management, where an initial focus on technical solutions gave way to a focus on management practices clustered around organisational behaviour and organisational learning. More likely, it could be that trends are intertwined with the existence of competing discourse communities gathered around the notion of information systems which they claim as their own.

It is interesting to relate these views to the propositions made by Becher (1989), referred to in the previous chapter, that disciplines that are convergent, hard, pure and urban tend to be regarded as having a privileged status: "[...] *good standing accrues on each scale at the end which emphasizes the theoretic, the quantitative and the sharply defined"* (Becher, 1989:160). The view that the IS discipline should refocus on technical artefacts would emphasize its standing in the wider academic community, especially in relationship to technically focused communities and disciplines. The arguments presented by Orlikowski and Iacono (2001) and by Benbasat and Zmud (2003) are also related to a belief that IS draws from the theoretical contributions of other fields, that represent its reference disciplines, but not only fails to contribute back to these disciplines with its own theoretical contributions, but does not represent a research tradition in its own, being fragmented by the diversity of disciplines that form its reference. Again, the view that diversity of intellectual influences and lack of focus in its pursuits weakens a discipline, seems to be consistent with the views analysed by Becher (1989) that convergence and urban patterns in the ratio of distribution of people to problems increase the external standing of a particular field.

Some authors in IS argue against the notion that diversity represents a weakness (Banville and Landry, 1989; Swanson and Ramiller, 1993; Hirschheim, Klein and Lyytinen, 1996; Robey, 1996; Baskerville and Myers, 2002). Baskerville and Myers (2002) claim that, not only IS is well established and reaching a degree of maturity, but it is also becoming a reference discipline on its own, although the evidence they present seems limited to contributions on the relationship between IT and

organisational power, following the seminal work by Markus (1983), and work in the area of business process reengineering, following the seminal paper by Davenport and Short (1990). Hirschheim, Klein and Lyytinen (1996: 4) argue that a *"unifying theoretical straight jacket* [...] *is neither possible nor desirable"* and propose that the roots for diversity should, instead, be well understood and the potential for cross-fertilisation and synergy pursued. Furthermore, it could be argued that, bearing in mind the distinction established by Gibbons et al. (1994) between mode 1 and mode 2 approaches to knowledge production, referred to in the previous chapter, there could be particular strengths drawn from approaching work in IS from a transdisciplinary perspective. In this context, considering a broad spectrum of research traditions would be more fruitful that attempting to narrow the discipline under one unifying paradigm.

3.1.2 Theoretical categorisations of research traditions in IS

As mentioned by Allen and Ellis (1999) there have been a limited number of frameworks proposed to map the different research traditions and intellectual structures in IS. The remaining of this section examines in more detail different attempts to identify and categorise research traditions in IS, since the 1980s through the work of Lyytinen (1987a; 1987b), Hirschheim and Klein (1989), whose framework is highly cited and debated, and, more recently, Hirschheim, Klein and Lyytinen (1996). These will then be discussed in the light of surveys and analyses of bodies of literature between 1972 and 2001 (Culnan, 1986, 1987; Orlikowski and Baroudi,1991; Chen and Hirschheim, 2004), in order to compare theoretically driven framework and empirically based analyses of bodies of literature.

The first of the frameworks was devised by Lyytinen (1987a), in one of the most comprehensive review efforts in covering information systems development approaches. It is specifically focused upon the categorisation of information systems development approaches, of which a huge variety exists (Jayaratna, 1988, refers to over a 1000). Lyytinen's objective was not merely to provide a systematization of the information systems development literature, but to identify how IS research has tried to deal with the different information systems problem areas. These problem areas comprise the processes dimension in the Ives, Hamilton and Davies (1980) model of IS research, whereby they characterise information systems and their context through a series of concentric boundaries – in the outer layer, issues around the external environment are represented, the intermediate layer concerns the organisational environment of information systems and the core layer concerns the information system. They propose that the focus of work should be the information systems boundary and that this boundary includes three information systems environments: the user, the information systems development and the information systems operations, to which three information systems processes correspond (user, development and operations processes). They propose that while environments define the resources and constraints of the scope of systems and processes, processes comprise the interactions between the system, its environments and its processes.

Lyytinen (1987a) uses this model to categorise the literature in terms of information systems problems and approaches to solve these problems. While arguing that it is not possible to characterise in exact terms information systems problems due the

multidimensional nature of what constitutes 'information systems failure' he proposes the following problem categories:

- problems with the information systems development process include ambiguous goals, restrictive technology, frailty of economical foundations, deficiencies in the process features (lack of communication and predomination of the analysts role), neglect of behavioural and organizational issues and rationalistic view of the development process.

- problems with the information systems use and operations process concern IS operations problems in terms of the friendliness of the interface, unreliability of data, misconceptions of the addressed problems, problems regarding relationships between people (power shifts and job qualification changes) and complexity problems, relating again to issues concerning the friendliness of the information systems and its adequateness to the organizational problems.

It is interesting to note that although Lyytinen has placed his categorisation in the inner boundary of the model by Ives, Hamilton and Davis (1980), leaving therefore behind issues concerning the organisational and the wider environment boundaries, and while some of the problems identified by Lyytinen concern technical (restrictive technology, unreliability of data, complexity problems) and human issues (user-friendliness), most are of organizational nature.

Lyytinen (1987a), then proceeds to identify 30 main different approaches to address these problems[(2)], clustered around five main categories. These categories were derived from the components of the information systems inner boundary of the Ives, Hamilton and Davis (1980) framework:

- approaches based in technical advances in the operations and development environment, which assume that the resolution of problems lies in a technical solution and comprise development support tools and application generators;

- approaches based in changes operated in the development process structure, including engineering, learning and dialogue process models, which place the emphasis of solutions in improvements in the development process;

- approaches based in changes in the development organization, which place the emphasis of success in information systems on the social environment and in interaction during and after the development process, and place emphasis in policy and strategy development at two levels (the management of the information systems function in organizations and project management strategies);

- information systems and related environments modelling approaches, which focus on modelling information systems, their environments and

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[(2)] Whereas Lyytinen has, in fact, identified 30 different approaches to information systems development, most of the literature referring to his work mentions only 26. This is due to the fact that Lyytinen, for analysis purposes, joined together the different approaches regarding the development organization changes (management of information systems function and project management, the latter including administrative models, interaction structures and interaction strategies).

contexts, where the key assumption is that accuracy of representation of these dimensions is key to successful development and implementation;

-    approaches based in theoretical alternatives to the traditional approaches to information systems, which are focused upon the technical and decision-making view of the IS development process; alternatives to the technical view include socio-technical and class-conflict views, whereas alternatives to the decision based views include inquiry theory, sense-making theory, soft systems approaches, contractual theory, based on the transaction cost view of the organisation, and language action theory; the key assumption of these approaches is that the roots of information systems problems lie in shortcomings and inadequacies of information systems theory itself and its conceptualisation of problems and of the information systems context.

Lyytinen's analysis revealed that none of the different approaches to information systems development focuses comprehensively on the whole range categories of information systems problems and, in fact, most address a limited range of problems, due to what he considered the theoretical fragmentation and diversification of the field and a correlated limitation in the conceptual assumptions underlying the different information systems development approaches. It is also interesting and significant that, as a framework to categorise different literature and practice based approaches, the emphasis is placed in terms of categories of problems, and more exactly pre-categorised problems, and categories of solutions to these problems based upon key assumptions on what constitutes a problem and what would be the adequate solutions for that. This categorisation implies a problem-solution driven view of the field,

probably rooted in the engineering referents in information systems and also in the close alignment between the academic component of the field and its practice. Seen as a discursive elaboration on the nature of the field and of its ramifications in itself, it could be argued that Lyytinen's categorisation displays the referents rooted in an engineering perspective through the emphasis in the definition of boundaries for action, the categorisation of problems and the attempt to match solutions to problems.

Lyytinen (1987b) has further developed this theme and attempted to map information systems development methodologies, through the proposal of a taxonomic model. The main assumption and the rationale for this taxonomy is again rooted in the notion that, despite technical advances, problems are still prevalent to solutions and that the major contributors to this state of things reside in the deficiencies in the development methodologies, as they tend to focus on a limited set of development issues, are underpinned by limited theoretical foundations and display unawareness towards philosophical underpinnings. This is backed up by empirical research on perceptions over the success and acceptance of computerised information systems, which points towards rates ranging between 80-90% of information systems not meeting their performance objectives and being late over their target delivery dates (Clegg, 1997). The notion that the possible reasons for this rate of failure (or perceived failure) lie in the process of planning and developing information systems has also been rooted in the information systems development literature for long (Lucas, 1975).

This taxonomic model is organised around six theoretical constructs: the contexts to which the development points to (technical, organisational or language), object systems identified by the contexts, representation forms, super-contexts bridging

between the contexts, the mappings between the contexts (descriptive and instrumental) and the content of the mapping process (deterministic or emergent). He contends that only methodologies that fall within the same taxonomic class can be compared and that different classes of methodologies present different assumptions on the development environment. He also states, based upon a previous study (Lyytinen, 1986), that "[m]*ost IS failures are caused by conceptual problems, data problems and people problems* [which] [...] *to a large extent relate to changes in the language and organization contexts*" (Lyytinen, 1987b:35), but that technical design oriented methodologies, arguably the most widely deployed ones, ignore these issues.

Seen as a discursive elaboration on the field of IS, the emphasis on problems and on methodologies to address these problems is, again, significant. There is a great emphasis in the information systems literature on methodology and process, as key to information systems work (Avison and Fiztgerald, 2003; Jayaratna,1988). This has roots in the predominance of the research tradition which views information systems as essentially technical, which has led to a concept of the process of information systems development as a technical intervention. This approach perceives the development process as a typical engineering scheme, through a *"step by step basis towards achieving a particular result"* (Lyytinen, 1987b:33). This has led to the concept of the development process as a life-cycle project, that should be organisationally aligned and fit strategic objectives, reinforcing the division between the role of information systems designers as technical experts and the role of users as requirements providers. These, are in effect, key themes in the IS literature that will be analysed in the next section. It is also interesting to note the emphasis placed by Lyytinen (1987b) in strengthening and enlarging the theoretical foundations of the

116

field and in raising awareness towards its philosophical underpinnings, as a way to improve methodologies and the result of interventions guided by them, but also, it could be argued, as a means to raise the profile and the standing of the field by emphasizing theoretical underpinning and rigour.

This was taken into consideration by other authors in the field that have focused work in this area on the identification of research paradigms, essentially by adapting the work on sociological paradigms by Burrell and Morgan (1979), in an example of recontextualisation of concepts through interdisciplinary intertextuality (Thomas, 2003). As mentioned by Allen and Ellis (1999), Burrell and Morgan's framework has been rather predominantly adopted in IS (examples include: Iivari, 1991; Wood-Harper, 1995; Klein and Lyytinen, 1995; Schultze and Leidner, 2002), following Hirschheim and Klein's (1989) first attempt in this area. In this chapter, emphasis will be placed in analysing Hirschheim and Klein's (1989) original work.

These authors considered that the differences between different research traditions and paradigms are based on the different assumptions that developers have on "*the nature of organisations, the nature of the design task and what is expected from them*" (Hirschheim and Klein, 1989:1199). Their classification of information systems development paradigms considers two dichotomies, borrowed from Burrell and Morgan (1979), in categorising research paradigms in organisational theory:

- the dichotomy between objectivism (reality is objective and objective methods and measures can be applied to know it) and subjectivism (there is no single reality, but many different perspectives about it);

- the dichotomy between order (the social world is based on order, stability, consensus) and conflict (the social world is based on chaos, change, irrationality).

The four paradigms which result from combining these dichotomies and its adaptation to the IS field are:

- the **functionalist paradigm** focuses on the development if information systems as a tool to support rational management, where specifications are made as objective as possible and the end result is making the organisation as effective and efficient as possible (ex: structured analysis, information engineering);

- the **social relativist** paradigm considers information systems as part of a means which aim at establishing a consensus between different world views and determining which type of system makes sense; therefore, what validates the system is its acceptance (ethnographic approaches, some applications of SSM);

- the **radical structuralist** paradigm emphasizes an existing objective economic reality and power relationships within this reality; in this perspective, information systems are developed to support managerial control and the developer has to chose between supporting the owners of the system or the labour force (trade union led approaches);

- the **neohumanist paradigm** is defined as mainly a theoretical approach (whereas the previous paradigms could be observed in practice in information systems development) centres around work, mutual

understanding of how organisations change and emancipation from barriers to change (ideology, power and social constraints in general); the developer's work focuses essentially on removing obstacles to social communication and establishing a shared consensus (critical social theory approaches, developed by Lyytinen and Klein, 1985, and by Lyytinen and Hirschheim, 1988, for example[7]).

Hirschheim and Klein (1989:1202) state, nevertheless, that it is difficult to demonstrate clearly how these paradigms are reflected in IS work, as they *"(...) are largely implicit and deeply rooted in the web of common-sense beliefs and background knowledge [...] which serve as implicit "theories of action" [...]"*. They propose that a simple vehicle would be to illustrate each paradigm through a series of genres that would exemplify a typical intervention following each paradigm. They develop, then, different generic stories around the key actors (who), the narrative (what), the plot (why) and the fundamental assumptions held by the actors in the story. Hirschheim and Klein note that the adoption of these paradigms is not clear cut and that there were overlaps across the different types of intervention, preferring to adopt the notion of archetype over that of paradigm. In effect, they superimpose an archetype over each of Burrell and Morgan's paradigms, whereby analysts play different roles in the intervention:

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[7] These were the examples provided by Hirschheim and Klein at the time. More recently, a number of papers claiming an interest or a contribution to the application of critical theory in IS have emerged, as is exemplified recent workshops (Adam et al. 2001), although analyses of the mainstream literature claim that this area is still virtually inexistent in IS research (Orlikowski and Baroudi, 1991; Chen and Hirschheim, 2004).

- functionalism equates to 'systems development as instrumental reasoning' (the analyst as systems expert)

- social relativism equates to 'systems development as sense-making' (the analyst as a facilitator);

- radical structuralism equates to 'systems development as dialectic materialism' (the analyst as labour partisan);

- neohumanism equates to 'systems development as emancipation through rational discourse (the analyst as emancipator or social therapist).

It is significant that Hirschheim and Klein openly acknowledged at the time that only clear examples of the functionalist and of the social relativist paradigms could be found in IS practice and research, with a strong predominance of the latter, and that there are very limited examples in practice of radical structuralism (union led development approaches in Scandinavia) and of neohumanism (theoretical constructs by a limited number of authors). Another point to note is that the ideas around the application of the paradigms to IS were explored through the development of stories exemplifying different genres, rather than through an analysis of the literature – although references are made to key papers and to systems development methodologies that exemplify some of the archetypal interventions. It is interesting, therefore, that this framework was originally presented as displaying potential and has been predominantly adopted in approaches to map the intellectual traditions in IS, being priviledged proposing the development of a framework based upon indigenously derived criteria and upon an analysis of work in IS practices and literature

Nevertheless, issues around the categorisation of work in IS through the notion of paradigms and, more specifically, through an adaptation of Burrell and Morgan's framework, have led to some debate within the field. Allen and Ellis (1999:85) state that the framework has become an "[...] *accepted orthodoxy*" that, through a "[...] *process of reification* [...]", has led to a tacit acceptance of the terminology and language and of the interpretations of the concepts, whereby "[...] *the researcher falls into a bounded paradigm almost by accident, rather than by design.*"

This is seen problematic, due to the limitations of the original framework itself (Allen and Ellis, 1997,1999, 2000; Jones, 1999). Some of these limitations lie in the simplification of the representation of a large body of knowledge in a 2x2 matrix, which reduces philosophical stances to two dimensions (Jones, 1999). Ellis (1994) and Allen and Ellis (1999, 2000) argue that, more significantly, there is potential for misunderstanding, due to both the interpretation of Kuhn's original work on the notion of paradigm by Burrell and Morgan and to, in turn, the interpretation of Burrell and Morgan's work in the IS literature. This relates to two different issues that, they argue, have been accepted somewhat uncritically, in the IS community.

The first, relates to the notion of incommensurability between paradigms, as originally defined by Burrell and Morgan (1979), whereby paradigms are mutually exclusive at a basic philosophical level and therefore any attempt to combine paradigms would not be valid. The second, relates to what they define as a limitative interpretation of Kuhn's original work by Burrell and Morgan, by stipulating that paradigm changes can only be revolutionary, rather than evolutionary in nature, which

"[...] *negates the ability of the researcher to work between paradigms or incrementally move towards another paradigm*" (Allen and Ellis, 1999:86). They argue, following the discussion between Mastermann (1970), who identified twenty one different uses of the term paradigm by Kuhn, and Kuhn himself, that the latter had accepted that his original formulation of the notion of paradigm was ambiguous and that he had revised it to include two possible main different senses – a sociological sense, focusing on the broad sets of beliefs, values and techniques shared by a scientific community - and a philosophical/construct sense, in which exemplars of solutions that are employed to model problem situations.

Allen and Ellis (1999, 2000) argue that Burrell and Morgan employ the notion of paradigm in the sociological sense, as a school of thought, rather than in the philosophical sense, as pre-existing exemplars that underlie the conceptualisation of issues, while advocating paradigm incommensurability at the philosophical level. On the basis of this argument, Allen and Ellis (2000:236) claim that the paradigm debate in IS is an "*ideological struggle*" - which they suggestively equate to the debate between the Dominicans and the Franciscans on whether Christ owned the purse that he wore, in Umberto Eco's Name of the Rose -, because it is focused on the belief that first, IS is characterised by competing paradigms that are incompatible and second, that a unified and homogeneous methodological position is required for disciplinary advancement: "*In this sense, the character of the debate in information systems research is not like that encountered in the history or philosophy of science but rather like that encountered in theological, or, more strikingly, scholastic discourse. The adoption of a particular tradition, position, stance or interpretation, concerning the nature of information systems research is buttressed by arguments from authority. In*

the scholastic tradition, that authority would be sought for in the scriptures and the writings of the divines. In information systems research, this is substituted by references to classic authors and works. (Ellis and Allen, 2000: 242).

This debate remains, nevertheless, an interesting exemplification of potential synergies between Becher's (1989) and Diesing's (1971) frameworks, as they exemplify that communities that are separated through methodological stances would tend to be perceived as divergent and divergence and deviance are seen as impediments to disciplinary advancement and external standing. It also reinforces Becher's assertion that an emphasis on theorisation is correlated with a perceived greater standing of the field and the importation of well known work from another (more established) disciplines (intertextuality, Thomas, 2003) could be seen in this context, as a form of asserting professional authority.

The uncritical adoption of views over paradigms and the entrenchment of positions in the paradigm debate in IS has been seen an unhelpful impediment to the development of an IS community and of the IS field (Allen and Ellis, 1999; Jones, 1999; Hirschheim, Klein and Lyytinen, 1996) and an alternative framework has been more proposed more recently, namely by Hirschheim, Klein and Lyytinen (1996), although, as mentioned above, there is limited work in this area. These authors propose that this framework serves three main purposes: first, to confirm that IS is, as originally proposed by Banville and Landry (1989), a *'fragmented adhocracy'*, as a strong consensus is not required within the community on the meaning and relevance of a research problem, as long as there is support outside the community and there are no agreed approaches and desirable results that guide the legitimisation of the work of

the various communities; second, they aim to illuminate the underlying reasons for that; third, they aim to support their view that unification under one paradigm is neither possible nor desirable and that the diversity of research approaches bears stronger potential and that synergy across communities and approaches should be sought.

They propose that the diversity of research approaches and the state of fragmentation in IS is due to the fact that IS researchers exhibit fundamentally different mindsets in terms of how problems are conceptualised and, consequently, on what would be adequate solutions. They propose a framework which is focused on the **process of change** in information systems development[8], based upon a combination of the social action theory approach by Habermas (1984, 1987), which is adopted as a basis for categorising social process in information systems development, and elements taken from the work of Etzioni (1968) to qualify **domains of change** in information systems development. The dimension that relates to **social processes** refers to the orientations that guide information systems developers, defined as "[...] *a consistent set of attitudes, beliefs, assumptions and intentions which a developer brings to the process of IS change*" (Hirschheim, Klein and Lyytinen, 1996: 10) and includes:

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[8] Hirschheim, Klein and Lyytinen (1996:2) propose that one core feature of what constitutes IS as a field refers to "*(...) the analysis, design, construction, and implementation of information systems. These together constitute what we understand to be information systems development*" (original underline)

i. **instrumental** orientation, geared towards the achievement of ends through the control of the domain of action;

ii. **strategic** orientation, which, as above, is geared towards the achievement of ends, but differently, regards the human element in the domain as independent;

iii. **communicative** orientation, geared towards sense-making and the achievement of a common understanding of issues;

iv. **discursive** orientation, geared towards argumentation towards the justification of claims and the establishment of 'truths';

The dimension that relates to **domains of change** includes the **technological**, **organisational** and **language** domains, each varying in degree of malleability for change.

The combination of the above two dimensions results in what they refer to as a *'federated framework'* with nine object system classes, which are referred to as a means to abstract fundamental mindsets in how changes brought about in IS development are conceived. Some, such as those concerned with instrumental orientation, are focused on physical artefacts, others on socially constructed artefacts, but all act as cognitive filters on how objects in the domain are to be approached by developers. For example, if the orientation of the development process is communicative and the domain of change is the organisation, the major design issues will focus on cultural social systems (including the change of values and beliefs and the achievement of negotiated meanings and practices). This mindset abstracts from information systems their ability to mediate and facilitate sense-making in

125

organisations, whereas a focus on information technology systems, resulting from an instrumental orientation aiming at the technology domain of change, would lead to an intervention clustered around the technical properties of systems, in terms of their ability to improve data processing and transfer, for example. Each object system class also fosters different views on what would be preferred principles, methods, strategies and adequate outcomes of development. Representative literature for each of the nine object system classes was also identified and mapped to the framework.

According to Hirschheim, Klein and Lyytinen (1996:49), the framework explains why IS is a fragmented field, as it establishes that: "*Firstly, it is possible to engage n meaningful research by focusing on any one object system without even recognising the existence of other object systems, let alone considering the subtle interrelationships between object systems. Second, a community deeply committed to see ISD through the filter of only one object system will feel the problems of other research communities that focus on a different object system to be irrelevant*".

There are similarities between this and some of the previous frameworks, namely with Lyytinen (1987b), in terms of the problem-solution orientation, the choice of the three domains of change and the adoption of the notion of object system classes. This framework also displays an emphasis on the need to explicitly uncover the theoretical underpinning of different stances in IS, through the adaptation of well known frameworks for the theorisation of social action, rather than grounded on an indigenously focused analysis of the literature. Emphasis on terminological specialism and rigour is also noteworthy, providing an example of technologisation of discourse (Thomas, 2003) and reinforcing the role of IS theorists as discourse experts, which

126

could be seen as a form of asserting professional authority (Bourdieu and Passeron, 1970). Published almost a decade after Lyytinen's work (1987b), however, the paper by Hirschheim, Klein and Lyytinen (1996) offers a greater number and variety of examples in each class. This is of interest and, as none of the frameworks that have been analysed so far is underpinned by a categorisation derived from an analysis grounded in the IS literature itself, but constitutes a categorisation derived from specific theoretical foundations, it would be of interest to refer to surveys of work published in mainstream IS journals in order to discuss any potential correlations between these theoretically derived frameworks and empirically based studies.

3.1.3 Survey studies of the IS literature

Three major studies were conducted in this area, covering the literature between 1972 and 1985 (Culnan, 1986, 1987), 1983 and 1988 (Orlikowski and Baroudi, 1991) and 1991 and 2001 (Chen and Hirschheim, 2004), spanning over a period of circa thirty years. Culnan identified first nine (1986), then five (1987) key areas of work in IS[9] using co-citation analysis of data collected from the Social Sciences Citation Index in order to provide a picture of the intellectual structure of the area, its direction and key

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[9] In the 1986 study, she identified the following areas: foundations and management theory, systems science, computing impacts/local government, MIS/DSS implementation, individual differences, human factors, computer conferencing and two further unnamed clusters. In the second phase of her study (Culnan, 1987), five main areas emerged from factor analysis: foundations, individual (micro) approaches to MIS design and use, MIS management, organisational (macro) approaches to MIS desgin and use and MIS curriculum.

authors and to identify whether clear paradigms exist and how the evolution of the field might be characterised. She concluded that "[...] *while MIS is still pre-paradigmatic, it has made progress (if one accepts the argument that MIS, like all social sciences, is a multiple paradigm discipline)*" (Culnan, 1987:347), in that it displayed strong inter-disciplinary traits and a growing focus on organisational and managerial issues.

Subsequently, Orlikowski and Baroudi (1991) conducted a study where they argued differently that "*(...) while there may be no theoretical or topic congruence among information systems researchers, there is a consistent philosophical worldview that underlies much of the activity constituting information systems research (...)*" (Orlikowski and Baroudi, 1991: 3). Unlike Culnan's, theirs was based upon an analysis of only four information systems publications, all US based: *Communications of the ACM, Proceedings of the International Conference on Information Systems, Management Science* and *MIS Quarterly*. They categorised the various papers according to different dimensions, including Culnan's (1987) five key research areas, research design (case studies, laboratory experiments and surveys, together with other less representative approaches), time period of the study and underlying epistemology (following Chua's, 1986, classification of research epistemologies into positivist, interpretative and critical studies). Although a complete overlap may be questionable, we could correspond these research epistemology categories broadly to Burrell and Morgan's categorisation of paradigms, widely adopted in IS, as mentioned above, in terms of: positivism-functionalism; social relativism-interpretative; critical-radical structuralism/neohumanism. It is worth to note that the classification of each paper into this categorisation was made by the

authors themselves, following reading and analysis of these studies, and presented through frequencies and percentages. In the context of this thesis, we will focus on the results on key areas of study, research design and research epistemology. Their findings point towards a strong predominance of:

- in terms of themes, research focused on individual approaches, representing 85% of studies, against 36% in MIS management and 34% in organisational approaches;

- the use of surveys, representing 49.1% of the work, against 27.1% of laboratory experiments and 13.5% of case studies;

- positivist orientation, representing 96.8% of studies (of which 23.9% are categorised as 'descriptive' and 72.9% are categorised as 'theoretically grounded'), against 3.2% of work defined as interpretative and no identified representation of studies in the critical tradition.

The subsequent study, by Chen and Hirschheim (2004) covered the period between 1991 and 2001 and attempted to uncover any potential changes in the overall trends in research in IS, bearing in mind new developments in its context, such as the emergence of new journals and conferences representing different perspectives and a greater awareness towards methodological pluralism. Their research design is similar to Orlikowski and Baroudi's (1991) in that they assessed the papers that formed the population of their study and categorised them themselves, representing the results through frequencies and percentages. Their categories are largely similar to the previous study, as well: research paradigm (positivist, interpretative and critical traditions), research design (survey, laboratory experiment, field experiment, case

study and action research), as well as new categories around methodology (empirical vs. non empirical, qualitative vs. quantitative, cross-sectional vs. longitudinal). This study covered a wider variety of publication outlets, however: four US based (*MIS Quarterly*, *Information Systems Research*, *Journal of Management Information Systems*, *International Conference of Information Systems*) and four European based (*Accountancy, Management and IT* – now titled *Information and Organisation* -, *Information Systems Journal*, *Journal of Information Technology* and *European Journal of Information Systems*). The results obtained by this study present strong similarities with the Orlikowski and Baroudi's results, in that there is a predominance of:

- positivist studies (81%), despite an increase of interpretative studies (19%) and no identified representation of critical studies (it is interesting to note here the fact that European journals were included in this study and that a greater representation of interpretative research was identified in these journals);

- survey research (41%), with an increase of case study research (36%), a marked decrease of laboratory experiments (18%) and a modest representation of action research (3%) and field experiments (2%);

- quantitative methods (60%), in detriment of qualitative (30%) and mixed methods (10%).

There are some points to note about these studies, as Culnan's (1986, 1987) work is clearly different from the two subsequent studies by Orlikowski and Baroudi (1991) and by Chen and Hirschheim (2004), in:

- aim, it was geared towards the identification of key thematic areas, whereas the latter two also aimed at quantifying the distribution of work across a number of other dimensions;

- research design, as its population is derived from the Social Sciences Citation Index, rather than from a selection of publication outlets defined by those authors;

- data analysis, as it is based upon co-citation analysis, combined with factor analysis (whereby there is an assumption that clusters of authors that are repeatedly co-cited will lead to the identification of specialities and patterns of evolution in a particular field and that this is based on the composite judgement of hundreds of citers, rather than on the judgement of the researchers carrying the study), whereas Orlikowski and Baroudi (1991) and Chen and Hirschheim (2004) have based their findings on the classification of papers based an interpretation provided by themselves and guided by an *a priori* categorisation;

- results, as Culnan concludes that there is evidence of interdisciplinarity, based upon the variety of key themes, and Orlikowski and Baroudi and Chen and Hirschheim conclude that IS is clearly dominated by one tradition, in terms of research paradigm and research design.

A relevant issue to be retained in terms of the discussion of views over research traditions in IS is that, despite a plurality of focus in terms of research themes identified by Culnan (1986, 1987) and by Orlikowski and Baroudi (1991), the results by both Orlikowsky and Baroudi (1991) and Chen and Hirschheim (2004) seem to

concur with Hirschheim and Klein's (1989) assertion that, in effect, in epistemological and ontological terms, there seems to be a clear concentration around one research tradition, functionalism, which we could broadly equate to positivism, as dominant in IS and that it remains difficult to identify other traditions than functionalism and social relativism (which we could equate to interpretivism) in the field. This raises the question of how then to relate findings that point towards the strong predominance of a particular research tradition with the widely referenced arguments, referred to in the beginning of this chapter, to strong diversity and fragmentation in IS as a field.

There are several potential explanations for this. The first relates to a generally agreed view that IS as a field presents a multiplicity of *foci* for objects of study. This is patent in the disagreement over what should constitute the focus of IS, referenced in section 3.1.1 – the IT artefact, its proximate context or its distal context, following the Ives, Hamilton and Davis(1980) seminal work in categorising information systems and their context mentioned above -, patent in the criticism offered to the IS research communities by Orlikowski and Iacono (2001) and Benbasat and Zmud (2003). It is also patent in various categorisations of potential areas of focus in IS reviewed in this section, ranging from Klein and Hirschheim (1987) to Hirschheim, Klein and Lyytinen (1996) and in the practical evidence of multiplicity of *foci* offered by Culnan (1986, 1987) and by Orlikowski and Baroudi (1991). This would imply that the IS community exhibits, in Becher's (1989) terms, a rural pattern of distribution in terms of ratio of people to problems and that subject based collaboration might be weak, in Diesing's terms (1971), despite the predominance of a particular philosophical stance (Orlikowski and Baroudi, 1991; Chen and Hirschheim, 2004). Hence, in IS,

divergence would be based upon the existence of multiple *foci* in terms of subject and objects of study, rather than on philosophical stance and methodological diversity. This is reinforced by the analysis of work that falls into the different object systems by Hirschheim, Klein and Lyytinen (1996:94), whereby they claim that "[...] *it is possible to engage in meaningful research by focusing on any one object system without even recognising the existence of other object systems* [...]".

Another potential explanation relates to the analysis by Allen and Ellis (1999, 2000) on the nature of the paradigm debate in IS, which, as mentioned above, they qualified as an "*ideological struggle*", resembling more a scholastic debate, where positions become polarised and entrenched, leading to violent refutation of one from the other – in the case of IS research, it appears, from the studies by Orlikowski and Baroudi (1991) and by Chen and Hirschheim (2004) that the greater area of contention derives from the polarisation between the functionalist/positivist perspective and the social humanist/interpretative perspective, with a strong predominance of the former. It would appear, on the basis of these studies, that there is a largely predominant epistemological worldview in IS and that divergence is more focused on the different *foci* and objects of study than on epistemological perspective and, where there is difference in terms of epistemological stance, this refers to a distinction between positivism and interpretivism. The perceived divergence in terms of the paradigm debate may derive from an entrenchment of positions between two poles that see each other as deviant, whereas in practice, outside this debate, the world may go on and most researchers carry on their work and pursue their interests in what may be in fact a consistent worldview. Chen and Hirschheim (2004) offer the conjecture that the reasons for this predominance may lie in the current tenure, promotion and

133

publication systems, where the first two emphasize number of publications and the latter is perceived as more favourable to research within a positivist tradition, both by bias and by practical requirements, as this is seen as less time consuming and as bearing faster returns.

On the issue of the perceived divergence in epistemological positions, Allen and Ellis (1999) offer the explanation that a key argument for incommensurability, and hence polarisation of exclusive positions, lies in language and in the use of different discursive resources and linguistic symbols, implying that a direct translation of issues from one paradigm to another becomes difficult, which means that "[...] *protagonists seem to talk 'past' each other rather than to each other.*" (Allen and Ellis;2000:236). Hirschheim, Klein and Lyytinen (1996) refer, in effect, to the difficulties in conciliating the hermeneutic assumptions about information and meaning associated with the interpretative paradigm with the assumptions around control and information and data in the functionalist paradigm, associated with the instrumental and strategic orientations of information systems. In this context, unification is not, they argue, desirable, as it would imply the stifling of the domain of enquiry, through the conceptualisation of some object systems through the lenses and, it could be added, the discourse of a dominant system.

Similarly, while the creation of a common technical language to be deployed with precision is strongly advocated by some authors (Checkland and Holwell, 1998), others (Allen and Ellis, 1999) argue, based upon Wittgenstein's distinction between technical and non-technical language games, that, perhaps the adoption of a non-technical language would be of greater usefulness and the commonality of a non-

technical language would allow each community to express their views in a common language and in mutual terms.

Some of the differences between functionalist perspectives on IS, focused around notions of control, and interpretative perspectives in IS, focused around meaning and sense making, are explored in the next section, through an analysis of the theme of information systems development described by Hirschheim, Klein and Lyytinen (1996:2) as one core feature of what constitutes IS as a field and described as "[...] *the analysis, design, construction, and implementation of information systems. These together constitute what we understand to be information systems development"* (original underline).

3.2 The role of discourse in IS research traditions: the theme of information systems development from contrasting perspectives

The previous section suggests that discursive approaches play potentially a key role in determining the boundaries between different research traditions, probably more so than the existence of fundamental differences in philosophical worldviews, as suggested by Orlikowski and Baroudi (1991) and, more recently, by Chen and Hirscheim (2004). This view could be reinforced if we consider the notion of paradigmatic differences from a philosophical point of view, rather than a sociological point of view, as suggested by Allen and Ellis (2000).

The entrenchment and the polarisation of views and positions on what is the nature of IS and on what constitutes legitimate IS research appears, on the basis of the studies by Orlikowski and Baroudi (1991) and by Chen and Hirscheim (2004), to be clustered around positivist approaches and interpretivist approaches.

Allen and Ellis (2000) also argue that these differences in perspective can be associated with the use of different discursive resources and linguistic symbols, which make it difficult to express views in common terms. This view is reinforced by Hirscheim, Klein and Lyytinen (1996), who argue that different research traditions make appeal to different concepts and notions, namely, around data and control, in positivist approaches, and information and meaning, in interpretivist approaches.

This section attempts to explore how these different discursive resources and interpretative repertoires could be defined in practice, in relationship to how these research traditions have addressed the theme of IS development, defined, as mentioned in the previous section, as central in IS research, by Hirscheim, Klein and Lyytinen (1996).

Jayaratna (1988) established, in his influential framework for evaluating systems methodologies and the process of systems development, three main elements of the development process: the construct of the problem to be solved, or 'issue of concern', the development methodology itself and the role of the problem solves. This section adopts a structure based on an adaptation of this framework and examines how three features of the development process – the nature of the development process itself , its relationship with its organisational context and the conceptualisation of the role of the actors in the process - have been approached both from discursive approaches that have a root in positivist perspectives and contrasting approaches, stemming from interpretative and, more recently, perspectives that claim a critical orientation.

3.2.1 The nature of the development process: from development methodologies to 'amethodical development'

Information systems development approaches have often, as mentioned in the previous section, been historically based upon a planning model, influenced by the engineering referents of the field, and defined as a *'step by step basis towards achieving a particular result'* (Lyytinen, 1987b:33). This goal driven approach,

fostering a view of the domain of action as controllable, is congruent with the instrumental orientation perspective of information systems development, as defined by Hirschheim, Klein and Lyytinen (1996), and characterised by the following features:

i)   a life-cycle project,

ii)   organisationally aligned and fitting strategic objectives,

iii)   reinforcing the division between the role of IS designers as technical experts and the role of users as requirements providers.

The instrumentally oriented notion of information systems development is, thus, closely associated with the concept of the development process as a life-cycle project, which has been criticised for its limitations (Lyytinen, 1987a, 1987b; Checkland, 1988; Jayaratna, 1988; Avgerou and Cornford, 1993), as it aims at the delivery of a final product, in the shape of an IT artefact and reduces the development process to analysis and design activities. The notion of information systems development as a life-cycle project has, in effect, emphasised the idea of planning as an analysis and design process, resulting in the practical neglect of implementation and use related issues (Avgerou and Cornford, 1993; Checkland, 1988; Jayaratna, 1988; Lyytinen, 1987b). This life-cycle approach is also connected to the idea of information systems development as a problem solving activity, leading to the delivery of a final solution in the shape of an IT artefact. The final system represents and embeds actions to undertake in order to solve organisational problems which have been identified in the requirements elicitation phase of analysis. Information systems development equates, in this perspective, to 'the building of a system'. As suggested in the previous section,

this view of the information systems development process can be seen as borrowing elements of the engineering referents in IS.

Much of the planning process in the instrumental view of information systems development relies on the deployment of formal methods and methodologies that are presented as a means to ensure the thoroughness of the requirements identification phase and the soundness of the design of the system. This seems to be a central characteristic of formal information systems methodologies (Avison and Fitzgerald, 2003; Jayaratna, 1988). As Truex, Baskerville and Travis (2000) note, methodologies dominate this view of information systems development to the point that information systems development equates to information systems development methodologies. In this context, there are a number of shared assumptions about the development process, defined by Truex, Baskerville and Travis (2000:68) as a goal-driven, staged, rational sequence: "[...] *(1) determine goals, (2) determine steps and events that lead to these goals, (3) follow the steps and generate the events. This assumption follows [...] other [...] assumptions like causal linearity, reductionism and universality, but it does take these ideas one step further by assuming that information systems developers will share the espoused goals and faithfully adhere to the plan by exercising their rational powers.*"

The reduction of information systems development to the deployment of methodologies has several implications in terms of how the development process, its organisational context and the roles of its actors are perceived. In effect, the view of the development process as a managed, linear, goal-driven and controlled process is based upon the logical decomposition of the development process into a series of

small controllable processes. As noted by Truex, Baskerville and Travis (2000:60) the view of systems development as *"control by reduction"* has been predominant and different systems methodologies have attempted to expand the boundaries of a reductionist approach from an original focus on physical computing processes to inter-organisational processes. So, they note, structured systems methodologies (Cutts, 1991) moved this concept from physical computing processes into logical software processes; later on, information engineering approaches (Finkelstein, 1989) extrapolated the scope of systems design from individual systems to an organisation-wide approach, whereby data processing structures and components would be shared across the organisation. Object-oriented design (Coad and Yourdon, 1990, 1991), they argue, further expands these boundaries, aiming at the development of reusable components across organisations.

Planning is therefore a way of controlling action (Suchman, 1987) and of ensuring that the systems developer maintains control over the development process, by mastering a process that is perceived as essentially technical and guided by a set of precise rules. Methodologies provide means of legitimating actions taken by developers during the development process. In this context, perceptions over the degree of success of the system are connected with perceptions over how closely the system represents the required actions to attain the goals that were originally defined. However, other authors argue that, as no set of control variables can be fully transferred from one control situation to another (Skär, 1997), a practical problem arises when unrepresented and / or unforeseen actions occur in the context of the development and of the wider organisational environment (Lea, Uttley and Vasconcelos, 1998).

Studies of development processes in practice present interesting findings regarding the *de facto* use of methodologies in practice. Parnas and Clements, as far back as 1986, when structured methods were thriving, noted that there was a mismatch between the documentation produced by systems developers, which provided an account of the development process as an ideal process, where methodologies were followed step by step and there were no detours in the process, and the systems development process in practice, which was found to be open to chances and mischances, serendipity and emergence. Fitzgerald (1996) conducted a postal survey on the use of methodologies in Ireland and in the UK and concluded that a large percentage of respondents (60%) claimed not to use a specific methodology, whereas 26% used internal, in-house developed methodologies and 14% reported the use of a third party commercial methodology. It could be questioned whether respondents that have reported the absence of adoption of a methodology might work in practice with a combination of internalised approaches that remain almost tacit through extended and repeated practice. In effect, Lee and Truex (2000:348) also refer that "[...] *there is evidence that, in practice, systems development projects are being approached from phenomenological pragmatism, deviating from theoretically proposed teleological prescriptions.*" A study by Hornby *et al.*(1992) has further explored these issues, through two different channels:

i) the identification of assumptions about human and organizational issues in IS development methodologies made by IS theorists (or experts in the specific methodologies);

141

ii)   the analysis of how, in practice, methodologies are applied, together
        with an identification of the assumptions regarding human and
        organizational issues displayed through interviews with thirty two
        information systems analysts.

Fifteen systems development methodologies, ranging from *"'hard', structured*
methods [...] through planning methods [...] to the more socially oriented 'soft'
methods" (Hornby et al., 1992:162) were analysed in their coverage of the different
assumptions about human and organizational issues in information systems
development methodologies life-cycle phases and of pre-selected human and
organizational issues. The study reached the following conclusions, as summarised by
Hornby et al. (1992):

i)   most of the methodologies in use were essentially technical in
        orientation and the explicitly social and human-oriented methodologies
        were very rarely used by the interviewed systems analysts;

ii)   none of the analysed methodologies covered all of the information
        systems development life cycle phases and the most neglected phases
        were the initial, regarding strategy formulation, and the latter phases,
        concerning implementation issues;

iii)   the human and organizational issues predefined by Clegg et al. were
        severely neglected, especially by the technically oriented
        methodologies; furthermore, the empirical results indicated that none
        of explicitly human and organizational-oriented methods covered all of
        the issues that these authors had pre-defined as important;

iv)   it is interesting to note, however, the evolution of methodologies in use, as analysts claimed that they rarely followed a step-by-step application of a particular methodology;

v)   most of the systems analysts tended to assume that the mere inclusion of users in the design project team ensured the coverage of human and organizational issues, whilst some of them recognised that users which participated in project teams tended to be subdued by the orientations of the technology experts;

vi)   finally, the authors stressed *"Analysts do not claim to have knowledge or understanding of human and organizational issues in IT systems and there is no evidence that they are encouraged to, or rewarded for, considering such issues. In fact it could be said that the reward and control systems within which analysts work actively encourage them not to consider them. They are rewarded, in the main, for delivering technically sound systems on time and to budget."* (Hornby *et al.*, 1992: 165).

Although many of the human and organizational issues analysed by Hornby *et al.* are, in fact, essentially human[10], the results of this study are particularly interesting, as they are grounded on empirical data supplied by both theorists and practitioners. It is also significant that the results of the study corroborated some issues stressed by different authors, namely in what concerns the emphasis on the *"design paradigm"* (Jayaratna, 1988:47), focusing essentially on design procedures in accordance to

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[10] In the sense of focusing on the interaction between individuals and a system, rather than on organisational or group interaction.

specific technical requirements (Lyytinen, 1987b; Avgerou and Cornford, 1993; Farhoomand, 1992). An important implication of this approach to information systems development relies, thus, in the divorce between design and implementation which is particularly striking in the praxis of information systems development, as displayed in the Hornby *et al.* (1992) study. It is also connected to another fundamental disencounter in information systems development, which concerns the different intervenients in the process, their different roles and the different views they bring to it, which is manifested in the lack of consideration of human and organizational issues, in a comprehensive framework, previously referred to abundantly in the literature (Kwon and Zmud, 1987; Lyytinen, 1987a, 1987b; Lucas, 1975; Checkland, 1988; Hirschheim, 1992; Tricker, 1992; Avgerou and Cornford, 1993).

More recently, alternative approaches to the development of information systems have been proposed, deriving from a critical perspective of the implications of the life-cycle methods driven approach fostered by instrumental perspectives of systems development (Introna and Whitley, 1997). These alternative approaches are clustered around notions of evolutionary development (Ian, 1996) amethodical systems development (Truex, Baskerville and Travis, 2000) and short cycle time systems development (Baskerville and Pries-Heje, 2004). Although there are differences amongst all, they also present some similarities. Short cycle time systems development is presented as a variant of 'amethodical' systems development and both are said to differ from evolutionary development in that the latter focuses on the delivery of a completed system and project (Baskerville and Pries-Heje, 2004). Amethodical approaches claim a greater appreciation of how development processes

occur in practice, *vis-à-vis* approaches based upon a purely technical intervention, where often chaos, rather than order, prevails, with the existence of overlap of simultaneous activities and also gaps between different activities. The role of negotiation and compromise is acknowledged, as are change and organisational shake-ups leading to an element of chance that is as likely to engender misfit as it is to lead to fit (Truex, Baskerville and Travis, 2000). In this context, organisations are assumed to be emergent and the result of ongoing change that will require attention to unpredictable requirements. The process of development is seen as emergent and never complete, evolving as the system grows and changes. Arguments towards amethodical development are based upon the analogy of 'growing the system', rather than the engineering metaphor of 'building the system' (Baskerville and Pries-Heje, 2004) and its proponents, while remaining focused upon the development process, claim an interpretative stance and present a rhetoric of opposition to the basics tenets of systems development as a technical intervention and as 'building the system'. Theirs is a rhetoric of dissention that originates a from a development process focus.

3.2.2 IS development and its organisational context: discourses on alignment and disalignment

The theme of control and of information systems as control mechanisms is considered central and still predominant in information systems development (Markus, 1983; Kling and Iacono, 1984; Alvarez and Klein, 1989; Hirschheim, Klein and Lyytinen, 1996), borrowing some of its manifestations not only from the engineering referents in IS, as suggested above, but also from management theory. Hirschheim, Klein and

Lyytinen (1996) note that this theme is expressed in views of how information systems contribute to more effective organisational control and on how IT plays a role in the achievement of competitive advantage.

The concept of organisational alignment (Markus and Robey, 1983) or strategic fit (Scholz, 1987) has been dominant in the information systems development literature and practice (Ciborra, 1997; Allen, 2000), leading to the belief that the organisational validity of information systems is dependent upon the degree of fit between the system and the goals and overall direction and strategy of the organisation (Earl, 1989;). This notion is imported from management theory approaches which relate successful management to the achievement of balance and harmony, based upon the development of 'the' adequate strategy for: on one side, pre-determined environmental circumstances and on the other side, organisational resources and capabilities (Johnson and Scholes, 1993). These approaches are very congruent with the design, planning and positioning schools of thought in strategic management (Mintzberg, 1998), especially the latter, and the work of Porter (1980, 1985) on competitive advantage, in particular, has been heavily influential for the literature of information systems planning and strategy. The importation of the discourse of competitive advantage to the literature of IS is interesting, not only as an example of intertextuality, but also because it shares and extends some of the attributes identified by Thomas (2003) in the body of literature it originates from. Thomas (2003) remarks, in effect, that, in the context of the strategic management literature, what constitutes competitive advantage and how to achieve it remains often loosely defined. The same could also be argued for its use in the IS literature, compounded by a relative absence of a clear definition of how information systems contribute to

competitive advantage. In this sense, the theme of information systems and competitive advantage share elements of interpretative viability (Benders and Van Veen, 2001) present in the original literature, where the loose definition of the notion of competitive advantage contributed to its attractiveness to various conjunctures – academic, consultancy and practitioner based – of management discourse (Thomas, 2003). It may also present attributes of rhetorical legitimation of action, by presenting information systems interventions as aligned with the discourse of strategic management and, by extension, sharing the attributes of a strategic intervention.

The traditional view of the process of systems development is articulated around a discourse that emphasizes notions of control, planning and design and organisational alignment and strategic fit. Elements of dissention to this discourse arise from studies of both strategic management and of the development process in practice.

In effect, approaches that claim the need for the organisational alignment and strategic fit of information systems often assume a level of stability at the organisational context. However, as Stacey (1993) stresses, organisational life tends to be dominated by exceptions, unpredictability, ambiguity and conflict, as supported by empirical research. In effect, in the strategic management literature, Porter (1990), himself, while researching factors leading to sustainable competitive advantage, has reviewed some of his original propositions and has proposed that globally competitive companies are usually part of a self-reinforcing interactive cluster, composed by a strong demand, fierce rivals, innovative relationships with suppliers and supportive industries, a skilled workforce and knowledge resources, supportive government policies, and, in addition, chance related events, creating discontinuities which can

reshape the industry in a way that favours these companies. Pascale (1990) stresses that successful organisations, in the sense of innovative organisations, are characterised by the contradiction of achieving both states of fit (a state of internal coherence) and split (a state of disharmony).

Similar studies carried out in the IS field support this view and present alternative perspectives on the development of information systems as a goal driven, planned and controlled process. In the context of exploring the relationship between organisational strategy and information systems strategy, through an in-depth case study at Olivetti, Ciborra (1996) found that the precise setting of goals and plans usually does not reach its target and the element of surprise, in the shape of unforeseen events outside of the control of the organisation, plays a major role in shaping organisational strategy. Supported by other studies at Silicon Valley, he concludes that innovative high tech firms tend to go through changes that challenge their core competences and threaten their business identity. In subsequent studies, Ciborra, (1997, 2000, 2002) contends that the rational management models, imported from management science to the field of IS planning, such as those inherent to the concept of strategic fit between internal and external business domains, are contradicted by recent ethnographic research on the implementation and use of IT on organisations, which emphasise a fuzzier link between a dynamic organisational environment and 'drifting' technological developments.

In terms of the development process, the acceptance of the notion of the dynamic nature of organisational life implies that organisational requirements are not static and their evolving nature cannot be apprehended through the static modelling of a

148

situation at a precise time and place. In other terms, the identification of organisational and user requirements, made at the initial stages of systems development may be irrelevant by the time the system is delivered, even if intermediary feedback loops are used. The problems associated with this may be reinforced by the practice of continuously updating information systems that are no longer perceived as adequate. The cumulative effect of updating (partly) systems that are no longer operational may lead to severe dysfunctions, strengthening practices which are no longer effective, as concluded by Kaasbøl (1997): fifteen out of sixteen IS replacement case studies carried out by Kaasbøl, were similar improved versions of the old system, with some new functionality added, due to simpler requirements engineering than the existing at the initial development phase. Kaasbøl stresses, however, that the decision of whether to update or replace systems is usually dependent upon organisational policy issues, rather than by technical options.

The main implication that these studies propose for information systems development is that assessing the effectiveness of information systems in terms of representing initially required actions and meeting targets and objectives 'misses the point' (Ciborra, 1996:116), as requirements and targets evolve and/or may no longer be perceived as necessary by organisational actors.

3.2.3 Conceptualising the role of actors: user and users, participation and involvement

Other contrasting perspectives and alternative views on systems development are focused upon the nature of context of the development process and the interaction between the different intervenients and other stakeholders in the process. Although some of the work in this area that claims an interpretative stance has been seen as indigenous to IS (see the comments of Baskerville and Meyers, 2002, on Markus, 1983, referenced in the previous section), much work draws heavily from reference to other fields, namely, organisational theory, organisational behaviour and social psychology.

These perspectives also tend to derive from a critical perspective of the reduction of the information systems development process to a design approach, separated from an implementation process. This is seen as implying that the development process is a technical intervention driven by experts, leading to what has been referred to as *"the fundamental division of labour"* in information systems development (Markus and Robey, 1983:213) and exemplified in some studies of the development process in practice, such as the above mentioned by Hornby *et al.* (1992). Although users were not interviewed in this study, the separation between two main groups of intervenients in the process - analysts and users - is clear in the perception, by the analysts, of human and organizational issues as the responsibility of users (Hornby *et al.*, 1992). The endurance of the notion of information systems development as a technical

process was also presented as safeguarded through the reward mechanisms which encourage analysts to deliver *"technically sound systems on time and to budget"* (Hornby *et al.*, 1992: 165). Beynon-Davies, Mackay and Slack (1997: 659), in the context of studying developers perceptions of user involvement, refer to *"the key assumption that producing the 'right' system involves finding the 'right' users"*. The main characteristics of the 'right' user, in their study, tend to be: a decision-maker, knowledgeable about the business process, envisioned, champion of IT, involved, committed and available. Nevertheless, as stressed by Clegg (1997), it can be questioned, precisely, whether the use of the expression *'user involvement'* does not reflect, in itself, the practical estrangement of the user from the planning, analysis and design processes, which seems predominant in instrumentally and technically oriented views of information systems development. Conversely, approaches which view information systems as social entities and the development process as a mean of social intervention tend to perceive this process beyond the design of a system and to emphasize its implementation as a permanent interaction between different social entities.

Studies addressing the role of the user and of the relationships between users and developers have often focused on issues of power. Jasperson *et al.* (2002) provide a comprehensive review of studies on the relationship between power and information technology and have identified three key strands of literature, which they categorise around what they define as sets of lenses.

A large strand of the literature, referred to as the technological lens, is centred around the notion of technological determinism, in that IT, as an external agent, has

introduced different power relations in the work place, by enabling forms of exercising control. Typically, these studies emphasize that IT impacts on existent power relationships and formal decision making structures, by changing the information processing capabilities of organisations (Carter, 1984; Zeffane, 1989; Anand and Mendelson, 1997; Nault, 1998). This perspective is seen by Jasperson *et al.* (2002) as limited as it does not address issues related to deeper societal structures.

Other studies concerning political issues in information systems development, referred to as examples of the organisational lens, emphasise the view that the development process is dominated by the exercise of power by systems developers over systems users, through the imposition of technical expertise and the manipulation of the user requirements incorporated in systems (Markus and Bjorn Anderson, 1987). This approach is, as referred by Jasperson *et al.* (2002), present in early studies of power and information systems development, as exemplified in the seminal studies by Markus (1983), within the context of studying the relationship between the establishment of a financial information system and the power relationships between divisional and centralised accounting functions, and by Kling and Iacono (1984), focusing on the legitimating arguments forwarded by key actors within an organisation to push a system which enabled them to extend their capacity for control within the organisation.

The issues raised by studies that fall into the organisational lens perspective are reinforced by studies which emphasise the misfit between what is stated as accepted at a formal level and what are the *de facto* beliefs regarding the roles, norms and values which structure the model of organisational activities. The existence of this

misfit, referred to as the distinction between espoused culture and culture-in-practice in the organisational culture literature (Brown, 1995b), has been identified by several authors in the information systems development literature (Pliskin *et al.* 1993; Tricker, 1992) and is often displayed by a gap between *de facto* work practices and prescribed procedures (Sommerville *et al.*, 1994). This strand of literature is often based upon interpretative approaches.

To overcome the problems introduced by the above mentioned disparity of perspectives, different authors in this strand of literature have proposed similar processes: the integration and negotiation of different interests (Markus and Robey, 1983); the establishment of a consensus between different world views (Avison and Wood-Harper, 1990; Checkland 1981; Clegg *et al.*, 1994); the focus on shared values and beliefs (Romm *et al.*, 1991). However, as stressed by Romm *et al.* (1991), these views tend to emphasise the organisational leadership perspective of the problems, as the beliefs and values of power established groups tend to impinge or prevail over other organisational groups. It could be questioned, therefore, whether the process of negotiating and integrating different interests through the shared norms, beliefs and values is an effective way of dealing with the problems introduced by the different perspectives brought into the information systems design process.

Other studies present an emergent perspective, where organisational power and information technology are seen as mutually impacting on each other. This is emphasised in other more recent studies, exemplified by Brown (1995a, 1998), in the context of a large IT project at the NHS, leading to the implementation of the Hospital Information Support System (HISS). Brown concluded that legitimacy for the system

was sought through the manipulation of multiple (and often radically different) interpretations, in order to adjust to the perceptions and requirements of different stakeholder groups, through control over the flow of information and the use of symbolic action. This process was used in the context of the promotion of a new set of power relationships.

A similar study was conducted by Doolin (2004), in the context of the implementation of a large health management information system in a New Zealand hospital, intended to monitor clinical activity. In the context of this study, despite the resistance offered by the clinicians at the hospital, the system was closely related to the new practices, values and *ethos* promoted by the new management discourse at the hospital and it was found that it introduced increased and more clearly defined accountabilities for the doctors. Doolin also argues that this was, however, a negotiated process and that, with time, the role of the system was reinterpreted and its potential for control was significantly diminished.

Another interesting study, within this strand of literature, and especially significant to this thesis, is presented by Sillince and Mouakket (1998), in the context of the introduction of the MAC (Management and Administrative Computing) initiative at a University in the North of England. They concluded that both the information systems users and its developers held, not only different and conflicting perspectives, but, more significantly, switched between perspectives at different times, in order to bridge communication gaps between themselves, which enabled coherence throughout the development process. This is s significant study in the context of this thesis, as it focuses on the development phase of the system whose post-

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implementation issues forms part of this thesis case study, at the same University. Therefore, further reference will be made to it in chapter 4.

Often, the more recent studies, within the organisational and emergent strands of literature, are representative of interpretative approaches and depart from zero-sum notions of power, portrayed as a capability that can be possessed and as the result of shifts in the distribution of resources, to embrace notions of power as a relation, often influenced by the work of Foucault, discussed in the previous chapter (Horton, 1998; Doolin, 2004). Critical approaches have also been referred to recently in the literature (Adam *et al*, 2001; Howcroft and Wilson, 2002; Doolin (2004). Howcroft and Wilson (2002), in particular, adopt a critical framework to emphasize the conflictual nature of organisations, often characterised, they argue by conflicting relationships between end-users and managers. They view the role of the systems developer as a mediator between the two groups, using the analogy of Janus, the two headed Roman god, which engenders a series of paradoxes inherent to participatory approaches to systems development, namely, around rhetorics of empowerment and of involvement, the exclusion of dissent and the illusion of compatibility. They propose that practical implications of this perspective emphasize the abandonment of a focus on development methodologies and of the tacit acceptance of "[...] *managerialist agendas of successful systems development* [...]" (Howcroft and Wilson, 2002: 21), to pursue deeper insights and understandings of what they see as a conflict that is intrinsic to the development process itself.

The literature on users, their role and on the relations between users and developers has been subject to other criticism. Horton mentions that most of the work undertaken

in this area has been directed towards explaining what power is; however, since the notion of power is socially constructed and therefore subject to a variety of interpretations, "[...] *attempting to define power is less useful than exploring the manifestations, mechanisms, or the exercise of power*" (Horton, 1998:121). Lamb and Kling (2003) further argue that the literature on users and their role has been based upon limited concepts of what 'user' is. They review different strands of literature on user studies, covering user based information studies of information and communication technologies (ICT) use, characteristic of the literature of Information Science/Information Studies, socio-technical design and computer-supported collaborative work (CSCW) and what they see as essentially an European tradition of Information Systems research.

The first of these strands of literature, relating to information studies of ICT use or non-use, largely characteristic of the literature of Information Science/Information Studies, tends to be based upon individualistic cognitive models of user, as "*(...) an atomic individual with well articulated preferences and the ability to exercise discretion in ICT choice and use, within certain cognitive limits*" (Lamb and Kling, 2003: 199). Both users and information are seen, they argue, as highly decontextualised, as the latter is processed as feedback to review user preferences and choice of information resources. These studies tend to ignore that fact that users are not, as they argue, primarily ICT users and that their choice of information resources is limited by the availability of a limited set of resources at the organisational context. Users often foster ambiguous views on their requirements and about their activities, as well.

In the Information Systems literature, an important problem with initial studies, especially those forming the technological lens defined by Jasperson et al (2002) mentioned above, lies with the assumption that both users and designers are homogeneous groups, whereas, in fact, underneath these standard 'tags', there are different roles, associated perceptions and agendas in action.

Socio-technical approaches (Mumford, 1983), and drawing upon these, computer supported collaborative work contributions (CSCW), are seen by Lamb and Kling as providing greater complexity to the notion of user by recognising the role of social interaction and of relationships of power in social interaction, as well as of existing environmental conditions that may influence the development process, but often revert to participatory design solutions, with inherent contradictions relating to the practical estrangement or, at least, a secondary role for the user. Lamb and Kling (2003:200, original emphasis) comment, ironically, that *"One might have expected that as end-users and developers began to share the same tasks, the term user would have disappeared. The very term end-user should indicate that the value for the user concept has broken down"*. Similarly, according to Lamb and Kling, the North American Information Systems literature, especially the strand referred to by Jasperson *et al.* (2002) as representative of the organisational lens, although providing a critical view of the treatment and of the position to which users are often relegated, does not appear to have challenged the traditional concept of the user. They consider that greater insight into reconceptualising the notion of user is presented by the European tradition of Information Systems research, which is seen as more amenable to interpretative approaches than its North American counterpart (cf. the study by Chen and Hirschheim, 2004, discussed in the previous section) and draws attention to

157

wider and richer notions of the environment of systems and ICT development and use and focuses on more complex notions of social interaction, where people and technologies are seen as part of social networks and issues of affiliation and of identity are explored. These studies are presented as strongly influenced by the work of European sociologists on the inter-relationships between technologies and social actors (Latour, 1987; Touraine, 1988; Castells, 1996), providing another example of recontextualisation of concepts from another field.

Drawing from contributions from socio-technical and CSCW approaches, and particularly from the European tradition of Information Systems research, they propose a reconceptualisation of the notion of user, departing from an individually focused model, to a socially oriented model, where users are seen as social actors, characterised by four dimensions: **affiliations** as networks of relationships across organisations that shape the use of ICT; **environments** that define practices of communication and of interaction; **interactions**, defined as "[...] *packages of information, resources, and media of exchange that organization members mobilize to engage with members of affiliated organizations*" (Lamb and Kling, 2003: 2007); and finally, **identities** (of individuals and organisations) that are constructed while ICT are used. Their main argument is that these dimensions should enable to explore studies of the contextualised and situated use of ICT, rather than pursuing isolated aspects of ICT use.

In conclusion, the literature on users and their interaction has been articulated around how the relationships between technology and the social environment have been conceptualised. Whether focused upon the notion of technology as an external agent

with a control impact on the social environment, or on notions of power as exercised through specific actors or on relational notions of power, with an emphasis on reinterpretation through the negotiation of meanings, this strand of literature has been seen, by authors such as Lamb and Kling (2003), as lacking an adequate conceptualisation of the 'user' as a multidimensional social actor. This also stems from a concern with defining interactions from often a single perspective of power, rather than examining different manifestations of interactions, and from a focus on isolated aspects of ICT use, rather than an interest on ICT use as part of broader contextual and situated activities.

3.3 The relationship between IS and conjunct subjects: the consideration of grey areas and gaps around boundaries

It is interesting to note the increasing adoption of alternative terms to 'information system', such as the broader term of 'information and communications technologies (ICT)' by authors such Lamb and Kling (2003). These authors form part of a group of researchers that look beyond information systems and the boundaries of the Information Systems literature to focus on a wider perspective of ICT and on the broader social context of ICT (Kling, 2000; Sawyer and Eschenfelder, 2002; Horton, Davenport and Wood-Harper, 2005a, 2005b)), adopting the term of Social Informatics to refer to their field of study, defined around socio-technical interaction. This trend of research considers context in a holistic manner and the relationship between ICT and context as bidirectional. It claims to distinguish itself from other conjunct subjects, such as Information Studies, in that it, in that it does not look into individual based approaches of ICT use but adopts a social perspective.

There is, in effect, potential for rather interesting convergence between the field of information systems and other fields, such as social informatics and the social shaping of technology, as proposed by authors such as Horton, Davenport and Wood-Harper (2005). This is particularly true in areas that are very congruent with the focus of this thesis, namely issues concerning the social adaptation of technologies. In effect, both areas stem from a critical perspective towards the technological determinism view that tended to be predominant in the literature around the 1960s through to the 1980s (Orlikowski, 1992; Kling, 2000). In contrast, both social informatics and the social shaping of technology have tended to foster the view that information technologies are the product of social action and strategic choice (Orlikowski, 1992).

In effect, Kling (2000) refers to information technologies as "*sociotechnical networks*" asserting that technology is socially shaped. These networks, in effect, comprise not only the technologies, but also people, structures and policies, which constitute "*computer packages*" (Kling and Dutton, 1982). He refers to ICT (information and communication technologies) implementations as an ongoing social process, where politics not only plays an important role, but, more than that, acts as an enabler. Simultaneously, information systems and the decision-making processes they enable reinforce the organisational power of the actors that are behind its implementation, what Kling (2000: 220) refers to "*reinforcement politics*" in a "*highly intertwined model*", where technological artefacts and social worlds are not seen as separate, but as constituting "*production lattices*". Davenport and her colleagues (Davenport, Higgins and Sommerville, 2000) adapted some of these concepts and refer to "*re-production lattice*" to refer to the appropriation of new

media in the household, where patterns of interaction adapt these artefacts to domestic routines and life.

As noted by Horton, Davenport and Wood-Harper (2005), there is a great deal of potential synergy between this work and studies carried out in the field of social shaping of technology, which Kling also embraces, namely by Fleck (1994), who refers to *"computer assemblages"*, *"configurational technologies"* and *"technology complexes"*. Fleck (1987) uses the term *"innofusion"* to refer to the processes of organisational learning and of adaptation of technology that users undergo as they often find it difficult to integrate technology to their work and organisational practices.

Similarly, in the field of information systems, as early as 1987, Zmud and his colleagues (Kwon and Zmud, 1987; Cooper and Zmud, 1990; Saga and Zmud, 1994) refer to an integrated information systems implementation framework around the following phases: initiation, adoption, adaptation, acceptance, routinisation and infusion. It should be noted, however, that the term adoption is used to refer to the revision of organisational procedures and training activities, whereas in this thesis it is seen as a wider process that also involves the adaptation of the role of the information systems through the discursive practices of organisational actors to fit various agendas. In effect, Cornford and Pollock (2003) and Pollock and Cornford (2004) studied the organisational adaptation of ERP systems at a UK Higher Education Institution, asserting that "[...] *implementation would not be possible without numerous ad hoc modifications*" (Pollock and Cornford, 2004: 43). In the case studied by these authors, this involved managing the tension faced by Universities in terms of

their similarity (an essential assumption of generic solutions such as ERP systems) and their differences *vis-à-vis* other organisations, involving processes of translation of the technology into a local context, but, at the same time, reshaping the way in which the University understood its identity. Similarly, as mentioned before, Doolin (2004) studied the implementation of a large health management information system in a New Zealand hospital, intended to monitor clinical activity, where with time, the role of the system was reinterpreted through negotiation between the initially sceptical clinicians and the hospital management.

The seminal study by Orlikowski (1992) adds an interesting dimension to previous approaches, by considering that both technological determinism and the social shaping of technology are incomplete views and proposes a model, referred to as the "duality of technology" that combines both views in dialectical manner, based on structuration theory. She refers to the notion of interpretive flexibility of technology to characterise the way in which users constitute and appropriate technology through shared understandings and meanings during its design and use. She does, however, assert that the interpretative flexibility of technology has got limits, both imposed by the material characteristics of technology itself and by the institutional contexts of its design and development. In this sense, according to her, temporal and spatial distance tends to correlate positively with decreased flexibility in the re-interpretation of technology. Her view of the role of technology provides interesting correlations with that of Clarke (2005), who refers to technologies as implicated actants, which through the discursive practices of social actors have an impact on the actions taken by these actors, as well as being the result of actions. This is of direct interest to the focus of this thesis and to the interpretation of its results, as its focus is on the role that the

discursive practices of a particular group of organisational actors – middle managers at different levels of the University administration and at academic and administrative computing – played in the organisational adaptation of information systems through negotiated interaction, thus introducing nuanced perspectives on the organisational role of information systems.

It is interesting to reflect upon proposed changes of terminology and proposed renaming of the field of study. In the previous chapter, it was noted that Becher (1989) refers that change in academic disciplines and discourse often involves the re-labelling of areas of work and the redoing of their history. He also notes that what is at stake is often more than a change of terminology and may involve a change in focus or even a shift in paradigm. The previous section discussed the frequent reference to the idea of identity crisis in Information Systems. This has been explored in the literature in relationship to arguments on what should constitute an adequate focus for the field, with different positions hovering between the system, seen as a technological artefact, and its human and organisational context. Hemingway (2004) noted recently that the term 'information system' and its adoption to label the field of study is problematic in itself, as the notion of system is limitative, because it is too mechanistic and not appropriate to designate new technologies, such as web based technologies based upon retrieval through browsing and navigation, that form a great part of the set of ICT that individuals and organisations relate to increasingly. The notion of system appears more connected to traditional views of data processing and of information transactions, whereby inputs to a system are processed and transformed. It also bears, in his opinion, strong assumptions of systematic building and use of a system.

It is argued, in this thesis, that there is an additional problem with the adoption of the term 'information systems' as a label for the field of studies it covers, which has to do with its other element – information. This chapter has reviewed different attempts to map the literature and practical approaches to information systems development and has commented on some discursive and conceptual differences in the treatment of the theme of information systems development and inherent issues. Different positions around information systems development can be categorised around notions of the development process itself, its organisational context and the role of its intervenients. Information and its role, however, remains largely an untouched subject, at least in explicit terms, throughout most of the literature that was reviewed.

Notable exceptions are: Lamb and Kling (2003), who refer briefly to an informational environment as part of the conceptualisation of the environment dimension of their user model; Doolin (2004) who considers the use of information provided by a large system in a New Zealand hospital in providing visibility to concepts, norms and values promoted by the management discourse at the hospital; and, finally, Hirschheim, Klein and Lyytinen (1995) who identify preferred metaphors for information in each of the paradigms defined by the application of Burrell and Morgan's framework to information systems development. In this context, functionalism views information as product, social relativism as an emergent outcome of a journey with a partner, radical structuralism as a means of manipulation, whereas neohumanism embraces the view of information as a means for control, sense-making and argumentation.

The relative absence of explicit reference to issues inherent to information in the Information Systems literature was noted by Ellis, Allen and Wilson (1999) in a study on the relationship between Information Systems and another subject they qualify as conjunct, Information Studies, through citation and co-citation analysis of highly cited authors in each field. They concluded that although there appeared initially to be great potential for overlap of focus of interest in the subject areas, there were, at the time, virtually no examples of co-citation across the two subjects and they "[...] *remain disjunct disciplines in terms of their disciplinary recognitions*" (Ellis, Allen and Wilson, 1999: 1100).

Their views were criticised by Monarch (2000), who carried out a co-word analysis in the titles ad abstracts of journal articles of representative journals in both fields. His analysis concludes that there are significant overlaps in the use of words and that this overlap is further patent in a third subject, medical informatics, that is presented as a hybrid between the other fields. It could be argued, however, that Monarch's study does not necessarily disprove the findings by Ellis, Allen and Wilson, but may even reinforce them. Monarch, in effect, seems to ignore the difference in method presented by the two studies in his interpretation of results. Whereas his study looked at co-word occurrence, the previous study employed co-citation analysis. His findings of significant overlap in terms of use of the same terms are congruent with the assumption by Ellis, Allen and Wilson of potential overlap of focus between the subjects, while not disproving their finding of absence of co-citation, as Monarch did not conduct a co-citation analysis, but a co-word analysis. In the absence of detailed content analysis of the population of papers covered in both studies, it could be argued that the findings of co-word use, allied to the absence of co-citation reported

by Ellis, Allen and Wilson reinforce the thesis by these authors that we are in presence of *"conjunct subjects"*, but *"disjunct disciplines"*.

Ellis, Allen and Wilson (1999) offer a set of explanations for this. Information Science often focuses on the content of information resources and systems and has been traditionally concerned textual information, whereas Information Systems has focused traditionally on the formal modelling of relationships between data and, predominantly, quantitative management information. They also appear to focus on different views of the user, albeit adopting essentially an individually focused concept. Whereas Information Science looks at the use by individuals of information services and channels of communication, Information Systems tends to consider the individual in his or her function or role and on the requirements that implies over the access to formal data.

These authors argue that there are also deeper differences that are related to the evolution of the fields and the process of socialisation of practitioners, using Diesing's (1970) notion of segmentation of different areas of social sciences, discussed in the previous chapter. They suggest that Information Science represents the grouping by professional field, as it exhibits close relationships with the professional and practitioner field, whereas Information Systems represents grouping by method, with its focus on method and methodology. They also relate the lack of practical co-citation and of overlap of work carried out in the two fields between the two fields to Bourdieu's (1984) notions of academic power, discussed in the previous chapter. They propose that Information Science and Information Systems are *"subordinate Faculties"* in the structures of power of the University system that have

struggled to defend a separate identity, forming often sections in Computer Science Departments or Schools of Management, in the latter case, or, in the former case, being often associated with the field of Librarianship, from which it originated. They argue *"While there may be no direct conflict between IS and information science, the lack of contact (at least revealed by this study) points to a desire to maintain separateness in order to focus attention on the institutional and disciplinary claims of each field, so that power can be gained and used to advance individuals and groups within the institution. In other words, the separate identity may have little to do with genuine disciplinary differences and more to do with the search of power"* (Ellis, Allen and Wilson, 1999: 1101).

The study by Ellis, Allen and Wilson brings, in almost a circular way, issues around discursive traditions in Information Systems back to previous discussion on the nature of discourse, academic discourse and issues of power. The previous chapter emphasized the argument proposed by Diesing (1971) that while interaction is intense within each community, boundaries are *"[...] marked by noninteraction, and more definitely by interminable polemics and unresolved misunderstandings. Examination of the polemics reveals differences in beliefs, goals and values that make rational discussion and collaboration difficult or even impossible."* (Diesing, 1971: 18). This has prompted the view that it is of importance to further explore how, in the differences between different discursive traditions within or across disciplines, potentially, there may be gaps in the form of some subjects that become clouded or subjected to unilateral observation or even neglected, where sometimes there could be potential for convergence and complementarity. This is the case of the treatment (or limited explicit reference) of 'information' in the literature of Information Systems.

The previous chapter argued that an important point to retain about discursive practices is not only what they allow to express and reproduce, but, often more crucially, what they do not allow to express. Identifying what is silenced is also of importance in the study of discursive practices (Ellis, Oldridge and Vasconcelos, 2004) and this brings interesting implications for research.

3.4 Summary and implications for research

This chapter aimed to build upon some of the implications for research derived from the previous chapter, by exploring issues raised by research traditions in Information Systems from a discursive perspective. Three main areas were proposed as significant: issues surrounding the emergence of discursive traditions; the identification and discussion of the attributes of different research traditions with reference to the notions of recontextualisation and of interpretative viability and the identification of gaps around seemingly similar objects of study and of grey areas around different discursive traditions.

Section 3.1 in this chapter discussed views on the nature and focus of information systems and noted a relative consensus on the notions of diversity and fragmentation as qualifiers for the discipline and its object(s) of study. There also appeared to be, with some exceptions, a relative consensus in viewing divergence and fragmentation as an impediment to the development of the field. Various frameworks that aim at categorising research traditions in Information Systems were reviewed, as discursive elaborations on what characterises and explains different research traditions. As these frameworks appeared to be largely underpinned by categorisations and theoretical foundations that are based upon classic work of well known authors (Burrell and Morgan, Habermas, Etzioni), rather than on categorisations based upon the empirical analysis of literature and practice in information systems, studies that provide surveys and analyses of the literature published in mainstream Information Systems journals over a period of circa thirty year were also taken into account.

Although some of the claims of the divergence in Information Systems have been based upon differences in ontological and epistemological position, most practical analysis appears to point towards divergence based upon plurality of focus in objects of study, rather epistemological differences. In effect, the results by both Orlikowsky and Baroudi (1991) and Chen and Hirschheim (2004) seem concur with the assertion by Hirschheim and Klein (1989) that, in epistemological and ontological terms, there seems to be a clear concentration around one research tradition, positivism, as dominant in IS and that it remains difficult to identify other traditions than positivism and interpretivism.

It would appear, therefore, that the IS community exhibits, in Becher's (1989) terms, a rural pattern of distribution in terms of ratio of people to problems and that subject based collaboration might be weak. In Diesing's terms (1971), despite the predominance of a particular philosophical stance (Orlikowski and Baroudi, 1991; Chen and Hirschheim, 2004), hence the potential for method based collaboration, the coexistence of studies focused upon a variety of object systems, as defined by Hirschheim, Klein and Lyytinen (1996), would be hinder subject based collaboration and, consequently, be an impediment to convergence.

Hence, in IS, divergence would be based upon the existence of multiple *foci* in terms of subject and objects of study: "[...] *it is possible to engage in meaningful research by focusing on any one object system without even recognising the existence of other object systems* [...]" (Hirschheim, Klein and Lyytinen, 1996:94). This is patent in the disagreement over what should constitute the focus of IS – the IT artefact, its

proximate context or its distal context, following the Ives, Hamilton and Davis (1980) framework for categorising information systems and their context mentioned above -, patent in the criticism offered to the IS research communities by Orlikowski and Iacono (2001) and Benbasat and Zmud (2003). It is also patent in various categorisations of potential areas of focus in IS reviewed in this section, ranging from Klein and Hirschheim (1987) to Hirschheim, Klein and Lyytinen (1996) and in the practical evidence of multiplicity of *foci* offered by Culnan (1986, 1987) and by Orlikowski and Baroudi (1991).

An important issue to consider is that, as stressed by Hyland and discussed in the previous chapter, convergence, consensus and homogeneity can be overemphasized and many disciplines are characterised by multiple and conflicting beliefs and practices: *"Most disciplines are characterised by several competing perspectives and embody often bitterly contested beliefs and values [...] Disciplines are the contexts in which disagreement can be deliberated."* (Hyland, 2000:11). Tensions arising from the clash of conflicting perspectives may, in effect, be a vehicle for disciplinary development and evolution and, as argued by Hirschheim, Klein and Lyytnen (1996:4), the pursuit of a *"[...] unifying theoretical straight jacket [...] is neither possible nor desirable"*.

The perceived divergence in terms of the paradigm debate may derive from an entrenchment of positions between two poles – positivism and interpretivism - that see each other as deviant. The analogy offered by Allen and Ellis (1999, 2000) on the nature of the paradigm debate in IS as an *"ideological struggle"*, resembling more a scholastic debate than a scientific or philosophical discussion, where positions

171

become polarised and entrenched, leading to strong refutation of one from the other has some explanatory power in discussing this perceived root for divergence. In practice, outside this debate, it would appear that most researchers carry on their work and pursue their interests in what may be in fact a consistent worldview and philosophical stance. This may have roots, as proposed by Chen and Hirschheim (2004) in the current tenure, promotion and publication systems, where the first two emphasize number of publications and the latter is seen as more favourable to research within a positivist tradition, both by bias and by practical requirements, as this is seen as less time consuming and as bearing faster returns. Allen and Ellis (2000) take a different stance, focusing the roots for this polarisation on the use of different discursive resources and specialised vocabularies.

The second section of this chapter, 3.2, attempted to explore further these potential differences by exploring discursive approaches to the theme of information systems development – essentially on the differences between positivist perspectives on IS, focused around notions of control, and interpretative perspectives in IS, focused around meaning and sense making. It identified attributes of discursive approaches around notions of the development process, its organisational context and the role of the different actors and concept of the user. Examples of these attributes were discussed around the notions of recontextualisation (especially through intertextuality and technologisation of discourse) and of interpretative viability.

Discursive approaches that are developed around notions of control focus upon the concept of the development process as a planned technical intervention, with a clear life-cycle, driven by a step-by-step adoption of a development methodology and

resulting in the delivery of an IT artefact. These approaches view the organisational alignment and fit of the systems as an important element, for two purposes: the identification, analysis and the representation of requirements are seen as an important element for sound design and the alignment of the system with wider organisational objectives is presented as an important factor for the development of competitive strategies. There is often an assumption of stability in the organisational environment and of the pursuit of order and harmony as desirable states. The specialised and technical nature of the development process implies the distinction between the developer as a technical expert and the user as a requirements provider. In this context, information systems tend to be characterised as external forces that can introduce shifts in the distribution of organisational power, by changing the basis of decision-making, through different data processing capabilities that enable different forms of control.

Contrasting discursive approaches to those focused around notions of control and to the instrumental view of information systems emphasize the nature of the development process in different ways, ranging from non-linear, evolutionary, to amethodical or even chaotic. The system is presented as emergent and never completed, as it evolves with changes that are inherent to organisations. Elements of organisational discontinuity and chance combined events that engender the need for negotiation and for compromise are emphasized in these approaches. In this context, views on what constitutes the system itself vary, and while some contrasting views present the system as a finalised IT artefact, others see the system as beyond the IT artefact to include social relations around the artefact. Some of these approaches advocate the need to depart from zero-sum perceptions of power to embrace relational

perspectives of power. Although some authors favour a rhetoric of consensus, negotiation of interests and of shared values and beliefs, others focus on the nature of conflict as intrinsic to organisations and as the source for insurmountable paradoxes. The treatment of the actors is variable in some of the approaches that present a rhetoric of dissention towards the instrumental and control oriented views of the development process: some studies are referred to as presenting users and developers are segregated into largely homogeneous poles of a conflicting relationship; other studies emphasize internal contradictions and dilemmas faced by different groups; more recent studies advocate the need to reconceptualise the concept of user in frameworks that recognise elements of complexity introduced by different dimensions of affiliation, environments, interactions and identity.

Both the instrumental, control driven approach and approaches that are defined by contrast to the former, which is presented as predominant, offer examples of recontextualisation of concepts through intertextuality (Bernstein,1995; Thomas, 2003). The instrumental and control driven discursive approach borrows elements from engineering analogies of building a system, life-cycle methodical development, that could appeal to views of the discipline as technically focused and potentially bearing stronger external standing. Other examples of intertextuality under the theme of control refer to the importation of the theme of competitive advantage from the strategic management literature and evolve around notions of technology as an enabler of competitive advantage. It was suggested that, by sharing elements of interpretative viability present in the original strand of literature from which this theme is imported, the reference to competitive advantage and to the role of IT in sustaining it appeals to different communities and conjunctures and serves as a

legitimating rhetoric, by presenting information systems as strategically aligned and, therefore, sharing the attributes of strategic interventions.

Criticism of the instrumental and control driven approaches to information systems development is especially driven by discursive approaches that present their focus on interpretivism, around notions of that favour meaning and sense-making. Work in this area tends to focus on the discussion of the role of the social actors that are involved in systems development, namely on the role of users and the treatment of users throughout the development process. This strand of literature presents strong references to the work of well established European sociologists and philosophers, whose frameworks are borrowed to guide analysis on the relationships between technologies and social actors.

Intertextuality through reference to either engineering, strategic management or sociology and philosophy is characterised by an accompanying trend towards specialisation of vocabulary and language, providing examples of technologisation of discourse (Fairclough, 1996; Thomas, 2003). As suggested by Thomas (2003), this has also the effect of depersonalising discourses and the interventions discourses refer to, covering its motives and rationale, and, as stressed by Bourdieu and Passeron (1970) of neutralising its agents. Allen and Ellis (1999) suggest that the polarisation of exclusive positions in Information Systems, lies in language and in the use of different discursive resources and linguistic symbols, implying that a direct translation of issues from one paradigm to another becomes difficult, which means that "[...] *protagonists seem to talk 'past' each other rather than to each other.*" (Allen and Ellis;2000:236). As mentioned above, Hirschheim, Klein and Lyytinen (1996:94)

refer to the difficulties in conciliating the research traditions based on multiple *foci* in terms of subject and objects of study, where "[...] *it is possible to engage in meaningful research by focusing on any one object system without even recognising the existence of other object systems* [...] ". The analysis carried out in this chapter suggests that the discursive recontextuatlisation of concepts that have roots in different referent disciplines and fields, such as engineering, sociology and strategic management may, at least partially, explain the coexistence of multiple objects of study and discursive traditions. Allen and Ellis (1999) argue that the adoption of discursive approaches that would allow each community to express their views in a common language and in mutual terms could help overcome the perceived incommensurability between functionalist and interpretative positions.

It is proposed in this chapter that there are areas in the interface between different discursive traditions on information systems development that remain relatively neglected or unclear and whose conceptualisation may require further attention. One of these areas refers to the notion of the development process itself, the other relates to different elements involved in the process.

In terms of notions of the development process, there is the need to adopt a view that goes beyond the classic 'waterfall' life-cycle model that views implementation as the end of the cycle. In line with interpretative perspectives in IS, focused around meaning and sense making, that view the development process as non-linear, and evolutionary, development does not end in implementation and the system can evolve with changes that are inherent to organisations. In effect, implementation may constitute new beginnings, as systems change and are adapted. There is therefore the

need for studies that consider post-implementation issues and examine the process of organisational adaptation of information systems.

There are also other relatively neglected themes that were identified in this chapter. Orlikowki and Iacono (2001) referred to the need to reconsider the concept of the IT artefact. Lamb and Kling (2003) argue for the need to reconceptualise our models of the user. Hemingway (2004) proposes that the designation of 'information systems' is limitative and the connotations of the term 'systems' out of tune with technological and social developments. It is proposed that the other term in the designation – 'information' – may need revisiting and reconsideration, as issues around the use and interpretation of information in a situated context are not often explicitly addressed in the literature of Information Systems. A co-citation study by Ellis, Allen and Wilson (1999) concluded, in effect, that, although there is potential overlap in focus of interest between Information Systems and Information Science, as potentially conjunct subjects, there appears to be evidence that they remain disjunct disciplines, with distinct *foci*. They propose that, whereas Information Science has a clear concern with the content and meaning of information resources and systems, Information Systems has been primarily concerned withy the formal modelling of data and relationships. This view is corroborated by Johnstone, Tate and Bonner (2004:2), who state that the IS literature has tended to largely ignore human information behaviour issues, often assuming the existence of "[...] *a standard and shared set of interpretative structures to gain meaning from the data*". There appear therefore to be differences and gaps across different fields that claim an interest in 'information'.

It is suggested that a study that adopts a non-systems centric position and a wider perspective, in the sense proposed by Lamb and Kling (2003) of exploring the contextualised and situated use of information systems, is of interest in addressing some of the themes that appear less explicitly addressed by different research traditions in Information Systems. A study focused on the wider notion of information systems development, particularly on post-implementation issues, would be of interest to explore issues related to the organisational adaptation of information systems and to discursive strategies formed around the both the process of adaptation and the information environment, seen as a wider context.

Chapter 4 - The University and its restructure within a climate of change in the UK Higher Education sector

The organisation where the study takes place is one of the Civic Universities founded in the United Kingdom in the beginning of the 20th century, following the amalgamation of several local Colleges in the later part of the 19th century.

At its inception, it proclaimed, alongside with classical academic subjects, its commitment to vocational and practical studies, in close alignment with local industry developments and the needs of a growing industrial community in the area of the North of England, where it is located. Non-degree teaching in subjects such as cow keeping and railway economics coexisted along with established academic subjects, such as medical studies.

This trend was maintained during the World Wars, when warfare related subjects, such as munitions making and radar studies, as well as the production of anaesthetics, were taught.

However, during the following decades, the University went through major changes and the nature and focus of its work changed significantly. Its vocational and locally oriented nature has gradually faded and was transferred to the latterly created former Polytechnic (now an University after the 1992 binary division abolishment), as a

result of profound changes introduced in the UK Higher Education Policy during the last four decades.

At the time the case study was undertaken, the University was part of the best ranked universities in many league table criteria, by emphasizing in its reports, web site and promotional material the very good results obtained in the various Research Assessment Exercises and the high proportion of research funds in its annual income (higher than those received through student fees, for example).

Senior administrators close to the strategic apex that were interviewed clearly emphasized the notion that this was to be seen as an elite institution that was clearly research driven, as will become apparent later in this chapter and in chapter 5.

In the mid nineties, the University underwent a major restructure that involved different dimensions. This process of change provides the context for this study and was presented as a deliberate strategy to re-direct the nature and focus of the University as, increasingly, a business enterprise, in order to ensure its competitive advantage, which required the streamlining of its work processes in a business context, rather than in a traditional academic sense.

This was in tune with major changes occurring in the Higher Education sector in the United Kingdom and coincided with a change in senior officers at the University.

This chapter provides an outline and an introduction to the major elements of the process of change at the University and is organised around the following elements:

i)   the wider context of change in the Higher Education sector in the United

       Kingdom;

ii)   the introduction of a new suite of management information systems, whose

       organisational acceptance was the original focus for the study, revealed

       and played a pivotal role in wider changes in the information arenas at the

       University;

iii)   this was, in turn, closely associated with concomitant changes in various

       organisational arenas at the University, namely, in its immediate and more

       visible expression, the reorganisation of the organisational structure of its

       Administration, as well as changes in administrative processes.

These aspects will then be further explored in chapters 5 and 6. Chapter 5 will analyse

in greater detail different perspectives around the reorganisation of different

organisational and professional arenas that are correlated with the new structure and

the "*play between powers*" (Alvesson and Sköldbergh, 2000, p.229) that ensued.

Chapter 6 will focus upon changes in the information arenas and the role that different

forms   of   control   played   in   securing   a   redistribution   of   resources.

4.1 The context of change in the UK Higher Education Sector in the 1980s and 1990s

The period within which this study took place followed a couple of decades of profound change in the Higher Education sector in the United Kingdom, marked initially by an expansion of the sector, which is often related back to the influence of the Robbins report (1963).

This process of change had a strong impact in most aspects of academic life in this country and comprised funding models and recruitment policies, governance structures, managerial and financial control and accountability systems, which in turn impacted heavily on the requirements for new IT systems, bringing to the sector a strong focus on the definition of information strategies and on new information systems to manage the administrative and operational ground across the sector. Most importantly, this period of change is seen as bringing profound alterations in terms of the organisational climate at higher education institutions (Allen, 2000).

In 1979, the election of a new Conservative government brought about generalised changes in policy, which affected significantly the Higher Education sector. These changes involved the attempt to cut public expenditure as a response to a generalised financial crisis. Two decisions had a strong impact in the Higher Education sector: the first, concerned the removal of public subsidy to students whose residence was outside the European Community; the second, more crucially, resulted in the reduction of 15% of the budget allocated to Higher Education (Williams, 1997).

Simultaneously, the decision to pursue a policy of increasing the number of students in the system meant that the unit of resource declined significantly during the period between 1987 and 1992 (Scott, 1995), culminating with the abolition of the binary divide between Universities and Polytechnics in 1992.

Williams (1997) refers that almost all government reforms were geared towards the establishment of market approaches. In Higher Education, this was achieved through a new funding and recruitment policy, giving rise to what is referred to as marketisation of the sector (Dill, 1997). Other authors prefer the designations of quasi markets (Flynn, 1998; Williams, 1997) or of artificial markets (Allen, 2000), arguing that these are characterised by significantly different rules than those that are in place market situations, as the funding providers are non-profit tax funded institutions. In these cases, there is a tension in a situation where "[...] *provider agencies were ostensibly non-profit, were tax funded, and although users did not pay for services directly with cash* [or did not before the introduction of fees], *suppliers' revenue depended on consumer demand rather than bureaucratic allocation* [...]" (Flynn, 1998:29). Williams (1997: 277) comments that "*in many ways higher education was a soft target*", as its funding already resembled that of quasi-markets. In Higher Education, the control over the suppliers was achieved by offering financial rewards in order to encourage desired action, via zero based formula funding, and by putting in place market monitoring mechanisms, such as teaching and research quality assessments. Simultaneously, the University Grants Committee established a clear demarcation between the funding of teaching and of research, whereby the former was based upon student numbers and the latter upon peer review of quality of research.

Williams (1997) refers that these policies resulted in a difficult situation for the government, as, with the increase of student numbers, although the funding per student had decreased by a third, the overall number of students in the system meant that government expenditure had also increased significantly. The stabilisation of the growth rate of student numbers was achieved through the reduction by 45% of tuition fees and by the establishment of limits to the number of students receiving fees (HEFCE, 1994).

Simultaneously, there were significant changes in the structures of institutional governance and in the management and administration of Universities. The Jarratt Report (1985) is often described (Jones, 1991; Dearlove,1998) as a turning point towards the new management style which challenged the conventions that regulated the traditional structures of governance in Universities[11] by recommending the involvement of more laymen, the establishment of a committee to oversee policy and resource allocation as part of stronger management structures headed by the figure of the vice-chancellor as a chief executive, as well as an academic leader. As a

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[11] Dearlove (1998:112) notes: " *The governance of 'old' universities is 'extraordinarily confusing' (Farrington, 1994: 160) but apart from Oxford and Cambridge, whose constitutions involve almost complete control by their academic members, internal university government had been based on a two tier system. Councils (the Court in Scotland) are the executive governing bodies responsible for finance and the control of resources. They have 'lay', that is non-staff and student, majorities, and anything from 25 to over 60 members. Senates are the sovereign academic authorities and have no lay members. In reality, both Councils and Senates are too large and do not meet frequently enough to directly control resources and organise academic affairs. With respect to resource management, much falls into Vice-Chancellors who are usually more able to control their own Councils than their Senates. With respect to academic affairs, universities have traditionally relied upon committees, although professional cliques frequently enjoy organisational power and full time administrators have come to prominence.*"

consequence, more power was located in specialised managers and in vice-chancellors. This new management style emphasized the need for planning as a strategic imperative, performance measurement as a control mechanism, financial accountability (Jones, 1991; Hardy, 1991; Tapper 1998). Dearlove (1997: 117) summarises these changes in the following way: "*In the face of a variety of pressures on universities, the broad trend of change has been away from collegiality towards a kind of 'managerialism' that eats into notions of professionalism and into the rights of academics to manage themselves*". This does not mean necessarily that power was taken away from the academic core in an irrevocable way. As Allen (2000) points out, the new managerial structures were superimposed on pre-existing collegial structures, leading to the establishment of what Birnbaum (1998:11) refers to as the "dualism of controls" in Universities. Trowler (2001) argues, in effect that "[...] *the dialogical nature of universities means that the impact of the NHE* [New Higher Education] *discourse is mitigated, as it is read and reacted to in varied ways* [...]", despite an acknowledged worsening of the working conditions of individual academics (Barry, Chandler and Clark, 2001). These changes, according to Allen (2000), led to shifts in the organisational climate of many Higher Education institutions, namely from one characterised by collegiality, trust and optimism to an increased emphasis on managerialism, mistrust and cynicism.

The stronger emphasis on performance measurement and on accountability, especially financial accountability, and the adoption of a managerial ethos and discourse, meant an increased focus on the notions of strategic planning and of goal driven strategies, often based upon the transfer "[...] *of simplistic assumptions driven from business management models* " and overlooking "[...] *the complexities and ambiguities of the*

185

university's operational reality" (Patterson, 2001: 160). Funding by performance targets required the provision of comparable data both internally to the strategic management structures under the Vice-Chancellors and externally to funding bodies. It also led to a focus on vertical information flows, from the periphery to the centre of Universities, and a focus on information systems requirements that is essentially outward, rather than inward oriented, as the emphasis is on the sources of income – both students and government (Sillince and Mouakket, 1998).

Throughout the sector, there was a strong emphasis on strategic plans for the management of information and of IT (through the influence of the Computer Board, subsequently the Information Systems Committee and the Joint Information Systems Committee – JISC) and on the development of IT applications geared towards the management of administrative information, such as the MAC (Management and Administrative Computing) initiative (Sillince and Mouakket, 1998; Allen, 2000), which provides the context for the case study undertaken in this thesis.

The initiatives towards the definition of information strategies were highly centralised and JISC undertook the task of defining a blueprint for information strategy, defined broadly as "[...] *a set of attitudes in which:*

  – *any information that should be available for sharing (and most will be) is well defined and appropriately accessible (allowing for necessary safeguards);*

  – *the quality of information is fit for its purpose (e.g. accuracy, currency, consistency, completeness – but only as far as necessary);*

  – *all staff know, and exercise their responsibilities towards information;*

— *there is a mechanism by which priorities are clearly identified and then acted upon"* (JISC, 1995).

This blueprint for information strategy was defined to a great detail, aiming at the standardisation of information processing activities and of data across the sector. The MAC initiative was created in 1988 and was seen as instrumental to achieve this standardisation through the development and implementation of a common management and administrative software in all Universities. Sillince and Mouakket (1998) argue that this choice was not an obvious one and that other alternatives would have been preferable, namely the development and use of centrally defined specifications in the form of minimum data sets, which would ensure the comparability of data across the sector without involving the risks inherent to the development of a large and complex software project. There were further issues that should have been considered, as the analysis of the empirical data collected in the chosen case study will demonstrate.

In parallel with the creation of the MAC initiative, a well known consultancy was appointed to undertake the high level requirements analysis, also involving the representatives of five universities. The resulting blueprint was delivered in 1989 recommending the formation of four different families of universities, based upon their different requirements and, after the definition of a migration strategy to harmonise the process of blueprinting and the requirements of individual universities, the adoption of different relational database software per 'family' (Oracle, Ingress, Powerhouse and Sequs). As noted by Sillince and Mouakett (1997), this implied the abandonment of the principle of grouping by similar user requirements, to, in practice,

187

grouping by similar software system and in the end the systems were chosen by usability, rather than functionality.

Four different companies were set to develop the systems, with an umbrella company, Delphic Ltd., supervising the process of converting the original blueprint into a data dictionary, thus ignoring the migration strategies defined for customising the blueprint to each university. In effect, as exemplified by the interview data analysed in this thesis and also commented by Sillince and Mouakket (1998), there was limited interaction between the systems developers and the universities and the blueprint was used as the source for the development of the system without considering the need for customisation. The dissatisfaction that this entailed led the UGC to appoint a consultant to review the work that was being undertaken in face of the concerns of the universities. Sillince and Mouakket (1998: 51) point out though: *"However, ironically, the consultant appointed was from the original consultancy whose lack of consultation had produced much of the frustration"*. The original delivery deadline of August 1993 was changed to January 1996 and universities were divided into different tiers for the testing and the evaluation of the beta version of the software, although each university could only test two applications in the first tier. The case study university in this thesis chose the finance and the management information systems application, leading, as will be detailed in the following sections, to the subsequent abandonment of the finance application.

Sillince and Mouakket (1998), who studied the process of analysis and design at the chosen university for this case study concluded that the software developers used both

division, through the separate treatment of user groups, and integration, by making the promise of customisation to local requirements, as political strategies.

The focus on strategic planning and on applications that were geared towards the processing of management information was, significantly, accompanied by the adoption of a new managerial and technological discourse, referred to by Allen, 2000: 21) as "[...] *an impregnable language armoured in modernism and rationality. It provides discourses that are rooted in technological determinism and the unquestioning belief in the righteousness of a particular brand of corporate management*". The following sections in this chapter introduce the process of restructure that served as a background to the introduction and implementation of the MAC systems at the chosen University and chapters 5 and 6, respectively, examine the role of discursive strategies in the reorganisation of, respectively, the social and the information arenas at the University, involving the organisational adaptation of the MAC systems at the chosen university.

4.2 The introduction of the MAC system at the University: background and sequence of events leading to its implementation

The initial focus of this research was, as mentioned in the Introduction to this thesis, the implementation of a Management and Administrative Computing (MAC) system at the University where the study took place. MAC systems are, as mentioned above, University wide management information systems that aim at integrating most of the central management processes at universities in the United Kingdom. They are the result of a government initiative that was introduced in 1988 with the objective of making the administrative data produced by all the Higher Education Institutions (HEI) in the country comparable across the sector. This section details the sequence of events leading to the implementation of the system, outlined in the previous section, from the accounts of key players that were involved in the process at the University, which concur overall with many of the issues referred to in the literature and presented in the previous section.

Most interviewees were well aware that achieving the aim of establishing comparable data across the sector was an important step for the University Grants Committee, which was in charge of distributing government funding across the Higher Education sector and therefore needed to benchmark performance in order to distribute resources.

"Originally the whole project comes out of the Government initiative, I
don't know how much of this you know already but the Government

initiative of 1988 where they proposed universities should look inwards on themselves and see what software they were actually using and decide whether or not they ought to be updating it - what they thought of what they'd already got or whether or not they ought to be trying to move it forward for the future in terms of the development tools they were using and sorts of databases and so on . Out of that they then sort of initiated a review through one of the big consultancy companies, probably Price Waterhouse, and they actually reviewed what all the universities were doing - the 'then' universities, there were only about 60 of us then, it was before they removed the barrier and took in all the new ones as well. "(CI.1:2)

The adoption of a common system and of a common data set required therefore, from the universities, potential significant adaptation of not only existing data processing systems, but also of information management practices and of administrative processes. As stated by Sillince and Mouakett (1998:48), who have studied the impact of the process of developing the software – hence focused on the pre-implementation process, rather than on the post-implementation - at this University, "*the way in which that adaptation*[12] *took place provides an interesting insight into the complexity and difficulty of the adaptation process, and the consummate political skills required*".

In effect, at the University, the pre-existing central administration systems followed a strongly centralised model, with limited access given to Faculties and academic departments:

"They were much more centralised. The academic departments at most had a 'browse' access. In some cases, they actually had c separate system which gave them browse access into the data in other cases they just had the screen to look things up, but they never had any actually input facility in the departments, I don't think at all. With the new system we hope to collect data from where it originates so that departmental staff will be able

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[12] Sillince and Mouakket refer, in this context to adaptation in terms of the software development process and, more specifically, of "[...] *aligning the new system and each university's existing procedures*" (Sillince and Mouakket, 1998: 48)

191

to input information about their students rather than it all being done centrally."(CI.1:11)

This model required that academic departments and Faculties would also develop and maintain local administrative information systems, in order to manage their own information. These systems tended to be maintained by the departmental offices and follow a similar model of limited access within each department. As mentioned by an academic member of staff that had developed the administrative system for his own department:

> *"It is* [Cheryl, an administrator] *who has the main access to it. I think* [Linda Henderson, the Technical Manager] *also knows how to use it.* [Jane Scott], *who is the Senior Secretary, and I suppose the Post-Graduate people as well, but beyond that we keep it away from the staff really – people have read access to it and it is not the most convenient system, not terribly friendly [...]" (MS.1:5)*

At another department, a senior administrator mentioned a similar situation.

> *"I personally use a database but I'm the only one that uses it, it's in Microsoft Access software, I can't let the secretaries use it because I haven't developed it enough for it to be foolproof." (DIS.2:18)*

The diversity of internal systems and the discrepancy between these systems required a significant effort in terms of adaptation, as mentioned above, but this was seen as a necessity, both in terms of internal operational efficiency and in terms of delivering information in the format required by the funding boards, which would be a requirement for obtaining funding. A senior administrator at the Academic Secretary Office, referred the following:

> *"That depends on how cynical you wish to be. I think in many institutions there is a cynical view that one is required to produce strategy documents and paperwork because the funding council's and JISC say so, and because it's a requirement to get money. Less cynically and perhaps more reasonably, the driving force in most cases is operational need. As student*

numbers rise and resource allocation depends increasingly on student numbers, it becomes important to have accurate records and to avoid ambiguity and to avoid the situation where you cannot say on a particular day what the situation is. You need evermore accurate and timely information and so there is a need for our internal allocation purposes to have a proper flow of information. So although in the early stages it may look as though we are being asked to conform to yet another set of requirements handed down, in fact it's in our own interests to get information systems working properly."(ASO.1:21)

In a sense, to some administrators, the adhesion to the initiative was driven by disincentives not to defect the collaboration, rather than by incentives to collaborate, as defection would trigger the automatic punishment of creating a barrier to receiving funding from the Government. As a result, the Universities collaborated with the management consultancy that produced the initial report on a high level requirements specification.

There were a fair amount of incentives or disincentives not to join because people thought they would be penalised if they didn't join, financially. So they all towed the line, did as they were told and had a look at their systems and this report was produced and basically from that it was recommended that all universities formed together into families of different sizes and based on the development software that they were thinking of using (CI.1:3)

This resulted in a large report proposing six applications and producing requirements specifications, data models, data dictionary, data store and entity relationship models, based upon the requirements of five chosen Universities (Sillince and Mouakket, 1998). The original concept was that of a single system, based upon a universal data model. This was, however, soon perceived to be difficult to achieve, following an initial consultation on how the migration process was to be achieved, leading to the formation of different 'families' of universities, based upon different requirements, as mentioned in the previous section.

"I'm not an expert on MAC systems. The original idea of the MAC initiative was for one marvellous set of programs which would all be

193

derived from the same software house, totally integrated and which would do everything that anybody could conceivably want. In the real world that was always probably a slightly optimistic target. As you will know, there were initially two and then three I think, certainly three families at institutions within that, we then had the creation of the new universities, whereby polytechnics came in and hadn't formerly been part of the MAC initiative and mostly chose different approaches [...]"(ASO.1:24)

"[...] we actually have different requirements, just on the basis of the fact that we have different courses, and universities with medical schools, for example, have different requirements from those that don't in terms of student administration and so on. They have different strengths and different areas that actually deal with where they need to develop, they all have different missions as to what they are trying to achieve as a university, so they're not necessarily all aiming for the same thing after their administration."(CI.1:4)

A key point to remember in the formation of the 'families' made by Sillince and Mouakket (1998) and mentioned in the previous section is that the grouping of universities ended up being made in function of similar software systems rather than similar requirements. The University chose to be part of the larger group, which formed the 'Oracle family'. This software developer was chosen by many of the Universities due to its reputation and the sophistication of its tools.

" [...] we sort of committed ourselves to having systems that were based on the Oracle database. The family that was quite large was made up of 24 institutions actually decided that they first of all look at the data that was required for a university system. So they put out a tender for the design of the data dictionary - in fact Oracle UK won the tender so they looked at the data dictionary that might be required by a generic university, as you might say, and then having done that they went out to tender again for somebody to actually write the software. "(CI.1:3)

The choice of this particular software developer was not necessarily seen as the best one, due to their lack of experience in developing specific applications for the sector and it was not, in effect, the recommended option by an independent consultant that advised the University on this matter (Sillince and Mouakket, 1998).

"Oracle UK won that tender and that's probably where things started going wrong really because, although Oracle are very good on their tools and so on, they, it is generally agreed, that their application software is

The original intention at the University, as stated by its MAC project manager, was that it would adopt a completely integrated system across its administration and that this would have been mostly developed by the software developer.

"[...] *and so initially the University were going to implement all the software they were going to provide because of our aim that* [name of the University] *was going to have an integrated database - so that wherever possible all the data would only be held once and everything else would hook into that so that we would have a fully relational system and that it would provide as much of the requirement as possible for the University administration and then taking that we would actually write extra additional applications to fulfil the things that weren't actually provided and they would be also written and they could also hook into what was already there."(CI.1:3)*

Problems began, however, with the first set of package deliveries, as developers at the software vendor began to realise that the requirements were far more complex to implement in terms of design than originally anticipated and that further development was required. This stemmed, in effect, from lack of familiarity with the complexity involved in university administration systems. As a consequence, as mentioned above, the delivery deadline of August 1993 was extended to January 1996 (Sillince and Mouakket, 1998), the time of the start of these interviews. Eventually, conflict between the software developer and Delphic Ltd, a company set up to represent the interests of the various Universities in the family, arose, as mentioned by the MAC project manager at the University.

"*Oracle started to develop the software in 1991/92. The very first deliveries came at the end of '92 beginning of '93, but the plan was at that*

stage to have everything delivered to us I think within about 18 months and they realised it wasn't as straight forward as they thought it would be, that there was a lot more design required than they expected, particularly in the Student Administrative area, so the development took longer and longer and longer, the whole thing just spread itself out in time and eventually we finally took the final delivery at the end of last year so they were probably two years behind schedule and it was not complete. There had been a lot of contractual disagreements between the company that had been set up by the universities, Delphic, and Oracle themselves, over what they were supposed to be providing and although it never came to legal disputes it got very near it." (CI.1:6)

The reason for the conflict derived, partly, from the delay in delivering the system, and, mostly, essentially from the lack of representation of various elements of user requirements. Satisfying specific requirements for such a large group of universities (24 in total) was always perceived a very difficult task and this was made increasingly difficult with the delayed delivery schedule because, as time evolved, so did requirements in such a complex environment.

"[...] these new MAC systems that are going in, they have a very long history - they go back to 1988, [...] in our case we were one of 24 universities working to have systems developed. The systems that we developed are not really what any of the 24 universities want, they are, by definition, a compromise. I don't actually feel that these are the systems that I want, so, yes, I understand why someone in the departments feels they haven't been consulted; they haven't, but you can't consult everyone." (CI.4:10-11).

"It became obvious over the lifetime of the MAC initiative, that as computing and requirements moved on, not everything that had been desired in the early years was now fully adequate, and decisions were taken to either adapt or to cut losses and to go for other systems and the task then became one of integrating other systems rather than adapting systems which were not now seen to be quite right."[13] (ASO.1:24)

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[13] This particular comment refers to the applications that the University decided not to adopt, namely, the Finance systems.

This situation was made more acute by the fact that the proposed migration strategies that had originally been conceived, in order to ensure an element of customisation, were largely ignored and the requirements followed a blueprint that the developer applied to all Universities. The difficulties experienced by the developer in dealing with the complexity of the task also meant that the University was delivered what it perceived as an incomplete product, but, to minimise further losses, it decided to accept it and carry out further work in-house, thus adapting the packages that it had decided to implement .

> "Eventually we agreed we would take the software as far as they'd got it and that would be it - that was the end of the contract, although there was going to be a maintenance contract of a sort, it would be done by another company and not by Oracle - and from there on the universities were on their own with the software. So it's not been that straightforward - so we haven't got a complete system, there are still things missing from what was provided - for example there's no payroll [...]. Various other parts are not complete so we've got incomplete software which we're now having to bring up to scratch. " (CI.1:6-7)

This caused an immediate internal division, as some departments refused to adhere to the adopted version of MAC and started pursuing other options. This was notably the case of the Finance Department, which was a powerful actor at the University, and had decided not to adopt the Finance package, once some shortcomings on the beta version of the software were known and not addressed by the developer.

> "At the same time it was decided by our Finance Department that they didn't want to use the accounting side of the system and that they actually wanted to buy something else so we've bought in another package to do the financial side of the administration and tried to hold to our original aims of having integrated systems." (CI.1:6-7)

The perspective of the Finance Department was that the process of development for the MAC system was well delayed and flawed in many ways, whilst lacking the

197

specific requirements for the management of the financial function in the organisation.

> "Well, the MAC system development has lasted many years now. About 18 months ago the Finance Department decided that the financial ledger system part of MAC was not good enough for what we wanted, for various reasons. So we looked outside at a third party supplier to see what systems we could get to link in with MAC - so we've now bought a system from another supplier" (DF.1:2)

> "I was personally involved in the development of the MAC system, but it was mainly various members from universities across the country to get the system going with Oracle UK who were the people actually writing the software. It got to the stage where it dragged on so long, Oracle wanted to finish the job and we weren't happy with what they were supplying. Very many reasons they weren't putting in changes that we wanted, so we then gave up and thought let's look elsewhere and get something a bit closer to our requirements and we knew the suppliers of this system, they were the suppliers of our old system, we thought they were much more professional so we moved over to them."(DF.1:19)

Lack of detail was expressed of both in terms of lack of support to the required functionality and lack of detail in the data provided. This was presented as the general understanding of what was the main reason leading to the defection of the Finance Department:

> "I think the financial part of the MAC system didn't do what they wanted it to do, and I think that they decided that the new system [...] as a better system but the two won't talk to each other, I don't think."(DIS.2:19)

> Question: "What did you require in the systems specialised for finance?"

> Answer: "There's lots of different areas, we wanted all the basic financial functions, we wanted to deal with sales invoices, purchase invoices, and we want to have to keep normal sort of financial transactions, payroll, · transfer of money between accounts, and also give the basis for management financial reporting, to see that departments could control their own budget or at least monitor their budgets."(DF.1:3)

This decision led immediately to the coexistence of two different systems with two different sets of data, bringing on further implications. The effort to maintain the autonomy of the Financial Systems had, in effect, an important impact on the concept

of the integrated University-wide Information System and on the practical

implementation of this system, as noted by the MAC project manager.

"[...] *so immediately we have a Finance system that wasn't written for us holding information and another set of systems holding information, so there is duplication by definition. We have recently decided no to go and buy a payroll package that we came very close to buying – that would have given us another set of systems to integrate, and whilst we felt it was technically possible, we thought it would be extremely difficult, so we didn't do that" (CI.4:12)*

" *We've already lost the 'piece of data being held only once' idea because we've got two systems and therefore we're bound to hold the same data to be able to function separately but we've worked hard in trying to make them talk to each other as well, as much as possible to try and keep them integrated." (CI. 1: 10)*

This decision was seen as relatively unilateral by managers at the Academic

Computing Services.

"*Finance department, within the Administration, have taken a decision of their own to choose their own financial software and some would say that they have not consulted us or other people within Corporate Information to the extent that they should have done. They have chosen software because of its financial merits, not really taken much notice of the technical constraints." (ACS.1:30)*

A route to overcome this duplication was to undertake further development, in order

to make the two systems compatible, so that they could 'talk to each other'. This was

seen as an essential step by the Corporate Information Department, which was in

charge of overseeing the implementation of MAC and of managing it afterwards.

"*At the moment the database has been incorporated with the big MAC database. There's now a big Oracle database incorporated into the* [Corporate] *Information Department, the financial part of that is this new system we've bought in." (DF.1:4)*

Whilst the intention of the Corporate Information Department was to try to maintain integration and communication between the two systems at all costs, the view from the Finance Department side was that this effort had brought up the worst of two worlds.

> *"It's a bad time to talk about integrated systems because we feel very much that we have suffered in the name of integration over the last few months in getting this system in, because we've had to make an awful lot of compromises in the set up of the system to help with integration as a whole and now I am no longer in favour, I've lost the grasp of the benefits for all the costs that we've had and I think that once we're actually settled into the system we're going to actually have to look at how we've integrated and possibly disintegrate to actually improve the effective running of the finance system. I'm all for having links with everywhere else, but I think implementing MAC and having this finance system incorporated in MAC we've rather overdone it, I think, and laid down lots of rules which have really held us back and caused a lot of extra work. Certainly it's a lot of management overhead to have to follow an integrated route and I've lost sight of the benefits, to be quite honest, we'll have to look at this again."*
> *(DF.1: 18)*

In what respects the implementation of the elements of MAC that were adopted, at the eve of first set of packages of software gong live, there had been virtually no internal consultation outside the Corporate Information Department and the Finance Department regarding either MAC or the new Finance system and very little was known of each, as reported by both the senior administrator and the technical manager of an academic department.

> *"I'm not aware of any new system, if we're talking about the administrative computing side of things then there was a MAC initiative which was set up by a number of universities, standardised across the services for student support in administration, etc. That has been well behind time and I'm not even sure what the current position is, whether they've decided not to use that any more or whether to therefore use other methods [..]" (DIS.1:2)*

> *"I am not even aware of any work that has been done from the Centre to find out what different systems people are using [...]"(DIS1.7)*

> *"I don't think there's enough consultation and enough indication about what stage particular processes have got to and I don't know when this new system for student records is to be introduced." (DIS.2:8)*

200

Question: *"Have Corporate Information or Finance or any other central administrative department ever consulted your department in how to get the best way of systems working in a way that would also serve the departments or can be used effectively by departments?"*

Answer :*"I don't know. I don't think so as far as I'm aware - they haven't actually come to us directly and said what are your opinions on how processes could be made to work the best way for a department. "* *(DIS.2:20)*

The lack of consultation was openly acknowledged by the staff at the Corporate Information Department, including its project manager and the deputy director of the department in charge of the area responsible for MAC, due to the difficulty in considering the diversity of practices and views.

"We have got...all of the project groups have an academic representative and the training group has more academic members than any other, but in my view not enough; we ought to involve academic departments more, but it has been very difficult to work out when to do it - student system, the next to go live, we are behind schedule with it and it'll be there when it's required but only just - in my mind we should have had things further ahead and then we would have been able to involve academic departments more from where we are now - so that we could have actually got them involved and told them what we were going to supply them with and so on. I think this is where things have slipped in terms of getting work done and so now there isn't the time to get the involvement of academic departments before the systems go live which is what I would have liked. As soon as they go live, all that the academic departments are going to be able to do, to start with, anyway, is actually look at records and run reports - we felt that the best way to introduce them to the system. As soon as we have the systems up and running we will be able to liaise with them more and find out exactly what they do want out of them. Hopefully in the next 12 months we'll be able to turn it into something much more 'user-friendly'. "(CI.1:20)

"It's very difficult when you've got 80 to 100 departments to consult them in a meaningful way." (CI.4:13)

As the system was rolled over, it was generally considered that it had some significant short comings, as mentioned above. The Finance Systems manager, a member of the MAC task team since its inception, summarised the issues that were seen as contributing to the problems raised by MAC:

"I suppose I've been involved from more or less the start, the late 80's - I think there's various reasons why it's failed. We looked like we were only taking on the student records system and that is causing us a lot of problems - I think it failed because initially people don't grasp the scale of the whole job, but the consultants who investigated it in the first place, Oracle who won.....

[interruption due to change of tape]

Oracle, in underestimating the scale of the problem, to win the contract they set up a price that they could not do the work for. The universities tried to do it on the cheap, tried to get the lowest price, not appreciating that to get something as complex as the university administrative system, you have to pay for it. The effort and money put into the development of the system was inadequate to cover the complexity of the system so from quite an early time Oracle had to simplify the system to keep within their costs. We also had the problem that there was 24 universities trying to develop this system with Oracle - I don't believe that designing by committee can really work satisfactorily, we had to compromise across the board so nobody was happy with what was coming out, and it made it very difficult to communicate with Oracle, and they themselves were going into areas where they had no expertise at all and they had system developers who really did not appreciate the detail of what they were writing - in particular some areas of student records and they obviously hadn't worked on systems like that before and they didn't put the effort into to learn about it. They did a very shoddy job to be quite honest. "(DF.1:20-21)

Nevertheless, although with reluctance, it was decided that the packages of the system that had been agreed upon by the University would be implemented, as the organisation would incur in significant penalties from the funding boards if it did not buy into the new system, which was a vehicle for accounting and benchmarking, as well as an expression of the funding models that were devised by the funding boards. Internally, academic departments and support departments also had no choice but to accept, at least formally, the new system, as they were, in turn, accountable to the strategic apex at the University and dependent upon the provision of information to get funding from the Centre.

"[...] because when it comes back to it they [the academic departments and the central support departments] are responsible for the data and responsible to the Registrar - making sure that the data on the system is accurate, so I don't think there is a sense that they are going to lose that responsibility. Getting people to make decisions about how things are actually going to be implemented is more of a problem."(CI.1:30)

The sequence of events leading to the implementation of the MAC system described above through the perspectives of different actors, raises a few interesting issues and implications that will be further expanded in the Chapters 5 and 6.

Beyond the clash between developers and the University as a user, which is immediately evident and has been analysed in detail by Sillince and Mouakket (1998) and therefore will not be the focus of this study, this sequence of events unveils a series of internal tensions faced by the University while trying to respond to wider changes in the Higher Education sector. The introduction of the new MAC system coincided with a deeper process of change at the University with special emphasis in the restructure of its administration and in rethinking its relationship with the academic departments. The redesign of its administrative processes was core to that and the implementation of the MAC system played a pivotal role in this process of change. In a sense, it was not merely a reflection of change, but an agent for change, as will be detailed in Chapters 5 and 6, through its relationship with the introduction of a new set of organisational arenas and by providing a key to the redistribution of resources. The effective estrangement of 'users' (composed by the academic departments and by central support structures) reflects the dynamics between them and the driving forces for the new sets of systems at the Centre.

These driving forces presented interesting tensions themselves. The clash between the rhetoric of efficiency, dictated by a common interest imperative, adopted by the Corporate Information Department and the rhetoric of effectiveness, dictated by a superordinate strategic imperative, adopted by the Finance Department, is interesting, as it represents the clash between two different powerful centripetal forces at the

University. It also expresses, at first glance, in the different arguments adopted, the contrast between two competing models of information politics, as proposed by Davenport, Eccles and Prusack (1992). The Corporate Information Department, while emphasizing the need for an integrated model across the University, where different administrative levels would feed into, could be seen as defending a model of information federalism, and the Finance Department, while emphasizing the need for a separate central finance management system, under its control and in accordance with terms and conditions defined by it, could be seen, again at first glance, as espousing an information monarchy model. As two central departments that were striving to define rules, processes and procedures in areas that were crucial for resourcing the University – student administration and finance – they represented the technostructure at the University, as defined by Mintzberg (1983).

The next section introduces the context of wider change at the University in the context of the restructure of its organisational and information arenas.

4.3 The process of restructure in the administrative arena at the University: scope and form

The immediate and most visible sign of the process of change the University underwent in the mid-nineties was a major reorganisation of its administrative structure. At the organisational structure level, this process involved: i) the removal of great part of its middle tier (the Faculty Administration) and the concentration of much of the previous Faculty administration at the Centre and ii) the concentration of all its central computing services in one single department (Corporate Information Department), through the amalgamation of the central administration computing services and what was presented as a merger or as a takeover, depending upon the perspective, of Academic Computing Services, which became a substructure of the Corporate Information Department .

In the departments that were close to the strategic apex at the University, such as the Academic Secretary Office, these structural changes were presented as something that cyclically occurred in Universities:

> "As it happens in this last year, some structural changes have been made
> which did not originate in the information strategy process, so different
> strands of decision making have come together and recommendations from
> one side have been overtaken by recommendations from another side, that
> is normal in large organisations I think. For example, the working party's
> report recommended some changes in committee structures - and
> universities are full of committees, as you know- and the committee which
> look after the work of particular information providers like the computing
> services. So I think certainly as strategies are developed and as they
> change and mature then organisational change may have to come as well.
> Very few organisational structures have a life of more than 4 or 5 years."
> (ASO.1:20)

205

The process of restructure was not, however, only expressed through the formal structure of the University, but it also reflected itself in the development of a series of new organisational processes, rules and procedures and in the development of new systems to regulate these new processes, of which the new series of management information systems played a pivotal role. As such, the process of restructure was perceived as symptomatic of wider changes in the Higher Education sector by other organisational actors. In effect, this process was perceived as a reflection of a more profound change in how Universities were perceived and, simultaneously, in how they wanted to project their image as institutions that were adapting to an environment that was seen as both turbulent and increasing in competitiveness:

> *"I also think these mergers have a lot to do with the way Universities perceive their business - there is more emphasis on the fact that the University should be projecting itself as a unit and that it should be competing for students with other Universities, and it should be competing for research income and that it needs to be a unified entity, not just a collection of individuals. Somebody had a very good description of a university - a collection of one-man enterprises, united by a common grievance about car parking." (ACS.1:35-36)*

This perceived change in nature was also viewed as bearing deep implications in how traditionally work had been organised and in how different groups related to each other in a way that was conducive to the reshaping of organisational arenas at Universities.

> *"[...] and there was clearly a need to alter the perception of how academic work related to administrative record keeping." (ASO.1:22)*

This restructure of the management processes at the University did not therefore only involve rethinking the relationships between the Centre and the local administrations,

206

but also involved, as evidenced by the above comment, a reconsideration of how academic work should relate to administration. The phrasing of this process is important, as it reflects to some extent the notion of subversion of the traditional relationship between administration as a support activity and academic work as a core activity, into academic work as an activity subordinated to a 'superordinate strategic imperative'[14] devised by the Centre and managed and controlled by the central administrative structures, as will be detailed in Chapter 6.

4.3.1 The abolishment of the middle tier – faculties

One of the major structural changes was, as mentioned above, the abolishment of the administrative middle tier with the transfer of the work previously carried out by the Faculties to the Centre. The position of the Centre was reinforced by taking on a greater amount of administrative activities and processes and by transferring many of the administrators that were previously at the Faculties to its own structures. The abolishment of Faculties as an administrative tier had strong political significance. In effect, Faculties were traditionally organised around and ruled by academic committees that were composed by members of academic staff and were seen to rule through collegial decision-making processes, whereas the administrative central structures were management structures, submitted to line management hierarchical structures and decision-making processes.

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[14] Hackley (2000) refers in a similar way to 'the strategic imperative' , as a rhetorical resource used by a group of planners in a UK top advertising agence to assert a position of power over its group of creatives.

The removal of the middle tier was not necessarily perceived as a negative step by some administrators at academic departments and the legitimising argument for its necessity was related to the removal of unnecessary redundancy in work, leading to an increase in efficiency. The following comment from a senior administrator at an academic department illustrates this case and perhaps a need to be working closer or seen to be working closer to the Centre.

> "Sometimes in the past I felt that some information was going to Faculties that could have easily have gone straight to Central Administration, I'm always aware of things to do with student records for instance, if the Faculty asks for information for that, then the faculty sends the information to central administration to be processed - what's the point? There has in the past been some redundancy of processing but I think the university has realised that, which is why they are abolishing Faculty Offices and they are redistributing the work, we've not yet been told how".
> (DIS.2:26-27)

Under the umbrella of the arguments towards greater efficiency and of the streamlining of administrative processes, local administrators could, in some instances, act, in effect, as a centripetal force, in that they would support the reinforcement of the position of the Centre in controlling decision making over ertain aspects of the Administration.

The Centre, however, was not a homogeneous entity, and there were mixed views over the process. The administrators that were part of the support structures that received the work previously carried out by the Faculties perceived this as an increase in both the amount of work that was carried out and in the level of responsibility. This was specifically the case of administrators that remained as part of the traditional support structure, such as the Student Offices at the Undergraduate and at the Graduate Schools.

" [...] at the end of the line, the Departments here, the Faculties in the middle and us in the Centre – the Faculties have been swept away and we are now both the Faculties and the Centre in relation to undergraduate students. We've got more staff but we've got an awful lot more work to do and we've got a new computer system as well, so it has been a significant change, but the main thing has been sweeping away the whole tier of administration, so we no longer have this intermediate Faculty tier, but just the Central departments and the individual academic departments." *(SO.1:21)*

The transfer of the work previously carried out by the Faculties to the Central Administration required a significant change in procedures, as each of the previous Faculties employed local procedures that differed significantly from Faculty to Faculty. The focus of the Central Administration was especially to standardise all these procedures and abolish local differences.

"A huge change in procedures because we had seven separate Faculty offices which had seven separate procedures in relation to largely standard functions so we are at the moment at the beginning of trying to standardise all of that we can't possibly cope as a central section, operating seven disparate functions/procedures in relation to one function – well that's not an easy task in standardising – in some cases, there were genuine reasons for wanting things to be done in different ways, in other cases, it was just historical." *(SO.1:22).*

This change in procedures was not immediately communicated to the academic departments. As mentioned by a senior administrator at an academic department, the local administration was unsure of what the new procedures had been until quite late in the process.

"[...] the system of Faculties is changing, they've just abolished the Faculty Offices in the university. Up until last month we had Faculty Offices with Faculty Administrators. From this month onwards, I don't really know what is happening. They haven't said how the Faculty work is going to be distributed amongst other Central Administration departments." *(DIS.2:26-27)*

The lack of access to knowledge on the new set of processes and procedures could be seen as contributing to a weakening of the position of the local administrations. In effect, the abolishment of the administrative middle tier and the relocation to the Centre of the administrative processes originally carried out by the Faculties, compounded by the creation of new rules and procedures was, as will be explored in Chapter 5, a vehicle to reinforce the strength of centripetal forces at the University, by tightening the control over administrative processes at the Centre, while at the same time introducing a new technostructure at the Centre, that would be in charge of defining and controlling administrative processes, procedures and systems.

4.3.2 The amalgamation of the administrative computing services

Another major change at the time involved the centralisation of all Central Administration computing activities into a new department with the responsibility of managing central information at the University and of overseeing the external projection of the corporate image of the University, via its web presence. This new structure was named Corporate Information Department and its name reflects the idea that the University should express its corporate presence and image in a homogeneous way, which should rise above local diversity and differences.

> "[...] *the new department is to take a corporate view on things, information." (CI.4:3)*

The creation of the new department involved the transfer of most of the IT staff that was previously in the various Central Administration Departments into the Corporate

Information Department. This involved the transfer of a large number of staff that had previously been in charge of IT at Central Administration structures into the new Department, with the inherent depletion of the various Central Administration departments of expertise in the area of IT applications. The idea behind it was that all the administrative IT processing would be centralised under one single department.

> "It didn't recruit any new people straight away - basically what they seemed to do was take the IT/Database part of the admin and put them together, so it's MAC services with a big chunk, then you had other bits like student information, student systems people, people who did the calendar, and they've taken in other jobs from other departments as well. But it was really anybody who had a database, they sort of latched into the main sort of MAC services people. They were all admin. officers within groups within the Administration, apart from my project[15], which was brought in, and we acquired some extra people who were working within the University, and we are still acquiring people." (CI.3:26-27)

The formation of the new structure involving computing services was therefore organised around the introduction of new systems. The way the formation of the Department occurred was described by one of the area leaders in a way that resembles the image of the weaving of a web around a central nucleus, which then expanded by aggregating staff from the main key areas of the Administration to which project groups would be attached, which in turn would be composed of smaller teams dedicated to specific parts of the new systems.

> "What we have is a big group - the MAC implementation group which oversees the whole project originally chaired by the Deputy Secretary. Then that group was made up of key people in each area, someone from Personnel Department, Student Area, Finance Area, Physical Resources/Estates area, someone involved in Management Information and so on. So there was someone from each of the main areas. Then below

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[15] This project – the development of Web based services - had originally been originated at the Library, being developed by staff members that saw themselves as information technology professionals, rather than administrators, and was then moved to The Corporate Information Department.

*that there was a whole series of project groups, one for each of the
particular areas. Then within those groups, small teams looking after
specific parts, and the project group itself would be made up of some
technical people but mostly users, people who could ensure that what
comes out of the project is actually what they want. Beneath that is
another whole series of groups looking at each of the little sub-areas.
So it's a very big team of people, with some overlap."(CI.1:17)*

The formation of the group allowed the building of a community around stronger

collaborative practices. This outcome was viewed positively by the administrators that

were part of the new department and that, by and large, had felt isolated in their

previous functional departments. The fact that they were all information systems

focused administrators, in a new information systems department, with increasing

influence in the University, helped building a sense of identity.

*"There is a lot of collaboration. Things have changed again very recently
because the department [...] has only been in existence since the beginning
of January and before that I was in a different department. Then I was
actually working with people in other departments whereas now we're
actually more together and the people working on the project are more
together than they've actually ever been." (CI.1:17)*

Staff in this department believed that this process had not hindered collaboration

across the Administration, but in effect had created better conditions for it, especially

in terms of bringing together staff across the Central Administration, although the

inclusion of "users", either in other administrative departments or in academic

departments is also mentioned.

*"[...] obviously all the users or most of the users are in actually other
administrative departments or they're actually within academic
departments - so there's a lot of communication/collaboration across the
Administration in particular but also with the academic departments,
because the other aim of this system was to be available to all members of
the University who needed to use it for their work so actually trying to
provide a much wider system, so virtually all academics should be able to
have access to information about their students. "(CI.1.9)*

The use of the term "*users*" is significant here, as it may denote the estrangement of the rest of the Central Administration and of administrators at academic departments, as a driving force for the restructuring of the new administrative information systems and of the processes supported by them. Clegg (1997) mentions that the term "*user participation*" often reveals, in itself, the effective estrangement of users from the development and implementation process.

The formation of the new department was not an entirely straightforward and harmonious process, however, as not all the members of staff in charge of what could have been perceived as key areas to the newly formed department moved into it. The reasons for this were not perceived as completely logical or rational, but as "*partly [...] dictated by political reasons, [...] people's individual agendas*"(CI.4:6):

> "[...] *certainly in the Academic Registry, there was a Students Section looking after the student records and the same thing in the staff area, there was the Personnel Department looking after the staff system. A number of these people have been brought into the Department. What perhaps is difficult to describe is that not all the people that were working on all of the systems have come in [...] What's happened with the new Department is that a number of these key users have actually come into the department , but confusingly not all of them, so the Finance one is still in the Finance Department, but the Personnel key user is in this Department, and I myself am not entirely sure of the rationale behind some of the people being in and some of them being out. Partly it's dictated by political reasons, I suppose, things that might happen through logic tend to get distorted because of people's individual agendas." (CI.4:6)*

The areas that tended to have maintained autonomy *vis-à-vis* the new Department were usually the ones that had not bought into the new MAC system, managed by the Corporate Information Department, and maintained their own separate systems at the Central Administration. For example, one big and notable exception to this centripetal trend clustered around the Corporate Information Department involved the Finance Department, which maintained its autonomy and control over its computing activities,

213

despite the general strong steer towards the integration of all administrative computing applications and towards moving its control into a single central department.

> *"At the same time it was decided by our Finance Department that they didn't want to use the accounting side of the system and that they actually wanted to buy something else so we've bought in another package to do the financial side of the administration and trying to hold to our original aims of having integrated systems". (CI. 1: 7)*

The key element of the argument put forward by Finance to legitimise the decision for not buying into the new system and therefore not releasing its information systems staff to the new structure was that the very essence of its nature and status, as safe keeper of the financial health of the organisation, required (and ensured) a strong level of independence towards other areas of the University. This rhetoric is also emphasized by the reference to the University and its operations as "the business", and, more so, "*a multi-million pound business*", below.

> *"[...] we are a multi-million pound business and we've got to focus on getting things right, and we've got to get things right across the board, it's not a trade-off, we've got to make sure the business is being run efficiently, effectively, so yes, we see things different to, say, the Academic Computing Services might see about the priorities, as far as how they set up and manage the network." (DF.1:15)*

The drive towards maintaining a strong hold of autonomy on the part of the Finance Department, raises also interest because, rather than being an example of the centrifugal–centripetal tension, it is the expression of the intent to reinforce another centripetal force in the University – in this case, the Finance Department, whose strategic importance for the organisation demanded that its requirements in terms of management information systems should be entirely fulfilled and not subject to negotiation or trade-off. As such, it acted as a centripetal force at the University. In

effect, from the point of view of the responsible for financial systems, the University was following a general trend towards the autonomy of [academic and central support or service] departments, in detriment of the overall effectiveness of the Financial Management System, even though this would be *"quite a slow process"*.

> *"Well I think if anything we are moving towards the departments being very autonomous, that movement is not quite as speedy as some people would like and I don't personally agree with it, I don't think it will work at all that well, in more poorer central control over a lot of things, but there is an overall policy towards devolution of management so that departments have a lot more control over their income and expenditure and their budgets. That's going to be quite a slow process and certain areas of it will be very difficult to implement, certainly control over salary expenditure there's always a feeling that there should be central management of the staff positions within the university." (DF.1:14)*

The recognition of this trend required that certain processes and procedures should be in place *"to get things right across the board"* (DF.1:15).

It is interesting to note that, unlike most other Central Administration Departments at this University, which reported, at the time, and still do, to the Registrar and Secretary, the Finance Department had historically reported directly to the Vice-Chancellor.

> *"What gets in the way is politics [...] Now I think if this University Administration was not broken down into areas that were in different chains of command, then these things would be more possible. Our bit is under the Registrar and Secretary. The Finance Department is under the Finance Director, the Estates Department is under the Estates Director. All those three people actually report up to the Vice-Chancellor. Now if you stuck the Finance and Estates areas under the Registrar, this would cut down the variety. You can simplify things by reducing the chains of command and actually clearer decision making, another thing this University is not good at."* [16] *(CI.4:22)*

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[16] As a post case study comment, it is interesting to note that, in a subsequent restructure, whereby the only other central administration department (the Estates Department) that did, at the time the case study took place, report directly to the Vice-Chancellor reverted to report to the Registrar and

215

The strong position held by the Finance Department was seen as stemming from the control it in effect held over the financial resources of the institution:

> *"Yes, well, the Finance Department have a strong position in this Corporation because they can lay their hands on the money, so in this organisation they have a history of being separate, so what we haven't yet managed to do is to bring all the areas together – and we have most of them, with the exception of Finance, which is still in the Finance Department, we work very closely with them, but there is a degree of difficulty there. I think the Finance Department [...] perhaps is an exception, in the fact that they yield a lot more power [...] than some other departments do "[CI.4:7]*

This was not an unusual arrangement in Higher Education Institutions and had its origins in the traditional foundations for the governance of Universities in the United Kingdom, according to Dearlove (1998: 112), whose comments on academic governance have been mentioned in the previous section. What is interesting, however, in the tension between the Corporate Information Department and the Finance Department, is that both could be seen as acting as technostructures and as centripetal forces at the University, through the effective control of the administrative processes that were reviewed and of the systems that were created to regulate them. The key point about these processes and systems is that they were in place to control and manage financial resources directly or indirectly (through the administration of the student body which was key to secure funding).

Secretary, the Finance Department maintained its status and is currently the only department, apart from Registry and Academic Secretary Office, to report directly to the Vice-Chancellor.

4.3.3 The merger/take-over of the Academic Computing Services

After the creation of the Corporate Information Department and the centralisation of most central information systems under its management, a subsequent restructure took place through what was seen by some as a merger of the Corporate Information Department with the Academic Computing Services and by others as a hostile take-over of the latter by the former. Traditionally, at the University, the provision of academic (rather than administrative) computing services to the various academic departments and to their students was ensured by a separate autonomous structure that reported to academic committees, rather than to an administrative line management structure. With the consolidation of the position of the Corporate Information Department, a decision was made to gather the two departments under the direction of the Head of the Corporate Information Department.

The argument that legitimised the decision presented the whole process as a merger, in the interest of efficiency and integration of the various activities. This was aligned with the rhetoric of efficiency that was developed when trying to bring together the various central administration information systems, under a common interest imperative – everybody would benefit from the integration of the various information systems activities, as users would be exploring the various applications from the same workspace and accessing information in the same format.

> *"There were other organisational changes and movement of other senior people at that time and it was decided by the senior management team that the balance of advantage lay in bringing all the computing services together and putting them under a single director, who would be able to co-ordinate work as increasingly academic departments were required to take a larger part in keeping administrative records, so their academic computing other than perhaps very specialised computing in the detailed*

intricacies of their subject, like a physicist using an enormous computer in America, lets say, 'ordinary' computing and the sort of work which a member of staff might be asked to do in keeping student, admin., financial records on the same computer he used for writing his letters and processing research results, it would be better if all those activities were combined under one organisation. Within the Department of Corporate Information there remain of course a Deputy Director in charge of administrative activities and a Deputy Director in charge of academic computing. So we have an umbrella organisation but we still have specialists in different kinds of computing within." (ASO.1:23)

Historically, Academic Computing Services maintained the computing network of the University. In some central administration departments there was a perception that the way the network services were operated did not stem from an appreciation of the requirements of the central administration and did not serve their interests in the best possible way.

"It's a bit split - Corporate Information [Department] has got some input into that but there's also the ACS department, I think there's some reorganisation going on there at the moment, we have to deal with both sets and the ACS have always been quite removed from anything administrative so I'm not sure if they really appreciate what goes on". (DF.1:17)

"[...] our perception is the network is not working to best suit us, it is more working to suit the students and the academic areas of the university, which seems to us wrong because we are a multi-million pound business and we've got to focus on getting things right, and we've got to get things right across the board, it's not a trade-off, we've got to make sure the business is being run efficiently, effectively, so yes, we see things different to say the academic computing services might see about the priorities, as far as how they set up and manage the network." [DF.1: }

The amalgamation of the two departments had significant implications for the political standing of both and for the balance of power in both departments. Traditionally, the autonomous status of ACS was emphasized by the fact that it answered to academic committees, within a relatively collegial structure. Its inclusion in the Corporate Information Department meant that it became part of the formal administrative management structure and chain of command.

"We will no longer be mainly responsible through committees but we will now have a parallel management structure which means we are responsible to the director of Corporate Information,[Alex Parson], who is responsible to the Registrar and who meets regularly every week with the Pro-Vice Chancellors, the Registrar and the Vice Chancellor. There is now a fear that major decisions affecting what we do will be made via that channel. We are afraid now that our efforts may be diverted more to the Administration." (ACS.1:31)

Again, this was a politically charged and controversial move, especially in the Academic Computing Services department, where the process was seen as a take over. The arguments against the process were based on the idea that academic computing services should be based on customisation and autonomy, rather than standardisation, and that the formation of a generic computing services would lead to the loss of specialised services and associated competences and to a subordination to the general interests of the administration.

"This leads onto another interesting area of controversy at the moment. This department is in the process of joining in with the Corporate Information Department. The administrative computing areas became the Department of Corporate Information. Now a decision has been made by management that Academic Computing Services should join in with that. The controversy that generated was about whether an academic computing service should actually be distinct from an administrative computing service - some people feel that we will become a general service and not provide such a good service to the academic departments. The counter argument to that is that the way we are managed should not affect the services we provide." (ACS.1:14)

The view of this process as a take-over and concern for how this would affect the provision of services was echoed in academic departments, as the head of technical services at an academic department expressed.

"The administration tends to be very centrally based and very directive, i.e. in saying "This is what will happen." That's recently been indicated by the take-over of Academic Computing Services by the Corporate Information Department. It's not yet clear to me what function the corporate information department does have, i.e. at one time you were

219

> *liaising with them for developing the internet and WWW services, first off, our relationship was with ACS, who at that time maintained the university's WWW/Internet service. That was then taken over by someone in the library, and has now I believe been taken over by the corporate information department. Politics which go on at an organisational level that impact on us here, we don't get a clear idea of what strategic level thinking is."*
> *(DIS.1:1)*

The discourse of dissention, from the part of the staff at the Academic Computing Services, was based upon the notion that autonomy was both a result and a guarantee of the quality of services that were provided. It was also based upon the idea that the services that were provided were founded in higher values that conferred a status of distinction to their activities.

> *"Within this framework of trust from the rest of the University, it's like the aristocracy, serving people, you know, you only get to the top by being good at what you do. We have been very autonomous because we have done things the rest of the University has seen as being sensible, correct and worthwhile and they trusted us. We are not so sure now that we are going to come under the Department of Corporate Information. We will no longer be mainly responsible through committees but we will now have a parallel management structure which means we are responsible to the Director of Corporate Information [...]." (ACS.1:31)*

In the case of the merger/take over of the two departments the managerial focus of the language of efficiency, based upon the legitimating argument that it served a superordinate interest imperative, is in direct clash with the collegial emphasis of the discourse of academic autonomy that emphasized values and ideals such as trust and quality of service in education.

4.4 Rationale for the restructure

Various views on what the rationale for the restructure was were offered during the interviews. They vary between the need to manage a degree of diversity that had got beyond control, the restrictions imposed by financial limitations and political and personal agendas.

The Corporate Information Department staff tended to emphasize a need for standardisation introduced by the degree of chaos caused by the variety and diversity of administrative procedures and computing work at the local level.

> "I think the problem has been that before the network or before the computers a lot of things were centralised, everything did get filled in by hand and sent back to the Administration who dealt with it. But as IT got into departments and the University grew, a lot of what was done centrally became done by certain departments individually and basically it has all sort of fallen apart and become a complete mess and needs gathering back centrally again. I think that's what this restructuring is aiming to do, well I hope it is!" (CI.3:22)

The focus of the work of the Corporate Information Department on redefining procedures and regulations, as well as standardising and integrating computer applications into the University wide management information systems, meant that the group of administrators that worked in the department had moved from being part of support structures to form the new university technostructure. This was associated with an interesting and exciting rise in status.

At other areas in the central administration, such as the Student Office, more a support service than a technostructure, this process was seen as a result of the cost cutting

221

activities that were taking place at the University. In these cases, the restructure implied a burden in their workload.

> *"Well, it results from saving money – the need to save money – a number of staff were offered or left the University on redundancy terms and we are having to cope with the number of staff we have got left and the only way that we could seem to do that was to restructure the functions that were previously carried out at Faculty level into central administrative departments [...]" (SO.1:21)*

At the Academic Computing Services department, which had in the past enjoyed a significant level of autonomy from the Central Administration management structures, the restructure was viewed as way of imposing a formal structure that did not result in an improvement in the way people worked. In this department, there was a strong perception that the intent behind the restructure was to change and control the various arenas that were an expression of the traditional academic autonomy. In these arenas, the culture of the independent professional IT programmer, working largely in an autonomous way, but with a tacit understanding of how things should work, prevailed. The introduction of teams determined by external consultants that largely ignored "the way we do things here" was not seen as an improvement to ways in which people could work together. The idea that teams are not necessarily beneficial, because *"people were mature and practical enough to do the right things without too much co-ordination"*, is reinforced by an element of artificiality in the way the teams were generated.

> *"It's not easy. We had a change in our structure about three years ago, we started off talking about customer care. We were told that it was no good talking about caring for customers in a simple way unless you actually had a structure for the organisation to back up what you were doing for customers. So we then had a fairly brief visit from a management consultant who looked at the way we did things. He told us that we should be organised in teams. At that time we had 20 professional programmer type people, no teams and a director, and people were mature and practical enough to do the right things without too much co-*

222

ordination. We organised ourselves into about 6 small teams of about 3 or 4 people, and I think that probably worked fairly well, people got clearer ideas about what their jobs actually were. It also made people look at the other teams and say "This is my responsibility, I can't actually deliver it well because that team isn't doing what they should be doing". So although it gave people a clearer idea of what they were doing, it also introduced a little bit more conflict between groups of people. And we continued with that structure." (ACS.1:8-9)

This understanding directly opposed the view adopted in central administration departments that largely autonomous structures, without clear chains of command, tended to be largely ineffective. The need for a change in structure was justified through an increase in efficiency through a stronger managerial drive.

"In Corporate Information, I think we are relatively good because we have people in teams and they know who they report to, but in other departments, certainly in some of the other service departments, there's a mass of people who are all self sufficient but the chains of command are very vague, they don't know themselves who they report to. I think improvements can be made there – culturally". (CI.4:22)

The view that the reshuffle of the various arenas that composed the central administration was a political process with the aim of changing the balance of power to benefit certain groups, especially the newly formed technostructure, was also espoused by elements of the central administration that were part of new structures. An element of personal agenda is also emphasized by a senior manager.

"I don't honestly know why they decided to put together a Department of Corporate Information. I have heard people say it's down to personalities and the person that is running the department is an empire builder, that it is clear to people in departments and things...just exactly who and what the Department of Corporate Information is for and what it covers. No information has been sent around [...]. There are some issues about information and types of information obviously that aren't going to be processed by Corporate Information, there are parts of the Students Office and the Graduate School which will be processing information. I personally don't see why Corporate Information was put together the way it was, it just seems like change for the sake of change." (CI.4:1)

As the above comments demonstrate, the process of change was multifaceted and could be seen through different perspectives, depending upon where the different actors were located in the institution, the roles they played and how their different professional fates (Strauss *et al.*, 1964, 1981) were affected throughout the process.

4.5 Summary and implications for the research

This chapter provided the background, context and an introduction to the major elements of the case study that was undertaken in this thesis. Although this study started with a focus on the implementation of the MAC systems, an initial set of interviews pointed towards the fact that there were wider issues at stake at and that these were part of a process of wider change in the Higher Education sector. This initial set of interviews pointed, in effect, towards a strong inter-relation between changes in the social arenas at the case study university and changes in its information environment, of which the introduction of management information systems, such as MAC, were one of the manifestations.

The changes in the social arenas were rather complex and reached beyond mere changes of formal structure, processes and systems. In fact, both the abolishment of Faculties as an administrative tier and the amalgamation of academic and administrative computing services under one single central administration structure had strong political significance: the faculties were traditionally organised around and ruled by academic committees that were composed by members of academic staff and were seen to rule through collegial decision-making processes, whereas the administrative central structures were management structures, submitted to line management hierarchical structures and decision-making processes. The subordination of structures, such as Academic Computing Services, which previously responded to academic committees, to the central administration, revealed a shift in the *locus* of control over these structures and over the activities they undertook.

This shift appeared to indicate changes in the relationship between centre and periphery at the University, which seemed to be echoed by changes in its information arenas. In this area, the two departments that, as argued in this chapter, assumed the role of the technostructure at the University, by driving the introduction of new management systems, were strongly divided regarding the adoption or non-adoption of the MAC systems. This, compounded with the apparent estrangement of other key stakeholders in this process, such as the support services and the academic departments that would feed into the new systems, seemed again to reinforce the view that changes in the relations between centre and periphery were manifested by a shift in the *locus* of control over administrative processes and correlated information processes towards specific structures at the Centre.

These changes were reflected in the discursive strategies adopted by different groups to legitimate options and actions taken and are exemplified in the differences between discourses of efficiency and of effectiveness, emphasizing common interests and superordinate strategic imperatives, and discourses that emphasize collegiality, professional autonomy and the ethos of serving communities.

The accounts and discursive strategies on the reshaping of social and information arenas unveiled more profound differences in representations of the work environment. In fact, underlying changes in formal structures, processes and systems, and we could find parallel social arenas where some groups preserved their pre-existing cohesion and identities, while new groups were reshaped and formed different identities, as will be further detailed in chapter 5, which will explore tensions between centrifugalism and centripetalism. These different social arenas of informal

226

nature could not be mapped exactly into the new formal structures and within the new structure different discursive accounts made appeal to different world views. The process of change in general and the new sets of systems in the information arenas provided the context where discursive resources were developed through the exploration of tensions in the social and information environments and, as will be further detailed in chapter 6, were instrumental to the organisational adaptation of information systems in order to negotiate the redistribution of (ultimately financial, but not only) resources at the University.

Discourses were, it will be argued, key to the process of organisational adaptation of information systems, by not only expressing the changes that were occurring, but also, more importantly, reproducing organisational behaviours and information arenas as worldviews. Chapters 5 and 6 will explore in more detail these issues, following further analysis resulting from subsequent sets of interviews, focusing on the reshaping of the social arenas (Chapter 5) and of the information arenas and on the implications of these changes for the control over resources at the University (Chapter 6).

Chapter 5 – The reshaping of the University administrative arena: the tension between centrifugalism and centripetalism

One of the main foci of the restructure of the University was, as concluded in the Background to his research, the formation of different organisational arenas and correlated control over different organisational groups. This was manifested through strong and increased adherence to the trend towards managerialism that had been defended as a general Higher Education policy after the election of the new Conservative Government in 1979 and was expressed clearly in policy statements through a number of reports (for example, the Jarratt Report,1985)

The clash between academic autonomy and collegiality and managerial control at the University, referred to in the previous chapter, was not merely ideological. The restructure of the administration and the introduction of new management structures and systems took place at different levels and through different mechanisms. The formation of new organisational arenas was attempted through the redefinition of ownership over organisational areas and correlated work and the redefinition of different levels of responsibility (and, more importantly, as will be explained later in this chapter, of accountability). This implied the definition of areas of inclusion and of exclusion for the different organisational arenas. In order to achieve this, different levels of access to information and participation in the creation of the new systems and procedures were defined.

The new managerial way had a strong impact not only on the organisation of work and redistribution of power, but, perhaps more profoundly, on the identity of different groups of people that were involved or caught in the process and on how their identity was defined *vis-à-vis* the perception of the roles of the groups within the institution.

5.1 Academic autonomy and managerial control: centripetal vs. centrifugal forces

Traditionally, as happened in many red brick Universities, the regulatory systems of the University, were based on a strong influence of academic autonomy and collegiality in decision making (Dearlove, 1997; Allen, 2000; Trowler, 2001). These principles were more or less taken for granted across the University. As pointed out by the technical manager of an academic department:

> "If you are working in a hierarchical organisation then you can go and say 'This is going to happen and you will do it' but if you're working in a university...where individuals are very much a collection of peers, then each person's opinion has got to be taken into account, and therefore you tend to move at the slowest possible level i.e. to take on board everybody you've got to move at the speed of the slowest person." (DIS.1:24)

Part of the rationale for the principles of collegiality and autonomy has been considered to stem out of the nature and essence of academic work as focused on the production and reproduction of knowledge that should not be coerced, controlled or stifled. This is reflected in the reaction of an academic, on being asked whether research should be controlled:

> "How can they? How do they? [...] In Science and Engineering it's simply by giving funds – it is very easy...but in the Humanities, where the money required is pretty limited, [it is different] [...] I suppose, in one sense, a reward mechanism controls the sort of research which is undertaken [through publication][...]. There is one form of control there through the reward system. Other forms...people seem to do what they like [...]. If an individual says [...] 'I don't care about promotion, I don't want any money, what research shall I do?' Well, nobody cares, I suspect. On that basis, I suppose it is all over with. Every, say, three or four years, someone

Funding allocation and reward systems (peer recognition through publication) were recognised as the obvious control mechanisms for academic work. It is interesting to note the difference attributed in the above quote to the different subject areas in terms of susceptibility to control via funding restrictions: there is a view that, in the 'war of the Faculties' (Bourdieu, 1984), Sciences and Engineering attract greater funding (and possibly prestige), but that can be undermined by a lesser degree of autonomy that may be easier to maintain in the Humanities, where research might often be less financially onerous.

It is also interesting that the emphasis of the answer was on the practical difficulty in controlling research when work is driven by individual interest and commitment. This is reinforced when recognition is provided by a community of peers that is not institutionally based. In this case, the discourse of academic autonomy emphasizes the values of freedom and choice in pursuing knowledge discovery avenues.

A very different view was espoused at a senior level in the Central Administration, where an intertwining of academic and business interests was seen as not only possible, but desirable. The values underlying the comments of a senior administrator in the Academic Secretary's Office focus on the need to 'steer' research into a superordinate strategic imperative that would be of the benefit for the institution as a whole, hence benefiting all its staff.

"It begs the question how much should one try to control the results? It depends also upon what we mean by control. In a research university presumably one wouldn't want to control in the sense of suppressing good

231

work ever, one would want to perhaps not allow people to publish nonsense, and one would want to steer people towards publishing in better journals. Certainly in terms of patenting material and things like that, I think you need a mechanism to facilitate rather than control the production of results, to help in deciding what should be patented which is a restricted process and what should actually launched in the public domain so that you share the results and not keep the benefits to yourself. I think the word control in that context is perhaps the wrong one and to steer would be better. To steer people into the best way of making use of their results, it might well be a patent or a licensing arrangement which will bring the university income or the individual member of staff rewards. In other areas it would be important to try and use contacts to make sure that the work was published quickly, it might well be that a preliminary note in New Scientist or even a mention on the BBC would be to the good of the university rather than waiting a year for publication in a journal with a big backlog. I suppose what I'm saying to some extent is that I wouldn't want unreasonably to try and control the flow of information, except where it was very obviously of competitive advantage." (ASO.1:26).

The use of the expressions *'to facilitate'* and *'to steer'* *'into the best ways of making use of their results'* [emphasis added], that would be *'to the good of the University'* [financially] and *'bring individual staff members rewards'* [career wise], whilst defending the undesirability of asserting control, reflect the espousal of the superordinate strategic imperative values, under the legitimacy of the need to safe guard competitive advantage and express at the same time an attempt to translate the benefits of that into an academic rhetoric and context, providing an example of discursive management, rather than sanction based management (Hackley, 2000).

This view appears to make reference to values that differ essentially from the values of freedom of choice and autonomy emphasized in the previous answer. In this case, the need to emphasize collective interest over individual interest is stressed. The fact that the University was presented as a 'research University' is also significant as it makes reference to the position of the University in a group that scored high in research ratings and, therefore, attracted a significant amount of research funding, within competitive conditions. In this case, research can begin to equate to business. There is an emphasis on the idea that Universities operate in effect under market

232

conditions, in competition with each other, where the need to establish advantage over competitors is crucial for the survival of the institution, that is presented, in effect, as a business.

> *"I think that is perhaps the key point in the release of information, that nowadays we have to have in mind the things like patenting information and so on, the old fashioned days when one published anyway for the greater good of humanity, not entirely the case nowadays in the present competitive world and there probably does need to be a degree of oversight of at least people who can say 'Hang on a minute, should we be issuing this information or can we benefit the researcher/institution/the UK whatever, by publishing, making it available in a more restricted way' and I think that probably comes down to individual colleagues plus their heads of departments, plus outfits like the Research and Consultancy Office which is set up to advise on the exploitations of inventions and to advise members of staff who may be asked to act as consultants, or to advise outside organisations or who may have something saleable that they want to make use of for their and the University's benefit. There does need to be a review mechanism and ultimately it probably, in the present situation, depends on the heads of department, to keep an eye on who's doing what. It is important that we should have a mechanism in place for saying 'is this something that should be dealt with other than in the traditional academic way.' I think that some universities have sold themselves rather cheaply in the past by giving away valuable results and not getting the benefits from them." (ASO.1:26)*

Again, the adoption of expressions that are part of the discourse of competitiveness and competitive advantage is significant of how the managerial drive had permeated senior managers and management discourse in academia. In this sense, discursive practices developed around the *'superordinate strategic imperative'*, which are framed under the umbrella of the need for survival under difficult conditions that are imposed on all organisations by external bodies, can be seen as a reflection of the difficult situation faced by the Universities, as a result of the changing conditions introduced throughout the 80s, that are clustered around the notion of managerialism. This also emphasized the need for efficiency, streamlining [business] processes and introducing mechanisms for accountability. In this sense, the new processes and language introduced in Higher Education can be viewed as having an active role in steering academics towards actions that would be of the benefit to all. As stressed by

233

Hackley (2000), discursive and tacit management can be as effective in control, as sanction-backed, explicit management.

The trend towards managerialism was emphasized by some administrators through the view that Universities and their academic departments should be run by 'career managers' and that management best practice is inherent to the private sector, rather than to the public sector.

> "Well, they do have a great deal of autonomy. I don't know a lot about academic departments, as I said earlier, but I think one of the problems that we must find is that the senior people out there are senior people because of excellence in research and perhaps excellence in teaching and not excellence in management, so they are really ill-prepared to manage their own departments in a sense that [...] if they were privatised tomorrow they would probably have a lot of difficulty knowing what was going on and to running their own information when needed. Not all of them, I think maybe half a dozen, would go off and be very prosperous and would actually be freed up by the ability of not having to refer back to the Centre, but I think the large bulk of them would find it difficult, because they probably rely on core services from the centre, the provision of information is part of it." (CI.4:23-24)

An academic that had a strong focus on administrative work fostered the view that it was, in a sense, possible for academics to subvert the system by 'playing the game', using its rules to their advantage and therefore reaping quick rewards through the system reward schemes, through promotion and recognition. Doubts on whether this would lead to long term development of subject areas seem to underlie the comment below.

> "Quick results research is more likely to get rewarded than long term research. There are people who, I'm sure you know, and I know, play the academic game [...], go through the motion stakes much more rapidly than other people who do empirical work...somebody who does empirical work might spend a year or two getting interesting data. I mean, you're a very good example. You may be spending four or five years part-time. You might get two or three good papers out of it. That's quite a long time. Yet some people send a quick questionnaire around and get it published in some journal or other." (MS.1:22)

234

This interviewee was an academic with a strong focus on administrative work. His views are not necessarily representative of the views of the majority of the academic community at the University. In effect, they collude with the understanding of research fostered by some administrators in that the efforts required by longer term research did not attract sufficient recognition to justify an investment in this type of research and that systems should be in place to ensure the maximisation of rewards and investment.

Despite the traditional emphasis on autonomy, there was a widespread recognition that the way the University had been run was changing towards a style of management that was perceived as more prescriptive, although the difficulties in overcoming the traditional bases for power in definite terms are echoed in the scepticism of a technical manager in an academic department. In his view, the various departments operated with a great deal of autonomy and independence, within a community of peers.

> "[...] [as] *individual departments within universities, we have seen ourselves as peers which has a Centre which is used to do the things that each individual department has. Each department is very protective of its independence. So there has been no central management in the terms you would have in a business that would impose a particular set of systems on the organisation. That now seems to be changing in that the current Vice-Chancellor and the current management in the University are a lot more directive in that line and are being a lot more directive and saying 'OK this is what will happen', but they are dealing with a historical position which in fact doesn't enable them to make those changes quickly and effectively, one of the main things being they haven't got the resources to implement that. Certainly it's possible given the technology that's available today in software packages, because if someone makes that decision centrally, then that can be done. It's a different way that universities are going in that individual departments very much protect their independence." (DIS1:19-20)*

235

The characteristic of a collection of peers, where relationships are largely non-hierarchical and regulated through negotiation, in committee like structures, where the plurality of local customs is privileged over codified and standardised procedures has been likened to a feudal structure (Allen, 2000) or of a fiefdom (Boisot, 1998). Each individual unit retains a great deal of autonomy and local customs. The relationships between different units are based upon largely negotiated processes in a way that can be related to the clan culture in Boisot's institutional orders model (Boisot, 1998). Clans are characterised, as opposed to bureaucracies, by largely uncodified and not standardised transactions, tend to operate under local knowledge and roots, information is diffused, but limited by the lack of codification, and coordination is negotiated, rather than hierarchically regulated.

Conversely, bureaucracies are characterised by mostly codified and standardised transactions and the establishment of blueprints and standardised procedures that are aimed at a generic application throughout the organisation, where control is hierarchical and the diffusion of information is limited by an established hierarchy and levels of access to information. The new managerial ethos that was emanating from the Centre could be seen as closer to this model.

The differences between the two different orders were pointed out by administrators and technicians that had moved from service and technical departments (such as the Library and the Academic Computing Services) to the Central Administration.

> "Academics more or less do what they want, the Service Departments that
> I've been in were like the academics, the Administration is more like
> working in a company. The roles are more defined, you have line
> managers." (Cl.3:30)

*"It has been difficult with the Administration because it is a different
culture, people do work in a different way. Being in an administration
department it has been like all the stereotypes we thought it was like!
"(Cl.3: 29)*

In effect, at the University, the service departments had more or less shared the
attribute of autonomy in pursuing professional interests. This autonomy seemed to be
the basis through which their professionalism was defined and contributed to their
sense of identity.

*"Yes, it's a team working thing and it is difficult to do that when I've been
used to doing what I liked, within certain boundaries, if there was
something I found particularly interesting and it was relevant I could go
ahead and work on it. It just seems more sort of regimented. Someone
says "You will do this" and you have to go away and do it - but that's not
how we used to work. It's not necessarily a good thing." (Cl.3:31)*

This way of operating was reflected in everyday decisions that had an impact at the
institutional level. The subordination to a 'superordinate strategic imperative' and the
need to justify actions through managerial efficiency did not seem to play an
important role in the traditional way of operating of service and support departments.
The following episode illustrates this point.

*"There was an example of that yesterday. Our Acting Director, [Alex
Thompson]", who is extremely good at spotting the relevance of new
technology and looking ahead and seeing how it can affect things - he
noticed that there are some very cheap laser printers on the market, cheap,
simple and robust. [...] He put forward his ideas on that. This is where
the culture comes in and the differences between people come in, because
he put this idea forward positively and enthusiastically, but people
concerned with printing began to feel he was making their decisions for
them. So later in the day, he changed the way he was saying it, he was
saying "this is just an idea, tell me if it's a good one". (ACS.1:6)*

*"This situation yesterday when our director said this is a wonderful idea
for printing...the people concerned with printing felt he was taking away
their control - quite naturally." (ACS.1:10)*

237

In effect, autonomy appeared to be a strong characteristic of technical services staff that impinged strongly in their organisational structure which was presented as flatter than in the ones found in Central Administration. Part of the reasons for this degree of autonomy lied, in a similar way to the academic departments, upon a reliance on professional expertise - in this case, technical expertise. This may form the basis for support departments operating as clans (Boisot, 1998) – that did not always coexist harmoniously.

> *"It doesn't necessarily mean that those people* [that are technically very competent] *are good at working in teams, and we have small groups who work together in teams very effectively, we have other teams whose work overlaps and different teams don't necessarily agree. Our work becomes more complex every year, there's more and more need for different people to consult each other because different aspects of the work overlap more and more. So that's an aspect that is difficult - inter-communication and consultation."(ACS.1:8)*

In this context, the merger/take-over of Academic Computing Services (ACS) by the Corporate Information department appears to take an even greater impact. The largely autonomous and independent way of operation of ACS, which was made possible and sanctioned by the fact that it answered to committees, within Faculty structures that were dominated by academics, would, in the eyes of some of its members, come inevitably under fire within the new structure.

> *"In theory the head of department,* [Alex Parson] *and the head of this department –* [Alex Thompson] *- are supposed to be getting together and writing a paper about how this merger is going to work. It was not our* [Alex's] *idea, it was not* [their Alex's] *idea, although she is more enthusiastic about it, so the people who are being asked to design how it will work are not the people who thought of the idea. [...] It is actually going to be very difficult to design a new departmental structure and keep everybody happy. Some people are worried that their jobs will be redesigned.* [Alex Parson] *explained three ways of doing this. One is to keep two departments separate under one head, one is to keep everything together and redesign everybody's jobs,* [Alex Parson] *would prefer to take the middle way which is to do the merger in name only, really, and then look at individual tasks/groups, and then decide whether they should*

merge or not, for instance we both have an information group." (ACS.1: 5)

From the point of view of senior administrators at the Corporate Information Department, the work ahead would definitely involve creating a new management structure at the newly acquired ACS to improve their management processes. In their view, their strength own lied in managerial ability, as opposed the technical ability of the people that would be acquired through the merger/take-over.

> *"There's another dimension that I haven't really touched on: Corporate Information is merging with Academic Computing. So part of what is going to tax my brain over the next few weeks/months is actually looking at ways that I can help them to improve their management. My skills are on the management side rather than computing. The people that have come in are skilled people, but they don't really have a management structure. I've offered my services to actually help them to kick into shape a management structure" (CI.4: 29)*

Conversely, the technicians at the Academic Computing Services saw their technical strengths as a way to assert their authority.

> *Question: "Do you support at all the administrative area?"*
>
> *Answer:" We provide the same facilities to them. They set up their own file server with similar services to ours, word processing, spreadsheets, all the basic stuff - and did it their own way, one or two departments have done that. But eventually they all realised that our system is moving forward, it is general for the whole university and everybody understands it and theirs is isolated and different so they always come back to us in the end. We've been pleased to help them when they asked for our support in the end".*
> *(ACS.1: 12)*

In each case, 'being of assistance' appears to be an expression of professional authority, by establishing their own way of work into new territory. There is a parallelism between the clash between technical expertise and managerial skills, as enacted in the battle between technical services and central administration and the

battle between academic knowledge and authority and management control, as enacted in the battle between academic departments and central administration.

Birnbaum (1998) described this tension as the dualism of controls that characterises most Universities:

"Administrative authority is predicated on the control and co-ordination of activities by superiors; professional authority is predicated on autonomy and individual knowledge. These two sources of authority are not only different but in mutual disagreement." (Birnbaum, 1998:11)

It is interesting to note that although service departments were central structures, their way of operating and their *ethos* seemed to be more closely allied with academic departments than with the Central Administration. In their quest for autonomy and for the assertion of professional expertise, they acted in effect as a centrifugal force.

Conversely, some senior administrators at academic departments could be seen as more aligned with the *ethos* of the Central Administration and act as a centripetal force. Standardisation and efficiency, which were an integral part of the managerial rhetoric, were strongly embraced in the language used by some local administrators.

> *"I think the departments have far too much autonomy, because if you go visit several different departments you'll find that they are doing the administration procedures for similar tasks in quite different ways, there's no standard for doing anything, nobody tells a department they should be processing things or filing things or doing things in a particular, it's up to them to decide for themselves as long as they respond to what comes through the centre or the faculty, then the university seems quite happy. And sometimes I think when I first arrived in the department 2 years ago and I could see that some of the administrative procedures weren't functioning as efficiently as they could do, because I had no idea what*

other departments did, you've got no reason to change a procedure. As an administrator I would prefer to have much more input about what's the best way of processing information, but, I mean, we have changed things in the office over time." (DIS.2:9)

The clashes between professional expertise and managerial skills and academic knowledge and managerial control also underlined an important tension between a focus on control over content and meaning and a focus on control over processes. Professional expertise and authority are founded on knowledge over a subject of expertise – knowledge of what (a subject area of knowledge and its meaning) -, whereas administrative and managerial authority, as they were defined in this context, were mainly founded upon hierarchical position, which defined levels of access to knowledge of how (standardised processes and procedures).

The discourse of centripetalism had clear roots in a managerially focused discourse and made appeal to a *"superordinate strategic imperative"* to justify changes associated with a stronger managerial drive that characterised the introduction of New Public Management initiatives in Higher Education. It both derived and privileged *'knowledge of how'*. The discourse of centrifugalism, on the other hand, made appeal to the values of academic and autonomy founded upon the authority derived from professional expertise and on *'knowledge of what'*.

What were, then, the strategies adopted by the Centre, in order to assert the new management style? Most of them involved control over information and control over resources – especially financial resources -, as described in Chapter 6. Central to asserting these forms of control was the redesign of regulatory systems and procedures that inhibited the autonomy of academic departments.

"People need information to take decisions but they also need to be able to make decisions based on that information, with which they've got a reasonable chance of doing something about. If they then have to go back for permission to do something, then their ability to manage is severely restricted. I don't think we are in a position yet to give departments complete autonomy. We're really still working on a formula that will give them incentives to earn money, because the current formula doesn't − if they save money, they don't get to keep it." (CI.4: 24)

Part of the process of restricting autonomy involved the creation of the new MAC system and of the Financial Management System, which served as a basis for the creation of a new institutional map (Strauss *et al.*, 1964, 1981)that reflected the intended redefined organisational arenas. This involved redefining ownership and responsibilities, which created areas of inclusion and of exclusion. Paramount to that was the creation of barriers to access and participation. These issues will be detailed in the following sections.

5.2 Redefining ownership and responsibilities: the information system as an institutional map

The largely decentralised way of traditionally running the University, implied the existence of a big diversity of procedures, with largely local knowledge associated with these procedures. This meant that there was, at least in parts of the University, a variable amount of academic discretion in decision-making processes, hence reinforcing and regulating the drive towards academic autonomy.

> "I think with an institution where a lot of the stuff is decentralised and departments historically [are autonomous, there are any different customs in place] [...]They [other Faculties] seem to do things which are strange. Engineers do things different from Arts and Social Sciences [...]. There was never any discretion about the borders, the Engineers would tend to do that, whereas we [in Social Sciences] have lots of discretion about marginal cases, but the only way you get around that is by having very central controlled and owned systems[...] They try to do that with modularisation [...], so it is only by imposing a system or getting an agreement that you could overcome these problems [...] everybody has the same sort of system, but it is the area of academic discretion [that can introduce changes]." (MS.1:17)

The abolition of the Faculty system, traditionally run and controlled by academics, and the devolution of the Faculty functions to the Centre, was associated with a significant effort in standardising procedures.

> " A huge change in procedures, because we had seven separate Faculty offices, which had seven separate procedures in relation to largely standard functions, so we are at the moment at the beginning of trying to standardise all of that. We can't possibly cope, as a central section, [with] operating seven disparate functions/procedures in relation to one function. Well, that's not an easy task, standardising – in some cases there were genuine reasons for things to be done in different ways, in other cases, it was just historical." (SO.1: 22)

243

Standardisation was an important step to guarantee the ownership of administrative procedures by the Centre, as that ensured a blueprint of procedures and of the associated knowledge, that are far easier to control than local and specific practices and knowledge. The comment below, from an administrator at an academic department, reflects the notion that, in a sense, although departments belonged to the University, they were perceived almost as different organisations.

> "I think the departments have far too much autonomy, because if you go visit several different departments you'll find that they are doing the administration procedures for similar tasks in quite different ways, there's no standard for doing anything, nobody tells a department they should be processing things or filing things or doing things in a particular way, it's up to them to decide for themselves. As long as they respond to what comes through the Centre or the Faculty, then the University seems quite happy." (DIS2:9-10)

It is interesting to note that the concern of some of the administrators that were interviewed focused on processes and procedures, rather than on specific knowledge of individual cases and on exceptions to rules. The move towards standardisation aimed to guarantee a uniformity of procedures and associated knowledge on how to operate the University. In this sense, this reinforced their role. This was also associated with a strong concern towards defining ownerships around the new system, in terms of who had access to which information and who was responsible and accountable for each process. In this sense, the new administrative systems worked as an institutional map, shaping the various administrative arenas at the University.

> "One of the very important things with setting up a new information system is to define the ownerships as we've just been talking about, to say and so to arrange the system" (ASO.1: 17)

The new system of ownerships was clearly defined from the broader to the specific

level. The following quotation alludes to the broad ownership of the computing

services at the University, where each area was clearly mapped.

> "Academic Computing Services is responsible for the teaching support of
> the university, they look after the networks, and also maintain the public
> area. The administrative systems are looked after by the MAC services,
> which is a separate department within, prior to them both being integrated
> in CID they were actually independent. Each teaching department has its
> own IT system in place, which is maintained independently by that
> department." (DIS1: 9)

Each area of work was clearly demarcated in terms of ownership and sphere of action,

reinforcing the notion of the new information system as an institutional map.

The same concern with defining arenas and areas of ownership was also reflected and

replicated at the level of the existing local systems.

> " Anything which has to be input, has to be documented, first of all, so
> we've got a document which people can initial what they've done, so it's
> clear what their responsibility is and then the question of changes for the
> database would be one person. In terms of read access, there is not much
> reason for this, as we provide all sorts of things they want, like tutorial
> lists, class lists, things like that just at their request. It would take so much
> time training them how to do it and retraining them, as they would forget,
> as they wouldn't use it very often. Nobody has requested it implicitly, so we
> see no point" (MS.1: 6)

The establishment of a University-wide integrated system that regulated its

administrative procedures implied, therefore, the definition of levels of access,

responsibility and control in a very detailed and tight way. The new information

system reflected the structure of ownerships that were defined and simultaneously

allowed to reproduce them as it was the vehicle where the administrative procedures

and processes were formally codified.

> "A student is in control of his address information, a department ought to
> be in control of the information about the courses that the student is taking

245

*in that department, and hopefully you end up with a single record of which
each part has a defined ownership, but everybody has the right to read
that, so that if Department A is teaching that student and he changes an
option within that department it's clearly that Department's business to
change the record, but any other Department teaching that student can
legitimately ask what he is doing, so they can read that record, the Centre
can read that record and obviously the student has the right to read that
record and say 'Sorry, you got that bit wrong.' So yes, the theory is, there
should be a record that everybody can access but the rules for altering it
are quite tightly drawn." (ASO.1:6)*

The administrators in charge of implementing the new system displayed awareness
that there was a perception that the system would impinge on the traditional
ownerships over administrative processes, as expressed by its project manager.

*"[...] ownership of something, definitely area. They may feel I am
interfering because I want to know what is happening." (CI.1:27)*

'Ownership' was, in this case, related to control over processes and procedures,
defined in terms of 'how things should be done' rather than in terms of control over
the meaning of information itself. This emphasis on processes and procedures rather
than on the information content of the system itself seemed to characterise
administrators across some of the areas of the University, regardless of whether they
worked at the Centre or at academic departments.

*"I don't feel that there has been has been so much possessiveness about
the information or over the functions that goes in it - some of it is over how
things are going to be introduced and sense of "this is my area because I
know how I want to do [things] regardless of anybody else". (CI.1:29)*

*"I think they are finding it a little bit hard to let go of what they have been
doing. Some people can cope with it - they like the idea of it all being
centralised like it was before." (CI.3:24)*

The implications of the new system of ownerships were twofold: at one level, it
allowed a redistribution and reorganisation of people, through the redefinition of
arenas and associated ownerships; at another level, it placed and introduced new

restrictions to the diffusion of information. It is interesting to note that the effort in standardising and in codifying administrative procedures, which, in theory would have increased the likelihood of the information associated with them to be more widely diffused - as noted by Boisot (1998) abstraction and codification of information tend to reinforce each other and to reinforce diffusion -, was, in effect, associated with a deliberate decision to restrict the diffusion of information by defining levels of responsibility and access, characteristic of bureaucracies, as defined by Boisot (1998). This occurred both with the new central administration system and with the new (independent) financial system. Control of processes was vital for the central administration, because it allowed the redefinition the different levels and dimensions of responsibility which, in effect, could control what people did, because different types of responsibility would have different practices associated with them.

> "[...] with the old computer system, it was clear who was responsible[...].
> There was a whole range of practices which had been built up over time
> that had had to be scrapped away [...] in the last few weeks because [...]
> [of the new system] and because of the closure of the whole [Faculty]
> administrative level within the University. There used to be administrative
> offices at the Faculty level and because of the rigid cuts last year they have
> all closed in the last few weeks and our section has been moved, formed to
> take on quite lot of work they did, so we've had a massive change in
> relation to the administrative structure and the new computer system [...]"
> (SO.1:14)

The administrators that were based at the Corporate Information Department, seen as one of the forces that were leading the process referred to different levels of responsibility, distinguishing between 'normative responsibility', defined in terms of the setting of rules for the system, and 'functional responsibility', defined in terms of carrying out the resulting everyday operational activities.

> "[...] there is an issue of who is in charge of what bits of an integrated
> system, again, there's different levels of responsibility which I find get in

the way, like people who are responsible for the functional, actually just doing , and there's normative responsibility who say 'this is how it ought to be'. Now we confuse both of them in this place so we have some people who believe they are responsible for things who are doing it just at the lower functional level. That clouds it for me as well. Again it's changing. In the past it wasn't a problem, because we did it this way and we'd always done it that way and it didn't really matter, because the functions tended to be in a post, the bureaucratic model, if you like, but now we move people around, we expect them to know more things."(C1.4:25)

This distinction served as a means to define their role as part of the technostructure, in charge of defining rules that would, in formal terms at least, be regulating the University. It also reinforced the traditional *"fundamental division of labour"* (Markus and Robey,1983:213) between the systems designers and implementers as experts that plan the work and of end users as the people who do the work (Hornby et al., 1992; Howcroft and Wilson, 2002) which was reproduced in this case throughout the University.

" it is a divided responsibility. In terms of design, it was done by an outsider but by having extensive discussions with [us] [...]. In terms of implementation, it has been done by an outsider and because it has been done 'on the cheap', it hasn't been documented and he is now not available to us so we can't change anything. In terms of operations [Cheryl] is the Exams Officer and she does [...] all things like that and then we have, I suppose, [Jane Scott], who is Computer Operations Manager, who is, I suppose, responsible for some aspects of the system, for example, backup[...]" (MS.1:4)

" There is a member of staff who is responsible overall for the implementation of the system as a project and then there are individuals in this Department of Corporate Information who have system's responsibilities for different bits of it and then the update aspect is devolved largely to the end user." (SO.1:8)

In effect, this model of split responsibility between 'rule definers' and 'doers' was replicated even in the departments that claimed autonomy in information systems. Their systems administrators clearly saw themselves as responsible for planning the systems and claimed ownership over that, whereas the role of users was seen as carrying out operational day to day tasks.

> *"I suppose it's Finance* [who is responsible for running the financial part of central administrative systems]. *We have to work very closely with Corporate Information, as they have set a lot of things up on the network and on the database itself. I suppose the applications side, the running of the system is a Finance function. In the medium term, we would like to think of departments outside finance actually feeding data automatically into the system - at the moment a lot of paperwork is sent up to Finance for people to key in. We're hoping automatically transferring data from different departmental systems into the centre, so that we avoid having to re-key things. That's perhaps the way we're going, an automatic feed-through of departmental invoices etc." (DF.1:6)*

Some end-users attempted to subvert this view by expressing their roles in terms of evaluators of the system that could request changes and improvements, as a consequence of their assessment. This view subverts the original perception of the departments that were leading the implementation of the new central administration systems by claiming the planning and design role and the normative responsibility back to the corner of the 'user'.

> *"It is our responsibility as end-users of the system to find the changes/improvements we want on this Central University database and that the system operates efficiently. It is the Department of Corporate Information's responsibility to put that into practice, in the sense of technical amendments to the software and the programmes and then come back to us and say 'we've done this – is it better for you?' and then we enter into negotiations like 'well, that's very good but can you just make one final change and that will be fine for us' so there is a sort of global-individual, technical-end user distinction." (SO.1:25)*

Level of responsibility and ownership were closely related, as the former allows to define the degree of autonomy and control over precise areas of the system and areas of administrative work. The view that the new system claimed ownership, on behalf of the Central Administration over areas that were previously the attribute of the Faculties and of the academic departments was expressed explicitly by managers at the centre.

> "[...] when I was Director of MAC services, I took effort to push parts of what I was doing into the user community. When we were putting in these new MAC systems, what I'd actually said to the users [was] 'You you must have ownership of this, you must have commitment to do it' [...] I started off the project management function with my bit and then managed to have it picked up in the user side of things, under the Deputy Secretary, which is a senior post in the University. So what that did was to legitimise the whole thing and gave it some political clout and gave ownership to the user departments, because computer people are generally committed to anything computer, but the users need to be committed, rather than the computer people. So what I'd actually done was I pushed this function out of my unit into the user community, what the new department does, it actually brings it back.[...].Efficiency gains may be part of it, I don't know..." (CI.4:8)

This senior manager had been previously in charge of the MAC systems at the University, prior to the introduction of the new Corporate Information Department and fostered a different view on how the new systems should be introduced and run. His was a discourse that made appeal to rhetorical devices such as *"empowerment"*, in terms of ownership, of the end user, albeit in a top-down way (*"to push"*, to *"help them write their own* ways"), presenting itself in contrast to the perceived form of intervention of his department.

> "What I think we should be able to do is empower people in the departments to get at the information themselves, help them to write their own ways of accessing the data, push things like reporting tools on them, [although] they are designed for programmers, really, rather than users [...]" (CI.4: 14

This discourse was not, however, shared by the majority of the administrators at the Centre and the trend for the Centre to reclaim ownership and control over organisational arenas appeared at the time irreversible and was legitimated by the perceived difficulties introduced by the implementation of the notion of *"devolvement"*. *"Devolvement"* was seen as requiring the tightening of a system of controls that should be in place in order to ensure the smooth running of administrative procedures.

> *"There's lots of difficulties that change as we devolve it, at the moment it helps with it being centrally controlled - we have a number of people who work in the department who deal with things. When we devolve entry to the department we have a lot of control and security things to be looking after to make sure that people are only dealing with their own budgets - we have those considerations already but it will be more difficult once it's devolved I think." (DF1:7)*

It is interesting to note, however, that, in this context, from the perspective of the administrators at the Centre, devolvement meant allowing end users to manipulate information, once the system was in place and within the circumscribed area of ownership of each department and of each staff member. *"Devolvement"*, in this case, was also seen as a way to define and ensure accountability.

> *"I don't necessarily think that people are going to be losing responsibility because they are still responsible within their department so Personnel Department is still going to be ultimately responsible for the staff records - the fact that departments may update some of them - responsibility is not going to be taken away because it will only be done with the approval of the central department because when it comes back to it they are responsible for the data and responsible to the Registrar - making sure that the data on the system is accurate, so I don't think there is a sense that they are going to lose that responsibility. Getting people to make decisions about how things are actually going to be implemented is more of a problem." (Cl.1:30)*

Conversely, the notion of *"devolvement"* espoused by the administrators at academic departments and at support departments focused on maintaining autonomy and control over resources.

> *"[...] the other way to do it is, rather than having Academic Computing Services in the Centre, that becomes devolved and resources are devolved to each individual department [...]" (DIS.1: 18)*

It is interesting to note that the term *"devolvement"* was frequently used by many of the administrators across the different administrative arenas and levels. It had,

251

however, different meanings according to which area these administrators belonged to. In the departments that were seen as leading the planning and implementation of the system – Corporate Information and Finance - and claimed the role of technostructure through *"normative responsibility"*, *"devolvement"* equated to allocating levels of responsibility and accountability; in the departments that were seen as 'user' departments, with *"functional responsibility"*, *"devolvement"* was seen as regaining ownership and control over areas of work.

Many central administrators thought that the trend towards *"devolvement"* of, at least, responsibility over data input and processing to the academic departments was inevitable and desirable, as it would bring back the onus and responsibility of keeping the data updated, while opening access to the central repositories of data to a wider administrative community.

> *"[...] in the past the administrative computing department has been responsible for the databases, so that if you wanted any information i.e. regarding student numbers, then you would probably put a request into the administrative computing department and say could you give us this information, they would get the information and send it back to you, and the onus is being put more and more onto the end users to the heads of departments; so there is a big move, as well as upgrading the hardware and software for the databases, there's a move organisationally to get devolvement of responsibility for the data within the databases to the departments. And that will need a lot of encouragement and support but hopefully the end users will get the benefit of being able to get the information themselves a lot easier - there's a big push for much more management information available to the whole of the campus rather than just the administration." (CI.2: 14)*

This also was seen as responding to a real need, as there was general awareness across the University that the departments held within them the most accurate data regarding most administrative processes.

"I think a lot of the information regarding the students is probably kept locally within departments. One of the difficulties with the central administrative databases is to keep that information up-to-date and the systems in the past have been such that that has been very difficult, one of the thrusts with the new systems has been to try and encourage all users to use the same system, which is why the new databases have been developed. I would imagine there is still departments that keep paper records of their students and then they'll get the information at the beginning of the year and then they'll keep their data independent of the university system, and one of the difficulties has been to get them to keep the central system up to date." (CI.2: 15)

In effect, the control held by the central administration over the new processes and procedures, was counter weighted by the control held by the academic departments over the content of the new system, the information held in it and its accuracy. In this case, knowledge of how (processes and procedures) was counterweighted by knowledge of what (the information and its meaning). This gave the departments a bargaining position, as the data that was input into the system had resourcing implications and it would not always be easy to identify and track inaccuracies.

"I think they realise that we in the department are the ones who have the most up-to-date information, therefore it makes sense for us to be the people that do the updating. Because as soon as a student comes in and says "I've changed my address" they come and tell us, they don't go and tell the University and it will be more useful if we were then to sit at the computer and input that new address and then it's available for everybody to use. I think the intention eventually is to make it updatable but I don't know when." (DIS.2: 7)

This reinforced particularly the position of administrators in local academic departments, as custodians of this data and of its accuracy. Due to the vast amount of data, it would be a difficult task to track down and identify inaccuracies in individual pieces of data.

"Nobody in the department ever asks me if those figures are accurate, they don't seem particularly worried about that. They seem more worried about the fact that the University might have asked for a report on the Annual Teaching Quality Review, we have to produce the statistics for that. And I could probably put down figures which nobody will check. I

happen to be conscientious, but I feel it's very much up to me to do it myself and they do not check my figures for accuracy." (DIS.2:15)

"[...] it is really [Cheryl] *who has a lot of individual responsibility for what goes on there, I mean, she is really the sort of person who could change numbers and no one might ever know."* (MS.1: 7)

The tension between centripetal and centrifugal forces discussed in the previous section was therefore also accompanied by a tension between control over processes and control over and the meaning of what was recorded in the system. By exploring these tensions, different groups of people made claims to power in different ways:

- central administrators asserted their position by aligning themselves with the discourse that emphasized the importance of a superordinate strategic imperative, which was espoused by the strategic apex at the University, and by redefining organisational arenas through the control of processes and the redefinition of areas of ownership; in a sense, they became the new technostructure, defining management rules that reinforced centripetal forces;

- local administrators, whilst often embracing centripetal values, asserted their position through the emphasis on the need to ensure accuracy of information, which, in effect, they often were in a position to control, without being monitored;

- service departments were aligned with academics in their emphasis on a centrifugal redistribution of authority; both groups asserted their positions through expert and professional knowledge.

The exploration of these tensions found significant expression in the rhetorical strategies formulated around the notion of *"devolvement"*. While for the groups that claimed a role of technostructure, *"devolvement"* of responsibility from the Centre to

the periphery equated to the definition of accountability within tightly bounded areas of intervention for each department, local administrators defined *"devolvement"* as regaining ownership over what they perceived as their area of work and over resources that were associated with it.

This was also correlated to conflicting notions of "user" and of the relationship between the "user" and the implementers of the system. The Centre and its technostructure established levels of responsibility, autonomy and access to resources, based upon the distinction *'normative responsibility'*, defined in terms of the setting of rules for the system, and *'functional responsibility'*, defined in terms of carrying out the resulting everyday operational activities. Other groups of administrators attempted to subvert this notion in different ways: by reconceptualising the user as both a definer of requirements and an evaluator of the system or by claiming their position, as content providers, as guardians of the accuracy, hence, of the usefulness of the system – 'knowledge of what' (content and its meaning) counteracted 'knowledge of how' (rules, processes and procedures).

5.3 The administrative information arena: areas of inclusion and of exclusion

5.3.1 Barriers to access and participation

The redefinition of ownership and responsibility that took place during the planning and implementation of the new system resulted in the formation of areas of inclusion and exclusion in the development of the new administrative regime, reflected in different levels of access and participation in the new information system.

A level of consultation seemed to have taken place in the administrative departments at the Central Administration that operated as support structures, namely the departments that were responsible for processing student information, the Student Office and the Graduate School.

> " [...] it was specified by a member of the University in a group some years ago and I've been involved along with others from different administrative departments in saying what was wrong with what had been delivered and how we might get it amended and that process is still ongoing and hasn't finished by any means." (GS.1: 5)

> "In relation to the implementation of this system, we have quite a lot of formal liaisons through working groups and I was on a working group to deal with students records for developing the part of the system which would provide that sort of composite information about students and also on a group dealing with a part of the system which deals with examination matters and exam results and they were quite regular meetings where I would often bring end user queries[...] and then it would be back to the technical people to take this on board and get back to me if they needed and then at the next meeting it would be to report on progress and so on[...]We have a formal paper system as well for reporting problems or shortfalls [...]As time drew on and the thing became so late and everything was delayed on the formal side of it...there just wasn't time for it anymore

256

There was a strong link between the work carried out by these departments and the Corporate Information Department in that both processed information related to student numbers, fees and HEFCE funding. The distinction was that, whereas the support departments tended to focus on individual units of information, i.e., information related to individual students, the Corporate Information Department focused on aggregate information, i.e., the production of statistics and reports that would be fed directly to the strategic apex at the University and form the basis of funding claims. This reinforced the strategic position of the Corporate Information Department, from the point of view of the strategic apex at the University, and formed part of the rationale for its role as a main driver for the new technostructure. As part of the new technostructure that was setting the rules for the new administrative system, they held a traditional position of systems development power (Kling and Iacono, 1984; Hornby et al., 1992; Wilson and Howcroft, 2002, Doolin, 2004), by being selective about what suggestions they would take on board .

> *"I think the global-individual distinction works fine because we don't have to be involved in anything like stats/reports, etc, as it is all handled by the Corporate Information Department, which is fine. I think where it possibly falls down or where our problems are at least, is to do with us as end users defining our needs and them as technical operators putting them into practice and I've found it extremely frustrating over the last few months making demands and making as I thought crystal clear exactly what I wanted and why, explaining it and then finding several months down the line that in fact what I had asked for had either been interpreted in a different way without them coming back to me to say 'we've received your request but we can't deal with it', it had just sort of gone into a black hole of systems development and I understand why – it is because there was just far too much to do, the system had to be implemented by a particular date and it was just left, but it's caused me anxiety. " (SO.1: 26-27)*

In the case of academic departments, no consultation appeared to have taken place.

"I understand why someone in the departments feels they haven't been consulted. They haven't, but you can't consult everyone. If we were designing the systems in-house, we would consult, and that is how we designed the last set of systems back in the early 80s." (CI.4: 11)

"I don't know. I don't think so as far as I'm aware - they haven't actually come to us directly and said what are your opinions on how processes could be made to work the best way for a department. "(DIS.2: 20)

This is explained by the belief that if things were 'right' and 'worked' at the Centre, they would be 'right' and 'work' at the local departmental level. The 'right' information was the information required at the Centre, *'whatever department needs'*, as stated by a senior manager at the Corporate Information Department This reflects the view that academic departments should be subordinated to the superordinate strategic imperative that was set at the Centre and managed by the newly formed technostructure.

" [...] the systems are going in, they have to go in and they have to work at the Centre first, they will work for the departments afterwards. So our focus has not been to actually ask the departments what they want all the time, because, for example, the student records has to hold all the student information, whatever department needs. So we haven't actually gone to departments and said 'tell us what you want'. We're hoping to develop generic systems for the departments. The reality is they'll probably develop their own, we're trying to pin down a clean version of data that they can work off themselves by using the corporate data model. I find it a difficult area to talk about, really." (CI.4: 11)

The acknowledgement that local departments would inevitably develop their own systems reflects the gap between the world of Central Administration and the world of Local Administration and between centrifugal and centripetal forces. It also denotes a level of organisational cynicism (Allen 2000), in terms scepticism and detachment towards the espoused view of the world, which is also reflected in the comments, respectively, of an academic and of an administrator at an academic department, below.

"[...] all the time, frustrations I've felt and told various people what we need at departmental level and people saying that the Centre will provide everything you need and of course then they don't provide everything you need, so one of the things I've been doing for , say, probably 16 years or something like that, is designing departmental systems for student records, writing them largely myself [...]. My ideas were then used by an outside consultant [...] but the sort of thing which happens there often provided by the Centre which is frustrating, is putting results into two different places, so a lot of duplication goes on as the databases aren't linked...silly things like you can't tell whether a student is home or overseas, so it is a bit frustrating at the moment." (MS.1: 2)

"The new system in the future will be more flexible, we will be able to produce reports and because of the new coding structure it might be possible for me to stop using my own system, but I'm not convinced that it'll be as good as what I'm doing at the moment." (DIS2:18)

The lack of consultation with the academic departments was extended to no participation at all once the system first went live, in the case of the Finance system, to very limited participation of read access only, in the Student Administration system.

"We will be preparing printed reports centrally and sending them out to departments as we do at the moment. On the old system they were used to getting into it through the screens, they are not happy about losing that in the short term but they will get that eventually. "(DF.1:5-6)

"I think this is where things have slipped in terms of getting work done and so now there isn't the time to get the involvement of academic departments before the systems go live which is what I would have liked. As soon as they go live, all that the academic departments are going to be able to do, to start with, anyway, is actually look at records and run reports - we felt that the best way to introduce them to the system. As soon as we have the systems up and running we will be able to liaise with them more and find out exactly what they do want out of them. Hopefully in the next 12 months we'll be able to turn it into something much more 'user-friendly'." (CI.1:21)

"I'm not aware of any new system, if we're talking about the administrative computing side of things then there was a MAC initiative which was set up by a number of universities, standardised across the services for student support in administration etc. That has been well behind time and I'm not even sure what the current position is, whether they've decided not to use that any more or whether to therefore use other methods, but certainly the MAC initiative [...] it's not a well worked through program." (DIS.1:2)

Despite the lack of information about new systems, local administrators developed tactics that involved getting access to the Central systems, quietly monitoring developments.

> "At the moment the computerised aspect of connections between the main university and ourselves are: there is a student records system which is in the process of changing from an old system to a new system, the MAC system is the new system. Up until about a year ago nobody in this department had access to any of these systems, in fact most of the staff didn't even know these systems existed. I started to find out about them and get myself on-line and I also got the secretaries on-line to the student records system. I am also connected to the university's ledger system, which monitors all the finances. I'm also connected to the Estates room booking system. The actual way that the systems work is not terribly user-friendly until you get used to using them and the other major disadvantage of these systems is you can't download information and you can't produce reports apart from screen dumps at departmental level - so they're useful to a point." (DIS.2:2-3)

This had to do with a local concern to ensure that their information retained its characteristic of being of the most accurate ('of the best quality') and hence strengthening their position through control over the content of information systems and its meaning. The introduction of new rules and procedures, such as modularisation, made it more difficult to maintain the control over the accuracy of information regarding individual students, for example, as this information would be spread through the different departments that owned the modules taken by the students.

> We have access to their databases via our local area network although access to that is restricted to certain people in the department etc., so we liaise with them to ensure that our systems are capable of integrating and getting data from our main one and making sure that the data we have available is of the best quality. We are not yet in a position to be able to input data directly into their system, which is a problem. And with the development of modularisation in the last couple of years that's caused us significant problems and is likely to continue causing problems - although its structurally sound in terms of university administration, in terms of the

The formation of the new organisational arenas, through the definition of the areas of

inclusion and the areas of exclusion, defined by the different levels of access and

participation, was, as became apparent through the views of the different actors

involved, a process charged with multiple tensions. Underneath the clashes between

different organisational groups, often expressed through the managerial vs.

professional discourses, these tensions appeared to be clustered around the

centrifugal-centripetal tension and around the control over processes – control over

meaning tension. These often found representation through multiple expressions of

resistance and buy-in.

5.3.2 Resistance and buy-in

Resistance was referred to as one of the major problems faced in the implementation

of the new system. This was perceived as stemming out of ignorance, lack of

communication and inertia.

> *"I really can't tell you why this happened, it really does surprise me how resistant a lot of people are and they are totally ignorant about what is there already[...]." (CI.3:8)*

> *"Communication is a big problem - it being such a big problem, it never ceases to amaze me how narrow people's viewpoints are. You have to ensure what people know what other people are doing".(CI.1:25)*

> *"One of the big difficulties is encouraging users to find different ways or better ways of doing what they do routinely. " (CI.2:17)*

> *"Effectively what you find is that staff adapt to a way of working, there's inertia in there that is almost impossible to change."(DIS.1:21)*

261

"I think in general it's the science departments that are less likely to say something, but it is very patchy, it really depends on whether a particular department is not computer aware, but network aware - they'll use computers to do work but they'll be totally unaware of what they can do on the network. It does tend to depend very much on particular people in particular departments, if there is an enthusiastic person then they tend to get the rest of the department going, but there are some very secretive and . strange people around!"(CI.3:9)

Whether they refer to perceived ignorance, lack of communication, inertia or the result of individual personality traits, the above comments reflect the view that, from the perspective of the administrators that were responsible for implementing the new systems, problems were originated by their users.

Resistance appeared to take on many different shapes. Some resistance tactics were less overt and appeared to be deployed in an *ad-hoc* manner, such as non-attendance or turning up late to meetings or delaying decision making.

"The structure that we have actually works reasonably well, very much depends on the nature of the individuals involved really - and some people will not turn up on time, due to personality, self-defensive etc."(CI.1:26)

"As a whole - I think one of the major problems is getting enough involvement from the users in making decisions about how they want to do things using the system and getting them to actually make decisions and not just talk about it." (CI.1:16)

"Registration process - it was decided it might be a good idea to bring in a new system for the first time - an on-line registration system, usually done on paper first then data inputted. It took a very long time from people to decide and say "Yes this is what we are going to do"(CI.1:24)

Other ways of resistance involved the development of more explicit and active strategies. Some respondents referred to strategies developed for dealing with the perceived lack of transparency of the Centre, by taking matters in their own hands and carrying them out without the knowledge of the Centre, almost as though centre and periphery were two separate organisations, leading parallel courses of lives that did not necessarily need to touch each other very often.

262

"There is a Pro Vice-Chancellor with a special responsibility for information technology - he is Professor [Donald East] who is Professor of East Asian studies. He is not well respected in our area. You have to choose a PVC who understand information technology, but you can't choose one who is deeply involved, because they would have too many of their own interests (i.e. , a Professor of Computer Studies)." (ACS.1:18)

"My personal attitude is that I will try to achieve what I can without consulting the PVC if I can avoid it. Whenever consulted he tends to say "leave it to me, I will sort out this problem for you", and nothing happens. So information strategy is always about to happen." (ACS.1:18)

A number of departments, both academic and at the Centre, made the decision to continue to run independent systems. The formal legitimating arguments for autonomy were usually centred around specific requirements, but the enabling factors that allowed the departments to remain autonomous were based on positions of power gained by these departments. This was the case of the Finance Department, which managed the financial status of the University, and of the Departments that had belonged to the previous Faculty of Engineering, whose technical competence, allied with the fact that they were a prestigious part of the University, attracting a great deal of research funding, hence an element of financial autonomy, had ensured a strong bargaining position for autonomy.

"In some cases it's because the person in charge who made the decision felt that he could produce a system that was better suited to their needs than our general purpose one. That is possibly the case in the International Office. Sometimes that decision is basically a matter of enthusiasm. Sometimes based on real technical skill, i.e. Engineering Departments who have genuine special needs which they feel better met by their own service. Sometimes because they want a lot of specialised software that they want to look after and don't feel that we do for them properly. In the case of the Central Administration it was probably that they thought they wanted a simpler system than ours and they're are used to running their own systems so it was a very logical decision for them." (ASO.1: 19)

263

Departments where there was strength in computing skills developed their technical support structures and designed their systems. Technical competence was clearly viewed as a vehicle for autonomy in these cases.

> *"I think probably the main difficulty is actually meeting the needs of different departments so departments have all their requirements[...]. We are lucky in the sense we are a big department, lots of computer skills here so we can write our own systems, but many departments don't have their skills or resources to spend money on these things so there is a real conflict as to what is provided by the Centre and as to what departments have to do. I went to a Modern Languages exam board and it was amazing how they actually went through the candidates. In the final exams, we have 350 candidates to consider, so marks are highly computerised and we got through it fairly efficiently, but this department went through all their marks by each candidate and worked out their median mark. I thought it was bizarre that they were actually having to do that sort of thing, but the Centre might not provide a system simple enough to operate, because they are not computer literate, particularly, whereas we are." (MS.1:12)*

> *"This department is not so bad at all because it is very much used to using electronic means of information exchange, so in other departments we still very much get that position where staff will do everything in hand written notes and pass it to the Secretary who will then type it up. " (DIS.1:24)*

The technical managers and technicians in these departments developed supporting structures in the form of informal networks and formed own communities of practice, to share experiences and therefore strengthening the professional expertise that gave rise and enabled their autonomy.

> *"Yes, there are informal networks that exist. I liaise reasonably closely with the Management School, and Computing Science downstairs and some of the other departments we have contact with. Because each department is so independent as with different systems, we would generally talk and see which way things are going." (DIS.1:21)*

This was often undertaken as a reaction to the lack of information provision or formal support from the central structures:

> *"There's no meetings - that's something that I tried very hard to get individual computing offices in the different departments to meet with ACS on a reasonably regular basis formally, and that was resisted and hasn't*

264

happened, because I always thought it was crucial that we get an indication of the way that ACS and the central system are thinking and developing their way forward. The way that happens now is informally. There is no close liaison with individual departments to find out what they are thinking of academic computing services and central services which means that I will make decisions in respect of my department which may well go against the grain of what the centre is thinking - and it's not that that can't be changed but it may well be that we've made a large investment in a particular system, that in 18 months time the centre is going down another direction and that means that ... we are going to lose our investment and reinvest in a new one ..."(DIS1:22)

In these cases, part of the role of the technical managers was to develop software programmes that allowed the translation of processes undertaken by the different systems and the exchange of information between systems. This was presented as a reaction to the limited diffusion of information regarding the new system and new processes.

"As far as I understand it we are all on the same network so potential for information exchange is there, but each department has grown its own particular set of administrative procedures which may or may not be compatible with the various other departments [...]St [Wilfrid's] Faculty Committee which is responsible for the IT requirements of all the faculties and departments within the St [Wilfrid's] area, and the Engineering Faculty has it's own system which is not compatible with our system and not compatible with the central system, what we tend to be getting is different systems and people writing different bits of software that they can extract information from the university central system and make it conformable to the system that department is using as opposed to moving across to the university system because it's not yet clear what the university system is, or the direction it's going. " (DIS.1: 6)

Simultaneously, local administrators developed organisational translation (McAuley *et al.*, 1999) roles. The following comment from an administrator at an academic department is revealing in that financial codes refer not only to specific financial information, but to the funding of specific activities that needed accounting for and control. The development of a departmental financial code reflected the need to regain control of knowledge of specific areas that might have, otherwise, been aggregated and treated differently within the general coding scheme of the University.

> *"I have actually put together a separate departmental financial code which would go on the end of the university's finance code and I didn't get any help from the university in constructing those codes, but they have accepted them and we can use them " (DIS.2:8)*

The role of organisational translation, as will be detailed later, was important for both technical managers and senior administrators, in carving a new role for themselves, within the new management style.

Strategies developed by the Centre to overcome resistance also varied and appeared relatively ad-hoc.

> *"There isn't any structure in terms of how you approach each department - there are some certain departments who are more aware of my existence than others. Once you are talking to somebody, half the problem is solved because they are aware I exist, it's departments that don't talk to me that I should be focusing on - because I don't know what problems they've got, and they don't know that I can solve them." (CI.2: 4)*
>
> *Question: "How do you perceive your role in liaison with all these differences and harmonising?"*
>
> *Answer: "That's what I do, but I don't know how you do it! It's difficult to generalise, you go into other areas and I'd been talking to somebody for several months trying to get them to write a few pages for an entry on the Web. When she finally got around to doing it - she gave it to me, written the words and it was totally prepared for entry onto the Web. She'd actually gone away and learnt how to do this, she was enthusiastic, she was keen and if she was being asked to do it, she ought to know more about it. It's not too difficult but she was prepared to work it out for herself. People like that are very encouraging."(CI.2:21)*

There was also a widespread belief at the Corporate Information Department that the system would benefit the local departments and that staff at these departments would eventually realise these benefits.

> *"Ultimately it's for the benefit of everybody, but trying to convince a secretary that isn't necessarily familiar with the computer systems that keeping the central record up to date is better than her keeping her filing index up to date which she's probably been doing for 10 or 15 years. "(CI.2:16)*

"It is in their interest – OK, we haven't gone as far as I would have linked with this yet but certainly in terms of the undergraduate admissions system which we have got up and running, for a year now, and talking to people in departments they've found it much more helpful and useful than anything they've had in the past."
(CI.1:15)

"[...] so by no means we haven't got everything in place and everybody changed, but the areas we have done, the people involved have been prepared to take on board that the system itself has changed even though what they are aiming to achieve with it hasn't necessarily.(CI.1:13)

Adherence to the changes introduced by the new system was clearly expected and its benefits were taken as assured by the Centre.

Championship, especially by senior members of staff, was also perceived as a particularly effective way of gaining adherence through political influence. Key figures in the administration were specifically sought as a way to sanction the new systems and the changes introduced by them.

"I started off the project management function with my bit and then managed to have it picked up in the user side of things, under the Deputy Secretary, which is a senior post in the University. So what that did was to legitimise the whole thing and gave it some political clout and gave ownership to the user departments, because computer people are generally committed to anything computer, but "the users need to be committed, rather than the computer people (CI.4:8)

"The example I gave earlier was the Academic Secretary's Office. The academic secretary is very keen to promote the use of IT in his office, the one area that he's been pushing over the last year is the use of network diaries/calendars. The one office at the moment using Schedule. He's pushed that very hard. People using the technology in his office, that's the other way you can get people to do things, get the boss to tell them to! I suppose it goes to the other extreme of other departments who don't see the benefits of e-mail."
(CI.2:19)

The lack of a clear view on how to engage the periphery in the new system, expressed in the attitude of hovering between hoping that users would appreciate its benefits, because the Centre perceived it of benefit, and, failing that, getting the

involvement of a senior figure as a champion to resolve differences, often defined as *"the right user"* (Beynon-Davies, Mackay and Slack, 1997:659), is a reflection of the practical estrangement of the end-users in the political decision-making that underlay the development of the new system and of the new order that was associated with it (Clegg, 1997; Lamb and Kling, 2003).

The different groups of administrators espoused very different views over the system and the changes it introduced, depending upon whether they belonged to the newly formed technostructure, in charge of driving its implementation, or to the existing support services and academic departments, that somehow portrayed themselves as hapless actors, effectively estranged from the decision making processes. In this context, the 'user' was perceived as a passive recipient of decisions, in line with traditional perspectives and accounts identified in the literature (Kling and Iacono, 1984; Hornby *et al.*, 1992; Markus and Bjorn Anderson, 1987;Howcroft and Wilson, 2002, Lamb and Kling, 2003) an discussed in chapter 3.

5.4 Agendas, transparency and irrationality: perceptions on the rationale for the changes

The rationale behind the new structure, associated management processes and information systems was seen, although potentially triggered by wider changes in the sector, as largely driven by internal political arenas and agendas. The resulting political activities were seen as clearly reflected in the planning and operating of the new administrative order and of the associated information systems. Information systems, in effect, seemed not only to reflect the internal political arenas, but also to reinforce them. In this sense, their role was as constitutive (Candlin, 1997; Wetherell, 2001a) of the perceptions over the new managerial regime as other discursive practices at the University.

The following quotations refer to the lack of integration exemplified by the 'old' administrative systems at the University, directly attributed to political feuds between different organisational arenas. This particular case relates to the relationship between the Personnel Department and the Payroll Department, which were seen as naturally linked in their spheres of action.

> "[...] we have a staff system, which is effectively the Personnel Department's system and we have a payroll system which is the Payroll Office's. For reasons I don't understand, our personnel department and the payroll department are not one and the same, one is the Personnel Department, the other is the Finance Department. The systems are very closely linked. They were written separately, but the staff system has to drive the payroll system, so, in theory, a member of staff cannot get paid until he/she gets put onto the staff system. Equally they have to be taken off the payroll system before they get taken off the staff system when they

leave. Now these two groups of people should really be working on common aims, they should have information which keeps up to date members of staff and make sure they get paid the right amounts of money. In reality, they tend to find reasons, ways of not keeping each other informed, so, if one of them makes a mistake on one of their systems, rather than inform the other side that there is a mistake, they need the other side's help, they used to come back to my department and ask us to fix it behind the scenes, so they didn't need to talk to the other department." (CI.4:19-20)

The difficult relationship between the two departments was seen as arising, not only from the clash between different organisational arenas, but also from an element of organisational irrationality in that there was a deliberate wish for systems to "go wrong", in order to give visibility to 'invisible' problems. The effect of this climate was the construction of *"distorted realities"* (Baumard, 1999), through incomplete information systems.

"[...]what the previous Director of Personnel used to complain to me about was he wanted the staff system to go wrong, to pay people wrong, because then at least he would know there was a problem, when it got reported to him he could change the information.[...] it was always in the hands of the payroll office to tell him things were wrong and they didn't on as many occasions as he wanted to know.[...] I see these two areas as being very closely linked, whereas the two component parts, although they collaborate a lot, they keep themselves apart for political reasons and the quality of the data suffers a lot because of that. Neither of them has the bang up-to-date picture." (CI.4:19-20)

The fact that this was known but not corrected added to the perception of an element of irrationality as a main driver and shaper of the ways of the University administration. This was perceived as stemming out of group or personal agendas that were not always clear or transparent. In effect, amongst some administrators there was a perception that the important issues in the situation were beyond the specific scope of information systems and related to wider agendas at the University.

"Computer systems really get a lot of flack from a lot of people, the departments say we haven't consulted them about things. That's right, but then the computer systems aren't really the problem, they're the vehicle for

this 'not consulting us' to come through. It's other things that aren't clear, rather than the computer." (CI.4: 22)

"A lot of it is not about computer systems. In my view, computer systems are the easy bit, the politics and the management and the motivation and the ownership, things like that are the key areas and we could do a lot better if we had a better management culture." (CI.4:22)

One of the major vehicles for the creation of areas of inclusion and exclusion in the University administration appeared to be the control over knowledge of what happened at the University and how things were done. This was especially associated with the perceived lack of transparency over how the Central Administration operated. This view was shared both by administrators and technicians at the academic departments and by administrators and technicians at the Centre of the organisation itself.

"If I want something of research information, I'd be likely to know who to go to. Whereas how the administration works is a complete mystery. Even doing things like sharing information electronically, a lot of their working practices are very out-of-date and totally ridiculous when it comes to things like the Web. " (CI.3:32)

"[...] unless you know exactly what every administrative department does, how the university works - there are so few people who have a proper overall view. I certainly don't." (CI.3: 15)

"I'm sure that somewhere in the Centre, somebody must have a picture of what the university central administration system is going to look like, but that has not yet devolved down to us at departmental level." (DIS1:6)

Similarly, there was a view that, in the Centre itself, there was very limited knowledge over the periphery and no interest in gaining an insight on what were requirements of the local departments.

"Academic departments are a huge distance away." (CI.4:20)

"I am not even aware of any work that has been done from the centre to find out what different systems people are using.". (DIS.1:7)

Some of the comments made by respondents also appear to indicate a view of the Centre as a tentacular organism, with wide ranging impact in the organisation, but almost invisible and difficult to grasp in its ramifications. This was also associated with a perception of the Centre as the 'heart of darkness' (McAuley *et al.*, 1999), that was shared both by staff at the local departments and at the support departments at the centre.

> *"Politics which go on at an organisational level that impact on us here, we don't get a clear idea of what strategic level thinking is." (DIS.1:1)*

> *" I think it* [our work] *is very politically determined because* [for] *most things we administer there are policies behind them and we may not make that policy, but it is all dependant on what somebody has decided should happen" (GS.1:16)*

There was a view, in effect, even amongst senior administrators at the Centre, that behind the managerially led legitimising discourse of efficiency and planning, which made appeals to a rational view of the organisation, were agendas that were not clearly evident or transparent. Many of the agendas were related to individuals and individual interests, rather than to organisational groups.

The idea that the centre of the decision making was focused on a very small number of individuals was also referred to.

> *"As I've got higher up an organisation it's become clearer to me that there's a very small number of people at the top of an organisation that actually affect the climate/culture, just one or two people and one or two changes can make a big difference and in some senses they are the key things that need to be looked at, rather than the computer systems that are trivial." (CI.4: 22)*

> *"These are areas where there is a lot of dissatisfaction. Structures in the university in this area are a little bit difficult. We have a Vice-Chancellor, beneath him are four pro vice-chancellors, normally academics, usually professors who do a lot of committee work, internal political work on behalf of the Vice -Chancellor." (ACS.1:17)*

Despite embracing a rhetoric emphasizing the need to pursue a superordinate imperative for the collective interest, the Centre appeared, in effect, to be associated with individuals and their agendas, rather than seen as a coherent collective entity. Individuality and agendas brought out of individual interest were seen as key to make sense of changes at the University.

> *"I don't believe it has anything to do with improving processes, I personally think it's more to do with people and personalities and reorganising it for the benefit of staffing – who knows?" (CI.4: 2)*

This was also seen as closely linked to the view of the Centre as 'the heart of darkness' (McAuley et al, 1999), which was emphasized by the perceived lack of logic in decision-making processes and a view that the strategic direction of the University was not the outcome of an entirely rational process.

> *"I don't honestly know why they decided to put together a Department of Corporate Information. I have heard people say it's down to personalities and the person that is running the Department is an empire builder [...]No information was sent around[...] I personally don't see why Corporate Information was put was put together the way it was, it just seems like change for the sake of change." (CI.4:1)*
>
> *"We are very much aware that the way we go about things is related to culture. Though we are computer professionals we are very aware that our decisions are not only based on logic - how the decision making in theory is supposed to happen - but we do have a culture, we do have elements of that culture that constrain us and areas that other computing services, other universities are constrained by that we are not[...] I have no idea how you go about describing an organisational culture or how you go about finding out what one is. I've certainly been to talks where people have said if you wish to make a change in the organisation and you have people pushing for change and have you have an organisational culture that doesn't want to do things, the culture will win every time." (ACS.1:1)*

Irrationality, in this context, appeared therefore to be defined in terms of decisions that did not comply with what would be considered an expected logical progression and outcome of a situation and, hence, lacked transparency. Perceptions on how the

process of change at the administration originated and developed and on how its impact was perceived also had an impact on how different individuals viewed their position and the position of the organisational arena they identified with, which will be the focus of the following section.

5.5 Redefinition of identity

Differences in the perceptions of different groups about each other were well entrenched at the University. For example, there was a clear distinction between different groups within the Central Administration:

> *"Well, I think there are differences just within the Administration, there are quite a wide range of views on this, I think it is down to people just not appreciating what goes on in other areas, and this is quite a topical thing really which we're, with the administrative systems, now being firmly on the network it's now difficult for us, our perception is the network is not working to best suit us, it is more working to suit the students and the academic areas of the university[...] so yes, we see things different to, say, the Academic Computing Services might see about the priorities, as far as how they set up and manage the network."(DF.1:15)*

> *"Our Payroll Department are actually very focused on what they are doing and they see things in terms of 'us and them' with the Personnel Department. Academic departments are a huge distance away."(CI.4:20)*

The restructure of the University and correspondent reorganisation of areas of work had an impact on the professional identity of individuals belonging to these different organisational groups. The close link between individual identity and group identity is established by Foreman and Whetten (2002). At the University, this varied to a great extent, depending on the fates (Strauss et al., 1964, 1981) of each individual, group or department.

A striking example of this occurred with the computing staff at the Academic Computing Centre, following its merger/takeover with/of the by the Corporate Information Department. Allen and Wilson (1995) and Allen (2000) refer to the fact that University IT services tend to have strong cultural identities. In the case of the

University, this identity seemed to be based upon technical expertise and the freedom

to pursue areas of work that were personally fulfilling, whether this involved helping

other people in solving technical problems or the development and preservation of

individual professional competences and of areas of technical expertise.

"New working procedures amongst people at the centre of the department
is a different matter, because each person who works here is an individual
and we have a collection of very special individuals. Most people who
work here enjoy working in the University for various reasons, they enjoy
the environment in various ways, a lot are very highly motivated to help
people. Personally, I moved out of research and into this department
because I realised what was motivating me in my research was solving
everybody else's problems and I wasn't motivated to set my own goals and
solve my own problems. I suspect quite a lot of people in this department
are like that, they are driven by other people's requirements and needs and
get satisfaction from fulfilling other people's needs. We also have people
who are very experienced in this sort of service, support environment, and
are very clever at individually designing systems and making things work."
(ACS.1:8)

The change in the status of the department had a strong impact in its staff on different

dimensions: the move from an autonomous technical structure that answered to

academic committees into a unit dependent from the Administration within a line

management structure was interpreted as a change in the nature of their professional

activity, from being computer specialists to administrative officers.

"One or two people in this department get frustrated in that they were
joining what was in the past a computing department and they feel that it's
become a word processing department to some extent because people
aren't doing what they think of as computing but they're using
sophisticated packages. [...] The administrative departments use a much
smaller range of software and word processing, spreadsheet, database,
probably covers 99% of what administrative departments use, whereas the
academic departments use a vast range of software. We certainly do a lot
more work for the academic departments - we are an academic computing
service after all."(ACS.1:13-14)

The merger also meant a perceived estrangement from the world of academia. Academic Computing Services staff perceived that a great deal of their identity derived from its closeness to academic work.

> "We are a service department and our job is to serve the rest of the University, to provide academic computing facilities to them, called academic because we are not the administrative student records, payroll, finance etc."(ACS.1:11)

This was associated with the view that the provision of specialist computing services to academic activities was a main source of prestige for the staff at ACS. Professional expertise was seen as valued and as a source of both authority and autonomy. Professional trust expressed by the academic structures was also a strong contributor to the identity of this group.

> "Within this framework of trust from the rest of the university, it's like the aristocracy, serving people, you know, you only get to the top by being good at what you do. We have been very autonomous because we have done things the rest of the university has seen as being sensible, correct and worthwhile and they trusted us. We are not so sure now that we are going to come under the Department of Corporate Information. We will no longer be mainly responsible through committees but we will now have a parallel management structure, which means we are responsible to the Director of Corporate information, [Alex Parson], who is responsible to the Registrar and who meets regularly every week with the Pro-Vice Chancellors, the Registrar and the Vice Chancellor. There is now a fear that major decisions affecting what we do will be made via that channel. We are afraid now that our efforts may be diverted more to the Administration."(ACS.1:)

The decision to restructure the computing services at the University without consulting this Department and resulting in what was seen as the subordination to an administrative structure was therefore seen as a direct threat to their group status and a breach in the conditions of trust and autonomy that had characterised their work.

"It is actually going to be very difficult to design a new departmental structure and keep everybody happy. Some people are worried that their jobs will be redesigned" (ACS.1:15)

Different groups of administrators at the Centre also thought the nature of their work had changed, in varying ways. This was perceived as a direct consequence of changes in the Higher Education sector. These changes were expressed in a number of changing practices, clustered around the trend for managerialism at the University. The focus on managerialism was important to some of these administrators, especially those associated with the new technostructure as, by claiming their role as managers, they achieved leverage for positions yielding greater power. The view that the University was in effect run by administrators, expressed by a senior administrator, exemplifies this point.

"[...] the people who are managing the University are really the administrators and the administrators of the 60s were doing a very different job – everything was static, Universities weren't growing, we weren't going modular. Polytechnics are now Universities, government funding is being cut back every year, we have to grab students in order to survive, we may need to amalgamate and form coalitions, etc. There's a lot going on and if you were to start from scratch, you would not put a University like it looks today. The people who are running it would clearly be managers and employed for management ability, so, in a sense, I think it's unfair to people I mentioned, like the Registrar. Really, that was not a managerial role 10 or 20 years ago, so the current Registrar is making a good fist of what he's got from a role that never was." (CI.4: 22)

The administrators that occupied the middle management tier that disappeared with the abolishment of the Faculty structure and with the amalgamation of different departments also had to develop new forms of identity. In these cases, it involved dealing with feelings of de-promotion and loss of autonomy

"[Alex Thompson], our deputy director, feels very strongly that his career path has been taken away from him because his next logical career step is to become director of this department. He will now be effectively something like second in charge of a much bigger department, which is not

278

what he wants to do. He also feels strongly that the decision was taken
without consulting anybody, which is perfectly true." (ACS.1:15)

"What's difficult is actually losing some of my old responsibilities - at the
start, they came with me. People perceived me as a person to come to with
their problems. So I need to make sure I can leave some of that behind and
that they have someone to take their problems to if it's not me, rather than
just move on and leave gaps. To be honest, I haven't entirely got to grips
with being a deputy, because I've never had a deputy and I've never been a
deputy." (CI.4:29)

Part of the process of devising new forms of professional identity for this group of

people involved subverting their new status of subordination, by devising and

adopting what was referred to as 'flexibilities' that they hoped would give rise to new

forms of autonomy.

"So I'm actually quite relieved it's not me, director of this big outfit,
because it's quite a handful. I believe I will have flexibilities as a deputy
that I didn't have before, when I was in charge. Hopefully, it will give me
scope to focus on areas that I want to look at and spend time on that – get
away from things that are currently bogging me down." (CI.4:29)

This involved, for example, moving from areas that were perceived of having less

prestige at the Centre, such as technical computing work, to the areas that were newly

valued and promoted, such as management, in accordance to an increased emphasis

on a managerial *ethos*.

"I'm keen to move into that area. I'm taking a look at the moment at
what's going on in our management information unit. My personal interest
is MI [management information]. I've got a Masters degree in MI. I'm not
a computer person by background, I'm a civil engineer by first degree – so
that is something that is a change for me . I'm taking steps to get away
from the computer end of it, and get to see the other areas in the part of
corporate information which is not the part that came with me, the WWW
and stuff like that." (CI.4:27)

One important point to note about the particular case of these individuals is that, in the

same way as the fate of departments affected notions of individual identity, the fates

of these individuals and resulting change in identity affected the way they identified themselves with their department and they perceived the department.

> *"[...] it isn't my department, in the sense that I'm deputy [...]" (CI.4:3)*

This also impacted on the way administrators could interpret the process of change at the University. This was also noted by Gioia and Thomas (1996) who refer to the relationship between organisational identity and the interpretation of the process of strategic change in academic institutions.

> *"[...] I'm not really the best person to talk to. The Director, [Alex Parson] ;is probably the best person to explain the rationale behind the new department, because it's her vision. I support the idea, but I have difficulty in that it's not my vision and I can't see the reasoning behind some of the things [...] (CI.4:8)*

Another group of people whose professional identity appeared to have significantly changed were the administrators that had joined the new Corporate Information Department. Most of them had previously either worked at support departments in the administration, such as Personnel, where they were the 'IT persons', or at central service departments, such as the Library. It is interesting to note that a large majority of the original nucleus were administrators at the various support departments in the Centre that had an IT responsibility.

> *"[...] that group was made up of key people in each area, someone from Personnel Department, Student Area, Finance Area, Physical Resources/Estates area, someone involved in Management Information and so on. So there was someone from each of the main areas".(CI.1)*
>
> *"There is a lot of collaboration. Things have changed again very recently because [the Department] has only been in existence since the beginning of January and before that I was in a different department. Then I was actually working with people in other departments whereas now we're actually more together and the people working on the project are more together than they've actually ever been [...] "(CI.1:8)*

Bringing this group together made it break the possible isolation these individuals faced in their previous departments as 'the IT person'. They were a community that shared an identity and that rose to a position of greater power together. The move to a new Department that took the role of the new technostructure, in charge of devising and implementing the new administrative order and way of doing things, and was seen in direct contact with the centre of power at the University, brought them new sphere of action and associated prestige.

> "Since the Department of Corporate Information has come into being, it's been a lot easier because we have all this direct access to the Head of Administration which means if something has to be done to change in the way admin. staff or secretaries in departments do something, then it can be done as needed from above, whereas before when I was working on the project in the Library we had to ask people nicely and we quite often got ignored, so I think things will happen but it is a slow process in a large University like this which isn't used to having corporate things done. It's a culture shock, I think."(CI.3: 7)

Many of the administrators in this department presented their roles as liaison agents. This was an extension of practices that were previously embedded in the Administration.

> "The other area is just general user liaison, prior to coming in to this department I worked in the medical school and was the main liaison person between medical services and computing services." (CI.2:1)

> "Other - academic - departments tend to have a departmental secretary, tutor or something like that, so that we would have regular contact with these people in relation to these individual changes of student status and then we have a lot of contact as well with other central administrative departments, for example, Finance Department, who deal with student fees, other sections in this department who deal with the welfare related aspects of support for international and mature students, the section that deals with registration and tuition fees and there is a Department of Corporate Information, which manages the systems side, the central computer system and there is a lot of liaison with them, at the moment, because we have just introduced the new computer system" (SO.1:2)

The previous liaison and networking activities had, to a large extent, helped them to form a community with a shared identity. They extended this role to establish new links with the other structures at the University – they were 'the go betweens' that mediated the relationships between the Centre and the periphery.

> *"A bit of a mixture - what I did 12 months ago was to write to all departments and explain that we wanted to have somebody within the department who would be a liaison person for the implementation of all the systems and for them to nominate someone from their department who knew how the department was administered. So it varies in some departments." (CI.1:23)*

Interestingly, though, liaison, in their case, was focused upon expressing requests and requirements that emanated from the Centre or from their new role as technostructure, as expressed in the comment referred to above: "[...] *if something has to be done to change in the way admin. staff or secretaries in departments do something, then it can be done, as needed from above* [...]"(CI.3:7).

This was also apparent within the Finance technostructure that had retained autonomy in their views of their relationship with corporate information.

> *"My job in the Finance Department is to liaise between the rest of the department and the systems developers - Corporate Information Department, which has a section for actually running the administrative computer systems and developing new systems, so I assess the needs for the Finance Department as far as administrative computing and discuss those with the technical people who actually get those requirements met." (DF.1:1)*

In both cases, their roles as 'the go betweens' was focused on the transmission of information, without necessarily engaging in translation, in terms of *"framing the interest of one community in terms of other"* (McAuley *et al.*, 1999:67)

Another group experiencing redefinition of identity was formed by the local administrators and technician at academic departments. The tension between control over processes and control over the meaning of what was recorded in the system meant that local administrators at academic departments also gained a significant role. This was reinforced by taking the role of organisational translation between the central systems and the local systems in the terms defined by McAuley *et al.*, 1999.

"As far as I understand it we are all on the same network so potential for information exchange is there, but each department has grown its own particular set of administrative procedures which may or may not be compatible with the various other departments[...] what we tend to be getting is different systems and people writing different bits of software that they can extract information from the university central system and make it conformable to the system that department is using as opposed to moving across to the university system because it's not yet clear what the university system is, or the direction it's going." (DIS.1:6)

"[...] you need one set of stuff for your own internal departmental needs and perhaps the same information presented in a slightly different way for the centre but that slightly different way perhaps means somebody has to spend a day or so to actually generate that, so it's a waste of time and resources" (DIS.1:8)

Control over meaning and accuracy of information, together with the role of organisational translation allowed the development of new ways of doing things. The episode referred to in the following quotations, involving the re-writing of financial codes, is important because it had the potential of changing the meaning of financial data, hence the control over financial results – the new language in the form of codes could mean new ways of doing things, as well as expressing them.

"The other thing that is changing is the Financial System, there's a new system for that. [...]. That is being linked also with a change in the way the University codes all its financial transactions, so they've introduced a completely new coding system as well as introducing new VAT coding - so

Control over content and meaning, coupled with organisational translation, had the potential to give power to re-negotiate a different order of ownership. The ability to translate allowed the opportunity to change practices and structures – as pointed out by Potter and Wetherel (1987:10) discursive practices and rhetoric 'do *not just describe things, they do things*'. The role of interpretation in changing structures is also emphasized by Trowler (2001) in the context of the strategies adopted by academics in dealing with managerialism.

This new position also enabled local administrators to extend their influence inside their departments and to establish ownership over important areas, as exemplified by the comment of a Senior Administrator at an academic department, whose involvement in the control of financial information and in the management of information related to research funding, demonstrates her influence in areas that were considered of strategic importance to that department.

at the time they put the proposal in so that would give us an idea of what might happen in the future. It would also have the original costings on it, so we would know how much costing was available for staff and how many staff were going to be appointed. It would also give us and idea of how much expenditure would go on office consumables and equipment which would give me a better idea of whether people were spending over their budget. And then I needed to know whether they were awarded the grant or not and I'd have to write that down, so I produced a sheet of paper with the stages on it so that I would fill in as I got to know how the process of the application was going until it got to the point where it was awarded and then we would know how much income we had, whether I would need to find more office space for new research staff and it had so many different implications that it was something that I found I really had to put processes in place to get this information". (DIS.2:10)

This involvement in the management and control over information about research grants and contracts is particularly significant in the context of the department this administrator belonged to. This was a 5* research department, where research grants and contracts were of strategic importance. The move to a position where not only this administrator had control over information on grants and contracts, but, more significantly appeared to be the first person to have a view over what could be seen as the whole picture in this area, allowed her to reach a position of considerable influence. This area of activity may not have been initially in the sphere of action of her job, but the changes introduced at the Administration meant allowed undertaking new and more influential responsibilities that helped carving a new identity.

The redefinition of identity of different groups and of individuals at the Administration was therefore an important strategy for exploring different opportunities and implications of the restructure of the organisational environment. It acted also as an important filter with which to attribute meaning and sense to these changes and to the new environment.

5.6 Summary and implications: the administrative arena and the tension between centrifugalism and centripetalism

The formation of different organisational arenas and correlated control over different organisational groups was manifested through strong and increased adherence to the trend towards managerialism that had been defended as a general Higher Education policy and generally embraced in many HEI institutions (Dearlove, 1997;Allen, 2000; Trowler, 2001).

The clash between discursive practices that appealed to academic autonomy and collegiality and those that defended managerial control was expressed through the tension between discourses that emphasized centrifugalism and those that emphasized centripetalism at the University. Academic departments and some central service departments, such as Academic Computing Services, whose position depended to a great extent on professional expertise, acted as centrifugal forces, by reinforcing the role of local systems and practices, as well as correlated knowledge, that was specific and often uncodified (Boisot, 1998). The Central Administration, and particularly the newly created Corporate Information Department, with a strong technostructure role, as the definer of new systems and rules, acted as centripetal forces, in that they actively promoted the creation of a centrally owned system and the definition and control at the Centre of standardised and codified practices and procedures.

This was expressed through the clash between the discourse of academic and professional autonomy, emphasizing the values of freedom in pursuing knowledge

discovery avenues, and a discourse that appealed to a 'superordinate strategic imperative', which was collectively oriented and framed under the umbrella of the need for survival under difficult conditions that were imposed to all Higher Education organisations by external forces. The discourse of 'superordinate strategic imperative' had, in itself, different expressions and was used in different ways, as manifested in the clash between two centripetal forces, the Corporate Information Department and the Finance Department, where although both assumed the role of a technostructure, defining administrative rules and procedures, the Finance Department resisted hegemonic attempts from the Corporate Information Department to centralise within itself the role of the administrative technostructure.

As pointed out by Potter and Wetherell, discursive practices and rhetoric *'do not just describe things, they do things'* (1987:10). The restructure of the Administration and the introduction of new management structures and systems took place at different levels and through different mechanisms. The formation of new organisational arenas was attempted through the redefinition of ownership over organisational areas and correlated work and the redefinition of different levels of responsibility (and, more importantly, accountability).

This implied the definition of areas of inclusion and of exclusion for the different organisational arenas. In order to achieve this, different levels of access to information and participation in the creation of the new systems and procedures were defined. The new management information systems played a pivotal role in this process, acting, in effect, as an institutional map that represented the new structure. Around this formal structure, different arenas were formed through conflicting notions of participation

and of responsibility, expressed through different rhetorics around the notion of devolvement. The different interpretations of the notion of devolvement conceptualised conflicting notions of the role of the user, articulated around the distinction between normative and functional responsibility.

The tension between centripetal and centrifugal forces was also accompanied by a tension between control over processes and control over the meaning of what was recorded in the system - knowledge of how (processes and procedures) was counterweighted by knowledge of what (the information and its meaning). By discursively exploring these tensions, different groups of people made claims to power in different ways. The central administrators asserted their position by aligning themselves with the strategic imperative espoused by the strategic apex at the University and redefining organisational arenas through the control of processes and the redefinition of areas of ownership. In a sense, they became the new technostructure, defining management rules that reinforced centripetalism. Local administrators, whilst often embracing centripetal values, asserted their position through the control over information, of whose accuracy they were the main guardians. Service departments were aligned with academics in seeking a centrifugal redistribution of authority. Both groups asserted their positions through discursive practices that appealed to professional knowledge and authority.

Birnbaum (1998) described this as the dualism of controls that characterises most Universities:

"Administrative authority is predicated on the control and co-ordination of activities by superiors; professional authority is predicated on autonomy and individual knowledge. These two sources of authority are not only different but in mutual disagreement." (Birnbaum, 1998:11)

The new managerial regime had a strong impact not only on the organisation of work and redistribution of power, but, perhaps more profoundly, on the identity of different groups of people that were caught in the process and on how their identity was defined *vis-à-vis* the perception of the roles of the groups within the institution. Conversely, the fates of individuals (Strauss *et al.*, 1964, 1981) within the new order had an impact on how they defined their professional identities and their perceptions on the nature of the new structures. The roles of intermediary or liaison agent (as message carrier) and of organisational translator (as message interpreter, framing messages in terms of the differing interests of the different University communities) seemed to be respectively adopted by administrators at the Centre (in the former case) and administrators at the periphery (in the latter case).

The findings in this chapter have implications for the views over the management of information and of information systems at the University. The pursuit of a policy towards the standardisation and codification of practices, rules and associated knowledge by the technostructure, under central control, was not surprising – as Boisot (1998) points out, there is a trend towards transactions with these characteristics, as they display minimum entropy and cost. The focus of the groups whose position depends on professional expertise, in the variety of local practices, often less codified, is also not surprising, as these groups operate in information

environments that are often fuzzy and less certain. Despite the temptation to move towards transactions that display minimum entropy and cost, this comes at a price, as "[...] *data economies are often achieved at the expense of data richness*" (Boisot, 1998: 133)

Boisot (1998:144) brings an interesting perspective over centripetal and centrifugal forces from an information economy background. He defines centripetal cultures as "*characterised by strong institutional attractors*" [of information transactions] and centrifugal cultures as those "*in which the attractive power of competing institutional structures in the i-space is either weak or more balanced*". Where one of the forces in the organisation becomes centripetal, this will be at the expense of the representation of the culture and way of operating of the other forces. The interesting point made by Boisot is that centripetal cultures tend to act as funnel, by confining transactions, and associated information attributes and learning processes, to limited areas in the information environment. As such, he argues that "*centripetal cultures tend to block learning, whereas centrifugal ones promote it*" (Boisot, 1998: 144). By limiting variety, centripetalism can be viewed as "*an uncertainty reduction strategy*," whereas centrifugalism can be seen as "*a strategy for absorbing complexity*" as it embraces fuzziness, nuance and diversity (Boisot, 1998:148).

It is interesting to relate this back to the different views and rhetorics over the restructure of the University, the role of information and of information systems. The rhetoric of the 'superordinate strategic imperative', emphasizing collective needs, the focus on standardised organisational processes and efficiency can be viewed as a way to promote the need to simplify the way to deal with a complex environment;

conversely, the rhetoric of professional autonomy can be viewed as a way to explore this complexity, within familiar niches for those professionals that were involved. Hence the emphasis on promoting local systems that serve the variety of local practices. The preferred configuration of an information system to manage each of these conflicting views of the organisation and its information environment would therefore be very different, according to whether a centrifugal perspective or a centripetal view of the information environment was adopted. The next chapter will explore the different strategies for the management of information that were expressed during the case study.

Chapter 6 – The information arena and the discursive exploration of tensions in the management of the information environment

The previous chapter concluded that the trend towards centripetalism at the University was expressed through a drive towards standardising processes in an effort to simplify and reduce the variety of practices surrounding the centrifugalism exhibited by the periphery. Centrifugalism could be seen as an effort to explore complexity, while centripetalism may constitute an attempt to simplify it (Boisot, 1998).

The changes in the structure and way of operating of the Administration were accompanied by an attempt to reshape the information environment at the University. This process was geared towards ensuring control over resources that were considered the driving force for strategic change at the University. Areas of contention surrounding the notion of ownership of information were centred in financial information and information inherent to the administration of students. The latter was, in effect, a variant of the former, as the administration of student numbers contributes directly to the funding that Universities receive from the government. The development of new coding structures that shaped a new funding model and the introduction of new management information systems that replicated the new management procedures were key to drive this process.

Again, there was division and tension among some forces at the centre and between centre and periphery, reflected in the process of attempting to secure control over

information inherent to these two areas. The resulting fragmentation and information insularity is characteristic of what Baumard (1999) defines as a 'puzzled organisation'. Depending upon the data structures and coding systems that were adopted, administrators reported having different pictures and scenarios over what constituted the University.

Strategies for the control of information by centripetal forces included: control over information handling processes, through the definition of a blueprint view of the organisation, introduced by the Information Strategy and implemented through the new management information systems; the definition of a corporate image and identity through the formulation of rules to guide the monitoring and policing of the generation, dissemination and use of corporate information; and, crucially, the attempt to define meaning, through the production and manipulation of new resourcing models and correlated coding structures and the definition of a corporate data model. These strategies represented, in effect, an attempt to codify and standardise processes and practices and associated knowledge and information, while, at the same time, reducing information diffusion by establishing different levels of access and responsibility, as seen in the previous chapter.

Organisational groups at the periphery, located in academic departments or in central support services, many of which constituted centrifugal forces, responded mainly through the control over local knowledge that ensured the capability to reinterpret meaning, in what became increasingly a negotiated model of the various information arenas at the University.

It is argued in this chapter that control over information, although seen as important, was not in itself the main driver behind the tensions between the different forces. The driving force behind the tension between different organisational actors was control over other resources, with financial implications that were presented as fundamental to secure the position of the University as part of a group of elite higher education institutions. Information was the vehicle that was utilised by organisational actors, as part of their discursive strategies, to enable the manipulation and control of those resources.

This was summarised by the comment of a very senior administrator at the Corporate Information Department:

> *"Well, only that information is power, so information is not a neutral commodity [...]" (CI.4:18)*

6.1 Defining information ownership

Although much of the focus of the restructure of the Administration was in establishing ownership of organisational arenas that were perceived as key to certain groups of administrators, information ownership and tension around the ownership of information were notions that were also conveyed by several of the administrators that worked at the newly created Department of Corporate Information. However, the meaning attributed to the notion of information ownership carried many different nuances and varied to a great extent, depending upon the categories of information that were being referred to.

Ownership of information was largely seen as context dependent and related to the ownership of areas of work and of work processes. Administrators referred to differences between academic information and administrative information. These differences in nature also affected the way ownership could be established. It was perceived that defining ownership over academic information, especially research related information, was a grey area and that, despite the definition of rules and regulations over intellectual property, it was far more difficult to establish than ownership over administrative information. This was particularly the case in the earlier stages of research, where much of the information might not be formally codified.

> "That's a difficult question and always one that's liable to cause dispute, I think to some extent it depends on how far the research has gone. We have regulations about who owns the intellectual property of published works, books, articles, review reports or whatever. In the early stages, I think that the information belongs to the researcher; at later stages, it can belong to the University. For example, if an invention is exploitable commercially

and a patent is taken out, that may very well be taken out in the name of the University and the rights under that patent belong to the University and the member of staff will have agreed to that. At the earliest stages, it's very much his or her own information." (ASO.1:9)

On the other hand, administrative information was not seen necessarily as belonging to administrators that processed it.

"Again much easier in the administrative field, most information belongs to the University, doesn't belong to the member of administrative staff who happens to be processing it at the time." (ASO.1:9)

This division between notions of ownership over academic information and administrative information is corroborated by Jarvenpaa and Staples (2001) who, in a study over perceptions of organisational ownership of information and expertise conducted at an Australian university and at a Canadian university, found that administrative staff members were more likely to adhere to the notion of organisational ownership of information than academic staff.

The following comment from an administrator at an academic department reflects a sense of detachment to the idea of controlling information, in the sense of monitoring it and relating its meaning to performance.

"I don't think there's actually much control over the information. I suppose in some ways you could say I oversee a lot of the information because of the nature of the job I do and because of the tasks the Head of Department asks me to do, which is things like replying to university requests for information, produce statistics about our programmes and modules, I have to make sure that the information that I need is there. I control it in the extent that I either collect the information myself and store it on the computer or in the filing cabinet or have to make sure the secretaries are collecting the information in the right way so that it can be used. But when it actually comes to controlling the information in terms of monitoring it, seeing that things are actually being achieved that we expected.... I suppose, at the end of the day, the Head of Department needs to know these things but it would be me that actually produced the statistics and the numbers to say we have achieved X, Y, Z research income and we have got A,B,C numbers of students on these programmes, but I

don't think that information from the point of view of statistics and performance related data is taken that seriously[17]." (DIS.2:11)

It is important to note that this was a comment made by a local administrator, albeit a rather senior one, at an academic department, referring to information regarding the performance of the department for which academics, such as the head of the department and other members of a departmental strategy group were responsible, not the administrator herself. A relevant issue arising from the above comment, therefore, is that it focuses on carrying out processes, but distances the administrator from the end result and meaning of that task – i.e., it was not for her to ensure that performance indicators were met. The ownership and responsibility over that area of work belonged elsewhere.

The above comment raises an important distinction between the notion of controlling information defined as a 'process' and the notion of controlling information defined as 'content' or 'meaning'. In this comment, the control over information exercised by the administrator referred to controlling information processes. Control over the meaning of information handled through those processes lied in the people that were responsible for the strategic direction of the department and for its performance and who, in a sense, could construct and interpret its meaning.

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[17] It should be noted that this Department enjoyed a relatively comfortable position at the University in that it had been a 5* rated department in all the successive Research Assessment Exercises that had taken place until then. The research funding it attracted covered the salaries of all its academic staff members. Hence, pressure on monitoring and manipulating performance related data might not have been as stringent as in other Departments.

A similar distinction can be found in some of the theoretical background of the Information Science field. Dervin (1977:22) distinguishes between three dimensions of information, labelled. Information1 (which *"describes [...] the innate structure or pattern of reality"*), Information2 (*"ideas, structures or pictures inputted to reality by people"*) and Information3 (described by Kirk, 1999, as *"a set of behaviours"*, which mediates the other two dimensions and constitutes *"the how of the information process"*). Kirk (1999) proposes that Dervin's dimensions can be mapped against the work of authors, such as Buckland (1991:351), who established similar categories when addressing and trying to resolve multiple uses of the word 'information': *"Information-as-thing"* (data, documents), *"information-as-knowledge"* (knowledge) and *"information-as-process"* (referring to the process of becoming informed). We can therefore consider that the different elements considered in defining 'information' found in the Information Science literature refer to three different dimensions: information as an external representation, information as an internal construct and information as process.

The distinction between information as process and information as meaning is key to understanding the difference between the notions of ownership over administrative information and academic information. Whereas the former was seen as essentially corporate based, the latter was referred to as more difficult to define and often associated with personal ownership. Administrative control over information tended to be seen as more impersonal and focused on process ownership, whereas academic ownership over information tended to be seen as focusing on the construction and interpretation of meaning, often associated with the development of expertise and therefore more personally related.

As mentioned by Jarvenpaa and Staples (2001: 174), *"separation and impersonalisation of knowledge is likely to reduce the beliefs of self-ownership and, over time, the beliefs of organisational ownership. Beliefs of self-ownership are particularly critical for expertise sharing"*. Constant, Sproull and Kiesler (1996) further elaborate on this by stating that the sharing of expertise is associated with the belief that it will engender personal benefits, rather than with organisational rules of ownership, which reinforces the points made about the difficulty in defining ownership over 'academic information'.

An explanation of the differences of perception regarding the ownership of administrative information and the ownership of academic information may therefore lie in the dual source for authority in Universities, referred to in the previous chapter. As mentioned by Birnbaum (1998), whereas in administration authority comes from position and rank, in the academic sphere authority is seen as deriving ultimately from professional expertise. Academic information is closely associated with the development of professional expertise that forms the basis of professional authority.

It is also interesting to note that the ownership over academic information was also seen as depending upon its degree of codification, in that, at the earlier stages of research, where much of the information might be found in a relatively tacit and fragmented way, it would be more difficult to apprehend and take over.

The issues surrounding control over process and control over information content or meaning were therefore associated with a perceived difference between the nature of administrative information and the nature of academic information. Whereas the

former was seen as more easily defined and structured, the latter was perceived as far more fluid and fuzzy, and hence lending itself less easily to codification and control. Administrative information was seen as related to management processes (resource allocation and management, performance monitoring and rules and regulations) and academic information to subject knowledge and subject expertise.

> *"It's easier to define administrative information obviously there are some fairly straightforward things we need to know. We need to know how much money we've got and how we spend it, We need to know how many students we've got and how we've calculated that. We need to have coding structures and structures for accounting, if you like, in a broad sense, and accounting for our money, our resources, our students, our staff. With academic information, it can be very much more diverse and diffuse, a number of academic staff may have all manner of contacts and pick up pieces of knowledge and in a way it's a distinction between information, data and knowledge. Academic information is much more to do with small pieces that are put together as a jigsaw, if you like, and information which can be interpreted; administrative information is much more to do with relatively straightforward facts and figures, I think, which don't require so much to be interpreted as added up." (ASO.1:7)*

Hence, the reasons behind the perception of administrative information as more structured and hence easily defined is the fact that its codification and structure were pre-determined by coding structures introduced by the rules and regulations of the administration and by the funding and resourcing models that were adopted. *"Coding structure"* and *"structures for accounting"* are therefore a way of pre-determining the interpretation of the University environment.

Information related to scholarly activities and to professional expertise tended to be seen as interpreted in action and in the precise situated contexts (Suchman, 1986; Lave and Wenger, 1991; Wenger, 2000) in which professional activities are carried out and learning regarding specific knowledge contexts occurs. The interpretation of this information was portrayed as emergent.

> *"So I think it's much more difficult to define academic information and academic knowledge than it is to provide structures for dealing with administrative requirements and that I think has been reflected in most institutions in the way that IT and information strategies have been developed, they concentrate on administrative procedures because those are the easy ones to define, where you will find common ground between different institutions - we all have to make similar returns to the funding council, we all have to account for our expenditure in very much the same way, there's a lot of similarity between institutions, whereas, in the academic field, we all have different portfolios of subjects that we look into, have a different flavour and ethos into how the research is carried out and it is a much wider field and much more difficult to tie down. Apparently trivial or unrelated facts, as you must know for yourself, can become the last piece of that jigsaw 10 years later, it's difficult to organise the information so that you can be sure of getting it all together at the end." (ASO:1:7-8)*

The focus on standardisation and codification of administrative procedures represent, as pointed in the previous chapter, a way of filtering and interpreting the complexity of the University environment, despite the perception of administrative information as more "straightforward" and less prone to interpretation. The focus of IT strategy in administrative information also reflected a concern with producing and shaping managerial information that was the basis for funding models and clearly related to the strategic positioning of Universities.

The effort to shape the managerial information that was perceived of strategic importance was reflected in the areas of contention, in terms of claims to control, over administrative information. Student numbers, upon which allocation of resources depended, and financial information were perceived as the two biggest areas of contention at the University. Administrative processes involved in codifying this information could therefore strongly influence the meaning of this information.

> *"I think the two most troubled areas in most universities are that of student numbers and registrations, that we've just talked about, and finance. A student record increasingly defines the amount of resource each department will get from the Centre. The resource allocation will increasingly depend on student loans and all the activities developing in terms of teaching and research. So that it can become the case that a minor error in the data has appreciable consequences in financial terms*

and developments in the Centre can form to dispute that. The other is the wider, general position about departmental accounts. Departments tend to fall out with the Finance Department about how much money they have and how it has been spent and where in the commitment accounting process, if a department reckons it has ordered a piece of equipment and therefore has spent e.g. £1,000 it will write that out of its records as being spent, it will be a month before it's delivered and another month before it's paid for so for that two month period the finance department will think that that department has more money than it earns. The reverse can also happen that income to the department will take time to be processed centrally, time for an invoice to be sent and a cheque to be received, so there's good scope for the central record and departmental record to fall out of step."(ASO.1:14-15)

The above quotation raises a number of interesting issues. The funding models, defined and controlled at the Centre, had considerable impact on individual departments. The coding structures and structures and rules for accountability devised and managed through the new management information system played a crucial role in that process, as they defined what and how would be accountable. The scope for differences in what was recorded centrally and locally, and the resulting different interpretations, were an open area for contention. This was reinforced by the lack of detailed information emanating from the Centre, especially concerning the meaning of the figures provided by the Centre, whose key was held in the coding structures.

"I think departments can be disadvantaged thereby, they can also feel, especially on older accounting systems, that they just don't have enough information - they are presented with figures without explanation, it can be difficult for them to work out how those figures were derived so that they would then feel that they suffer from a lack of information as opposed to a lack of data, data as figures, and no information as to what those figures mean. Student numbers and financial matters are the two areas of concern. Staffing is usually less of a concern because the numbers are usually smaller and you can attach names to them more readily so that it is easier to resolve difficulties at the outset. When you are dealing with large numbers of students, large numbers of banknotes, it can be much more tricky." (ASO.1:14-15)

The impact of the efforts to centralise the management and coordination of information that were associated with the change in the management ethos was significant, as greater central control of information tends to be viewed as equating to

302

an increased trend towards centralised ownership of information (Brynjolfsson, 1994). This is related to the view, espoused by the strategic apex and by the technostructure at the University, of the University as a corporate entity and of University work as part of the corporation, that was fostered by the trend towards managerialism – beliefs in the organisational ownership of work were clearly correlated to beliefs regarding the ownership of information (Constant, Sprull and Kielsen,1996; Jarvenpaa and Staples, 2001). Organisational ownership of work processes and of information would be consistent with the ethos of the Administration in Universities, where, as mentioned before, authority depends largely upon role and position and role and position define largely the scope of activity and of control over work. As the Centre at the University gained increased control over administrative processes, through the restructure that was undertaken, its sphere of action and control was expanded.

However, although there was a widespread view that the management information that was to be administered by the Centre, through the new system, was a University resource and therefore University owned, notions of information ownership also centred heavily on control through monitoring and manipulation. By devising the new funding and resourcing models and the new administrative regulations and systems, the two rising groups at the technostructure, the Finance Department and the Corporate Information Department, ensured, in effect, a form of control over information by attempting to pre-determine the key to its interpretation and therefore its meaning. The expansion of the sphere of action and control of those administrators that held control over resource related information could also be seen as potentially related to the control of views over performance at the University.

The following comment, by a senior manager at the Corporate Information Department reflects the tension between the espoused rhetoric around the management of information as a corporate resource, as 'thing', and *de facto* practices and beliefs whereby different groups aimed at controlling particular types of information and how the format of that information was perceived as an important element to preserve.

> *Question: "What about the information that is in the system? [...] With the new corporate system, who owns the information?"*
>
> *Answer: "It's a good question and I don't know the answer entirely. In theory, the University owns it, it's a University-wide resource. In practice, we have a data administrator who is charged with actually controlling the data that goes in there, so the data administrator is in theory at least responsible for putting this data in a format, so really the data administrator is what we need in the departments. In practice, the data administrator is heavily influenced at this stage by what the Centre wants to hold. It's an area that I don't really know much about, I don't have any textbook answer, I haven't really ever seen the departmental side of it."*
> *(CI.4:17)*

The espoused view of administrative information as a University wide resource conferred legitimation to the creation of the Corporate Information Department, as a guardian of a University-wide resource, in a similar way in that the Finance Department was a safe keeper of the financial status of the University. It also legitimised its activities in controlling and processing information that was previously controlled and processed at the Faculty, academic department and service department level.

> *Question: "What implications do you see in this in terms of information management, access and control. Who owns the systems?"*
> *Answer:" It'll be done through the department, corporately".(CI.2:12)*

Information as a resource conveys the idea of an entity with a physical existence, an external representation, of information-as thing (Buckland, 1991), that can be owned

in discrete ways. However, in the accounts of many administrators, a notion of information as an entity whose meaning can be manipulated and interpreted differently – information as construct - is also present.

Ownership through monitoring and manipulation poses greater ambiguity to the association of the ideas of ownership and of information, because it can be changed at different points through the manipulation of meaning. A senior manager, at the Academic Secretary Office, reflected this through the idea of expressing ownership of particular pieces of information through a system of layers of ownership, that took hold of specific pieces of information in a phased way, so that, as information progressed through organisational processes at the University, it belonged to different people that, at different times, had the power to control and alter its meaning.

> "[Ownership of information] *Lies in different layers of different kinds. A good example is examination marks. A student sits an examination and while he's sitting that examination the information that he provides belongs to him obviously, once it's marked and assessed it belongs to the marker, it then belongs to a Board of Examiners, it then belongs to a Faculty Board that has to approve the examiners report, then it belongs to the University as an institution, prior to the award or degree whatever. So at different times in the process, the same information belongs to different people. Different people are responsible for the integrity of that information and I'm sure altering it, or taking it to the next stage. The Examining Board, for example, had discretion to amend a mark in recognition of let us say a medical circumstance. Then at the higher levels, different people have the authority to look at that information again in a different context." (ASO.1:10)*

An interesting point in this view is that authority to control through manipulation or ability to determine the path of that piece of information as part of the process is seen as dependent upon the context of activities within the process, reinforcing the ethos of the Administration. By defining different layers and different levels of access to information, different capacities of intervention and of influencing meaning are also

defined. Greater centralisation reinforced the capacity of intervention of the Centre. This was also emphasized by an administrator at the Student Office.

> *"In some aspects, it is very clear. For example, examination results – once these are collated at the departmental level, because that is the examining department, they deal with all of the marking of the papers, recording of the results. They do that and so on (and they probably do that on their own database or on a Word for Windows document or just on tape or whatever). Once the results have been approved by the Faculty Board of Examiners, which we service, the results are then ours and any change that has to be made or any amendment is in our control and the department has to petition us and say 'Will you change this? We've made a mistake in marking this paper or there is a genuine reason and we want this result changing'. So, in that example, up to a certain extent, it is solely in the department's control and we don't have anything to do with it at all. Once it gets beyond a certain stage, the department loses control entirely and it is solely for our section to handle" (SO.1:12-13)*

However, a change or disruption in organisational processes, as happened with the restructure resulting from the abolition of the Faculty system and the introduction of the new management information system and associated rules, resulted in the lack of definition of who owned information at particular points.

> *"But when you come down to certain things, like who is responsible for changing a student's course on the central computer record, because of all the problems in the last few weeks and the errors with the new computer system and the difficulties of the transfer from the old system, pretty well the whole central administrative department has been involved in trying to correct that and a whole range of temporary staff as well, so in this sort of crisis period it's been 'full hands to the pump', everybody sort of helping and it is not really very clear who is necessarily in control of that."*
> *(SO.1:12-13)*

Ownership of information was therefore clearly related to the ownership of areas of work and process, but whereas there was normally a clear demarcation of who owned processes, including information handling processes, defined by the rules and regulations of the University, the ownership of information as meaning and content

was far more elusive to define, as different actors had the capacity of changing and shaping that meaning at different points.

The attempt by the technostructure to pre-determine the interpretation of administrative information by devising the keys to its interpretation, could also be met, at points and within certain circumstances, by the reinterpretation of processes, rules and data structures at different decision making processes, by different actors, throughout day to day administrative activities.

In summary, key points raised by the discursive accounts around notions of ownership of information refer to three inter-related areas:

i)   notions of information, articulated around views of information as process, information as thing and information as meaning;

ii)   notions of ownership, articulated in terms of ownership as control and ownership as negotiated sense-making and interpretation;

iii)   centripetal views of the information environment, favouring views of information as process and as thing, usually as an unidimensional entity ('one piece of information has one meaning') and centrifugal views of the information environment, privileging a notion of information as meaning, potentially subjected to multiple interpretations, within negotiated interactions.

Centripetal perspectives, articulated around the control of the information environment by the Centre, require a focus on the codification and standardisation of information through the pre-determination of meaning. Centrifugal perspectives, on the other hand, imply the need to negotiate multiple inter-relations in situated

contexts, where meaning is emergent. The two perspectives can be related to notions of data and control, characteristic of a functionalist paradigm in IS research, and notions of information and meaning characteristic of an interpretative paradigm in the same field, which, as pointed by Hirscheim, Klein and Lyytinen (1996) are difficult to conciliate.

The following sections deal with the different strategies for management of information, deployed by the various groups of actors. This process includes different categories of strategies by the centre: defining a blueprint view of the organisation; defining rules, monitoring and policing; and defining meaning of what was conveyed through the system, as a way to ensure that particular strategies for action were put into practice.

These were met by other actors at the University, by strategies centred around the control over local knowledge that ensured the capability to reinterpret meaning, in what became increasingly a negotiated model of the various information arenas at the University.

The following sections cover, in more detail, various battlegrounds for control of information within 'grey areas' whose ownership was less clearly defined:

    i)   the definition of an information strategy as an organisational blueprint;

    ii)   the development of a corporate view of identity through Web based services and the mediating effect of local discourses;

iii)   the definition of meaning of resources and performance through the

MAC and the Finance systems.

6.2 Blueprinting the University : Information strategy and control through information processes

The view of the University as a corporate entity and of information as an organisational resource was accompanied by the legitimating proposition that information should be available as freely and as openly as possible by the strategic apex and that this view was informing the information strategy at the University.

> "In terms of absolutely general principles the basic principle that the University operates in terms of an information strategy is that we want to be as open as possible, we want information to be available as freely as possible and there is in existence an information strategy of the sort [of] enabling kind, which says it is the University policy that every member of the university should be able to access the information that they require, as and when they require it. So we have a very clear statement at the outset that information is a freely available resource at the University and that we need mechanisms for actually making that achievable, making it possible for people to obtain the information that they need to do their jobs, or to carry out their studies etc." (ASO.1:1)

This was seen as being promoted and championed by very senior figures at the University administration. This championing gave legitimation to the implementation of a series of new management information systems, ranging from the new integrated administrative systems (the MAC system) to new Web based information services, all under the control of the Department of Corporate Information.

> "There's a lot of shared information around the administration both within particular offices and again this is being driven by the Academic Secretary's Office. He's very keen that any documents being worked on within the Office are available to the right people across the network." (CI.2:5)

One of the major efforts in defining blueprints that occupied senior figures at the University administration was the development of the information strategy. While this

was seen, on one hand, as a codification of existing views and practices, it was also acknowledged that it would serve as a blueprint for the espoused vision, by the strategic apex, of the information arenas at the University. In the rhetoric employed by many administrators at the technostructure and at the strategic apex, information strategy equated to the blueprint of the organisation.

> "[...]we drew up an IT strategy for the first time to codify a lot of what we were already doing at the end of the 80's and also to set up a blueprint for ways that we thought the University should develop its provision of computing equipment for staff and students, develop its television equipment, develop its admin computing [...]"(ASO.1:1)

This was, as mentioned before, the result of external demands from various funding boards that were being driven nationally by JISC, which allowed access to funding the information infrastructures at higher education institutions. It also served as a way of replicating that process internally, by creating an internal market, in the sense of 'artificial market' (Allen, 2000) or 'quasi market' (Williams, 1997, Flynn, 1998), whereby internal contenders would present bids to the IT strategy committee, for the funding of particular infrastructures and projects. The establishment of an internal market ensured a control over where and how the funding would be spent. This was reinforced by the fact that the information strategy was seen as a blueprint.

> "I think an information strategy as envisaged by JISC is a blueprint for the sorts of information you need and what you then do with it, once you've got it. In practical terms, a lot of what we can do depends on money and resources, and therefore the strategy in its present form and the IT strategy within that and the management strategy are to do with making the best use of limited development funds and one of the main tasks of what we call the IT Strategy Committee, senior body that looks into this area, is to take bids from the information provider services, like the computing, for the things that they would like to spend money on in the coming year and then to divide what money is available. "(ASO.1:3)

This blueprint was perceived as something that should go beyond IT services and have a focus on a wider perception of what an information strategy was, consubstantiated in the view that it should provide the principles for managing all

aspects of the life-cycle of different categories of information. This involved, for example, the involvement of staff from the technostructure and support services in the development of new approaches to teaching and learning – blueprinting through information strategy was seen as extending the sphere of action of these services into education provision, especially in eLearning and the virtual learning environment, that were strongly developed at the University and attracted a great deal of funding, both internally and externally.

> "[...]so we produced one partly in that context so it told them things we thought it needed to know in order to provide money but also to provide a blueprint to show how we would develop central computing in the university over the next 5 years. As part of that we envisaged a growth of something beyond IT strategy, and for example we employed a couple of people in the staff training unit as multi media advisors to advise members of academic staff to use new techniques, multi-media techniques to introduce into their teaching - not necessarily to do it for them, or tell them what they should be doing, but really to take their ideas and help them to bring them into practice. Since that time, in 1993 probably, JISC as it then was, started to get interested in the development of wider information strategies, and the information strategy is supposed to be the whole spectrum of how universities determine the information they need and then acquire it, process it, make use of it, pass it on and record it, generally exploit it, and we set up a working party to advise the university on the preparation of an information strategy." (ASO.1:1)

This wider understanding of an information strategy as a blueprint was carried out nationally as well, as JISC, the body in charge of developing the blueprint at the national level, devised its rules in terms of what was described as a 'bible', defining, categorising and managing all types of information that would be necessary to Higher Education Institutions.

> "[...] and at the same time, because JISC carried forward its national initiative on information strategy development, and in particular set up a number of pilot sites in universities which again to try and devise information strategies according to the JISC rules, of which the biggest task, as it appears from the way they have written the rules, is to actually produce a Bible of all the information that person x might need, so that if you as a researcher in your department decide that this is the information you need to do your work, this gets written into the strategy. One would end up with a very wide range of information, a lot of which would be common, you would probably want to know what other institutions were

The level of detail of the rules defined by JISC was therefore seen as having an 'information *panopticon*' (Zuboff, 1988) effect, bringing visibility to information processing activities in Higher Education, especially, but not exclusively, in administration.

This huge effort in detail was not perceived, even at the strategic level at the University, as necessarily useful, as it would imply a level of prescription that would necessarily imply that important issues might be left behind. This view correlates with Davenport's (1997) assertion that, the more complex an information model, the less useful it may be, as its level of prescription may lead to decreased flexibility and adaptability. The more the level of prescription of detail, the greater the risk of exclusion of unforeseen issues and of focusing upon 'thinking within the thinkable' (Baumard, 1999:49) is incurred.

> "But there would be particular things e.g. what are the professional associations in Engineering doing? What are the College of Surgeons in Medicine doing? What information do the medics need, etc. Where we are in this university at the moment is that we have not tried to produce that checklist of every piece of information that every person might need. Personally, I think that's a difficult and in some ways a dangerous thing to do because you are bound to miss something out" (ASO.1:)

The driving force behind this view by some administrators close to the strategic apex was that the 'information *panopticon*' effect that would potentially result from devising and making public a picture of the information environment with such a level of detail would compromise the competitive position of the University.

The strategic apex at the University aimed at projecting the image of the University, part of the Russell Group of Universities, as an elite institution, that was 'research led'. The discourse adopted to project this image was in tune with that of the Nw Higher Education Discourse (Trowler, 2001) and emphasized notions such as 'competitive advantage' and the need to preserve it on the basis of 'research excellence', leading the preservation of the confidentiality of information and the protection of the expertise that could provide an edge to its competitiveness.

> "I think that my personal opinion is that I wouldn't have necessarily approached the task in quite the same way as JISC, but then JISC has had a very difficult job to do. I think for purposes of the research you should assume that this University is a very ordinary University with very much the same requirements and confidentialities and mixture of openness to the outside world and trying to preserve its competitive advantage, the same as any other. I think obviously because we are a research led University there is an emphasis on research productivity and on competitive analysis, again I think we would claim to try to collaborate with other Universities in areas where it is obviously sensible for us to do what you might call pre-competitive collaboration - collaboration which is clearly for the benefit of all of us and we needn't fight about it, but we would wish to keep some secrets when you get into more detail." (ASO.1:4)

This was seen as a particularly important principle, to the extent that the reporting of progress and the final approval of the document were moved from the sphere of the IT Strategy Committee to the Strategic Planning Committee – a body that was placed at a higher level in the organisational decision making processes and a management committee, rather than an academic committee.

> "That reported about a year ago, it was supposed to initially report to our IT Strategy Committee, in fact the report went straight to the Strategic Planning Committee which is a very high level body, that tries to put together many aspects of university plans. That body accepted the report but did not approve it, it asked that there should be further discussions to bring forward as it were, more explicit recommendations, the report had concentrated in the end on setting up structures within which information could be handled properly and the Strategic Planning Committee asked for more hard information about what kind of information." (ASO.1:1)

What followed appears to be a negotiated process involving a series of discussions including the various information services providers at the University.

> *"So over the following months that report was looked at again and some further discussions took place and involving the providers of information services like Academic Computing, Administrative Computing, Library Services, Television Services, some aspects of training[...]."(ASO.1:1)*

The views of the staff members at the service departments that were involved in this process bring interesting insights to how the process might have been differently perceived across the University. The information strategy document was not, in their view, a recent initiative. There had been a previous information strategy document in which they had been involved and which they acknowledged was in need of updating, but which did not appear to have been recognised by the strategic apex as a document.

> *"In this university those committees do trust this department to a very great extent. The university was asked by the HEFCE to produce an information strategy. We already had an information strategy document that we produced three years before, but it was ready for updating. A lot of work has been done on that document, it has been discussed by working parties, worked on by individuals [...]"(ACS.1:18)*

The removal of this process from the sphere of action of the IT Strategy Committee and the Computing Committee to the sphere of action Strategic Planning Committee was seen as a way for the strategic apex to take ownership, through the Pro Vice-Chancellor in charge of IT and Information Strategy, of a process that was previously submitted to the academic committee decision making process.

> *"[...]It's been started all over again in a day's discussion by all heads of departments involved. It has never been finalised. The first draft was not approved of by [Donald East] the PVC. He's now begun to realise, after all the discussion that's gone on, that the document is not so bad after all. It is his responsibility to see that that document is produced, but he is apparently leaving it to his administrator. It's all very unsatisfactory. My*

The removal of the process from the sphere of action of academic committees and into the remit of management committees was seen as an attempt to breach the spirit of trust that previously existed between computing support services and academic committees and to legitimise the development of strategies for action from support services technical managers that evaded the scope of management committees and of specific actors in the strategic apex.

Technical managers at the academic departments expressed the view that they had very limited impact on the information strategy and that this was a process that was essentially led by the Administration and its interests.

"We don't have a lot of input into the IT policy side of the University [...].The administration tends to be very centrally based and very directive, i.e. in saying "This is what will happen."" (DIS.1:19)

In addition to the notion of limited intervention, it is interesting to note in this context that, while the information strategy at the University level was seen as being administratively driven and with a stronger focus on administration, academic departments that mentioned having a strategy at the local level referred to it as being essentially focused upon teaching and research. The interests of the Administration and of academic departments appeared to potentially lie in different areas.

"[...] there has been a strategy to provide for teaching and research purposes and to support that [...] That is the strategy to provide a lot of support within the department, which tends to be for teaching and research, rather than admin" (MS.1:13)

The result of the perceived lack of involvement of the academic departments in devising the information strategy was seen as the cause for the ad-hoc development of new systems at the local level. Contrary to the objectives of integration, standardisation and rationalisation, academic departments, would, by and large, continue to develop and use their own local systems, thus maintaining the nature of the information environment as a 'puzzled' landscape (Baumard, 1999), characterised by a multitude of information arenas and the resulting information insularity. This was seen as a reflection of the clashes between the differing ways of operating of the administration and of academia and can be also seen as a representation of the clash between managerialism and academic autonomy, as well as of the tension between information centripetalism and information centrifugalism.

> *"What you've had is the system developing on an ad-hoc basis and that's not a critique of what it would be at the moment, that individual departments within universities, we have seen ourselves as peers which has a centre which is used to do the things that each individual department has. Each department is very protective of its independence. So there has been no central management in the terms you would have in a business that would impose a particular set of systems on the organisation."*
> *(DIS.1:19)*

This view expresses the notion of a gap between the intended blueprint for the information environment at the University, as intended by the drivers of the process, and the various actors that *de facto* intervened in different information arenas throughout the University, as a series of coexisting worlds that were, in effect, often autonomous, and that occasionally clashed, often at critical points.

The notion of puzzlement, by Baumard (1999), refers explicitly to a 'surprised' organisation, in face of unexpected events, *"(...) an organisation that cannot find its way, that finds itself in a fog, of which it cannot determine the thickness, the extent or the duration."* (Baumard, 1999:3). Alongside the fragmentation of the information

317

landscape, the view of the information environment at the University as "puzzled" is also reflected the idea that there was a gap between the information strategy as a planning document and the practical implementation of the strategy. The blueprint intended by the strategic apex had little reflection in what happened at the operational level. In effect, while the legitimating arguments for the information strategy emphasized the need to satisfy the information requirements of the various communities at the University and free access to information (with the exception of competitively sensitive information), the practical implementation of the strategy was seen, as detailed in the following sections, as relying on control, monitoring and policing.

6.3 Development of Web based services and the mediation of discourses across information arenas

The widespread change in the view of a University from a community of peers into a an organisation that should increasingly operate in terms of a business, required the projection of a corporate stamp to its image. This change in the perception over what the University should be and how its identity should be defined and projected was, in effect, another driving force for the development of the information strategy which was implemented through the a new range of web based information services. This was an area whose ownership was vacant at the University.

> *Question: "And who is working on the corporate image of the university - is it one unit, several?"*
>
> *Answer: "Well nobody at the moment, as far as I'm aware - I would have thought it was up to the Public Relations Office but they actually don't seem very interested in doing it - although in the past they have expressed interest, but they've not actually done anything. There's been a lot of changes in personnel in the administration this year which hasn't helped matters, we did have a meeting back in Spring with the new head of printing resources and we were talking about overall corporate image, e.g. headed notepaper, signage, the lot - but we've not heard anything since so I still don't know if anything is actually happening. So there isn't a corporate image and the trouble with creating something like that obviously requires quite a lot of money putting into it and it has to have direction from the top." (C1.3:6-7)*

One of the potential areas of intervention for the new Department of Corporate Information was to take ownership over the development of the University corporate image, sanctioned by the Registrar. This was perceived as a difficult area, as it required expertise that this Department lacked. Negotiations with the Public Relations Office, another potential contender for the task (and, to some, the more likely one), appeared unfruitful.

319

"These are big problem areas anyway because the university has never had a corporate image, that is something where the new universities have got much further down the line, certainly before they changed from being polytechnics they had much more of a corporate structure and image. When I started this, it was obvious that we needed some kind of corporate image and guidelines, and there were just none whatsoever. We still haven't got anywhere with them, we've had no end of discussions with various people in the Public Relations Office but we still haven't got anywhere with the corporate image - so what we've done is to go ahead and create our own (with the blessing from the Head of Administration) but it means we've got nothing to work on, so at the moment it's really a bit hit and miss and I'm sure it will change, we really need to get someone in who knows about it - just to design the logo for a start. We've got every different department and research area using their own sets of headed notepaper and it's all very silly! That's a problem - the new Web pages will be put into place at the beginning of June - the first ones to have a proper corporate feel and I'm sure that won't last - I think it needs to be changed." (CI.3: 3-4)

The development of a discourse around the notion of corporate identity was seen as crucial. The take over of symbols of a corporate image, over departmental images and symbols, also represented a subordination of the academic arenas to a 'superordinate strategic imperative'. The adoption of corporate image symbols is, in itself, a graphical expression of the discourse of a superordinate strategic imperative that should drive the organisation, rather than academic autonomy .

The sphere of action of the Department of Corporate Information went therefore beyond the administrative systems, to include the information on the University provided through the Web, both internally and externally. This information, which constituted the public face of the University, was not circumscribed to administrative matters, and included most academic related issues, whether research oriented or teaching oriented, that were disseminated throughout the Intranet or the University's website.

The identity of the Department of Corporate Information was therefore, closely associated with the attempt to generate new image and identity for the University and related discursive practices.

The advent of the Web, its popularity and the flexibility involved in sharing information through it, had in effect increased the widespread centrifugal effect on the provision and access to information - all departments and many individual academic, research and technical members of the University, including students, had their own web pages.

> *"At the moment there are bits and pieces around but no central repository for information - firstly what research everybody is doing and secondly what interests they have related to them. This has come from two sides: from Public Relations and from Research and Consultancy. The PR office will get a query from the local paper and say we've just read a report on BSE, is there anybody local in the University that could give us some advice on BSE and talk to us. If the people in the PR office are clued up well enough then they can say "Oh yes there's somebody in biological sciences that can do this". Again, we're hoping to get a more comprehensive database, available to people for general interests as well as work interests."*
> *(CI.2:10)*

6.3.1 Defining rules and monitoring: information sensitivity

The discursive approaches to the notion of corporate image emphasized the need to define rules on what was an acceptable corporate image and of *"monitoring"* and *"policing"* the observance of these rules. These rules were geared to define the information that would be adequate to project corporate image and, more importantly, define information that would be considered *"sensitive"* and not publicly accessed. In effect, while the rhetorical strategies that aimed at legitimating the information

strategy emphasized blueprinting as a means to promote efficiency and free access and openness towards information, as seen in section 6.2, the rhetorical strategies of some of its implementers focused on terms such as *"monitoring"* and *"policing"*

Building a central repository for information that projected the image of the University involved, in effect, two major concerns for the Department of Corporate Information: the definition of rules regarding the provision of information and monitoring their observance, while at the same time ensuring the participation and the collaboration of the various areas of the University in providing information for the system. Ensuring this double, if at times conflicting, objective was crucial to the aims of the Corporate Information Department.

One of the concerns of the Corporate Information Department was the fact that there were no rules regarding content, format, dissemination and use of information regarding the public image of the University.

> *"There's been something come up as regards to information on the Web. The way that things are done within the university, you go to Computer Services and register yourself, either on behalf of the department or as an individual, you've then got rights to put information on the Web, and generally there's very little control on what you put on there, and the question has been put up whether that should be monitored or not, at the end it's such a big university it's not possible to monitor everything that goes up, but occasionally you'll get queries from people outside saying 'We've discovered this information. Do you really think it should be there?' and there have been occasions where it has been removed."*
> *(CI.2:22)*

Defining these rules was important as it was seen that, as long as rules were defined and observed and processes were in place, the right information would be conveyed. Control over meaning was seen as dependent from control over processes of handling information. The development of rules for regulating the content, format,

322

dissemination, access and use of this information was therefore one of the prioritised areas for action that this department devised. The almost spontaneous way in which the development of Web based information services had occurred meant, though, that this was a very difficult task to control and, on its first stages, administrators and technicians at the Corporate Information Department had to carry out a laborious and retrospective process of checking pages individually.

> "We've also got no guidelines as to what people can put up on the Web - how they're to put it up, how to format it, there is no consistency. This is one of the things we've taken on, we've got to go through all the Web pages and check people are consistent - so there's a lot of tedious checking of pages, there's no way at the moment to do it automatically. When I started we weren't starting a new thing and we couldn't say everyone has to put information on the Web this way, we had to do it retrospectively which is much more difficult - it's possible we may have to restructure the whole thing in about a years time, but at the moment I think we'll keep to the minimum guidelines, but we've got to make our top level pages consistent as well, we've attempted to do that - it still needs a lot of tidying up."(CI.3:4)

This involved monitoring different dimensions of issues: first, whether the information that was being provided was under the control of its owner, ie, whether the people that had published it were authorised to do so; and second, ensure that the information fitted requirements of accuracy and of sensitiveness that were deemed necessary to the projection of the public face of the University. Both were difficult tasks as they involved knowledge of the contexts within which departments, groups and individuals operated.

> "There was one example where somebody was putting coursework up, which certain people in the university felt a) that it shouldn't be there and b) that it wasn't theirs to put there in the first place. You occasionally get people putting things up which are politically sensitive. This is one of the problems of monitoring it, you go into somebody's research pages, unless you know what the research is - which in most cases in the University you won't -, how do you judge whose information it is? There have been occasions where departments have put up information without the sanction of the rest of the department. Two years ago when the information first went up, people were putting photographs up from some of the biological

sciences departments, and somebody questioned the problem of the animal rights people, there were researchers working on animals who wanted to show their photographs to the rest of the world, but then animal rights people could create problems for people".(CI.2:23)

The implementation of monitoring processes implied, first of all, the identification of criteria for sensitiveness, then the monitoring of abusive use of public information services and, finally, the attribution of responsibility and accountability within the various organisational arenas. The following paragraphs analyse how the Corporate Information Department attempted to establish these processes.

Although there was a notion that some information was sensitive, defining explicitly criteria for sensitiveness was difficult, even in what were apparently more clearly cut areas, such as financial information. There were tacit rules around preserving confidentiality around the cases of individual department budgets and individual staff members salaries.

> *"We never actually were very specific. We say on a general level, everything is sensitive. If it's your budget you can see those accounts, fair enough - but if it's not, then you can't. We do try to work by departments, so that each one has its own manager who looks after the department financial information and they can have access to a range of things."*
> *(DF.1: 12)*

> *"Some of the financial information is sensitive because some of it is to do with people's salaries. The information comes through on monthly statements from finance and I have figures in my own system and I am conscious of the fact that when I produce reports etc. I try not to put anyone's name next to things like that so that people who just see the report can't identify people's salaries for instance. We collect information about when our graduates finish and actually go to jobs, last year I recorded the information about their salaries that they were starting at in a Word document, which is on the office system and could be looked at by other people if they knew it was there, it's not protected in any way."*
> *(DIS.2:21)*

Other areas of obvious implicit sensitivity concerned individual files, with personal information, whether staff or student related, and assessment related information.

There was strong concern with keeping physically secure any hardcopy files regarding exams and personal data and with defining the people that had physical access to these files. This was usually defined at quite a high level in some academic departments, where it was up to a senior level of administration or to the Head of Department to keep these files in their offices in locked cabinets. Access to data of sensitive nature, especially personal data, was perceived as a symbol of authority and seniority.

"I don't think it is defined, I think it's just up to people's common sense, nobody says you must make sure such and such is hidden away. Another piece of sensitive information is exam papers. I've been the person over the last 2 years who has prepared the examination papers in collaboration with administration staff. Normally in other departments it's done by a secretary, I would prefer it to be done by a secretary but our undergraduate secretary who has recently left was not really capable of being trusted to do that sort of work. I keep that locked in my filing cabinet so I have to ensure it's locked all the time. I did ask at the beginning if there was a safe or somewhere more secure where we could put this information, but people didn't seem to be interested. Then there's things like staff files, they're actually kept in Head of Department's office, and his office is locked most of the time. Student files are sitting in the files in the departmental office and can be looked at by anybody who comes into the departmental office. The University has a code of practice about peoples personal details, which is in the student handbooks, which states that details about students are not allowed to be given out to people outside the department, and if there is a problem that is preventing the student doing coursework or finishing dissertation, and they don't want that information to be made known, the information can be put into a sealed envelope and put into their file." (DIS.2:22)

These practices were sometimes contradicted by the design of the Central administrative systems prior to the MAC system, where personal information was accessible to whoever had access to the system, independently of the context of use of the system.

"I do have access to the Central System, so I know, for instance about, for example, applicants, where they live, information about them, but I suppose one of the strange things is that the information about their home

325

and things like that go on there. It is all very factual information, unambiguous fee status of the students, etc. It is not desperately sensitive, but personal information about lives that you can find on the central system. I'm surprised, for instance, that I can find out the marks of the students on Engineering. They haven't designed the system to limit the students I can look at, I can either look at them all or none, so I just find the idea to be a bit odd." (MS.2:1)

In effect, the definition of sensitivity was often correlated to the medium where information was kept. The *"information panopticon"* (Zuboff, 1999) effect of computerising the access and handling of information often had an impact on the perception of what was sensitive.

"A lot of them didn't actually want their information publicly available, even though it was stuff that was publicly available in print, for some reason they didn't want it publicly available electronically and got very worried about it. I really can't tell you why this happened, it really does surprise me how resistant a lot of people are and they are totally ignorant about what is there already, a lot of them didn't want their e-mail names and addresses electronically available, and they didn't know that we have an e-mail directory on the network anyway! " (CI.3:)

Some of the practices on restricting the diffusion of 'sensitive' information were also founded upon custom and tradition and upon traditional ownership of work areas, without being perceived as having a necessarily clear rationale, from the point of view of some of the administrators that were developing the University's web site. The higher visibility brought about by computerisation also had an impact on these practices.

"Well I mean one particular instance that worried me was this one about the conditions of service for jobs. It is stuff that is handed out to anybody if you just send them a letter saying you want further details for the job, more or less publicly available. They don't scan through the people who send letters and validate them, they just send them out. Yet I was told this was confidential and when I asked why they said they didn't want other universities to see our conditions of service. It strikes me, because a lot of them are covered by union regulations I would of thought, it doesn't stop anybody from another university writing in for a copy of them, so why are they confidential? When I actually tackled the Head of Department about this he said well yes, they shouldn't really be confidential. It seems to be a particular thing about the Administration at [the University], when you look at what other sites have got, other personnel sites for example, they

326

Beyond clearly sensitive areas, such as finance and personal data, it was therefore more difficult to achieve consensus over what constituted sensitive information or not. Part of what contributed to a definition of sensitiveness had to do with how that information could be seen in terms of the external positioning of the departments concerned vis-à-vis competitor departments, both in and out of the University. In these cases, owning and controlling this information played a role that was very similar to the preservation of information related to individual expertise, and there was a large element of discretion over it exercised by individual staff members.

"[...] and there's another level of data, which is data that would be of benefit to one of our competitor departments - they might like to see what sort of bids we've got in and for how much, a lot of the stuff we do in terms of research is obviously published but the preparation may well be sensitive. It is up to individual members of staff to decide what is sensitive data." (DIS.1:17)

In effect, there was a view that perceptions over what constituted sensitive information varied according to whether it was considered within the administrative sphere or within the academic sphere. Whereas the latter tended to focus on the establishment of intellectual authorship and intellectual property, the former focused upon individual categories of information that were related to the control of financial or other resources or were deemed sensitive because of its personal nature – as mentioned, access to sensitive information was perceived as a symbol of authority and seniority.

"Well I think it's in the administration side, they are very worried about sensitive information. The academic side seem to be more worried about copyright, rather than the information itself being sensitive. I'm not sure why the administration are so worried about a lot of the information, stuff that is more or less publicly available, they get very worried about handing

327

it out - whether or not it comes from the past and they're worried about whether it costs money to photocopy it, I don't really know." (CI.3:34)

In parallel to defining and monitoring access to information that was considered sensitive by nature, the Departments of Corporate Information and Academic Computing Services had the role of ensuring security across the network and of monitoring and avoiding sensitive use, abuse and misuse of public information services, such as occurring for example from the abuse of the services for political and other purposes at a very mundane level.

"[...] and of course we have hackers, people who will abuse the system - we've had political problems, people putting pornography on screens in public places etc. Right down to trivial things e.g. there's a newsletter for people who like rabits, and somebody at [the] University put on it a recipe for rabbit stew! Any service organisation has a small number of notorious people, because you know that they will take a small problem and make a big fuss about it."(ACS.1:28)

Hackers were perceived at different and more technically sophisticated level, as the darker side of computer expertise.

"It's not difficult to do that [ensure security] for normal people.` Anything that's on the system is held on a file and files are grouped into directories and we can control access to those directories. So if a department wants to put on a piece of software that's only for use in that department that is no problem. Users are grouped by department and whether they are staff or students so we can have only staff access to something etc. The most open part of our system is the World Wide Web and Internet material that we provide, that can be provided only to University [...] people for instance. The complexity occurs when you have to control people who are determined to get into the system, and that is much more difficult. We try to make sure our system is secure as it can reasonably be, the Internet is largely based on UNIX systems and that is how people tend to get in, because the file servers are not really open to the outside world, for technical reasons it is just not accessible. The UNIX systems are used all over the world, the loopholes in the systems are understood by the hackers and they have a way of going in. " (ACS.1:29)

Despite the concern with sensitive information and sensitive use or abuse of the system, formally defined structures and systems for the monitoring of these areas were reported as very fragmented or inexistent.

> *"No control of the data - at the basic level it's the network - and that's controlled by this system. The administrative computing control rare data and restrict access to student records etc. And each department has its own system set up for control of its own data some of which may be stronger or weaker than others - I don't think there is actually any control over what data is sent over the network, and who it is sent to and how it's actually sent, so in terms of departments I don't believe there is any security specifically in place for the student data or data that may well be sensitive. It's part of my job in this department to ensure the security of the systems, it would be very difficult for someone who is not authorised to access our data. For other departments, I'm not sure." (DIS.1:15)*

There was also a strong lack of definition of whose responsibility it was to monitor these aspects, despite the claim made by the Department of Corporate Information over these areas. The role of monitoring access to and maintaining the integrity of data was loosely defined between *'someone from administrative computing services'* for University wide information, and heads of department or individual members of staff for other categories of information, depending on whether they were seen as 'belonging' to University departments or to individuals.

> *"In terms of the University, I would imagine it would be someone from administrative computing services. In terms of in the department, possibly the individual member of staff. The system that we run allows various levels of [...] protection on data, then it would be up to individual to decide what level of security to put against each particular document. This department has a fairly open philosophy in terms of, unless it's personally sensitive to an individual member of staff then all members of staff have access to all documents that are generated by the department. Sensitive information would be controlled by Head of Department who then would decide who gets access to it." (DIS.1:16)*

Senior staff members and heads of department were seen as key elements in this role of monitoring, but it was acknowledged that, probably due to the nature of Universities as organisations that traded on knowledge, it was ultimately down to individuals to maintain this role, due to the enormity of the task. It is paradoxical, in

effect, that in an organisation that was seen as knowledge intensive and whose activities were based on intense provision, sharing and trading of information, that the effort on monitoring information had an emphasis on defining sensitive information and restricting its access, despite the espoused objective of devising an information strategy to ensure wide access to information.

> *"At the moment I think it's fair to say we don't have very clear guidance on that and I suppose it comes down to Heads of Department in many instances and the common sense of individual colleagues, really I think we operate on the basis of the judgment of the individual managers as to what information should be held back, both in the academic sense of publishing results and administratively in terms of what we are trying to do to improve our position against other universities". (ASO.1:5)*

The enormity of the task led ultimately to the Corporate Information Department having to, at least nominally, to delegate the task back to the departments. This was again done through the definition of an area of responsibility and accountability which was allocated to an individual member of staff, designated as 'key user', within each department. The role of the 'key user' varied immensely – it could lie with a Head of Department, for the purposes ensuring authority and legitimation, or with individual technicians who would be held accountable for the use and misuse of the systems.

> *"Individuals within departments. Stuff on the Web is the ultimate responsibility for registered Web information providers for that department. We have ensured that there is one person registered per department, they don't actually have to put the information up but they are responsible for anybody who puts up information that is illegal or whatever. They have a password which they can give to anybody they like, some have a team or some keep it to themselves - but ultimately they are responsible for content. Now this person can range from a head of department to a technician. It's just somebody who is enthusiastic." (CI.3:16)*

Despite this effort, it was eventually acknowledged that the task of monitoring the provision and use of information was very difficult to implement, due to the nature of activities that are undertaken in a University and the exponential use of Web based

330

information systems for the provision, access and dissemination of information. This was especially the case for research related information, whose authorship was indelibly linked to particular individuals or research groups.

> *"Yes, it's too big a task to monitor. At the end of the day, who is going to make the judgement? In some cases if somebody puts something that is politically sensitive up, or religiously sensitive or socially sensitive then it's fairly clear to most people that there is a potential problem, how you resolve it, I'm not sure. A lot of the research side, unless you are familiar with the research it's very difficult to judge whether it's sensitive, valid and what the copyright implications are. If somebody publishes a paper in a journal and then makes that paper accessible across the Web I'm not sure where the University sits with regard to the copyright with regards to the publishers."(CI.2:25)*

Therefore, regardless of the effort in defining general rules for the monitoring task, this was in effect difficult to implement without actual knowledge of what is to be monitored and without a key to the interpretation of its meaning.

Eventually, this was an area which the technostructure recognised it would be very difficult to define rules for or monitor. Despite the view that there should be a an internal 'policing' role, its rationale, rules, feasibility and even legitimation were not clear and it was decided that the University should rest upon regulation by national bodies. Part of the rationale behind this was the realisation that the more control was exerted over what was publicly available by a particular Department or by a particular group of staff members, the more they, themselves, would become liable and accountable for it.

> *"[...] we obviously needed some sort of guidelines to stop people doing really silly things, and they've gradually sort of grown and been polished up over the past year or two. They've been fairly static for the past year. There's been a lot of internal discussion on, basically, policing, do we police what's going on, validate, verify it, whatever, but at the moment we can't do that because the law as it stands means that if you actually start validating the information that goes on, the more you validate, the more*

you are liable for what goes up - if you just give guidelines and you don't check people's data then you are not actually liable for anything they put up. So that is an overall problem. So we're leaving it up to the national bodies to make recommendations on this." (CI.3:5)

Monitoring and policing became, then, perceived as double edged processes, as they could subvert the original relationship between the monitoring and the monitored – without exact control and knowledge over the meaning of what was being monitored, the process of monitoring had limited effectiveness and could subvert the process of allocating responsibility and accountability that were central to the processes established by the technostructure. In this sense, the discourse of monitoring turned against itself.

6.3.2 Participation

The second major area of concern that was critical to the success of the Web based services was, as mentioned, ensuring the participation of the various areas of the University, as information providers. This was not an easy process as there was a potential tension between the task of monitoring what was being produced across the University and ensuring the participation of the various University departments, within a regime regulated by rules they had not been involved in defining.

An area of conflict arose from having to deal with conflicts of perception of ownership over particular sets of processes and information by different departments, with associated differences in perception of what was legitimate to be made public.

332

"We have a section for current jobs, appointments being advertised, some departments have put up jobs within their own departments themselves, and haven't realised that we've got an overall section for this, and they have put up jobs which have not been advertised by personnel, which they should not do. Somebody had put up things like conditions of service and somebody in Personnel was very unhappy about this and said it was confidential and should be taken off. You get different approaches by different people. These conditions of service are the sort of things where if you write for further details for a job, you actually get these. They are not confidential, they are the sort of thing everybody wants to see, but there is all this underlying worry about who owns what, what should be confidential, who should be allowed to see whatever..."(CI.3:17-18)

"The question came up with telephone numbers - they are only available internally within the university. The university telephone directory is available across the Web. Certain people were querying whether their telephone number should be made available. But it's only available within [the University]. *Ultimately there's the Data Protection Act, I suppose."* *(CI.2:13)*

Interestingly, the central administration departments were perceived to be more resistant to collaboration on the project involving the development of Web based services than the academic departments and the service departments.

"It is the administration departments that have the trouble with this, the academic departments, like the service departments, want to put up their information in general, as much as is possible. They do realise that some will have to be restricted somewhat, just some things like copyright problem, but in general those areas of the University want their information to be seen by people, but the administration departments don't." *(CI.3:19)*

There are two interesting aspects in this difference of attitude. Firstly, perception over ownership of information and willingness to share and diffuse information are often seen as correlated in the literature (Jarvenpaa and Staples, 2001; Constant, Sproull and Kielsen, 1996), but the case of the University may suggest that although there was a trend towards perceiving administrative information as organisationally owned, different areas across the University still tended to hoard that information – so perception of ownership, information dissemination and hoarding are, in this

333

particular context, different issues and there might not always be a direct correlation between these issues, at least in relationship to certain areas of work and related information. In this context, it is possible that hoarding certain categories of information was seen, by certain administrators, as a vehicle to secure positions of ownership of specific work areas or organisational arenas.

As concerns the academic and the service departments, greater willingness to impart some of their information may be related to how those particular categories of information were viewed and to the role that information played in the different work activities. It is possible that this may concern information that these departments had to disseminate to students and that its availability through the Intranet would improve efficiency in its provision and reduce queries. As mentioned by Jarvenpaa and Staples (2001) it is information that is closely related to professional expertise that may be less likely to be diffused, if that is perceived to undermine the basis for expertise. However, this may be a more complex issue. Even in the case of teaching material, its publication with an attributed authorship would, similarly to the publication of research results, establish the intellectual ownership of that material.

Initially, even with departments that were willing to collaborate in the Web based services project, difficulties arose related to the establishment of a common understanding of several issues: defining what was both feasible and desirable to include in the University sites, getting access to information in an adequate format and medium and conflict resolution over who in effect controlled the sites and how information was displayed in them.

"Once it was clear that the Administration weren't going to put information up on the Web, and once we became a team within Corporate

Information, so we started going round departments saying 'You have information that you hand out to staff and students, we want to put it on the Web can we have it? To start with, a lot of them were clueless as to what sort of information we want, and they'd say 'I don't know' and give us a little bit or they'd hand us a 200 page handbook and say they wanted that on the Web, which isn't sensible. They'd want total control over layout and graphics and things, which they can't have - so it's all that sort of hurdle to get over. Once we decided to put on, it was actually tracking down the information which was difficult." (CI.3: 32-33)

Again, the above comment reveals a clash between the perception of what other departments saw as help being provided by a support structure and the perceptions of ownership over the sites, their information and management, held by the Corporate Information Department. Staff at this department clearly saw themselves as the managers and guardians of the new corporate image of the University – *"They'd want total control over layout and graphics and things, which they can't have"*. This claim over the University identity is clearly related to the establishment of the identity of the new department – its own image was perceived as integrative to the image of what constituted corporate information and corporate identity.

It is interesting to note the trajectory and evolution of the Web Services project. Significantly, it had originated within a service department that enjoyed relative autonomy and reported to academic committees – the Library. Its move to the domain of the Department of Corporate Information meant a perceived change in the nature and the evolution of the project, giving rise to conflicts over what the services should be.

"It's a bit difficult to say what I actually do because the role is changing all the time. As I explained, it started off as a project with the Library, and it's been taken over by the Department of Corporate Information, which was set up in January. There have been a lot of changes, there are to be more changes shortly, and I'm not sure exactly what is going to happen. I think at the moment all you can say is that the Administration [the strategic apex, in this context] want to use the Web to deliver as much internal

335

information as possible, and external information. So that is the general [aim], what we are working towards, which is a bit different to what I started off doing, and what other people thought I was doing. So there have been lots of different ideas, scenarios of what I should actually be doing, which caused a bit of conflict because my idea was not the idea of some of the academics that we are working with, or Computing Services, or the Administration. Originally the Library wanted to start an on-line information service and my original thoughts were that this was going to be an information service for the whole of the University - students, academics and the administration -, so it was a general service, whereas certain people saw it as a very much restrictive service, just for provision of University information, the sort of stuff that goes into the university calendar, that I should just be providing that. There was also the academics who thought that there shouldn't be such a service, it should just be a facility on the network, for them to put information on as and when they liked. The Administration see it more or less as a way of controlling the information that goes out, there's much more of a corporate feel to the whole thing - they actually want overall control of it - so it's quite difficult to sort out all these different conflicts."(CI.3:1)

Again, here, the emphasis is on the clash between perceived ownership of information and autonomy to manage it, by the academic departments, and the perception of the system by the administration as, beyond a service, a mean to control both the information that is provided and how it should be provided, in relationship to the shaping of the image of the University conveyed by that set of information. Privileging certain types of information, to the detriment of others (corporate logos and formats, instead of departmental ones, for example) allowed the exercise of control over how the University and its different areas should be perceived.

This was counterweighted by the fact that, as the information producers, departments had control over its accuracy. Although, Corporate Information controlled the processes of designing and implementing the new systems, academic departments and support departments in effect controlled much of its information content and held the keys to its meaning.

"This is one of the problems of monitoring it, you go into somebody's research pages, unless you know what the research is - which in most

336

Corporate Information was dependent upon the information provided by the departments. Without actually working in the areas that were being represented in the Intranet and acting as an intermediary, its staff faced a series of problems, ranging from not being able to assess whether a complete set of information was being made accessible, being dependent on constant changes in curricula provision and dealing with fragmented information in different formats.

> *"We have had all the trouble with these taught Masters courses, a lot of people put the descriptions up under departmental pages and we got a chunk of information which I was under the impression was a description of all the taught Masters courses. In fact, it was partial descriptions, which an awful lot of academics don't seem to have heard of. We are gathering together the proper descriptions but then, possibly, it will not match what the academics have put up." (CI.3:17)*

> *"Again we still had the same problem of the fact that I was given... I knew there was a deadline to get this done, because they're even further behind this year, and as soon as the information came out, I got the files and worked on them for a week, I was then told that this was not the definitive information because it had come out of Oracle, into Access and into Word, but then had gone off to somebody else and they'd made all sorts of last minute changes, of which there were an awful lot, but the changes hadn't got back into Oracle and I had to take another set of Word files and work on those. This happens constantly, we get a chunk of information from somebody, work on it and then they tell us we shouldn't have been using that because it's not the definitive data."(CI.3:14)*

There was, in effect, a fundamental tension between the nature of administrative work and information, which were relatively stable, and the nature of academic work and information which, as observed before, tended to be more emergent and changeable in its nature.

This meant, for the Corporate Information Department, the need to ensure access to local information and that this information was not changed frequently – which proved, at points, difficult in the interaction between administrators and academics.

The following quotation emphasizes the difference between the world of administration and the world of academia, from the point of view of an administrator (who held a doctorate herself). Her articulation of these issues presents the world of administration as rationally and stability oriented and the world of academia as disorderly and changeable. A striking aspect of this view is the fact that it was not for the individual academic members of staff to change the content of Courses, without the sanction of formally established channels. It also emphasizes that, once information is held in the formally adopted information systems, reality should not differ from it, thus reinforcing the notion of the new management information systems as the institutional map of the University.

> *Question: "Do you find that it often arises a conflict of the ownership of information?"*
>
> *Answer: "Yes I think it's lot of that - there's also one aspect of this is that we are trying to get a Corporate Information Department, trying to get information gathered centrally so there will be just one central repository for information for instance on the module descriptions, timetables etc. There has been quite a lot of difficulty getting module descriptions from departments. The problem is that the published module descriptions are part of the University's legal contract with the student, departments can't just change it willy-nilly, but academic staff in departments don't seem to realise this. Academic staff in departments especially for taught Masters courses are liable to think "Oh, we'll do one of these, do a description and say right this is our course" and when it actually comes to it they can't do it, they haven't got the staff or it's not quite ready, but they don't realise that this has to be verified by some committee or something, so the information that is held centrally on taught Masters courses is legal but academic staff say it's all wrong and out-of-date and somehow we've got to settle this conflict of interests. Again it's a culture change. They don't realise they have to go through official channels - once we've got it into the official database then that should remain unchanging until it's gone through another round of going through the official channels, but academic staff think they can change it as they like. They are not happy for us to hold information centrally where they can't easily update it."*
> *(CI..3:11)*

In the end, the enormity of the task involved in developing the Web based services meant that Corporate Information had to count on the collaboration of individual departments, by providing them training and asking them to develop the sites

themselves. This, of course, implied that the project was dependent upon the willingness of each department in collaborating with the Corporate Information Department.

> *Question: "There is a lot of tradition for academic institutions and departments to have a great deal of autonomy - how does that affect the delivery of a service like this?"*
>
> *Answer:"It affects it quite a lot - going back on what I've just said, when we wanted to get departments to put something on the Web, we either had to get them enthusiastic about it or say please can we have information. But at that point actually I couldn't do it myself anyway. I had no help, so it was more of a case of 'We would like you to put your information on the Web, but you will have to do it and I can just give you some assistance and training', so of course a lot of them were very resistant to this. A lot of them didn't actually want their information publicly available, even though it was stuff that was publicly available in print, for some reason they didn't want it publicly available electronically and got very worried about it."*
> *(CI.3:8)*

This dependency on the willingness of academic and support departments to collaborate and supply information was, in effect, extended to most of the administration central systems, as detailed in the next section.

> *"All of these systems will be ultimately dependent on the end users feeling that it is worthwhile to provide the information." (CI.2:11)*

Administrators at academic departments, while willing to collaborate, as there were many disincentives for them not to join the new initiatives, were sceptical about the quality of the end results and retained belief on the greater accuracy of their local systems.

> *"The new system in the future will be more flexible we will be able to produce reports and because of the new coding structure it might be possible for me to stop using my own system, but I'm not convinced that it'll be as good as what I'm doing at the moment."(DSI.2:28)*

In effect, academic departments and support services retained most of the local knowledge necessary to produce and interpret the information that was to be

integrated in the new systems. Despite the fact that new rules for the provision and management of the new systems were being developed centrally, by the newly established technostructure, the key to interpreting the meaning of the information that would be conveyed through these systems and the ability to ensure its accuracy remained to a large extent with the periphery. The major challenge for the Centre was to manage the tension between its aspiration to monitor and control the systems and the need to ensure local buy-in at the various other arenas at the University. Furthermore, there was a realisation that the more a group of people monitored and controlled information, the more they would become liable for it, thus, subverting the relationship between the monitoring and the monitored.

This situation eventually required the need to establish a relatively negotiated model for regulating the information environment, as the trend towards the establishment of blueprints and increased standardisation of the information environment by centripetal forces could be counterweighted by the preservation of the keys to interpret information and to ensure its accuracy by centrifugal forces. The next section explores different tensions involved in attempting to define meaning and to the keys to different interpretative repertoires.

6.4 Defining meaning

As mentioned above, the two traditional areas for contention in defining ownership of information were finance and student administration. This was expressed through attempts to control the definition of the meaning of information in these two areas. The codes adopted to manage information in these areas played a significant role in the control of meaning as they constituted, in effect, an attempt to establish new interpretative repertoires and filters.

6.4.1 The corporate data model : MAC systems and student administration

6.4.1.1Background

Despite the fact that administrative information was more likely to be seen as organisationally owned, the tensions surrounding the control over administrative processes meant, as outlined before, that there was a great deal of fragmentation in the information environment. The resulting information insularity was one of the characteristics that contributed to make the University resemble what Baumard (1999) described as a 'puzzled' organisation, as proposed in section 6.1. This was expressed in gaps in the information held at different points, not only between the Centre and academic departments, but also amongst and within different departments at the Centre itself.

> *"At the moment I find it absolutely strange that in a University like this of this size they have a central information system about student records but we have in the department to keep our own files on them, in Word or Excel. The secretaries all keep their own files about who's on what programme, module etc. I think that's ludicrous, the University should have a system that secretarial staff can use which would immediately be able to give them the information and the listings that they need to be able to keep up-to-date what the students progression is. The Faculties have to keep separate systems going which are not ideal because we are using things like Word and Excel, instead of a database which would be much better way of doing it. I personally use a database but I'm the only one that uses it, it's in Microsoft Access software, I can't let the secretaries use it because I haven't developed it enough for it to be foolproof." (DIS.2:28)*

The gaps and diversity of information held at the Centre and at the departments also originated from the diversity of different practices and local interpretation of regulations. There was, for example, amongst certain Faculties, a strong tradition for exercising academic discretion in the administration of particular student cases, particularly at Exam Boards, whereas in other Faculties academic discretion would be more limited. This impacted, for example, in final results and completions. The introduction of a new set of rules, developed around modularisation, could be interpreted as limiting the degree of academic discretion, and again, decreasing the degree of academic autonomy previously existent at the University.

> *"I'm not quite sure what happens with modularisation, you know [...].They* [other Faculties] *seem to do things which are strange. Engineers do things different from Arts and Social Sciences [...]. There was never any discretion about the borders, the Engineers would tend to do that, whereas we* [in Social Sciences] *have lots of discretion about marginal cases, but the only way you get around that is by having very central controlled and owned systems[...] They try to do that with modularisation [...], so it is only by imposing a system or getting an agreement that you could overcome these problems [...] everybody has the same sort of system, but it is the area of academic discretion* [that can introduce changes]. *"(MS.1:17)*

The introduction of modularisation, coupled with a new corporate data model, signified also that new rules in the definition of student numbers, the administration of the student body and related funding were taking over established rules. This was

reinforced by a change in the structure of the administration and by the redefinition of ownership and responsibility over work areas.

> "[...] *structures changed with the modularisation system and so on.*"
> *(MS.1:2)*

The most important implication of this, from the point of view of the different academic departments, was the redefinition of resources that it implied, in terms of allocated funding per student.

> "*A student record increasingly defines the amount of resource each department will get from the centre. The resource allocation will increasingly depend on student loans and all the activities developing in terms of teaching and research. So that it can become the case that a minor 'error in the data has appreciable consequences in financial terms and developments in the centre can form to dispute that.*" *(ASO.1:15)*

Modularisation, in particular, reorganised the traditional ownership over the student body by different academic departments, by allowing students to study Courses composed by subjects in different departments, even though the Course might be primarily owned by a single Department or jointly owned by two departments. This was especially important for the University, as it allowed a degree of flexibility in accounting for student numbers, especially as the Government had introduced different funding allowances and bands, according to the subjects undertaken by the students.

This was reinforced by a degree of discretion in allocating scholarships or opening vacancies in some departments, depending upon the context of the situation.

> "[...] *some of the things which we can handle depend on the politics of the situation or, for example, say, if a department asks that we award a*

343

scholarship which is out of the normal eligibility of the scholarship, but if the University decided it wanted to attract more students to that particular department, then the Chairman of the Graduate School is much more likely to say 'Oh, yes, we'll make a special case and give a scholarship to that student'. I think it is very politically determined, because [for] most of the things we administer there are policies behind them and we may not make that policy, but it is dependent on what somebody has decided should happen. (GS.1:16)

Modularisation had in effect raised awareness towards the differing practices across the University. As different practices were being followed at different departments, there was potential for the same student to be considered under different rules, depending upon the department where he or she would be taking a module. At the same time, this increased the information management problems faced by both Centre and departments, due to the lack of an integrated system and the proliferation of different local systems.

"[...]but because modularisation happened at a fairly fast speed it doesn't seem as though there has been a clear strategy to work, to develop [...] prior to that students were departmentally based with responsibility in departments [...] and there could be good control. Now if you are getting students from different departments taking modules in other departments it's not clear by what processes that student's marks are upgraded, things like that, and that would be obviously perfect for a big central database somewhere, with each student on it and we could input directly into it information about that student, rather than what it seems to be at the moment in each department that student comes into contact with they'll have their own record for that student." (DIS.1:5)

An example of this situation was also reported by an academic, who referred to delivering the same module to a group of students composed by undergraduates and two different groups of Masters students, belonging to two different courses. Although the students attended the same classes at the same time and were exposed to the same material, with some variation in assessment, each of these groups gained different credits under the CATS system.

344

Modularisation also reinforced the fact that, at the Centre, information held at the academic departments was perceived to be the most accurate, strengthening the sense of local ownership of information, despite the trend for introducing central systems.

> *"Again a good example would be information regarding student numbers. In this University, in the past, there has been a central record of student registration, course registration and all of the details of what the students are doing and how they are doing it, and we have often found that the information held in the Centre is different from the information held in the department. With the advent of modular courses that situation has changed slightly and we've recognised that, in a modular course environment, the people who will have the best information about what students are doing, is the department, who are the people who are most directly concerned with teaching that student, but it's by no means uncommon in universities for different records in different parts of the institution to be quite different. " (ASO.1:11-12)*

Administrators and technical managers at academic departments conveyed, however, a different view, in the sense that, although University regulations had been firmed up at the Centre, there were still considerable difficulties in managing related information locally. Modularisation, in their view, had strong implications upon computerised information systems and increased the potential for information insularity.

> *"And with the development of modularisation, in the last couple of years, that's caused us significant problems and is likely to continue causing problems - although it's structurally sound in terms of University administration, in terms of the computing support required for that on the teaching side, it's problematic." (DIS.1:1)*
>
> *"There's also modularisation which has a direct impact on computing use and the needs for different software and systems, which it's not clear how that has been integrated, it may well be that [Susan Wilson] has a clearer idea about it. Generally as ever, if it appears as a vacuum [...] or if there is a need that isn't being fulfilled from the centre, then people fill their own one and it may be good, it may be bad, it's certainly a waste of resources."*
> *(DIS.1:8)*

As mentioned previously, gaps and differences in information did not just occur between Centre and departments and between different academic departments - there

were also considerable differences within the Centre itself. These differences occurred again in the areas of student administration and finance, with significant repercussions for the management of resources that contributed directly to funding.

This was also represented by the existence of a multitude of small legacy systems that were managed by different sections, with limited communication between them.

> "[...] *this is another problem with it, there is a separate admissions system* [from the registration system] [...]. *What we're supposed to have done is loaded* [CATS credit information] *on the admissions system and then that gets carried over* [to the Registration system], *but usually, either due to the fact that we have not had the time or to the fact that a lot of scholarships are hanging in* [...] *right until the very end, we've not loaded everything before we pass it over to the Registration, then Registration people don't necessarily have the time, then students start at a funny time of the year* [...]" (GS.1:10)

This fragmentation was seen by some administrators as a reflection of the various internal political arenas. Arenas defined by the ownership in work areas were reflected upon the ownership over pools of information.

> "I see these two areas [Personnel and Payroll] as being very closely linked, whereas to the two component parts, although they collaborate quite a lot, they keep themselves apart for political reasons, and the quality of the data suffers because of that – neither of them has the bang up-to-date picture.
>
> [...] It impacts on the data and the quality of it and part of the reason it's not a major problem is because these are quite small units in the Centre – if the Payroll System was open to the departments, which it isn't, then a lot of these anomalies would be ringing alarm bells. (CI.4:20)

Tensions around territorial claims over work areas could involve complete lack of direct contact between sections whose work was interdependent.

> "[...] what the previous Head of Personnel used to complain to me about was he wanted the Staff System, if it was wrong, to pay people wrong, because then, at least he would know there was a problem, when it got reported to him he could change the information." (CI.4:20)

6.4.1.2 The corporate data model as a discursive resource

As with the development of the Web based services, whose implementation was analysed in the previous section, the new set of administrative systems – the MAC systems -, developed under the direction of the Corporate Information Department, was intended to generate a corporate view of information across the University and acted as a discursive resource in order to establish it.

It should be noted that, from the point of view of its staff, there was an attempt to distance the systems from 'administrative', in the traditional sense, and define them as 'corporate' – thus emphasizing the view that it was necessary to subordinate initiatives at the University to a 'superordinate strategic imperative' that was above the different components of the University. It also reinforced the status of the department as a management structure, rather than an administrative body.

> *"Part of the reason why the new department was formed was that we were changing things anyway, so we're putting in a complete new suite of admin systems – well, they're not admin, they're University wide systems – but they are replacing systems that were previously seen as admin systems." (CI.1:4:5)*

Despite the nature the new set of systems as a central repository, managed by the Centre, the aim was to input the data locally, at the point of its generation.

> *"With the new system we hope to collect data from where it originates so that departmental staff will be able to input information about their students rather than it all being done centrally".(CI.1:11)*

The new systems were presented as a way to achieve better efficiency and rationalisation of information, aiming at reducing the duplication of information across the numerous systems at the University. This implied the development of what was defined as a corporate data model.

" [...] we're trying to take a view where we reduce the number of times that people do the same things with information, so we're trying for the first time to put in a corporate data model to get the University to pin down at any moment what it actually thinks a piece of data is, and hold it once. To some extent, that was happening before Corporate Information came together, Corporate Information's rationale is to minimise the duplication of data across the place." (CI.4:4-5)

"The whole aim of the project was to provide the University with better management information, and you can only really do that if you've got it all easily linkable - and that way is to have it in one database with common coding structures - so that it's easy to pull out information that you have about a particular department, because its all accessed the same way." (CI.1:28)

The corporate data model was presented as defining what should be considered as data in the system and what each piece of data would mean within the system and for the Administration. This was necessary to achieve compatible records, allowing the integration of information related to the whole of the University Administration and locating it at a single central repository. This would take place, not only inside the University, but across the sector, enabling connectivity and integration of systems across the Higher Education sector.

"There has been, as I'm sure other people have told you, an initiative called the MAC initiative, which is designed to produce that kind of record among other things. It is designed to produce coherent and compatible records across the whole Higher Education sector and also within an institution it's designed to produce a single record." (ASO.1:16)

The corporate data model was therefore intended to hold a definition of every single piece of information held. This was done to a very specific level of detail, in terms of

348

defining what constituted a student or a year, for example. The data model was devised to avoid variations the manipulation of performance indicators and management ratios that were undertaken by different systems which was seen as leading to the generation of different 'stories' about each department and the University.

> *"We're holding a definition of all the things that people need, like we have a student defined, we have a year defined, department defined, things like that. Part of the problem of getting information at the moment is – if you want to know what the staff/student ratios are, the staff system is using one set of departments, the student system is using another set of departments, so you can't easily map these staff over these students. They might be working on different years, for instance, and there's all sorts of complications that get in the way. The rationale behind the corporate data model is to actually define what the information is and have a data administrator responsible for pinning down what the definition of the data is, and then holding the data only once, so people can access it."(CI.4:12)*

The corporate data model was, thus, crucial for the control of the definition of meaning of administrative information at the University and across the Higher Education sector. It relied on the belief that there was one set of meaning that could be established across the Higher Education sector and was adequate and that should be applicable to every institution in the sector.

However, as outlined in Chapter 4 quite early in the process this was found to be a difficult task, leading to the grouping of the Universities into three different families according to heir requirements.

The new coding structure had a significant impact upon the definition of meaning. In some cases, it was referred that data had to be re–coded and entered manually, rather than automatically converted from previous legacy systems, as the difference in data structures would make an automatic transfer impossible. This was also reinforced by

the introduction of new rules and procedures, around modularisation, for example, which also altered what was meant by a student, courses, modules and credits.

> "Well we've already got a lot of administrative computer systems here, anyway, with a lot of the data on them already, so a lot of the data is just being transferred really from one system to another in one way or another - sometimes it can actually be manual transfer rather than automatic but there is a lot of automatic transfer going on as well - particularly the core data that you'd want whatever the system was e.g. Personnel system, names and addresses, and that can be transferred from one system to another so that it doesn't all have to be keyed in again. But a lot of data is being keyed in because of the structure of the database and what it holds. One of the reasons we needed to replace our current student system is because the University has gone modular and the system before could have coped at a very rudimentary level with modular course structures, but not particularly well and it couldn't have coped with the real intricacies, it was at a very superficial level. Whereas the new system is an incredibly complicated structure, so a lot of the information just wasn't available on the old system, so it's actually had to be compiled and entered manually."(CI.1:13)

The adoption of a new coding structure appears therefore to have introduced significant changes, compounded by technical problems in translating the old data structures into the new ones and with problems in setting up the new database.

> " [...] there is a significant problem in transferring information from the old system to the new one, which has resulted in it being inaccurate on the new. There was a significant problem in relation to one particular part of software which scans information, a bit like lottery tickets, the sort of optical MARC reading forms. That software, I think went wrong, so information related to students, choices and courses wasn't transferred into the new system correctly. There was also a problem when staff at Registration events were keying the information. The information ...wasn't recognised by the system, because the database hadn't been set up correctly, so I think, really, those three [sic] main areas, added to that human errors, but I think the human error is in fact less than the system's errors." (GS:19-20)

This resulted, in effect, at the initial implementation phase, in the lack of integration between old and new systems, leading to different departments having to run the different systems in parallel.

" [...] we haven't had the opportunity to train our staff adequately in using the system. We've also had significant problems – the Corporate Information Department had significant problems in transferring data from the old system, which we had until a couple of weeks ago, onto the new computer system, which, again, is frustrating to staff and it means the system isn't being able to be used 100%, because it isn't trusted or there is a variety of information which is missing; for example, all the historical information about students isn't yet on the new system, so we are currently running the old system in tandem with the new system [...]."(SO.1:9)

"They do run in parallel. I mean, we what would like to be able to do is basically see us having a distributed data base where we had, at our level, a local database which held the fine details we want at a departmental level, but then, without going out of our system, [...] multitask. We could say 'OK, here is the student, I wonder where he is living now – that is in our central database. I can understand why, because [...] [there is no] advantage for them, really, so we carry on being frustrated by duplication." (MS.1)

The major difficulty of the situation was that it led to having different pictures of each entity that was administered, according to the system that was being used. This reinforces the view that the new data model was not merely a new data structure, but a new way of generating meaning – according to which structure was adopted, meaning could change.

"[...] having to have both systems at once and depending on which one [system] you look at, you get a different picture about the student, which is concerning and confusing." (SO.1:9)

The significance of these changes is deep. The process of change was legitimised by a rationale that stressed the need for integration of data, in order to overcome the existing state of fragmentation. Behind this rationale for managerial efficiency lied an opportunity to control the meaning of information that related to key resources with financial implications. Controlling administrative processes that led to the definition of new data structures, acting in effect as new interpretative repertoires, allowed the redefinition of the meaning of administrative information

The fact that the different data models could alter significantly the meanings conveyed by the systems - *depending on which one* [system] *you look at, you get a different picture about the student, which is concerning and confusing (SO.1:9)* -, led to the necessity to devise codes that would allow the interpretation of the different realities, by those administrators that adopted the role of organisational translation. This activity of translation of the different codes reinforced the role of local administrators as organisational translators mentioned in section 5.5.

6.4.1.3 Accuracy

The major challenge faced by the new MAC system was effectively to ensure the accuracy of the information contained in it. There was strong awareness of the gaps between the Centre and the academic departments and moreover that the latter were more likely to hold the more accurate information, as expressed below by the MAC project manager. The issues created by this situation were especially important for the University, as it depended upon the MAC system for the production of statistics that would serve as the basis for the funding provided by external bodies. The Centre tried to overcome this by sending information back to the departments for accuracy checks and corrections.

> "The main problems that there have been are actually keeping data in step
> and that the University has for a long time had the information at the
> Centre - talking about students and what they are doing - it doesn't match
> up with what the departments have - actually trying to rationalise it has
> taken up an awful lot of people's time and then what has had to happened
> when external statistics have been required, we've had to send out
> information what the Centre thinks about students and then ask
> departments to update it and to make sure what each individual is doing,
> what course etc. and send it back to the centre and then unless the two are

always communicating, they will always be out of step, and this is one of
the big things the University has been hoping to overcome."(C1.1:14)

The definition of a corporate data model meant that the Department of Corporate

Information needed to undertake strict quality control to assure that the meaning of

the model was being adhered to. This had been the main driver for developing the

corporate data model, as the variety of local practices implied the existence of

administrative data with multiple meanings. It was especially important to unify these

different meanings in order to ensure the supply of coherent information, centrally

manipulated, to the funding bodies.

> *"If the problem of keeping data on step - we will have to have some system*
> *of quality control and that things are being kept up to date - how we can*
> *monitor what information is there - it's when we start doing returns for*
> *external bodies, that's when things will start coming out. Procedures will*
> *have to be set up to see that there is regular monitoring of what's being*
> *entered - particularly when it becomes a much more devolved system,*
> *when data is being entered in a much wide-spread manner." (C1.4:22)*

The model for handling information that was implemented was highly centralised,

although there was an intention to allocate information handling processes at the point

where information was originated. The Centre therefore depended to a great extent on

the willingness of the administrators at the departments to carry out accuracy checks

and corrections.

> *"I think in practical terms very often, information from the Centre is sent*
> *to departments for checking and departments should try to correct it,*
> *because they do tend to have most up-to-date knowledge, they are the parts*
> *in direct contact with students and so they will pass it back and the Centre*
> *should amend it. Again, in realistic terms, that process does not work as*
> *easily as it should and departments may get tired of correcting information*
> *that they see as inaccurate, at the same time they [the Centre] get tired of*
> *departments grumbling about information the Centre sees as accurate,*
> *disputes can arise." (ASO.1:13)*

In effect, as with the development of the Web based services, a major challenge faced

by the Centre was to manage the tension between its aim to maintain strong central

control and the need to ensure local collaboration from the various academic and support departments in, not only supplying information, but ensuring its accuracy.

Most of the process was traditionally carried out manually, due to the lack of an integrated system and Centre, Faculties and departments each held different information repositories, thus increasing the likelihood for variation in the information held.

> *"From what I understand, the departments have a folder for each student, in the way that the Faculties will do. I mean, in general, the majority of the time, the information overlaps, but there are a lot of inaccuracies between the systems, so, I mean, it would make more sense if more information could be on the computer eventually. I mean, when we do things like renew scholarships this year – and it sounds simple enough - you send the information off to the department and say 'Do you want this scholarship renewing? Please tick the box', basically, and you come back with all sorts of things: 'Well, this student doesn't exist any more' and "This student doesn't get £1500, they get £2000', so you can only assume that there is a lot of errors in the information held in different places." (GS.1:3)*

This variation in information that was held at different parts of the system also stemmed out of the fact that different departments focused on different uses of the same information and on different administrative tasks around the same entities that were to be administered. Academic departments, for example, were bound to have more detailed information about each student than a central structure that managed grants. What would be perceived as a useful system, in one case, would be perceived as less useful in another.

This situation also could be seen as resembling what Davenport et al. (1996) described as a feudal model of information politics, where information is managed essentially at a local level, with the supply of limited information to the Centre. See also Allen (2000)

Some administrators at the Centre perceived that, in effect, the process should be subverted and the focus should be on departments supplying information, rather than on the Centre requesting information, within a model that would resemble more closely information federalism (Davenport et al., 1996). This had to do with the perception, held by some administrators at the Centre, that academic departments used the system for heir own purposes, but contributed to them in a limited way.

"We are reliant on them very much for individual information about students so, if we receive one of those forms I've described to you and we've got a query with it or it looks like it has been filled in wrongly, we wouldn't go back to the student, but would normally ring the departmental secretary and say 'The student has filled in and said they want to do this but we think this is probably wrong – do you know what they really want to do and can it be corrected?'. But, in a sense, it's the other way round in that departments are wanting this system to pull up lists of students who are registered in particular courses for their own purposes, so rather than us going to them saying who is registered on a particular module, it really should be for them to come to us and say on the central system who is registered on a particular module and we look on the system." (SO.1:11)

Despite the introduction of the MAC system and of the corporate data model, and unlike the situation concerning with financial information, as will be detailed in the next section, control over student information, in terms of monitoring and preserving its accuracy, remained with the academic departments. Unlike the case of finance information, the Centre often asked the departments to check the accuracy of the information it produced, rather than assuming that what it produced was correct.

"From the point of view of student information, it's usually the other way around [from Financial information], what normally happens is the Centre will produce the information and ask us to check it which I think it's a case of the administration thinking the departments having the most up-to-date information, and anything they produce is reasonably good, but we can make it better, so if we send them data or information they don't usually question it, but if they've sent me information to check, it's because they don't think their information is accurate enough" (DIS.2:16-17)

355

It is interesting to note that academic departments were seen as holding the most accurate information, due to being closer to the point of origin of information, regarding student administration – the contrary of what happened regarding financial information. Despite the realisation that academic departments, as closer to the point of origin regarding student related information, held the most up to date information, there was potential for tension in the future, as the remit of the Corporate Information Department was to be responsible for the accuracy of corporate information data in the future. For that, it was acknowledged that it relied upon the cooperation of the academic departments.

> *Question: "Who will then be responsible for quality control, say to ensure that the data is correct and accurate?"*
>
> *Answer: "It will be this department again. It will be very difficult - at the moment you get your annual student registration at the beginning of the year and generally I think a lot of the information regarding the students is probably kept locally within departments. One of the difficulties with the central administrative databases is to keep that information up-to-date and the systems in the past have been such that that has been very difficult, one of the thrusts with the new systems has been to try and encourage all users to use the same system, which is why the new databases have been developed. I would imagine there is still departments that keep paper records of their students and then they'll get the information at the beginning of the year and then they'll keep their data independent of the university system, and one of the difficulties has been to get them to keep the central system up to date." (CI.2:15)*

It was also acknowledged that this was an area that enabled academic departments to negotiate for the allocation of further resources, as the effort in helping to keep accurate, in a collaborative way, the information at the central system was seen and presented as stretching their own resources.

> *"That is actually a very serious point in the context of the MAC initiative and the MAC systems coming in and as we ask departments who are nearest to the information, the departments who we say are going to be the most accurate sources of information, so we're going to ask them to provide it, to maintain it - they can very legitimately say 'OK we'll do that but can we please have some extra help in doing it'. So yes, there is*

always going to be pressure on the allocation of resources between this person and that person."(ASO1:28)

Interestingly, there was an inherent assumption that the figures presented by the administrators at the academic departments would be accurate and interviewees at the academic departments referred – sometimes in puzzlement - that that nobody would check their data.

> *"Nobody in the department ever asks me if those figures are accurate, they don't seem particularly worried about that. They seem more worried about the fact that the University might have asked for a report on the annual teaching quality review, we have to produce the statistics for that. And I could probably put down figures, which nobody will check, I happen to be conscientious but I feel it's very much up to me to do it myself and not check my figures for accuracy."(DIS.2:14)*

> *"[...] in a sense, anybody could make a request to access the data, to analyse it and [Cheryl] could do it, but beyond that, in terms of change, verify anything, then it is really Sharon who has a lot of individual responsibility for what goes on there. I mean, she is the sort of person who could change numbers and no one might ever know." (MS.1:7)*

Despite this, and especially in what concerned student results – that could be more easily checked by students, if inaccurate – there were formal procedures in place for checking the accuracy of this data with the allocation of levels of responsibility throughout the process.

> *"What we also do is check what is keyed in, we either check the data by two secretaries comparing it side by side, checking it is physically the same, the handwritten version against the computer printed one or send it back to the member of staff, asking them to check what we've done, saying that 'we have done our best, but it is your responsibility to check it, so please go back and check we've done it correctly'. We have a policy there whenever possible, we check the hardcopy against the written one, so we have one or two things like that which are built into the system to try and provide a high degree of reliability in what we are processing." (MS.1:10)*

Accuracy was, however, difficult to achieve in a complete and absolute way, especially in other areas, where meaning was derived from building a wider picture

based on sets of different elements and where the underlying information was difficult

to get hold of. As mentioned above, different areas of the University were likely to

make different use of the same information, thus potentially informing its meaning in

different ways.

> *"I don't think the rest of the department really cares - that's probably not true - they expect me to produce accurate information and whether that is possible or not, sometimes it's more difficult to produce it because the underlying information either isn't there or is only half there, so sometimes I know I'm producing information which I know is not completely accurate." (DIS.2:14)*

In effect, problems in establishing the corporate data model did not only derive from

the fluidity of the activities in the world of academia. At the Centre, administrators

from the support departments, dealing with student administration, held different

views on what the corporate data model should look like, how the system should be

structured and how the data should be displayed, depending upon how administrative

processes were organised in each department or unit. Administrators responsible for

undergraduate and post-graduate students, for example, had entirely different views

on how the data was displayed and should be displayed. At the postgraduate

administration level, information access was seen as individual student oriented,

whereas it was proposed that it should be functionally oriented.

> *Question: "What are the right systems in some ways?"*
>
> *Answer: "Something like this, as I said before, I think it is somewhere where information is stored according to things which are functional unit, rather than, say, according to the name of the student." (GS.1:15)*

Differently, at the undergraduate administration, the system was seen as functionally oriented, whereas, in the opinion of its administrators, it should be seen as individually oriented.

> "Ummmm, yes I think what we've found with this system is that , for example, it didn't bring up immediately visible information about individual students. It dealt with it in a functional way, so that if you needed to know something else about them, then you had to go into one part of the system and then if you wanted to know something else about them, then you had to go in again, whereas we wanted a composite information – everything that the system holds about the student that we could get at. So we've got that to an extent, but it is not fully developed, so that sort of information at our fingertips is a crucial requirement. And then I think the ability to be able to change it easily, not so anybody could change it, as obviously it would have to have some security in place, but a simple procedure making changes, and I think now it isn't simple as it involves pressing an awful lot of keys and going into an awful lot of different screens and it isn't user friendly and I think those are the two main things: getting information out easily and being able to update things easily." (SO.1:6)

The perceptions on how the system was structured and data was accessed could therefore be very different and, at points, lead to almost opposite views of the system and its data. In this context, the notion of a corporate data model would necessarily be rather difficult to operationalise and the definition of what the corporate data model should be, in particular, would be difficult to achieve by consensus.

6.4.1.4 The implementation of the Corporate Data Model: the critique of integration

The difficulties in implementing the corporate data model were related to divergent views on what constituted accuracy, which were, in turn, related to pre-existing administrative processes. The major criticism towards the model of the data devised by the Centre and provided to the various departments, whether central support

departments or academic departments, was that it lacked the level of detail that would be necessary to make it useful to them. An example is provided by an administrator at the Graduate School, from the perspective of administrative processes:

> *"No it's all on paper. We have nothing – the system that we have at the moment on the computer is very much related to things like registration and extension of registration periods and if they have got any debts. It is very much related to University [...] but beyond that, it doesn't hold any information which is useful for us from day-to-day. We don't have any section which has a page, for example, for American Loan or a page to say when we've sent something off or whatever." (GS.1:2)*

An academic also conveyed the view that the new system lacked detail from the perspective of administrative support to teaching.

> *Question: "In what way do you think that departmental needs are different than the Centre's needs?"*
>
> *Answer: "In terms of record keeping, really, it's things like we...for every module that a student takes and grade every piece of work, so we have systems for when it is handed in properly, it detail, for example, three course work pieces, one examination. All that information is in our computer system. It is the only simple way of dealing with when you are dealing with 100-200 students doing modules calculated/verified to be correct and then staff can look at their overall profile and module and review marks, for example [decide] whether to leave it, whether it needs adjusting, etc ...who borderline candidates are now – that level of detail is simply not provided by the Centre. Whether it is feasible is another matter, because the trouble is every department tends to want to do things their own way and there is resistance to a uniform central system to do these things, certainly there is an enormous amount of effort into departmental computing." (MS.1:3)*

Underlying this tension was the view that Centre (in this case, the strategic apex and its technostructure, the Corporate Information Department and the Finance Department) and support and local departments focused on entirely different types of information for their operations, in terms of degree of individuality and level of aggregation. This was expressed by an administrator at the Student Office, in terms of

a Centre focused upon aggregate information, geared towards the production of reports to the funding boards, and of central support departments and academic departments having to focus on individual cases in operational student administration.

> *Question: "[...] you are both in charge of corporate wide information, so what's the difference?"*
>
> *Answer: "The distinction that has intended to have been built up is that our section (to give you an example of undergraduate students which we are responsible for) would be responsible for the details, including student cases. The Department of Corporate Information would be responsible for the data relating to undergraduate students in general and as a whole, so if, for example, there is a statutory requirement, which there is, to report to the University's Funding Council on the number of students who have passed the year or something like that, Corporate Information would be responsible for bringing together those statistics and liaising with the funding Council/Statistics Agency, but if an individual department phones up and says 'Can you explain what the position is of a particular student on their Course, in relation to whether or not they are able to proceed to the next year and tell me how many modules they've passed?', then it would be our section, we would use the same data, but in an individual way [...] so there is a sort of global-individual [...] distinction." (GS.1:25)*

The global-individual distinction reinforced the role of the new technostructure as responsible for defining and presenting the picture of the University that was centrally adopted and externally conveyed. Control over the overall picture was essential to that. The notion that different pictures could be obtained at different levels, referred upon beforehand, reinforces the idea that whatever data model was adopted, it would serve the purposes of developing and manipulating a picture. In an operational sense, the new MAC system was of little use to the administrators at the departments at the periphery,

> *"[...] but it served the purposes of central admin counting heads and accounting for different types of funding."(C1.3:12)*

In effect, the focus of the Centre was not on individual cases, but on the aggregate information that would provide a picture of the University to potential sponsors and funding entities. Control over the processes that led to the development of that picture was essential to that, as different data models could, as expressed by some of the

administrators, lead to different pictures. On the other hand, the periphery controlled elements of meaning, by providing a key to its accuracy.

The practical result of the differences of view on what constituted an adequate picture of administrative data and of a system to provide it was the defection from the system by different elements of the Administration. Defection took different guises and grades – ranging from defining an entirely different system that would be 'the corporate system' in a particular area, as happened with the Finance System, to maintaining parallel systems or delaying – often legitimately - the provision of information to the Centre.

In effect, the problems associated with the idea of complete integration and with the definition of a single corporate data model, compounded with the traditional fragmentation of the information arena into different fiefdoms, led to the defection of various departments from the project, as mentioned before.

> "So, yes, in this University we have gone for Kodak in Finance, we're
> going for non-Oracle MAC solutions to several other things, so indeed are
> other people, either because they feel that the Oracle MAC or whichever
> family solution isn't quite right or because it was something perhaps that
> wasn't addressed in that initiative. For example, Room Bookings Systems,
> the system that has been introduced under the MAC initiative does not
> cover everything that we already had in home grown software and things
> we know we need which were not common requirements over the whole
> sector and therefore were not included in the Oracle contract. So we
> would be going backwards if we settled for the basic Oracle product,
> we've decided that we will go for a modified product or an additional
> product, so there is a considerable task in integrating. Some of it has been
> show to work, I imagine in some institutions bits of it have been shown not
> to work, and for the rest of it we'll have to wait and see. The difficulty of
> any project which is so big and so slow, must be that by the time you get to
> the end, the world has changed around you and you no longer want quite
> that and the possibilities are wider and you have to start
> again."(ASO.1:25)

The above comment reflects the fact that the original concept of the MAC system did also, from its inception, not address satisfactorily the requirements of part of the Administrative processes at the University, at least from the point of view of some arenas at the central Administration. It is interesting to note that some of the explicit and open defection from the system did not arise from what could be seen as arenas peripheral to the project, academic departments and support departments in students administration, who continued to use their own systems simultaneously but contributed to MAC, but from other departments at the Centre – the Finance Department, an already established part of the technostructure at the University that was in competition with the Corporate Information Department to preserve its supremacy as part of the technostructure, and structures in charge of room booking, upon which a great deal of operational efficiency at the University was dependent.

The modes of operation of academic departments in relationship to the MAC system were more subtle and less overt in that, by and large, they continued to collaborate with the MAC system, by checking and ensuring that the requirements for accuracy were up to a point satisfied, in exchange of some negotiation for extra resources, while at the same time maintaining their own systems, which were a way of preserving their understanding and sense-making of their environments.

> "We're hoping to develop generic systems for departments. The reality is they'll probably develop their own. We're trying to pin down a clean version of data that they can work off themselves by using the corporate data model. I find it a difficult area to talk about, really." (C1.4::11)

This was perceived as a duplication of resources and effort at the departmental level, albeit a necessary one. The comment below also stresses the effort involved in re-

shaping the 'same information' various times, depending upon where that information would be sent to.

> "[...] if there is a need that isn't being fulfilled from the Centre, then people fill their own one and it may be good, it may be bad, it's certainly a waste of resources. The other thing is the Centre becomes more frustrated because they can't get the quality of information that they need from individual departments who are having to put a lot of work into generating resources, so you are doubling the work - you need one set of stuff for your own internal departmental needs and perhaps the same information presented in a slightly different way for the centre but that slightly different way perhaps means somebody has to spend a day or so to actually generate that, so it's a waste of time and resources." (DIS.1:8)

The problems underlying the corporate data model, despite its apparent and perceived neutrality, are outlined below by a senior manager.

> "To some extent, the corporate data model is a good way of hiding the underlying systems from the people that need them, so the users in departments, I think, when they get access to this corporate data model should in theory be able to access just the bits they need and get greater consistency than they do now. [...] There's two difficulties, really: one being the departments need information to run themselves, so they need better information and they need to get a lot of it from the Centre; the other one is that the Centre is changing all its existing computer systems, which were previously written just for the Centre and are now, in theory, anyway, designed for departments as well [...]" (CI.4:12)

His view fosters some interesting issues. First, the corporate data model as "a good way of hiding the underlying systems from the people that need them", which is consistent with the view that different data models could lead to different 'realities'. Secondly, this is also coherent with the view that the information provided to the departments by the Centre was limited in detail and in operational usefulness for both academic and support departments. Thirdly, it emphasizes the difficulties involved in moving from systems that were designed for the Centre into systems that were "in theory" designed for the departments as well, in that the logic of the systems, the

processes involved and the content of the systems would be perhaps not only different, but sometimes even in potential contradiction with each other.

The difficulties introduced by the effort of integration between different systems, in terms of trying to overcome clashes and contradictions between the systems, are also emphasized in the view over the process of integration between the MAC system and the Corporate Finance System by the manager of the latter. In this case, integration was a definite requirement from the point of view of those who held strategic decision making in the organisation, as both were 'the corporate information system' for the University administration.

> "It's a bad time to talk about integrated systems because we feel very much that we have suffered in the name of integration over the last few months in getting this system in, because we've had to make an awful lot of compromises in the set up of the system to help with integration as a whole and now I am no longer in favour, I've lost the grasp of the benefits for all the costs that we've had and I think that once we're actually settled into the system we're going to actually have to look at how we've integrated and possibly disintegrate to actually improve the effective running of the Finance System. I'm all for having links with everywhere else, but I think implementing MAC and having this Finance System incorporated in MAC we've rather overdone it, I think, and laid down lots of rules which have really held us back and caused a lot of extra work. Certainly it's a lot of management overhead to have to follow an integrated route and I've lost sight of the benefits, to be quite honest, we'll have to look at this again."
> (DF.1:18)

The scepticism over the various issues involved in the integration of systems was not only apparent within those departments of the Administration that had defected the MAC system or support and academic departments. At a senior level at the Corporate Information Department, there was also a belief that integration, in itself, was not enough and that there could be different models of information systems and of managing information that could work potentially better. The following comment highlights another perspective on the problems introduced by the way the blueprinting effort had been implemented at the University – the view that it pursued integration

365

without coordination. The notion seems paradoxical, but highlights the essence of the problems introduced by blueprinting, from the perspectives of a variety of actors that were analysed in this chapter. It also reinforces the notion of 'puzzlement' that could be applied to the administration of the University at the time.

> *"Integrated systems have been put forward as a panacea in the past. Certainly before these new systems came along, we had very good systems that would stand alone: they weren't integrated, they were coordinated [...]." (CI.4:25)*

This statement is key to discuss many of the issues put forward by various organisational actors regarding the problems faced in the implementation of the MAC, the process of integration it aimed at, to which the corporate data model played a pivotal role. Integration of processes and data were seen as a panacea for the problems introduced by the fragmentation of the information environment, as a result of different organisational arenas that were associated with differing administrative practices. One single data structure model was seen as leading to 'one meaning, one picture'. The logic of efficiency behind its legitimation seemed very clear and justifiable.

Its implementation, however, led to the realisation that the coding introduced by the new corporate data model significantly changed the meaning of the data - *depending on which one* [system] *you look at, you get a different picture about the student, which is concerning and confusing (SO.1:9)* – and therefore there could be many coexisting views of reality concerning the University and its environment, depending upon the coding structure, but it was less clear which would suit better each organisational group.

This was also compounded by the espousal of the notion, by the Centre, that accuracy – or the perception of accuracy - was critical to the success of the system and that ownership over accuracy lay with the various users of the system, namely the academic departments and some of the support departments, which had largely remained peripheral to this process of change. There was an open acknowledgement that the Centre depended upon these different actors to ensure that accuracy prevailed. This enabled administrators in academic departments the adoption of an element of organisational translation in their roles and gave them a bargaining position with the Centre.

Further problems arose from the fact that the different information arenas at the University were in fact concerned with different perspectives of information. The 'global-individual distinction' and the different requirements in levels of detail, pointed out by some administrators, were symptomatic of the fact that actors in these arenas operated at different levels in the organisation and, depending upon their activities, they were likely to make different uses of the same information and define different meanings around those activities.

The notion of integration as blueprint of processes and data leading to 'one meaning, one picture' seemed not only difficult to achieve, but rather questionable from a variety of different actors, including managers at the Corporate Information Department. In the context of the various issues it raised in the implementation of the MAC system, integration was seen at odds with coordination.

Different organisational groups explored these tensions differently.

The newly formed technostructure at the Corporate Information Department had been a promoter and implementor of the tend towards standardisation introduced by the blueprinting of processes and of data models (as keys to controlling meaning) that were part of the centripetal effort to control information at the University. Their focus was in putting in place processes that should lead a standardisation of meaning across the University. This served the purposes of simplifying and making sense of the complexity of the information environment but also of ensuring its control over the overall 'picture' of what the University was. Their role was reinforced by the fact that this 'picture' was key to securing resources from external funding sources to the University.

Centrifugal forces at academic and support departments held a variety of legacy systems associated with different administrative practices and power bases. There were disincentives for these actors to defect the system as defection would, in this case, incur in significant forms of punishment, as the MAC system was critical to the allocation of funding to the departments. In a sense, they were in a Prisoner's Dilemma situation (Parke, Rosenthal and Chandran, 1993; Bradenburher and Nalebuff, 1996) and were locked in a situation where there were too many disincentives for not collaborating.

> "A student record increasingly defines the amount of resource each
> department will get from the centre. The resource allocation will
> increasingly depend on student loans and all the activities developing in
> terms of teaching and research. So that it can become the case that a
> minor error in the data has appreciable consequences in financial terms
> and developments in the Centre can form to dispute that" (ASO.1:14-15)

It was, in effect in the interest of academic departments to ensure that the data was 'accurate' to ensure as many financial returns as possible. The notion of accuracy was also strongly pursued by the technostructure, i.e. the Corporate Information and the Finance Departments, as this was seen as critical to the success of the system. The realisation that the key to accuracy in the information regarding student information lied with academic departments gave administrators in these departments a bargaining position for further resources, even though there was also a realisation that 'accuracy' was relative.

> " [...] *because the underlying information either isn't there or is only half there, so sometimes I know I'm producing information which I know is not completely accurate.*" (DIS.2:14)

A relatively negotiated information arena emerged therefore in the relationships between centrifugal forces and some centripetal forces, whereby there was collaboration within certain contexts, but centrifugal forces, by and large, maintained their existing information arenas and their specific information systems, as a key to make sense of the situations they dealt with. These different information arenas were, in effect, concerned with different perspectives of information, depending upon the level of aggregation they focused on. They also constituted different locales for the construction of meanings and of understandings over the organisation. The '*one piece of data, one meaning, one picture*' rhetoric espoused by the Centre, associated with the centripetal effort towards centralisation and blueprinting, was met with the *de facto* pursuit, by different actors of different understandings of what was the situation at the University and of diverging views, and correlated rhetorics, over what constituted accuracy. Data structures and codes were not neutral but acted as interpretative repertoires in the construction of meaning.

The major divergence and a clear and explicit defection from the MAC system came from the Centre itself, namely from another strong centripetal force that had traditionally held a sound position as technostructure – the Finance Department. The foundation of this position was not only historically different from the Corporate Information Department, but rested in different principles. The following section analyses, in more detail, the implementation of the Finance System, as a vehicle to establish a new funding model through a new financial coding system.

6.4.2 Financial information systems and the new funding model

The fragmentation of the information held at the Centre, analysed in the previous section, was presented as a contributing factor for the lack of information dissemination to the departments, especially in the area of Finance, where, unlike in student administration, control and ownership over accuracy was presented as held centrally, by the Department of Finance.

> "The problem is that the Administration control the money and the Administration they say, they do. We feel they have their own priorities."
> (ACS.1:32)

In effect, during the first stages of the implementation of the new Finance Management System, access was completely restricted, according to its manager.

> "At the moment nobody outside Finance or Central Administration has access to this system, and we're hoping, within the next few months, to give departments access into the system, to enable them to see directly what their financial position is. "(DF.1:3)

370

However, in the Corporate Information Department, which competed with the Department of Finance for a leading position in the technostructure, there was a view that the limitations to the diffusion of information lied, more deeply, in a particular ethos of work whereby the financial information arena was dominated by the Department of Finance in a way that restricted the capacity for decision making across other areas of the University. This model of information management relied in the complete control over financial resources at the Centre.

> *"What we haven't pinned down is what is core that everybody needs and what is additional that people might be interested in paying for, if it was worth having. There's a lot of levels at which things can get diverted, and some really good theory gets a battering when you put it into practice, because of a number of differences in culture, ethos, expectations, things like that. Decision-making, I think, that's the problem area. People need information to take decisions, but they also need to be able to make decisions based on the information with which they've got a reasonable chance of doing something; [if they haven't got it] then their ability to manage is severely restricted. I don't think we are in a position yet to give departments complete autonomy, we're still working on a formula that will give them incentive to earn money, because the current formula doesn't – if they save money, they don't get to keep it." (CI.4:24)*

Underlying this perspective was, as expressed above by a senior manager at the Corporate Information Department, a funding model that not only restricted the decision making power at other areas in the University, but did also not encourage the pursuit of the business models espoused by managerial trends at Universities, as it did not allow individual departments to reap the financial benefits of their enterprise. The implications of the funding model would be that the Centre would have greater flexibility in managing these resources, potentially redistributing them across areas in need, reinforced by the limited diffusion of information that remained contained at a very local context at the centre.

"There are constant disagreements I suppose about certain accounts where departments might believe they have a greater freedom to spend money on what they want as opposed to what the Centre thinks the money should be spent on. There are lots of particular accounts, perhaps the major area for disagreement is - a lot of academic departments have ranges of what they call discretionary accounts where a lot of money, perhaps what an academic will generate, money comes into the University in some ways, goes into this account, then the department then feels that they can spend that money however they want. The Centre sees it as University money and if necessary that money can be hived off if there are times of financial hardship and this happened a few years ago, where money was taken out of these accounts because we needed it centrally and that caused some disquiet." (DF.1:13)

Underlying this perspective was the notion that financial resources were owned by the organisation or, more precisely, by the strategic apex and its immediate support groups – in this case identified as 'the Centre' -, rather than by individual departments or academic groups. The discretionary power of individual departments could be overridden by the discretionary power of the Centre for the fulfilment of superordinate objectives. The structure of the financial codes was key to maintaining this flexibility of decision-making by the Centre, through a degree of lack of diffusion and transparency of information, enabled by the perceived opacity of the codes in other University arenas, as will be detailed ahead.

In parallel with the introduction of the new Finance Management Information System – and concurrent to the introduction of the corporate data model in the MAC system -, a change in the financial transaction coding system was also introduced. This was perceived as a big change at the academic departments, implying a great deal of preparation and analysis, in order to understand its full implications.

"The other thing that is changing is the financial system, there's a new system for that. We haven't been given access to it yet, they told us we would be able to start using it over the Summer, but it hasn't started yet. That is being linked also with a change in the way the university codes all its financial transactions, so they've introduced a completely new coding system as well as introducing new VAT coding - so that has been quite

complex, I had to do a lot of preparation to actually see how we could
utilise the new financial codes."(DIS.2:4)

This was a significant change, as the funding model that was associated with the new coding system had strong implications in the way each different department could be funded. This process was controlled by the Finance Department. There was, however, tension around the ownership of the process of managing the implementation of the new funding model, as the Department of Corporate Information was also attempting to claim its ownership. The new coding system and the new funding model were not perceived as neutral tools, but as means to change the funding allocation criteria at the University – they represented a new way of intervening in University resources, as expressed by a senior manager at the Corporate Information Department.

> *"I'm keen to see the new funding model, because it'll hand cash to the departments based on various criteria and I'm keen to make sure we're holding the information that will allow that to happen fairly. Again, it's going to be fairly awkward in areas like finance, where information is out of our hands, but whereas in the past the Finance Department would kick it into shape, it's likely, possible then we would get the Finance Department, if they're prepared to release it, to give us the information and for somebody more neutral to kick it into shape." (CI.4:27)*

Traditionally, as mentioned above, this had been a domain completely controlled by the Finance Department. Despite the requirement for a final approval from the Finance Committee at the University, there was an acknowledgement that the budgets were almost exclusively defined by the Finance Department.

> *"There are people in the Finance Department who work out the budgets for all the other departments but I suppose an overall budget has to be agreed by the University's Finance Committee I think - a committee of academic and admin heads. It's very much done by the Finance Department to come up with the figures" .(DF.1:9)*

Other departments were expected to accept these budgets. There was no request for

the departments to check the accuracy of the budgets defined and allocated by

Finance, unlike with student administration information. The budgets were presented

as accurate at the source and expected to be passively accepted by the academic

departments. Senior administrators at academic departments did, however, check

these budgets for consistency and inaccuracies were occasionally found and disputed.

> *"In terms of finances, the Department of Finance sends out statements*
> *every month about what's in the accounts and the transactions that have*
> *gone through that month, and they send us that as information. They don't*
> *expect a response at all, but because I am now responsible in the*
> *department for monitoring budgets. I do actually check those figures, I do*
> *occasionally find problems, for example things that have gone through*
> *twice etc. Then I will get back to Finance and ask them to update and*
> *correct things, but they don't expect that to happen, they assume what they*
> *are producing is right." (DIS.2:17)*

This was, as mentioned, considered one of the greatest areas of dispute at the

University, often resulting from the inconsistency between central and local

information systems. It was not, however, the only reason for the disputes. The coding

used by the Finance Department was considered uninformative and many departments

conveyed the view that there was not enough information about the funding models

for them to assess the accuracy of the budget information defined and supplied by the

Finance Department.

> *"The other is the wider, general position about departmental accounts,*
> *departments tend to fall out with the Finance Department about how much*
> *money they have and how it has been spent and where in the commitment*
> *accounting process. If a department reckons it has ordered a piece of*
> *equipment and therefore has spent e.g. £1,000 it will write that out of its*
> *records as being spent, it will be a month before it's delivered and another*
> *month before it's paid for, so for that two month period the Finance*
> *Department will think that that department has more money than it earns.*
> *The reverse can also happen that income to the department will take time*
> *to be processed centrally, time for an invoice to be sent and a cheque to be*
> *received, so there's good scope for the central record and departmental*
> *record to fall out of step. I think departments can be disadvantaged*
> *thereby, they can also feel especially on older accounting systems that they*

just don't have enough information, they are presented with figures without explanation, it can be difficult for them to work out how those figures were derived so that they would then feel that they suffer from a lack of information as oppose to a lack of data, data as figures, and no information as to what those figures mean." (ASO.1:15)

From the point of view of administrators in academic departments, the new finance system still did not present the required level of detail that allowed them to control and monitor financial data from their end. This sense of disadvantage led many of the local administrators that took upon themselves to assume the role of organisational translation to try to negotiate with the Finance Department new coding systems that would be of local use and that would integrate what the central system provided and their requirements, thus allowing to make sense of the two different sets of information.

"I have actually put together a separate departmental and financial code which would go on the end of the university's finance code."(DIS.2:28)

"If we've had any comments I've had actually to, for example, the Finance Department about the new coding system, I actually sat and thought about what might be useful to us and I contacted them with some ideas which they said thank you very much for, but they didn't tell me whether they were very useful or not. I have actually put together a separate departmental financial code which would go on the end of the University's finance code and I didn't get any help from the University in constructing those codes, but they have accepted them and we can use them. I feel that there is actually quite a big bridge that's between the central administration and ourselves when it comes to introducing new systems." (DIS.2:8)

It is interesting to note that the detachment of the Finance Department was translated into different actions: more than lack of negotiation leading to an integration of a proposed alteration, a non engagement with a discussion on what was being proposed, but simultaneously, an acceptance that these codes could be used at the local level – almost as if there was a view that this would not change the overall general scheme of things.

Also, although the options to consider and provide more detail were technically feasible, the management implications of providing more detail were presented as too onerous by administrators that would be in charge of the management of the Financial Information System, as expressed by the Finance System project manager.

"The systems themselves are perhaps more sophisticated, the more specific you get the more management is involved and you could even get down to a level where a particular professor can see one research accounts expenditure, but then that means somebody centrally and managing, for one individual to see that account of course it costs hundreds of departments and hundreds of professors - a very big job. So I think we centre on a more department basis where each department can look at their own figures and nobody else's."(DF.1:12)

The decision to keep to the coding system defined by the Finance Department was therefore a deliberate one, as a more detailed structure would be too onerous and too complex to maintain and potentially imply a loss of control over the management of financial information and ultimately of financial resources.

For the academic departments, though, it was an important step to ensure that parallel structures could be used, in order to make sense of what was presented to them and to grasp and define its meaning.

"For a department like ourselves some of the codes we didn't use at all and other codes we used for so many things it was fairly useless. The new system is larger in the sense there are more codes so it makes it easier to track more specifically the spending on particular accounts. But even so it's not absolutely ideal - I've actually had to add a departmental code to add on the end of it to make it more useful for us and that involved work over the Summer and I had to tell the secretary how to do the coding as well." (DIS.2: 5)

As expressed in the previous comment, the adopted coding could significantly change the meaning of the different budgets, by aggregating and disaggregating different activities under various codes. The role of organisational translation undertook by local administrators was therefore of special importance to the academic departments and concurrently conferred greater preponderance and status to those that undertook it.

> "I suppose the most important thing that has happened recently on a bigger scale was we had to justify we had enough money to carry on paying the salaries for three members of staff which are departmentally funded - and before I came the department would have found it very difficult to try and find the figures and produce the budgets to say yes we can. But because of the system I've put in place I'm able to produce a balance and a budget for the next two years, which is as accurate as I could be, which proved that we could fund these three people and that was actually quite a big part in the University then saying 'yes, we'll allow you to continue to employ these people'. They didn't ask for that budget information originally which they probably should have done, but they asked for it at a very late stage. When they looked at the budgets they didn't come back to us and say is this right, they just accepted it."(DIS.2:17)

Again, it is interesting to note the tacit acceptance of the case made by the administrator, coupled with silence, by the Finance Department – but overall, a lack of engagement in a discussion on the subject.

The view that the Finance Department constructed the meaning, potentially in manipulative and distorting ways, of financial data, following agendas that were not transparent, was, as mentioned, widespread at the University, even at a very senior level. The comment below seems to indicate that control over the strong hold of the Finance Department was difficult and viewed as necessary, at the Pro-Vice-Chancellor level. This was territory that was being claimed by the Corporate Information Department on the grounds of greater neutrality in defining budgetary information and allocating budgets.

"[...] academic departments perceive that the Finance Department are juggling the figures. My department is seen as not having an axe to grind when it comes to the producing of Corporate Information. - one of the Pro-Vice-Chancellors, it's his perception, not mine. This is a representation of the academic departments. It is his belief that the new department is a vehicle for getting more neutral information, because we don't have the best of interests that are associated with the previous owners of information." (CI.4:28)

Neutrality was defined in terms of not pursuing group or departmental agendas and in allocating budgets on fair grounds, rather than '*juggling*' or '*manipulating the figures*' '*to come up with a set of figures they consider acceptable*'. As a newly formed the Corporate Information Department was presented as not pursuing any particular agenda in this area. The dispute around the funding model represented another variant of the clash between two centripetal forces that were claiming the role of technostructure – the Department of Finance, through the control of the rules regarding the distribution of funding and resources and Corporate Information Department, through the control of general administrative rules and of the corporate data model.

Question: "*Does it* [the Corporate Information Department] *aim at effectiveness in terms of achieving something which has a corporate ownership, rather then, let's say, a diffused ownership?*"

Answer: "*I think it does, yes. We are perceived by the senior academics as being more neutral, for example, than the Finance Department, so this department isn't very old yet, but we are likely to be asked to run the new formula for funding departments and the Finance Department currently run it, but the academics in particular are suspicious that the Finance Department are manipulating the figures to come up with a set of figures they* [the Finance Department] *consider acceptable. Now, we are perceived as a better bet to run the figures, because we are perceived not to have an agenda of our own, but that's not to say that we're seen as better. I find it difficult to actually pin down, but, in principle, yes, one of the benefits of a Corporate Information Department is that you have a central place for actually collating information, and if it was doing the whole job, then I could see that it would be very valuable. We are not yet doing the whole job.*" (CI.4:9)

Establishing control over the funding models was a way of securing a preponderant position as a technostructure by the Corporate Information Department.

It is interesting to note the differences in tactics deployed by the two competing departments for the technostructure –the Corporate Information Department actively pursued attempts to own the Finance System, first through the attempt to develop, implement and manage a corporate wide information system; faced with the defection of Finance Department from this system, on the grounds of the need to preserve a better system than offered by MAC, the Corporate Information Department actively lobbyed, through engaging in discussions with the Strategic Apex, towards establishing control over the funding models, on the grounds of its greater neutrality.

6.5 Summary and implications: the information arena and tensions in the management of the information environment - information centripetalism and information centrifugalism ; control over process and control over meaning

"Borges attributes the following taxonomy of the animal kingdom to an ancient Chinese Encyclopaedia entitled the Celestial Emporium of Benevolent Knowledge.

> *On those remote pages it is written that animals are divided into (a) those that belong to the Emperor, (b) embalmed ones, (c) those that are trained, (d) suckling pigs, (e) mermaids, (f) fabulous ones, (g) stray dogs, (h) those that are included in this classification, (i) those that tremble as if they were mad, (j) innumerable ones, (k) those drawn with a very fine camel's hair brush, (l) others, (m) those that have just broken a flower vase, (n) those that resemble flies from a distance. [Borges, J. L. 1966, Other Inquisitions. New York: Washington Square Press, p.108]*

Borges, of course, deals with the fantastic. These not only are not natural human categories – they could not be natural human categories. But part of what makes this passage art, rather than mere fantasy, is that it comes close to the impression a Western reader gets when reading descriptions of non-western languages and cultures." [Lakoff, G. (1987) Women, fire and dangerous things: What categories reveal about the mind. Chicago: University of Chicago Press, p. 92].

The point made by Lakoff is especially relevant to the discussion of findings regarding the discursive exploration of tensions in the management of the information environment. Behind different categorisations of the world, are not only views of the world, but different interventions on the world – even if the intention is to exploit the

surreal. In the same way as the Emperor's classification of animals would, or would not, as the case was, reproduce a way of engaging with the world, the coding systems that were introduced with the new funding model and with new ways of administering the student population, such as modularisation, allowed forces at the University to reconstruct meanings in a way that aimed at the re-organisation and re-distribution of its financial resources.

The definition of blueprints was a preferred mode of intervention by the technostructure both at the Corporate Information and Finance Departments. This took the shape of the codification and standardisation of processes, rules and data structures. In the information arena, this was reflected in the definition of an information strategy, the adoption of standard software applications and, much beyond that, the definition of data structures. The strive towards standardisation, codification and a greater abstraction in how the information environment was devised could be seen, as proposed in the previous chapter, as a way to achieve greater control over the environment, by reducing its complexity. While privileging certain types of information, centripetal forces did not only reconstruct the meaning of what was conveyed, but also controlled the behaviour of people, by defining targets and measures of performance (Walsham, 1993). This was, however, a process that was negotiated and different organisational groups made claims to different organisational arenas through the development of different discursive strategies which constituted, in effect, strategies for action. These discursive strategies were not only devised as a response to various tensions – they explored these tensions as well and, in doing so, reconstituted the social and information arenas at the University and acted as a vehicle for the organisational adaptation of the new information systems.

Just as Borges's Ancient Chinese categorisation of the animal world may look arbitrary but has an element of (literary) plausibility, as it *"comes close to the impression a Western reader gets when reading descriptions of non-western languages and cultures"*, as Lakoff (1987: 92) noted, the coding categories and data models adopted with the new systems did not necessarily need to be recognisable or understood by all of the administration of the University. Its element of alienness to administrators that worked outside the technostructure appeared to be plausible, perhaps as a reflection of the distance between the various elements of the University Administration: *"I have actually put together a separate departmental and financial code which would go on the end of the university's finance code [...] I feel that there is actually quite a big bridge that's between the central administration and ourselves when it comes to introducing new systems."*(DIS.2:8)

The exploration of 'alienness' reinforced by limited information, especially on the financial coding systems, allowed the construction, by the Finance Department, of meaning over the financial status of departments that was difficult to question by local administrators. This group of workers had to devise local codes that would translate the corporate codes into meaningful structures within their context of activities and allow them to negotiate or dispute figures and consequent allocation of resources. In this case, the meaning of financial information was essentially controlled at one central department, although its accuracy could be disputed by individual departments. Change in meaning occurred through dispute.

A different scenario appeared to take place in student administration, where the need to ultimately focus on individual cases – making sure that students were awarded the correct degree, that the correct assessment marks were allocated to the correct individual student –, in a context where the meaning and accuracy of this information was validated by a number of different academic committees at the University in different stages, with varying, but generally agreed by consensus, degrees of discretion, required precise attention, not just to aggregate information to present to funding boards and to quality committees, but to individual cases. Accuracy was built in gradually, through different stages, and by negotiation aiming at consensus.

Perceptions of accuracy and discourses on accuracy depended, therefore, upon the formation of meaning around specific contexts and situations and of the specific lenses that were adopted, in terms of codes and data structures that were used to form that meaning. Furthermore, different areas of the University had different areas of activity and different scopes of intervention and were therefore likely to make different use of the same information, thus potentially informing its meaning in diverse ways. Accuracy was therefore, depending upon the context and the perspective adopted, another "*reality that eluded the actors*" (Baumard, 1999:41), when looking at pictures formed with different lenses.

Ultimately, from the point of view of the administrators that were in charge of dealing with individual cases, establishing the accuracy of what was being presented was vital, and their focus was on assuring the meaning of the content of the information systems.

> "[The systems are] *extremely vital. Yes, in portfolio it is very important, because they tie in, for example, if students aren't shown on the right course or aren't registered correctly, it is the same information which produces invoices for sponsors and if the invoices aren't right, the fees won't be paid and the University won't get its money in. If students aren't shown on the right Courses, the bit of the system which timetables the examinations won't know who is doing what and won't have anywhere to put student exam results, so we won't be able to produce degree certificates and organise ceremonies, produce transcripts, produce paper copies of student results for them to have, so the whole thing hinges on this." (SO.1:16)*

Administrators that viewed themselves as intermediaries, and not as target achievers, presented the focus of their work on controlling processes and ensuring that the processes were adequate to get the information and to enable them to *"to present it in a particular way"*.

> "*From my point of view as an administrator the focus is on the process because it's not my responsibility to achieve targets, it's my responsibility to show that we may or may not achieve targets and to show that you need processes that will give you the information and enable you to present it in a particular way. It is the departmental head or departmental strategy group to ensure we are achieving targets etc." (DIS.2:13)*

There was, in effect, an assumption, especially at the level of the technostructure at the Corporate Information Department, that, as long as the processes in place were correct and adequate, the end result in terms of information accuracy should be correct – in a sense, processes and procedures were seen, by some administrators, as a means to ensure adequate meaning.

> "*If the problem of keeping data on step - we will have to have some system of quality control and that things are being kept up to date - how we can monitor what information is there - it's when we start doing returns for external bodies, that's when things will start coming out. Procedures will have to be set up to see that there is regular monitoring of what's being entered - particularly when it becomes a much more devolved system, when data is being entered in a much wide-spread manner."(CI.1:35)*

This was a view fostered especially by centripetal forces that were focused upon the introduction of standard procedures, under the banner of efficiency, as mentioned in the previous chapter. For these administrators, the focus on processes and procedures, rather than on the variety and multiplicity of local information, allowed the establishment of an orderly and disciplined way of making sense of the complexity of the world of the University. This was also emphasized by the fact that these administrators were often in charge of dealing exclusively with aggregate data and with the funding models that would be the basis for making and justifying claims to the funding boards.

Nevertheless, the simplification introduced by the funnel effect of centripetalism and standardisation, was seen to be at the detriment of information richness. In effect, administrators at support services at the Centre, in charge of producing awards results, emphasized the need to focus on individual cases. In their view, process was not enough to guarantee accuracy, as individual pieces of information had to be checked against individual students.

> *"I think the core information is important, though. I don't think it is just a process issue, because we are dealing with individual student places, I would say. Obviously, the purpose of having procedures is to try ensure as much as possible that the information is correct [...] I would say in that case because it is not just the fact that we have a procedure to deal with exam results, for example, the fact is we need the results against the students correctly, because they need a transcript of qualifications, you can't just throw all the results together and say it is just part of processing exam results, it needs to be correct for the individual." (SO.1:28-29)*

It is therefore not surprising that the view over what should be an adequate and effective information system varied significantly depending upon whether a

centripetal and aggregate information perspective or a centrifugal and individually focused information perspective was being discursively pursued.

More so, regardless of which perspective was argued for, the adoption of particular coding structures, data models and correlated resource allocation models were not neutral actions and behind the apparent 'neutrality' and 'objectivity' of figures and formulae, were specific ways of intervening in the world of the University.

> "[…] *information is power, so information is not a neutral commodity and even if it isn't – it's only people's perception of how good or bad the information is that is more important than the quality of the information itself. If people think that information isn't of a very high quality, then that might actually cloud their sense of ownership to go off and do their own thing, It's not an area that I find it easy to talk about.* " (CI.4:18)

Thus, in various different ways, at the time, there was a *"reality that eluded the actors"* (Baumard, 1999:41). In the face of the uncertainty generated by the implementation of the new systems, actors that portrayed themselves as hapless found in central support departments and in academic departments, held to what was familiar and to existing knowledge, as a basis for building knowledge around the new system, as exemplified by local administrators that devised new coding structures to build the gap between the central system and local systems. Baumard (1999:35) provides a suggestive example of tacit ways of building knowledge around uncertain and uncontrollable situations, in the context of the study of family structures caught in a tornado in Arkansas in 1952, where, in face of a situation of extreme emergency, people held to what was familiar – *"the closest piece of furniture, a section of wall still standing, the grasping hand of a loved one […] They were no longer seeing but knowing"* –, thus maintaining both a tacit organisation between individuals and the social organisation of the group.

In the face of disconcerting developments that followed the implementation of the new administrative regime and systems, the technostructure of the University at the Department of Corporate Information and at the Finance Department engaged in reconstructing and adapting this regime and information systems, by making adjustments to what was originally planned for the systems and adapting to a new acceptable 'reality', as exemplified by the attempt to integrate the MAC system and the Finance system, following the defection of Finance,

> *"We've already lost the 'piece of data being held only once' idea because we've got two systems and therefore we're bound to hold the same data to be able to function separately but we've worked hard in trying to make them talk to each other as well, as much as possible to try and keep them integrated".(CI.1:7)*

and by re-establishing and tightening boundaries for action and for making sense of action within this reconstruction, whereby no 'reality' should differ from what was recorded in the system.

> *"[...] once we've got it into the official database then that should remain unchanging until it's gone through another round of going through the official channels, but academic staff think they can change it as they like [...]" (CI.3:)*

The notion of corporate data model was central to conveying the 'meaning' of the newly established administrative 'reality'. However, the desired meaning did not materialise as intended, as what was seen as an acceptable corporate data model varied enormously across the administration. In effect, uncertainty ensued, as administrators at different levels found out that different systems presented different realities over the same entity, as exemplified by the comment that *"depending on*

387

which one [system] *you look at, you get a different picture about the student, which is*

concerning and confusing" (SO.1:9).

The clash between *"thinking within the recognisable"* and *"thinking within the thinkable"* (Baumard, 1999: 49) was bound to increase the gaps between the different actors. While *"thinking within the thinkable"*, the technostructure held to a view of the world, that, although readjustable, was contained within the boundaries of what had been determined and accepted by itself and the strategic apex, whereas while *"thinking within the recognisable"*, (seemingly) hapless actors held to existing structures and knowledge, as a basis for developing new ways to make sense of new events and act upon them, whilst not necessarily embracing the new administrative 'reality'. In doing so, both groups adapted the new information systems to their own work practices and views of the world of the University, by discursively exploring tensions in the management of the information environment.

> *"We're hoping to develop generic systems for departments. The reality is they'll probably develop their own. We're trying to pin down a clean version of data that they can work off themselves by using the corporate data model. I find it a difficult area to talk about, really."(CI.4::11)*

Chapter 7 - Synthesis and discussion: The role of discourse in the organisational adaptation of information systems - the discursive exploration of tensions in the management of the information arena

7.1 In summary: where the research started and where it is arriving at

As mentioned in the Introduction to this thesis, this study originated within a systems centric perspective on information systems development and had an initial focus on the implications of the introduction of the MAC systems in a Higher Education Institution. A first set of interviews pointed, however, towards the view that the introduction of these systems was just a fraction of a process of wider and deeper change across the Higher Education sector in the United Kingdom and that these systems were an element of a broader and far more complex information arena that comprised different dimensions, where tensions both reflected and created a dynamic context of social interaction.

These broader issues were related to the complexity of the organisational context where, underlying changes in formal structure, we could find different issues related to the informal interaction between coexisting social worlds. In parallel, these social worlds fostered different perspectives on their information environment of which the

new MAC systems were just one element. This process of change was reflected in discursive strategies adopted by different groups, which not only expressed, but also, more importantly, reproduced organisational behaviours and, in doing so, played an important role in adapting the new management information systems to their work practices and their perspectives of the University world.

Simultaneously, a review of the literature focused upon discursive traditions in the field of information systems also suggested the need to explore potentially neglected themes in the interface between not only different research traditions, but also between Information Systems and other conjunct subjects. In particular, the role of discourse and of information use in the organisational adaptation of information systems appeared to be a theme that was usually implicitly, rather than explicitly addressed in the information systems development literature, which has tended to focus, as patent in the analysis that was undertaken in Chapter 3, on:

- the development process, its methods and outcomes, usually seen as ending with the implementation of information systems,
- the organisational alignment of information systems and
- the interaction between the actors involved in the development process.

This view is corroborated by Johnstone, Tate and Bonner (2004:2), who state that the IS literature has tended to largely ignore human information behaviour issues, often assuming the existence of "[...] *a standard and shared set of interpretative structures to gain meaning from the data*".

The issues that this research then set out to explore focused therefore on a wider notion of the information arena, beyond the strict boundary of information systems as IT artefacts and the immediate and proximate context of their development and use, and beyond a perspective of information focused on the formal modelling of data and relationships, often adopted Information Systems research. It also attempted to explore issues beyond a perspective of information based upon information services provision and the meaning of information to individual models of users, generally adopted in Information Studies research (Lamb and Kling, 2003).

The stance taken in this study was based on a view of the development process that emphasized post implementation issues (Hirscheim, Klein and Lyytinen, 1996), particularly the organisational adaptation of information systems, adopted a socially oriented and multidimensional view of the actors involved (Lamb and Kling, 2003) and of the wider information environment that includes the information systems to be analysed (Wiggins, 1988; Ellis, Allen and Wilson, 1999).

Chapters 5 and 6 analysed, respectively, accounts on changes and interaction in the administrative and information arenas at the University. The two areas were found to be closely related to each other and Chapter 6 concluded that the interaction between different groups of administrators around the data models associated with the introduction of the new management information systems, which acted as new interpretative repertoires (Potter and Wetherell, 1987), allowed the reinterpretation of meaning on the University 'reality' in diverse ways, following the restructure of the University Administration and, in doing so, served as a vehicle for the organisational adaptation of information systems. Furthermore, it was concluded that interaction in

social and information arenas was characterised, in the accounts made by the different

interviewees, by the discursive exploration of two inter-related tensions – the tension

between centripetalism and centrifugalism and the tension between a focus on process

and a focus on meaning when dealing with information. Underlying these tensions,

we could find different assumptions on complexity, uncertainty and ways of coping

with that. This chapter aims at further exploring these inter-relations.

7.2 The information arena as a force field of negotiated interaction

The formal restructure of the Administration at the University was the immediately visible manifestation of change in its administrative regime. This process did not, however, only involve these formal aspects, but included the re-formation of informal groupings of professionals, clustered around a clash between discursive approaches that, on one side, made appeal to managerial efficiency and to the need to embrace superordinate strategic imperatives and those that, on the other hand, appealed to professional autonomy. The managerial agenda adopted by the strategic apex at the University and characteristic of a wider trend in the Higher Education sector had a strong impact not only on the organisation of work and formal and informal renegotiation of power basis, but, as analysed in Chapter 5, on the identity of different groups of people that were involved or caught in the process and on how their identity was defined *vis-à-vis* the perception of their roles within the institution.

The clash between managerial agendas and those that appealed to professional autonomy was expressed through the tension between discourses that emphasized centripetalism, by advocating the strengthening of control and decision-making processes at the Centre, and those that emphasized centrifugalism, by defending the need to maintain them at the periphery. Academics, some local administrators at academic departments and administrators and technicians at some of the central service departments, such as Academic Computing Services, whose position depended to a great extent on professional expertise, were portrayed as acting as centrifugal forces, by reinforcing the role of local systems and practices, as well as

correlated knowledge, that was specific and often uncodified (Boisot, 1998). The strategic apex and its newly created technostructure, particularly the Corporate Information Department and the Finance Department, as the definors of new systems and rules, acted as centripetal forces, in that they actively promoted the creation of centrally owned systems and the definition and control at the Centre of standardised and codified practices and procedures. The following quotations, reproduced from Chapter 5 express this tension in terms of differing views over departmental autonomy:

> *"I think the departments have far too much autonomy, because if you go visit several different departments you'll find that they are doing the administration procedures for similar tasks in quite different ways, there's no standard for doing anything, nobody tells a department they should be processing things or filing things or doing things in a particular, it's up to them to decide for themselves as long as they respond to what comes through the centre or the faculty, then the university seems quite happy. "* (DIS.2:9)

> *"People need information to take decisions but they also need to be able to make decisions based on that information, with which they've got a reasonable chance of doing something about. If they then have to go back for permission to do something, then their ability to manage is severely restricted. I don't think we are in a position yet to give departments complete autonomy."* (CI.4: 24)

In this context, the new administrative information systems acted as an institutional map, representing the new structure, through the redefinition of ownership over organisational areas and correlated work and the redefinition of different levels of responsibility (and, more importantly, accountability). As discussed in chapter 5, this involved the definition of areas of inclusion and of exclusion for the different organisational groups. In order to achieve this, different levels of access to information and participation in the creation of the new systems and procedures were defined. The newly introduced management information systems were a formal

representation of a particular view of the information environment, similar to the formal structure of the Administration.

In effect, more broadly, representations of the information environment at the University reflected, to a large extent, representations of its social environment, echoing both its formal and informal organisation. It is also proposed that we could extend the notion of negotiated arena model (Strauss *et al.*, 1964, 1981; McAuley, 1994; Cohen, Duberley and McAuley, 1999; Darwin, Johnson and McAuley, 2002), to refer to these representations of the information environment, clustered around the introductiom of the new systems, the corporate data models and the development of an information strategy. In effect, behind a formal representation of the University information arena as a reflection of its formal organisation and structure - incorporated in the concept of the information strategy as guide to an organisational blueprint, in the new management information systems as an institutional map (Strauss *et al.*, 1964, 1981) and in the definition of its corporate identity through its Web presence -, alternative views of the information arena coexisted. These emphasized the role of local systems and practices and of local knowledge, as key to meaning attribution within negotiated contexts. These views can be seen as representing social worlds, in the sense used by Clarke (2005), as "universe of discourse".

As with the administration at the University, whose interaction was representative of the negotiated arena model, the information arena at the University can be seen as a field of interaction, where coexisting "universes of discourse" fostered representations of the information environment that reflected different worldviews and visions of the

University 'realities'. It was through the negotiated interaction between these discursive regimes that the organisational role of information systems was reshaped and adapted to particular worldviews and social practices.

The notion of 'information arena', as proposed in this thesis, is not dissimilar to the notions of 'virtual arenas', by Ellis, Oldridge and Vasconcelos (2004) and of 'information grounds', proposed by Pettigrew (1999) and developed by Fisher, Durrance and Hinton (2004) and Fisher *et al.* (2005).

Ellis, Oldridge and Vasconcelos (2004: 167) proposed the notion of 'virtual arenas' to characterise "[...] *communities based around the sharing of expertise in virtual environments* [...], *as learning locales that bond around shared ideologies regarding their practices, that are articulated through shared rhetoric and interpretative repertoires*". They considered that, in this sense, the notions of virtual communities of practice and virtual arenas can overlap, and, that the gap between virtual community and virtual community of practice can be bridged by the notion of virtual arena: "*The virtual arena provides the locale for the virtual community of practice by virtue of definition of focus, membership and norms*".

Pettigrew (1999: 811) defined information ground as an "[...] *environment temporarily created when people come together for a single purpose, but from whose behaviour emerges a social atmosphere that fosters spontaneous and serendipitous sharing of information*". Fisher, Durrance and Hinton (2004) and Fisher *et al.* (2005) further develop this concept and define some of its attributes: it is the result of social interaction as the primary activity, rather than having information sharing being its

main motivation; this interaction involves different social types with different roles in information flow; it includes formal and informal information sharing and many sub-contexts.

The common element between 'information arena', 'virtual arenas' and 'information grounds' is the emphasis placed on social interaction, rather than information sharing, as the primary activity and motivator for their formation. The major differences lie in that the notion of 'virtual arenas' relates to social interaction leading to the sharing of expertise within virtual communities and the concept of 'information grounds' equates to particular physical and social settings (e.g., community clinics, literacy skills centres, children story-time hours in public libraries) and has been essentially deployed to explore different patterns of information sharing and of information flows, whereas 'information arena', as proposed in this thesis, is a force field of negotiated interaction, where different discursive regimes, constituting different worldviews, coexist in the same social setting, marked by tensions and contacts.

These different worldviews are simultaneously reflected and constituting of the discursive practices and interpretative repertoires (Potter and Wetherell, 1987, Hackley, 2000) deployed by the various intervening actors within negotiated interaction contexts (Strauss *et al.*, 1964, 1981; McAuley, 1994; Cohen, Duberley and McAuley, 1999; Darwin, Johnson and McAuley, 2002; Ellis, Oldridge and Vasconcelos, 2004). In effect, this thesis proposes that the 'information arena' informed approaches towards sense-making of the University 'realities', both expressed and constituted by particular discursive practices that made reference to

different interpretative repertoires and resources. In negotiated interaction contexts, different actors made claims to power by exploring these discursive practices.

The discursive practices that constituted and embodied the information arena and played a significant role in the organisational adaptation of information systems were articulated around three major categories of issues, which acted as interpretative repertoires and discursive resources:

i)   models of the information environment, expressed through the tension between information centripetalism and information centrifugalism;

ii)   models of information management approaches, expressed through the tension between a focus on process and a focus on meanings;

iii)   and, underlying the previous elements, assumptions about the nature and complexity of the environment, strategies for dealing with uncertainty and correlated models of learning, expressed through exploitation as a complexity reduction strategy and exploration as a complexity absorbing strategy.

The following sections of this chapter will discuss these three discursive categories in turn and in relationship to the literature. The chapter will then conclude with a discussion of their inter-relationships in the context of the nature of the information arena and of the models of interaction and negotiation that constituted it, leading to the organisational adaptation of information systems.

7.3 Models of the information arena: information centripetalism and information centrifugalism

Contrasting models of the information arena were found in the tension articulated around information centripetalism and information centrifugalism. Information centripetalism was characterised by privileging forces that allowed the coordination and control of information handling activities by the Centre, whereas information centrifugalism referred to the distribution of these processes to the periphery of the organisation. This relates to the key tensions suggested by Mintzberg (1983) as influencing principles that affect organisational structures and further explored by McAuley, Duberley and Cohen (1999) in the context of Centre-Periphery relationships in public sector research institutes. In the particular context of the University studied in this thesis, the trend towards centralisation of the strategic apex allied with the tendency towards standardisation of its technostructure emphasized a model of information centripetalism, whereas the focus on professonalisation of the operating core, allied to the collaborative emphasis of support services and particularly with the strive towards autonomy of middle managers at support services, emphasized a model of information centrifugalism.

At the University, centripetalism manifested itself through a trend towards the concentration of control and coordination of information handling activities at the Centre, to be achieved through a focus on the standardisation of processes and on the definition of levels of access to information by the technostructure, constituted by the newly formed Corporate Information Department and by the Finance Department.

Information centripetalism was manifested through: the definition of a blueprint view of the organisation, introduced by the Information Strategy and implemented through the new management information systems as a means to create an institutional map (Strauss *et al.*, 1964, 1981); the definition of a corporate image and identity through the formulation of rules to guide the monitoring and policing of the generation, dissemination and use of corporate information; and, crucially, the attempt to define meaning, through the corporate data model as a key to the production and manipulation of new resourcing models and correlated coding structures, which allowed the reorganisation and redistribution of resources across the University.

Conversely, centrifugal models of the information arena, embraced at the extinguished Faculty Administration level, at Academic departments, support structures and service departments, such as the Post-Graduate and Undergraduate Student Offices, and at Academic Computing Services, emphasized diversity, local processes and practices, and correlated knowledge that ensured the capability to reinterpret meaning, expressed through the discourses around information accuracy and devolvement as a means to regain ownership over local practices.

An example of this tension could be found in the rhetorical strategies developed around '*devolvement*' discussed in chapter 5. The different interpretations of the notion of devolvement conceptualised different notions of the role of the various actors. These were articulated by the Centre around the distinction between normative responsibility (as defining rules) and functional responsibility (as working within the rules being accountable for complying to them).

"[...] there is an issue of who is in charge of what bits of an integrated system, again, there's different levels of responsibility which I find get in the way, like people who are responsible for the functional, actually just doing , and there's normative responsibility who say 'this is how it ought to be'. Now we confuse both of them in this place so we have some people who believe they are responsible for things who are doing it just at the lower functional level." (CI.4:25)

"Devolvement", in this case, was, as mentioned before, also seen as a way to define and ensure accountability - in this discursive context, responsibility equated to accountability.

"I don't necessarily think that people are going to be losing responsibility because they are still responsible within their department so Personnel Department is still going to be ultimately responsible for the staff records - the fact that departments may update some of them - responsibility is not going to be taken away because it will only be done with the approval of the central department because when it comes back to it they are responsible for the data and responsible to the Registrar - making sure that the data on the system is accurate, so I don't think there is a sense that they are going to lose that responsibility. Getting people to make decisions about how things are actually going to be implemented is more of a problem." (CI.1:30)

The distinction between normative responsibility, as an attribute of the Centre, and functional responsibility, as an attribute of the periphery, was counteracted by elements of the Periphery by claiming the roles of both requirement definers and systems validators and, thus, placing normative responsibility back in the corner of the 'user'.

"It is our responsibility as end-users of the system to find the changes/improvements we want on this Central University database and that the system operates efficiently. It is the Department of Corporate Information's responsibility to put that into practice, in the sense of technical amendments to the software and the programmes and then come back to us and say 'we've done this – is it better for you?' and then we enter into negotiations like 'well, that's very good but can you just make one final change and that will be fine for us' so there is a sort of global-individual, technical-end user distinction." (SO.1:25)

In this other discursive context, the notion of "*devolvement*" was focused on maintaining local autonomy and control over resources at the Periphery.

> "[...] *the other way to do it is, rather than having Academic Computing Services in the Centre, that becomes devolved and resources are devolved to each individual department* [...]" *(DIS.1:18)*

The discourse of centripetalism made appeal to efforts towards the codification and abstraction of administrative information (Boisot, 1995, 1998, 2000), through its categorisation in the corporate data model and in the funding codes and model, to be applied across the entire University ('*one repository, one piece of information, one meaning*'). Its legitimating argument lay in the need to pursue a superordinate strategic imperative, in order to preserve collective interests in the face of adverse conditions faced by higher education institutions across the country, which implied a need to compete for limited resources.

The discourse of centrifugalism emphasized local practices, often tacitly adopted and specific to concrete contexts. Its argumentation lay in the notion that local contexts held the key to information accuracy and to its correct interpretation. Discourses around centrifugalism also emphasized issues related to professional authority, such as degrees of discretion, negotiation and validation of meaning through different instances, represented by the various academic committees.

The literature around models of control and coordination of information has often tended to focus on the polarisation between the centralising and the decentralising effects of IT as opposite and exclusive states, following Leavitt and Whistler's (1958) original argument that the widespread use of IT would change radically organisations,

playing a significant role in eliminating middle management. Seminal work in the IS field includes:

i)   arguments for greater organisational centralisation (Robey, 1981) and arguments for greater organisational decentralisation (King, 1963);

ii) arguments for greater centralisation of managerial power (Pettigrew, 1972; Markus and Pfeffer, 1973) and arguments for greater decentralisation of managerial power (Klatsky, 1970).

It is, however, argued in this thesis that centralisation and decentralisation, understood as opposite and exclusive states which characterise different organisations, would not express clearly the complexity of issues that were seen to interact in this particular case. Instead, this complexity is better expressed through the adoption of the image of coexisting (rather than exclusive) forces (rather than states) that form through their interaction a tension. The analogy of centrifugal and centripetal forces is suggestive of this tension between diverging trends towards seeking and fleeing a centre and has been used both in the Discourse Studies (Bakhtin, 1984, 1986) and in the Information Studies literature (Ellis, 1986; Seadle, 1998).

As mentioned in Chapter 2, Bakhtin (1984, 1986) refers to the tension, expressed in the form of a conflict, between centripetal forces, focused upon the production of standardised and codified meanings expressed in dogmas and accepted views of universal truth, and centrifugal forces that promote diversity and variation consubstantiated in different discursive genres. This tension relates to another proposition made by Bakhtin that meaning is dialogically constructed, as utterances in

discourses are produced in relationship and as a reaction to other utterances (Maybin, 2001).

In the literature of Information Studies, the tension between centripetalism and centrifugalism is used to refer to the locus of control over information processes. Ellis (1986:116) points out that the widespread use of IT leading to the proliferation of computer based information systems in organisations and the integration of formerly discrete information systems has reinforced the concurrent development of two opposite effects in organisations:

i)   *"the centrifugal effect of the rapid, but often uncoordinated growth in the use of"* computer based information systems;

ii)   *"the concomitant higher visibility or profile of the information handling function within organisations - and centripetal efforts to coordinate and control the information handling function by the development of integrated [...]* information management systems"*.

Seadle (1998) refers that one of the three key binary tensions faced in the provision of information and library services lies in the [perceived] need for centripetal administrative solutions to centrifugal information services needs.

The key point about the analogy of the centripetal and centrifugal tension is not just that it represents coexisting forces, rather than exclusive states, but also, and perhaps more importantly, that, as a tension, it can represent differing elements of relative balance and imbalance. It is borrowed from physics, where these forces can be

determined precisely. As stated by Seadle (1998: 10): *"Balance in the social world produces more irregular orbits than in the natural. But the analogy holds roughly true [...]"*.

In the information arena at the University, shifts in the control over information systems and processes were accompanied by a tension between discourses that emphasized standardisation and codification and discourses that emphasized diversity of practices and meanings.

As mentioned in chapter 5, Boisot (1998, 2000) refers to the tension between centrifugalism and centripetalism from an information economy background, as forces that define the difference between different cultures, which, he states, have been characterised in different ways "[...] *but nearly all of them involve the structuring and sharing of data within or across groups.*" (Boisot, 2000: 125). He defines centripetal cultures as *"characterised by strong institutional attractors"* [of information transactions] and centrifugal cultures as those *"in which the attractive power of competing institutional structures in the i-space is either weak or more balanced"* (Boisot, 1998:144).

He offers an explanation for the existence of different institutional models of information transactions and cultures as aiming at minimising the rate of entropy in particular information environments. The standardisation and codification of processes and practices associated with centripetalism tends to be associated with minimum entropy and cost, whereas the diversity embraced by centrifugalism can be seen as yielding greater information richness and greater variety in the information

environment. In effect, despite the temptation to move towards transactions that display minimum entropy and cost, this comes at a price, as *"data economies are often achieved at the expense of data richness"* (Boisot, 1998: 133). According to Boisot, in many organisational contexts different institutional models coexist, as there is a need to explore the complexity of their environment in different ways: *"Where one of these cultures predominates – i.e., acts as a strong attractor – at the expense of others, dysfunctional behaviours are likely to appear."* (Boisot, 2000:122). Where one of the forces in the organisation becomes centripetal, this will be at the expense of the representation of the culture and *modus operandi* of the other forces.

We can see the discursive interaction around the tension between information centripetalism and information centrifugalism as a means to re-dress the balance between contrasting models of the information arena. These different models imply, then, different configurations of information systems to manage these conflicting views of the organisation and of its information arena.

7.4 Models of information management: a focus on process and a focus on meanings

The discursive practices adopted by the interviewees explored, in parallel with the tension between centrifugal and centripetal models of the information arena, an inter-related tension which refers to different approaches to information management, expressed through a focus on process and a focus on meaning.

Discourses that emphasized process as the focus for information management approaches were articulated around the definition of rules and procedures, standardisation and codification of processes and the attribution of levels of responsibility and accountability, whereas discourses focused on meaning were developed around notions of quality and accuracy of information that were locally originated. Depending on the perspective that was adopted, different views on what constituted legitimate and valid information were formed – the process based approach focused on validation through the adoption of standard and codified processes and data codes ('*one repository, one piece of data, one meaning*'); the meaning focused approach emphasized validation through negotiation, often by committee discussions, where there was scope for an element of professional discretion in decisions that affected the establishment of university 'realities'.

An example of this tension could be found in the rhetorical strategies developed around '*accuracy*' discussed in chapter 6. As mentioned then, administrators that viewed themselves as intermediaries, and not as target achievers, presented the focus

of their work as consisting of controlling processes and ensuring that these processes were adequate to get the information that was required in each instance.

> *"From my point of view as an administrator the focus is on the process because it's not my responsibility to achieve targets, it's my responsibility to show that we may or may not achieve targets and to show that you need processes that will give you the information and enable you to present it in a particular way. " (DIS.2:13)*

Approaches focused on process fostered an assumption that processes and procedures were a means to ensure adequate meaning. For the administrators that adopted this approach, a focus on standard processes and procedures, rather than on the variety and multiplicity of local information, allowed the establishment of an orderly and disciplined way of making sense of the complexity of the world of the University. This was also emphasized by the fact that, at the technostructure and at the strategic apex, administrators were often in charge of dealing exclusively with aggregate data and with the funding models that would be the basis for making and justifying claims to the funding boards.

> *"[...] how we can monitor what information is there - it's when we start doing returns for external bodies, that's when things will start coming out. Procedures will have to be set up to see that there is regular monitoring of what's being entered [...]. "(CI.1:35)*

On the other hand, at central support services, such as the Postgraduate and Undergraduate Student Offices and at local academic departments, where administrators were in charge of dealing with individual cases and individual instances of information, establishing the accuracy of what was being presented through the information systems was vital, and their focus was on assuring that the meaning of the content of the information systems was accurate. The simplification introduced by the funnel effect of centripetalism and standardisation was seen to be at

the detriment of information richness. For these administrators, process was not

enough to guarantee accuracy, as individual pieces of information had to be checked

against individual students and validated through different instances and decision-

making processes, often through committee structures. The following quotations,

reproduced from the previous chapter, exemplify this:

> "I think the core information is important, though. I don't think it is just a process issue, because we are dealing with individual student places, I would say. Obviously, the purpose of having procedures is to try ensure as much as possible that the information is correct [...] I would say in that case because it is not just the fact that we have a procedure to deal with exam results, for example, the fact is we need the results against the students correctly, because they need a transcript of qualifications, you can't just throw all the results together and say it is just part of processing exam results, it needs to be correct for the individual." (SO.1:28-29)

> "[...] at different times in the process, the same information belongs to different people. Different people are responsible for the integrity of that information and I'm sure altering it, or taking it to the next stage. The Examining Board, for example, had discretion to amend a mark in recognition of let us say a medical circumstance. Then at the higher levels, different people have the authority to look at that information again in a different context". (ASO.1:10)

As mentioned before, different areas of the University were in charge of different

areas of activity and different scopes of intervention and were therefore likely to make

different use of the same information, thus potentially informing its meaning in

varying ways. Perceptions of accuracy and discourses on accuracy depended,

therefore, upon the specific lenses that were adopted and the formation of meaning

around specific contexts and situations.

The tension between information management perspectives focused on process and

those focused on meaning can be related back to the tension between centripetal and

centrifugal models of the information environment. Information centripetalism,

articulated around the control of the information environment by the Centre, requires

a focus on the codification and standardisation of processes of handling information and of data structures to ensure the pre-determination of meaning. Centrifugal perspectives, on the other hand, are more congruent with an acceptance of diversity and the need to negotiate multiple inter-relations in situated contexts, where meaning becomes emergent.

As mentioned in the previous chapter, these two perspectives can be related to notions of data and control, characteristic of a functionalist paradigm in IS research, and notions of information and meaning, characteristic of an interpretative paradigm in the same field, which, as pointed by Hirscheim, Klein and Lyytinen (1996) are difficult to conciliate. It is therefore not surprising that the view over what should be an adequate and effective information system varied significantly depending upon the adoption of a centripetal and process focused perspective or a centrifugal and multiple meaning promoting information perspective. The adoption of a particular perspective on the information environment and correlated model of information management implies the adaptation of information systems to its own objectives and agendas.

These two different tensions can also be correlated back to different notions of information and different assumptions on what information is. Centripetal models of the information environment appear to favour views of information as 'process' and as an external representation, as 'thing' (Buckland, 1991), usually as an unidimensional entity (*'one piece of information has one meaning'*), whereas centrifugal views of the information environment can be seen as privileging a notion of information as meaning, as an internal construct, potentially subjected to multiple interpretations, within negotiated interactions.

This distinction has practical implications in terms of views on how information can be managed. Information as an external embodiment, a 'process', as thing, correlates well with notions of organisational ownership of information, amenable to interventions based upon information codification and control and standardisation of processes, which were seen, in turn, as ensuring the standardisation of meaning. On the other hand, information as meaning implies a far fuzzier and more ambiguous relationship between notion of ownership and that of information. In this context, the focus is on interpretation in action, in situated and often negotiated contexts, where meaning becomes emergent. The tension between the two perspectives is illustrated by the different rhetorical strategies developed around the corporate data model and the finance codes, as attempts to standardise meaning by the Centre, met with renegotiation by the periphery, analysed in the previous chapter and further discussed ahead.

7.5 Discourse, complexity and uncertainty

As proposed above, underlying discourses on models of the information arena and of its management, we can find different assumptions about the nature of complexity of the environment, strategies for dealing with uncertainty generated by complexity, and correlated models of learning, expressed through exploitation as a complexity reduction strategy and exploration as a complexity absorbing strategy.

Boisot (1998) refers to centripetal cultures as uncertainty reduction strategies and to centrifugal cultures as complexity absorbing strategies. In a similar way, as proposed before (Chapters 5 and 6), we can relate information centripetalism and information centrifugalism to these different ways of dealing with complexity. Whereas information centripetalism, through its focus on standardisation of processes and codification of information, can be seen as a complexity reduction strategy, information centrifugalism, through its focus on plurality of meaning and diversity of local practices, often not clearly codified and largely tacit to those individuals that carry them, can be seen as a complexity absorbing strategy.

These two different approaches are also related to models of organisational learning that emphasize a focus on exploiting knowledge and on exploring knowledge. According to Levinthal and March (1990), March (1991) and McNamara and Baden-Fuller (1999), most organisations face the dilemma of deciding whether to focus their strategies on the exploration of knowledge or on the exploitation of knowledge. Exploration can be defined as *'the pursuit of new knowledge of things that might come*

to be known' (Levinthal and March, 1990, cited in McNamara and Baden-Fuller,

1999: 292), whereas exploitation is *'the use of things already known.'* (Levinthal and

March, 1990, cited in McNamara and Baden-Fuller, 199: 292). In many organisations,

both are present and there is a temptation to pursue both avenues, in the shape of a

tension between exploration and exploitation. In effect, McNamara and Baden-Fuller

(1999) consider that a balance between both is necessary for organisational survival.

The emphasis on the standardisation of meaning, expressed through the adoption of a

corporate data model (*'one repository, one piece of data, one meaning'*) represented a

tightened boundary for making sense of the University 'reality', recorded within the

corporate information systems, that allowed the reorganisation and redistribution of

resources, particularly financial resources, at the University. As mentioned above,

behind different categorisations of the world, are not only views of the world, but

different interventions on the world and the new coding structures constituted

interpretative repertoires and filters and acted, in effect, as resources for action

devised by the technostructure and the strategic apex. As argued in chapter 6, the

adoption of particular coding structures, data models and correlated resource

allocation models were not neutral actions and underneath an appearance of

'neutrality' and 'objectivity' of figures and *formulæ*, we could find specific ways of

intervening in the world of the University. The pursuit of a strategy that emphasized

blueprinting and singularity of meaning could be seen as an intervention that

promotes the exploitation of familiar knowledge – *"thinking within the thinkable"*

(Baumard, 1999: 49). Its prescriptive slant can also be seen as consistent with

Regnér's (2003) proposition that strategy making in the Centre can often follow a

deductive avenue, through the promotion of standard routines, planning and analysis.

In contrast, this attempt to centrally define one set of meaning as a key to control and manipulate the distribution of resources across the University, was, as seen, often either renegotiated or disputed by those at the periphery. It could be argued that centrifugal approaches adopted at the periphery, emphasizing a plurality of perspective and meaning and diversity of practices and of local knowledge and, more importantly, negotiated understandings of meaning, are more consistent with an exploratory approach, where meaning emerges and follows an inductive pattern. Regnér (2003), again, in the context of strategy formation in industry, characterises strategy making at the Periphery as essentially inductive, following exploratory trial and error patterns. The efforts to devise local coding structures as a means to make sense of the 'reality' generated by the corporate data model and to bridge its gap with local practices and meanings, can be seen as a way to explore diverse meanings, using "*thinking within the recognisable*" (Baumard,1999: 49) as a basis for action and for sense-making.

As mentioned above, both tensions tend to co-occur in organisations. Mintzberg and Waters (1985), for example, suggested that strategy formation requires the two different approaches – one, based on planning and analysis, thus essentially deductive (Regnér, 2003) in nature; the other, more crafted and based upon intuitive responses to the uncertain and unexpected and therefore closer to Regnér's inductive avenue. The approaches taken by Centre and Periphery may then be complementary. McNamara and Baden-Fuller (1999) suggest, in effect, that successful organisations go through different stages of reorganisation of the balance between exploration and exploitation.

Nevertheless, Levinthal and March (1993, cited in McNamara and Baden-Fuller, 1999, 292) state that there is a tendency, especially in mature organisations, for exploitation to dominate over exploration over time:

"*Exploitation tends to generate clearer, earlier and closer feedback than exploration. It corrects itself sooner and yields more positive returns in the near term. As a result, the primary challenge to sustaining an optimal mix of exploration and exploitation is the tendency of rapid learners and successful organisations to reduce the resources allocated to exploration.*"

It is possible for organisations to pursue successful strategies based on exploitation, if they are able to continually re-deploy their skill basis adapting it to an evolving environment. However, logic would determine that at some point there must be a need to adapt this knowledge base and integrate it with new developments if the environment changes significantly. In effect, we can consider that success based upon exploitation will tend to reinforce the patterns of behaviour that have led to it and overwhelm the capacity for organisational change in the long term.

Boisot (2000) suggests that different models of information transactions address different environmental requirements and, hence, lower the costs of transacting within those requirements, so when information is amenable to standardisation and codification and environmental requirements are consistent with that, it may make sense to reinforce those dimensions. Conversely, where it is amenable to variety of interpretation and tacitness, institutional structures should foster transactions with

those characteristics. He suggests that these dynamics of institutional information transactions should be thought of as "[...] *emergent Nash equilibria in iterated games between varying numbers of agents, equilibria that are partly shaped by the characteristics of the environment in which the games take place.*" (Boisot, 2000: 121). In this context, successful organisations are those that are able to deal adequately with complexity and operate within a complex regime, generated "[...] *either from strongly structured relationships between a large number of agents or weakly structured relationships between a modest number of agents*" (Boisot, 1998: 204)[18].

The tensions identified through the discursive practices of the administrators at the University, in terms of models of the organisational information arena, models of managing information and representations of complexity and correlated learning patterns can, then, be seen as inherently necessary to deal with the varying requirements of the complex environment Universities, as large professional institutions, operate within. At one point, one force may predominate at the expense of others; at other points, the attractor may be another force, but the tension and the relative balance between the forces is necessary and different environmental changes

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[18] Boisot (1998:204) considers, in effect, that organisations can fall into three different categories depending upon whether they operate in a:

- ordered regime, defined as "*the result of highly structured relationships between a limited number of agents*" ;
- chaotic regime, characterised by "*weakly structured relationships between a large number of agents*";
- complex regime, generated "*either from strongly structured relationships between a large number of agents or weakly structured relationships between a modest number of agents*" (Boisot, 1998, 204).

Ordered regimes are too rigid and too focused upon measurable efficiency gains to being able to deal with complexity leading to core competence development and chaotic regimes do not possess the degree of organisational coordination that can lead to embedding processes of important know-how across the organisation. It is the complex regime that ensures oganisational capabilities of dealing with complexity.

may require constellations of the various forces with different configurations, as part of a process of continuous learning and adaptation, and implies, in turn, the adaptation of information systems through this process.

7.6 Information arenas, tensions and contacts

The relationships between different forces and the tensions that constitute information arenas as fields of interaction are not, however, linear or clear cut processes and it would be simplistic to characterise the various tensions between forces both, on one hand, in terms of the antagonism between two opposing and exclusive poles, as suggested above, and, on another, as part of some inherent invisible rational logic that will inevitably draw the interaction between forces into some state of desirable *equilibrium*. In effect, despite the re-formation of different social groups through conflicting notions of participation and of responsibility around the new formal structures, there was scope for renegotiation and redefinition of organisational roles and practices across them. As stressed by Cohen, Duberley and McAuley, (1999: 481), in the context of the relationship between centre and periphery in public sector research institutes, in *"Examining the relationship between the professions and bureaucracy from the perspective of the negotiated arena, the central concern is not to expose or explain the fundamental antagonism between these dimensions, but to investigate the more complex ways in which they co-exist and interact [...]"*.

Prichard and Willmott (1997) offer an analysis of changes in the Higher Education sector in the UK that can help explain the nature of interaction and of tensions that characterise information arenas and, ultimately, shape the organisational adaptation of information systems. They adapt a conceptual framework proposed by Fiske (1993) and conceptualised as the 'power-bloc' and the 'people' to explain different and opposing formations of social power in this sector These different formations include

worldviews, forms of interaction and identities. Whereas the 'power bloc' is characterised by *"imperialistic ambitions"*, the 'people' has more *"localised concerns"* (Prichard and Willmott, 1997: 294). These are expressed through the construction of, respectively, 'stations' which are colonising in their intent and impose a different social order from above and 'locales' which have a concern with *"immediate social conditions of every day life"* and with strengthening local territories rather than expanding them (Prichard an Willmott, 1997:294). 'Stations' and 'locales', according to Prichard and Willmott (1997) are both a physical place and the positioning of individuals within social relationships and orders and, therefore, enact different physical and social spaces. Both are formed around different types of knowledge: *"In opposition to the top-down power of 'power blocs', the subordinated formations of 'the people' comprise and articulate localized knowledges and practices, as contrasted with imperializing ambitions"*. (Prichard and Willmot, 1997:295).

This framework is useful to explain the root concerns associated with the interaction within and across arenas and the tensions that characterise them. This was, as discussed in Chapter 5, expressed, in this particular case, through the clash between a discourse that appealed to a 'superordinate strategic imperative', which was collectively oriented and framed under the umbrella of the need for survival under difficult conditions that were imposed to all Higher Education organisations by external forces, and a discourse of academic and professional autonomy, emphasizing the value of professional freedom in pursuing knowledge discovery avenues. The clash between discursive practices that appealed to managerial control and those that defended academic and professional autonomy and collegiality, is evocative of the

interaction between stations and locales. This was expressed through the tension between discourses that emphasized centripetalism and those that emphasized centrifugalism at the University.

Information centripetalism, with its focus on standardisation of processes and codification of information into a *'one meaning'* perspective, associated with a focus on managerial practices and processes, can be seen to be driven by colonizing intents, requiring the simplification of the complexity of the environment. The promotion of managerial ability as an attribute of the newly formed technostructure at the University and the adoption of discursive resources that appealed to a managerial ethos (the 'superordinate strategic imperative', blueprinting, efficiency) acted as a vehicle for this social group to make claims to power. Prichard and Willmott (1997) characterise management knowledges and discourses as largely imperialising and established through operating the distinction between property and control of resources, requiring the development of specialised knowledges of controlling organisations.

On the other hand, information centrifugalism, emphasizing plurality of meaning, local practices and knowledges, can be seen to be driven by a concern with maintaining a local *modus operandi* and identity, evading colonising intents by exploring the complexity of the University environment and through the promotion of the various niches of expertise professionals and academics were familiar with. It asserts itself by promoting and developing specific professional knowledge, rather generic knowledge of how to manage organisations and on the control and coordination of activities predicated upon role and position.

This raises interesting implications when considering conceptualisations of power, ownership and control in relationship to discourses on information systems. As seen in Chapter 3, the notions prevalent in the literature have been focused on the inter-relationships between IT, as an exogenous entity, and organisations. Section 3.2.3 discussed this aspect and the comprehensive review of studies on the relationship between power and information by Jasperson *et al.* (2002) which have identified three key strands of literature categorised around what they define as sets of lenses. A large strand of the literature, referred to as the technological lens, is centred around the notion of technological determinism asserting that IT, as an external agent, introduces different power relations in the work place, by enabling forms of exercising control. These studies emphasize that IT impacts on existing power relationships and formal decision making structures, by changing the information processing capabilities of organisations (Carter, 1984; Zeffane, 1989; Anand and Mendelson, 1997; Nault, 1998). A second strand of literature, referred to as the organisational lens, emphasises the view that the development process is dominated by the exercise of power by systems developers over systems users, through the imposition of technical expertise and the manipulation of the user requirements incorporated in systems (Markus, 1983; Kling and Iacono, 1984; Markus and Bjorn Anderson, 1987). The third strand of literature presents an emergent perspective, where organisational power and information technology are seen as mutually impacting on each other. This is emphasized in more recent studies, exemplified by Brown (1995a, 1998) and Doolin (2004).

The case study explored in this thesis exemplifies the nature of both information systems, as implicated actants, constructed through the discursive practices of organisational actors, and power relations inherent to the actions of these organisational actors as socially constructed. Unlike in zero-sum perspectives of power which conceptualise it as something that is possessed by single actors or groups of actors, the relational perspective of power, influenced by the idea of its circularity, proposed by Foucault (1980:98), emphasizes the view of social actors as "[...] *the vehicles of power, not its points of application*" and of power as the result of social and discursive interaction. As proposed by Horton (1998:121), since power is socially constructed and therefore subject to a variety of interpretations, "[...] *attempting to define power is less useful than exploring the manifestations, mechanisms, or the exercise of power*". This thesis adopts the perspective that power relations are discursively constructed and that they are shaped by the interplay between discursive regimes. They are characterised by dynamism, multidimensionality and continuous shifts. Through the exploration of the tensions and contacts between the discursive categories that were identified around information centripetalism and information centrifugalism, control over processes and over negotiated meanings, as well as assumptions relating to environmental complexity, different actors negotiated relative positions of power. In effect, the initial managerial and centripetal agenda that was attributed to the new management information systems and the administrative regime they supported, was met with efforts to renegotiate who and how was responsible for information processes, through the debate around 'devolvement' and 'systems integration', as well as attempts to renegotiate meaning, through the discussions around the 'corporate data model'. Despite the fact that the new systems and changes in the administrative egime

were associated with the rise of a new group that played an important role in providing the backbone for the technostructure at the University, closely associated wit its strategic apex, other administrators who were initially at the periphery of the decision making processes driving the administrative changes, were able to renegotiate new roles in the new administrative regime. This was often carried out by administrators at academic departments and at support services, by switching between different discourses and in effect occupying different discursive locales and renegotiating meanings. As stated by Brown (1998: 49), "[p]*ower is thus not a thing and nor should it be thought of as an unexercised capacity, but as a matter of the successful deployment of meaning. What is struggled for and against is a particular legitimated interpretation of rules, actions, events, motives, outcomes. Power is, in part, at least, expressed in and through narratives* [...] *which groups deploy to legitimate interpretations that they believe favour their interests*". It could also be added here that power relations are constituted by narratives and discursive practices.

The important point to retain from this study is that existing local practices, knowledges and discourses have a mediating effect in the interpretation and adoption of imperialising discourses and practices, as suggested by Prichard and Willmott (1997). Similarly, Cohen, Duberley and McAuley (1999) suggest, in the context of Centre-Periphery relations in scientific research institutions, that the interplay between managerial discourses and those of science is marked by negotiation, rather than imposition and blind acceptance or resistance. They suggest that the concept of duality of structure by Giddens (1976; 1984) further extends that of the negotiation arena by Strauss *et al.* (1964, 1981), as it is through negotiated interaction that social structures are reproduced and transformed. Negotiation in this case, as they suggest,

comprises two distinct dimensions: one, located within each discursive regime and defined by its structural and agentic dimensions; the other, defined by the interplay between different discourses. This proposition has practical implications for the discussion of the nature of the tensions identified through the discursive practices of the administrators interviewed in this study, leading to the organisational adaptation of information systems.

A critical example of how the role of negotiation can frame the nature of tensions and the relationship between different forces can be found in the different rhetorical strategies developed around the *'corporate data model'*. In the previous chapter, it was suggested that the new resourcing models and the new data structure, incorporated in the *'corporate data model'*, devised by the technostructure, aligned with the strategic apex, at the Centre, were a way to reorganise and redistribute resources, essentially financial resources, at the University and were not considered neutral. Data structures and models could significantly alter the meaning of administrative information:

> "[...] *depending on which one* [system] *you look at, you get a different picture* [...], *which is concerning and confusing"* (SO.1:9).

Administrators at the periphery responded through different attempts to change meaning: in the area of student administration, which had an important impact in the allocation of funding to Universities, by developing rhetorics around notions of *'accuracy'* and of its importance, establishing themselves key holders to information accuracy, in a context where *'accuracy'* was in many instances established through negotiation (in exam boards and different academic committees, for example); in financial administration, the Finance Department was, as discussed in the previous

424

chapter, the point of origin of budget definition, which was organised through the finance codes, and change in the meaning of financial information often occurred through dispute.

In the interplay between discourses on the 'corporate data model', key to the allocation of resources at the University, the focus of the activities of those in the Periphery of the decision-making process was in devising counter tactics focused on establishing control over meaning, rather than over process. Devising local codes, which allowed these administrators to translate the central finance codes adopted in the new management information systems and make sense of them in the context of their activities, was key to renegotiating meaning. In doing so, local administrators often assumed the role of organisational translators, framing different interests across different discourses. This was made possible by the occupation of different locales (Prichard and Willmott, 1997; Trowler, 2001) where "[...] *alternative social structures are conditioning behaviour, including the use of different discursive repertoires*" (Trowler, 2001:196).

Andrade (1999:13) refers to the notion of "social translation" (after Gadamer and Wittgenstein), as "*rites of passage*" between and across language games, played by individuals and social groups. It was also, in effect, not unusual for local administrators to occasionally defend centripetal positions, when that allowed the reinforcement of their positions within their departments, while arguing with the Centre for the devolvement of ownership of their working practice, as seen in the following comment, previously discussed, by the head of administration at an academic department:

"I think the departments have far too much autonomy, because if you go visit several different departments you'll find that they are doing the administration procedures for similar tasks in quite different ways, there's no standard for doing anything, nobody tells a department they should be processing things or filing things or doing things in a particular, it's up to them to decide for themselves as long as they respond to what comes through the centre or the faculty, then the university seems quite happy. And sometimes I think when I first arrived in the department 2 years ago and I could see that some of the administrative procedures weren't functioning as efficiently as they could do, because I had no idea what other departments did, you've got no reason to change a procedure. As an administrator I would prefer to have much more input about what's the best way of processing information, but, I mean, we have changed things in the office over time." (DIS.2:)

Trowler (2001:196), in the context of discussing the adoption of the 'New Higher Education Discourse', states that "[...] *it is perfectly possible for the same person to employ sets of discursive repertoires in different contexts which articulate and sustain completely contradictory sets of assumptions, particularly when a different 'order of discourse' [...] is being drawn on*", referring to this as a form of *'bilingualism'*. In effect, some of the interviewed administrators could, at different points, explore the various tensions that were identified, by moving across different discourses, when and as required by changing circumstances. These different rhetorical strategies allowed the negotiation and reinterpretation of the University 'realities' and of work conditions and exemplifies the interplay between the structural and the agentic dimensions of discourses. In this context, as suggested by Cohen, Duberley and McAuley (1999), the interplay between individual agency and social structure within and across different discursive regimes allows the reconstruction of the social context where interaction occurs, as well as the redefinition of identities of different actors through the exploration of these discursive regimes. Identity is defined *vis-á-vis* 'what one is not', as much, or more as by 'what one is', and sometimes 'against what one is' (Huntington, 1999; Andrade, 1999).

In this context, the relationship between the various discursive forces in information arenas is also marked by elements of contact, as well as of tension. Information arenas, then, enact and inform social interaction, as well as representing social interaction, marked by "*dialogic contacts and tensions*" (Andrade, 1999: 1) between different forces, leading to the social re-shaping and adaptation of the organisational role of information systems.

7.7 Summary: The role of discourse in the organisation adaptation of information systems

The core argument that resulted from this research is that the organisational adaptation of information systems is, to a large extent, driven by the interplay between the discursive practices of different organisational actors. In the case of the University that provided the empirical ground for this research, this occurred through the interaction between the tensions between the following discursive categories:

- models of the information environment, expressed through the tension between information centripetalism and information centrifugalism;

- models of information management approaches, expressed through the tension between a focus on process and a focus on meanings;

- and, underlying the previous elements, assumptions about the nature and complexity of the environment, strategies for dealing with uncertainty and correlated models of learning, expressed through exploitation as a complexity reduction strategy and exploration as a complexity absorbing strategy.

Chapters 5 and 6 analysed and discussed the various manifestations of these discursive categories. For example, the discourse of centripetalism made appeal to efforts towards the codification and abstraction of administrative information, through its categorisation in the corporate data model and in the funding codes and model, to be applied across the entire University ('*one repository, one piece of information, one meaning*'). Its legitimating argument lay in the need to pursue a superordinate strategic imperative, in order to preserve collective interests in the face of adverse

conditions faced by Higher Education institutions across the country, which implied a need to compete for limited resources. The discourse of centrifugalism emphasized local practices, often tacitly adopted and specific to concrete contexts. Its argumentation lay in the notion that local contexts held the key to information accuracy and to its correct interpretation. Discourses around centrifugalism also emphasized issues related to professional authority, such as degrees of discretion, negotiation and validation of meaning through different instances, represented by the various academic committees. A striking example of how this tension was manifested is the continuous reinterpretation of the notion of *"devolvement"*. In the discursive sphere of centripetalism, *"devolvement"* equated to defining accountabilities over who was responsible for operating different aspects of the new systems. In the discourse of centrifugalism, *"devolvement"* was represented as a way of guaranteeing local autonomy and control over the operation of the system. Its reinterpretation corresponded to different perspectives over where the *locus* of control over the new information systems should lie.

The tension between information management perspectives focused on process and those focused on meanings is related to the tension between centripetal and centrifugal models of the information environment, although they are not equivalent or correlated in an automatic way. Information centripetalism, articulated around the control of the information environment by the Centre, requires a focus on the codification and standardisation of processes of handling information and of data structures to ensure the pre-determination of meaning. Centrifugal perspectives, on the other hand, are more congruent with an acceptance of diversity and the need to negotiate multiple inter-relations in situated contexts, where meaning becomes

429

emergent. A key example of the interplay between discourses focused upon process and those focused upon meaning is the discussion around the *"corporate data model"* and notions of *"data accuracy"*. Approaches focused on process fostered an assumption that processes and procedures were a means to ensure adequate meaning. For the administrators that adopted this approach, a focus on standard processes and procedures, rather than on the variety and multiplicity of local information, allowed the establishment of an orderly and disciplined way of making sense of the complexity of the world of the University. On the other hand, at central support services, such as the Postgraduate and Undergraduate Student Offices and at local academic departments, where administrators were in charge of dealing with individual cases and individual instances of information, establishing the accuracy of what was being presented through the information systems was vital, and their focus was on assuring that the meaning of the content of the information systems was accurate. The simplification introduced by the funnel effect of centripetalism and standardisation was seen to be at the detriment of information richness. For these administrators, process was not enough to guarantee accuracy, as individual pieces of information had to be checked against individual students and validated through different instances and decision-making processes, often through committee structures. The new resourcing models and the new data structure, incorporated in the *'corporate data model'*, devised by the technostructure, aligned with the strategic apex, at the Centre, were a way to reorganise and redistribute resources, essentially financial resources, at the University and were not considered neutral. Data structures and models could significantly alter the meaning of administrative information. Administrators at the periphery responded either through different attempts to change meaning: in the area of student administration, which had an important impact in the

allocation of funding to Universities, by developing rhetorics around notions of *'accuracy'* and of its importance, establishing themselves key holders to information accuracy, in a context where *'accuracy'* was in many instances established through negotiation (in exam boards and different academic committees, for example); in financial administration, the Finance Department was the point of origin of budget definition which was organised through the finance codes, and change in the meaning of financial information often occurred through dispute, rather than negotiation.

As has been proposed, we can consider that underlying these tensions are assumptions about the nature and complexity of the environment, strategies for dealing with uncertainty and correlated models of learning, expressed through exploitation as a complexity reduction strategy and exploration as a complexity absorbing strategy. They also reflect wider changes in the University arena that were visible throughout the sector and found expression in the tension between a discourse and ideology of managerialism and that of professional autonomy. Both are examples of structural dimensions of the discourses in the Higher Education arena (Prichard and Willmott, 1997; Allen, 2000; Trowler, 2001). The promotion of managerial ability as an attribute of the newly formed technostructure at the University and the adoption of discursive resources that appealed to a managerial ethos (the 'superordinate strategic imperative', blueprinting, efficiency) acted as a vehicle for this social arena to make claims to power. Management knowledges and discourses can be seen as largely imperialising and established through operating the distinction between property and control of resources, requiring the development of specialised knowledges of controlling organisations. On the other hand, information centrifugalism, emphasizing plurality of meaning, local practices and knowledges, can be seen to be driven by a

concern with maintaining a local *modus operandi* and identity, evading colonising intents by exploring the complexity of the University environment by promoting the various niches of expertise professionals and academics were familiar with. It asserts itself by promoting and developing specific professional knowledge, rather than generic knowledge of how to manage organisations and on the control and coordination of activities predicated upon role and position.

These discursive interactions were represented through the notion of a tension, rather than simple opposition between different and antagonistic poles. This way of conceptualising these particular discursive interactions has been largely influenced by the process of analysis and the specific method that was used – the constant comparative method, by Glaser and Strauss (1967). The initial phases of analysis yielded a large number of open concepts - examples include, for instance, 'resistance and buy-in [to the systems]', 'accuracy of local data', 'sensitive data', 'access', 'user participation'. Constant comparison between open concepts and data instances led to the definition of the more abstract categories of centrifugalism and centripetalism, process and content and of the underlying assumptions on the nature of the environment and its complexity – these form the key categories that were identified and relate to the part of the method that is referred to as axial coding. Delimiting categories is not, however, enough to develop an emergent theoretical framework, as proposed by Glaser and Strauss (1967), and as important as the key analytical categories, if not more, are the relations between them and it was this final stage of analysis of establishing relationships between the categories that revealed that these were more complex and far more nuanced than would be expressed between the simple opposition of two antagonistic poles. This is particularly expressed through the

activities of *"organisational translation"* and of *"mutilingualism"*, which will be expanded below.

The tensions articulated around the discursive categories of information centrifugalism and information centripetalism and of control over process and control over meaning can be related to notions of data and control, characteristic of a functionalist tradition in IS research, and notions of information and meaning, characteristic of an interpretative tradition in the same field, which, as pointed by Hirscheim, Klein and Lyytinen (1996) are difficult to conciliate. It is therefore not surprising that the view over what should be an adequate and effective information system varied significantly depending upon the adoption of a centripetal and process focused perspective or a centrifugal and multiple meaning promoting information perspective. The adoption of a particular perspective on the information environment and correlated model of information management implies the adaptation of information systems to its own objectives and agendas.

However, although these perspectives are not easily reconcilable, in a given arena, seen as "[...] *a field of action and interaction among a potentially wide variety of collective entities*" (Clarke, 1991:128), in this case the University administration, its information systems and its various social worlds, their interaction and inter-relationships cannot be simply equated to pure antagonism and opposition. Instead, it is complex, multidmensional and shifting. In effect, although in the initial phases of analysis information centrifugalism and information centripetalism, process and content were seen largely as "bipolar" notions, further stages of analysis led to the verification that representing these discursive elements as such would not express

433

clearly the complexity of issues that were seen to interact in this particular case. Instead, this complexity is better expressed through the adoption of the image of coexisting (rather than exclusive) forces (rather than states) that form through their interaction a tension. The analogy of centrifugal and centripetal forces is suggestive of this tension between diverging trends towards seeking and fleeing a centre and has been used both in the literature of discourse studies (Bakhtin, 1984, 1986) and in the literature of information studies (Ellis, 1986; Seadle, 1998). At one point, one force may predominate at the expense of others; at other points, the attractor may be another force, but the tension and the relative balance between the forces is necessary and different environmental changes may require constellations of the various forces with different configurations, as part of a process of continuous learning and adaptation, and implies, in turn, the adaptation of information systems through this process.

This is particularly expressed by the activity of *"organisational translation"*, not only mediating across discourses, but, much more than that, framing different interests across different discursive regimes, as happened for example in the interplay between discourses on the *'corporate data model'*, key to the allocation of resources at the University, where the focus of the activities of those in the Periphery of the decision-making process was in devising local codes to translate and complement the central codes, requiring action focused on establishing control over meaning, rather than over process. This allowed these administrators to translate the central finance codes and make sense of them in the context of their activities and was key to renegotiate meaning that affected the redistribution of resources. More than that, different administrators switched across different discursive regimes engaging in *"bilingual"*

activities. For example, it was not unusual for local administrators to occasionally defend centripetal positions, when that allowed the reinforcement of their positions within their departments, while arguing with the Centre for the devolvement of ownership of their working practice. This was made possible by the occupation of different locales or social worlds, where different ideologies were expressed through the various discursive repertoires that were identified in this thesis. In doing so, these actors established contacts across different discursive regimes. The relationship between the various discursive categories is therefore marked by both tension and contact. These actions of exploring tensions and establishing contacts are also an expression of the interplay between agency and structure within and across different discursive regimes.

Through these incidents, we could see the adaptation of the new systems from the initially intended centripetal drive, focused on centrally defined processes and data structures, to a more negotiated regime in defining local responsibilities, rather than just accountabilities, and in deciding what constituted accurate and legitimate information processed through the system, by negotiating its meaning. It became evident and more or less accepted that, as different areas of the University were in charge of different areas of activity and scopes of intervention, they were therefore likely to make diverse uses of what appeared as the same data in the system, thus potentially informing its meaning in varying ways. Perceptions of the role of the new information systems depended, therefore, upon the specific lenses that were adopted and the formation of meaning around specific contexts and situations. Similarly, the new information systems became a vehicle through which meanings around the University administration were negotiated and discourses were articulated. This

exemplifies in practice the dual aim of discourse analysis, previously referred to, of identifying and explaining the interplay between the structural and agentic dimensions of discursive regimes and across different regimes.

The tensions and contacts identified through the discursive practices of the middle managers in administration and technical services at the University, in terms of models of the information environment, models of managing information and representations of complexity and correlated learning patterns can, then, be seen as inherently necessary to deal with the complex, multidimensional and shifting nature of Universities, as large professional institutions. The University administration information arena can then be seen as a force field where these tensions and contacts between "universes of discourse" are both informed by and informative of action and interaction (in the Straussian sense) or practice (in the Foucauldian sense), whether it is conflicting, collaborative, disciplining, negotiating. The information arena as a force field of tensions and contacts provides then an interesting practical context to revisit the paradigm debate in IS research, discussed in Chapter 3. Although the assumptions underlying the functionalist and the interpretive traditions in academic discourses in IS research are not easily reconcilable, in practice, different organisational actors displayed the capability of discursively switching between notions that may be seen as inherent to each tradition – for example, switching between blueprinting, standardisation of processes and one data model to local practices and procedures and negotiation of meanings – and to accommodate these perspectives, not only as means for negotiating, but also sometimes perhaps as means for sense-making . This is consistent with propositions that the paradigm debate in IS

research is ideologically and discursively founded and based in the use of different

discursive resources and repertoires.

Chapter 8 - Conclusions

8.1 Contribution to knowledge

This thesis set out to explore what was perceived as a relatively neglected theme in the information systems research literature -- the role of discourse in the organisational adaptation of information systems within a constructivist perspective. This required the exploration of notions of information beyond a unidimensional and process oriented perspective (which is focused on data structures and data flows) and a consideration of the complexity of a wider information environment, of which information systems as IT artefacts, as well as the context of their immediate and proximate use, form only a part.

As mentioned in the Introduction, the aims of this thesis were articulated around:

i)   the analysis and exploration of perspectives on the relationship between the management of information systems and of the wider information environments they belong to, through the discursive practices of organisational actors,

ii) by defining the premises around which these discourses are constructed and deployed and,

438

iii)   simultaneously, how, in turn they inform worldviews on the information environment and lead to the organisational adaptation of information systems.

The thesis addresses the stated aims through an extension of a framework that has formed a particular understanding of the focus of the research, which emerged as the investigation process evolved. In effect, the Introduction to this thesis acknowledges a series of theoretical influences that have introduced a particular perspective for exploring the stated aims in the context of the chosen empirical ground, a University. This framework implies exploring the world of the University as a professional organisation, where multiple arenas, representing different worldviews coexist, within negotiated interaction (Strauss et al., 1964, 1981). As a large professional organisation, the University also offers a rich ground for exploring the negotiated arena concept from the perspective of Centre-Periphery relationships where negotiated interaction further reproduces social structures and forms *loci* for learning (McAuley, 1994; Cohen, Duberley and McAuley, 1999; McAuley, Duberley and Cohen, 1999; Darwin, Johnson and McAuley, 2002). This process of negotiated interaction is also marked by tensions introduced by the focus and interests of organisational groups and structural elements (Mintzberg, 1983), but also where technological developments have introduced further tensions, namely, through the concurrent effect of centrifugalism and centripetalism in information handling (Ellis, 1986), of particular interest to explore in the context of a large professional organisation, where Centre-Periphery relationships play an important role in the reproduction of social structures. It was thought that these influences form a particularly interesting vehicle to address how the complexity of the information

environment is represented and explored, how this in turn affects the relationship between organisational tensions and the management of information and, finally, how the discursive practices of organisational actors are formed around these perspectives and how these perspectives are, in turn, informed by those discourses. Simultaneously, addressing these aims can also contribute to further extend the pre-understanding formed by this framework. In this context, it was also suggested (Chapter 2) that, we can also explore potential linkages between the negotiated arena model and other more recent work on discourse, especially academic discourse and professional discourse.

The principal argument made in this thesis is that the discursive interaction amongst social actors plays a fundamental role in the organisational adaptation of information systems. As stated by Brown (1998: 52), "[...] *the capacity of IT to coordinate, structure and control is contingent only, and [...] actors often have much considerable discretion over their use of technology that making reasonable a priori predictions regarding the consequences of a particular implementation is often impossible*". Discretion comes from, it is argued in this thesis, the ability to explore discursive resources and negotiate meaning through the constitutive role of discourse. This also informs the nature of power relations as circular. Much of the original literature on managerialism in Higher Education over emphasized the imperialising effect of managerial discourses over academic work (Willmott, 1995; Parker and Jary, 1995). This case study illustrates that in the Higher Education administrative information arena, the managerial discourse, clustered around information centripetalism, an emphasis on process standardisation and generic knowledges of managing (in the sense of planning and controlling) organisations, could be

successfully nuanced by discourses that emphasized professionalism, centred around information centrifugalism, plurality of meanings and local practices and knowledges. The interplay between these different discourses is much more marked by mediation and negotiation than by antagonism, as is stressed in more recent work by Prichard and Willmott (1997), Trowler (1998, 2001) and Clegg and McAuley (2005). In this context, we can also conceptualise arenas as force fields of negotiated interaction, marked by discursive tensions and contacts.

The following paragraphs discuss the findings of the research against each of its aims.

The first aim of the thesis - *(i)* above - concerned *the analysis and exploration of perspectives on the relationship between the management of information systems and of the wider information environments they belong to, through the discursive practices of organisational actors*. The analysis of the empirical material reveals that the discursive practices of the various interviewed professionals are focused upon the context of their work practices and activities, rather than projecting information and their information behaviour as a beginning or an end in itself. The information environment in which they operate, which includes a variety of sources, systems, processes, behaviours, but also attitudes and cultures, is largely referred to, often implicitly, as an enactment and a representation of their social environment, structures and interaction, in its formal and informal manifestations. This thesis proposes that we can extend the notion of negotiated arena to consider University administration information arenas as fields of interaction between different worldviews on information environments that coexist in the same social setting. The University administration information arena was both represented and constituted by particular

discursive practices that made reference to different interpretative repertoires and resources articulated around three major categories of issues, which are dealt with when explaining the contribution to the second major aim, as follows.

The second aim (*ii* above) was referred to as *defining the premises around which these discourses are constructed and deployed*. As mentioned above, these discourses were articulated around three major categories of interpretative repertoires and discursive resources:

- models of the information environment, expressed through the tension between information centripetalism and information centrifugalism;

- models of information management approaches, expressed through the tension between a focus on process and a focus on sense-making of different meanings;

- and, underlying the previous elements, assumptions about the nature and complexity of the environment, strategies for dealing with uncertainty and correlated models of learning, expressed through exploitation as a complexity reduction strategy and exploration as a complexity absorbing strategy.

Each of these tensions had particular manifestations, synthesized in the previous chapter, and corresponded to different notions of information. Centripetal models of the information environment and models of information management approaches based upon control over process, favour views of information as an external representation and as process, whereas information centrifugalism and information

management approaches, based upon negotiation and sense-making of different meaning, viewed information as an internal construct. This distinction has practical implications in terms of views on how information can be managed. Information as an external embodiment, as a 'process' and as thing, correlates well with notions of organisational ownership of information, amenable to interventions based upon information codification and control and standardisation of processes, which were seen, in turn, as ensuring the standardisation of meaning. On the other hand, information as meaning implies a far fuzzier and more ambiguous relationship between notion of ownership and that of information. In this context, the focus is on interpretation in action, in situated and often negotiated contexts, where meaning becomes emergent. The tension between the two perspectives is illustrated by the different rhetorical strategies developed around the corporate data model and the finance codes, as attempts to standardise meaning by the Centre, met with renegotiation by the periphery, analysed in chapters 5 and 6.

There were therefore clear inter-linkages and alignments between these tensions, although not always necessarily automatic correspondences between them. It is possible to adopt a centripetal view of the information environment and a multiple meanings focused model of information management and vice-versa and centrifugal and process oriented view, for example.

It is therefore not surprising that the view over what should be an adequate and effective information system varied significantly depending upon the adoption of a centripetal and aggregate information perspective or a centrifugal and individually focused information perspective.

The previous chapter suggests that these different categories of interpretative repertoires and discursive practices that inform information arenas and the tensions that characterise them arise from the characteristics of the interaction between Centre and Periphery, where the former is driven by colonising intents, requiring the simplification of the complexity of the environment and the development of knowledges and discourses of controlling organisations (hence the focus on process, standardisation and singularity of meaning), and the latter is driven by a concern to maintain a local *modus operandi* and identity, exploring the complexity of the environment through various niches of professional expertise (hence the focus on local knowledges, and practices and on the negotiation of multiple meanings).

It was also suggested that it would be simplistic to characterise the various tensions both, on one hand, in terms of the antagonism between two opposing and exclusive poles, and, on another, as part of some inherent invisible rational logic that would inevitably draw the interaction between forces into some state of desirable *equilibrium*. The response to the third aim – iii) above, to explain *how, in turn, discursive practices inform worldviews on the information environment* - addresses this issue.

The professional discourses articulated around these perspectives and the interpretative repertoires that support them not only reflect, but also help to reproduce social relations between members of different arenas. It is also important to consider not only what these discourses express, but also what they do not express and is

silenced and left behind, which is often the expression of the perspective which forms a tension with what each rhetorical strategy is expressing.

As mentioned above, although there were clear inter-linkages and alignments between these tensions, there were not always necessarily automatic correspondences between them and different individuals carried out activities of organisational translation, by framing the interests of some communities in the terms of other communities, as well as, when necessary, making appeal to different rhetorical strategies and *'orders of discourses'* that sometimes implied contradictory assumptions. These examples of interplay between individual agency and social structure suggests that the relationship between different forces in information arenas can also be characterised by elements of contact (Andrade, 1999), as well as by tensions. In this context, the interplay between different discursive regimes in negotiated contexts allows the reconstruction of their social context, as well as representing it and enacting it. As mentioned in the previous chapter, the University administration information arena can then be seen as a force field where these tensions and contacts between "universes of discourse" are both informed by and informative of action and interaction (in the Straussian sense) or practice (in the Foucauldian sense), whether it is conflicting, collaborative, disciplining, negotiating. In doing so, these different discursive regimes serve as a vehicle for the organisational adaptation of information systems.

8.3 Practical implications

There are various implications of the research for practical approaches for information management in general and, more specifically, for the management of information systems. The thesis proposes that information systems development does not end in implementation and is carried on after implementation through their organisational adaptation. This is consistent with studies found in the literatures of social informatics (Kling, 2000), social shaping of technology (Fleck, 1994), but also in the information systems literature (Kwon and Zmud, 1987; Cooper and Zmud, 1990; Saga and Zmud, 1994;Orlikowski, 1992; McLoughlin, 1999; Doolin, 2004; Pollock and Cornford, 2004). It is also proposed that this process of organisational adaptation is particularly influenced and constituted by the discursive practices of the various organisational actors.

The first practical issue that derives from this is that, in a large organisation such as the studied University, the perception of what constitutes an adequate information system will depend upon the premises adopted by organisational actors and organisational groups – in the case of the studied University, this was reflected in terms of the discursive tensions discussed in the previous section. For example, we saw that discourses that emphasized process as the focus for information management approaches were articulated around the definition of rules and procedures, standardisation and codification of processes and the attribution of levels of responsibility and accountability, whereas discourses focused on meaning were developed around notions of quality and accuracy of information that were locally originated and negotiated.

Secondly, depending on the perspective of the information arena that that was adopted, different views on what constituted legitimate and valid information management approaches were formed – the process based approach focused on validation through the adoption of standard and codified processes and data codes ('*one repository, one piece of data, one meaning*'); the meaning focused approach emphasized validation through negotiation, often by committee discussions, where there was scope for an element of professional discretion in decisions that affected the establishment of university 'realities'.

Thirdly, this then impacts on how the role of the systems that manage information is perceived and also on how these systems should be managed. Centripetal perspectives advocate the reinforcement of the control over the centre and, in these cases, issues such as 'devolvement' are, as was seen, interpreted as a mechanism for defining accountability, whereas centrifugal perspectives strive for autonomy and diversity of management approaches at the periphery and 'devolvement' turns into a mechanism of regaining responsibility and freedom of operation.

It is difficult for a single system to satisfy completely these perspectives. What was seen in the studied case study was however that a system that was presented as driven by a centripetal and process oriented agenda, became, through discursive negotiation, adapted to other agendas that privileged different concerns. We discussed, for example, how the interplay of discourses around 'accuracy' allowed administrators at the periphery to reclaim power around areas of control over processes that, at first, it appeared that they would have lost, by asserting themselves as key holders of information accuracy. The fourth practical implication of this study is that different

organisational groups whose activities relate to information systems or are affected by them, can try - and succeed - to adapt information systems to suit their particular worldviews, agendas and actions.

Finally, information systems are not neutral. They have embedded assumptions about the organisation and its processes that can also change significantly how the organisation is presented and perceived, as was demonstrated through the introduction of the 'corporate data model' at the University, which acted in itself as a discursive resource that reshaped how the organisation was presented and viewed. As information systems are introduced, they can generate new actions in the organisations just by being there. They are clear examples of Clarke's (2005) non-human actants. While they are present in the situation and are constituted through the discursive constructs of actors in the situation, they also have an impact on actions taken by individuals as well as being the result of actions.

These implications bring out a clear message for the information manager and the information systems manager, which emphasizes that success and failure in the implementation of information systems can be the result of a process of negotiation and the effective information managers and information systems managers would be those that not only understand the underlying premises and assumptions of the discourses that are uttered around implementations, the particular agendas that they foster, but, more importantly, those that can mediate proactively between discourses, by adopting the role of organisational translators and frame different interests across different discourses.

8.3 Limitations

The chosen research approach implies that there is no claim to generalisation made by this research. This was a holistic perspective on a small scale context. There is no suggestion that it represents higher education institutions, but it can be argued that it exemplifies some of the effects of the process of change underwent in the in the Higher Education sector in the UK during the 1980s and 1990s on the role of information systems in Universities, at least in the empirical context that where the research was carried out.

As mentioned in Chapter 1 although the focus of these thesis is on 'defining discourses', the original data analysis was conducted using grounded theory and did not adopt any other approach closely related to discourse analysis. The reasons for this have been explained in Chapter 1, but in further work alternative approaches with a focus on discourse studies should be considered with care. It was nevertheless found that Grounded Theory principles are of usefulness and have great potential to analyse and identify the premises around which discourses are constructed. In the case that was studied, the process of adaptation of the new systems drove them from from the initially centripetal intents, focused on centrally defined processes and data structures, to a more negotiated regime in defining local responsibilities, rather than just accountabilities, and in deciding what constituted accurate and legitimate information processed through the system, by negotiating its meaning.

8.4 Further research

Following from some of the limitations that were pointed out above, there are, at least, three different avenues for further work:

i)   the first concerns the evaluation and the extension of the applicability of the findings to other Universities, as well as other professional organisational contexts, within constructivist and dialogic perspectives;

ii)   the second avenue has to do with relating any findings to practical approaches to information management and to the implementation of information systems;

iii)   finally, the third avenue concerns the need to pursue and explore in more depth issues that were touched upon by the research but were not carried further.

This is the case of the issues dealing with individual experiences and identity. The various interviewees - administrators, technicians, the one academic interviewed – were part of particular social arenas, but were also individuals, acutely aware of what they perceived as their organisational and professional fates and sometimes conveying a sense of haplessness. At points, different individuals pointed out many issues relating to how the wider process of change they were part of, but that often they saw as out of their individual control, affected their sense of professional identity. Other individuals expressed a view that personal agendas were the real driver of organisational life. Depending upon how their perceived fates had affected them, experiences of loss of role and of 'professional bereavement', as well as of great

optimism were related by the interviewees. These issues, related to "lived experience" (Sullivan and McCarthy, 2004), are worthwhile of further study, especially within the context of the dialogical relations between social structure and agency, as suggested by Sullivan and McCarthy (2004), an area which is only briefly touched upon in the discussion of these findings. Sullivan and McCarthy (2004: 292) suggest, in effect, that many social theory approaches to the study of agency tend to foster a centripetal perspective, where culture and person are assimilated, whereas a lived experience perspective of agency may allow to capture "[...] *the centrifugal messiness of lived and felt relations between people*".

End Note

The understanding of the situation under study and the nature of the interaction between the social actors involved and the accounts they provided over their experiences has evolved significantly over the years, since the original data collection. It is, to a great extent, a reflection of how different and successive phases of analysis can lead to further insight and illumination over was is being studied.

The original aims of the investigation, although open-ended, were placed firmly in a discrete field – Information Systems – and had a clear systems centric focus, by aiming to investigate organisational issues in information system development, with a particular emphasis on organisational culture and political issues.

The intent was to derive inductively and empirically from a case driven and data grounded approach the focus of what constituted the key organisational issues within that context. The initial set of interviews focused on the context of the introduction of a completely new set of management information systems at the chosen University, part of a national initiative called the MAC (Management and Administrative Computing) Initiative, funded by the UK University Grants Committee, which had the aim of introducing common administrative software to allow data comparability across the sector. The original analysis of this set of interviews pointed towards a focus on the interaction between what characterised processes of exercising power and processes of legitimising the actions involved in doing so.

Further exploration of the material and a larger set of interviews showed that the introduction of the MAC systems was one single incident that was a reflection of a set of wider changes which affected not only the Administration at the particular University that constituted the case study, but also most of the Higher Education sector in the United Kingdom at the time. It was not a beginning and/or an end to explain a situation and a set of circumstances, it was just one of its manifestations. Yet, whilst being a single incident, it led, through its inception and through the interaction amongst social actors around it, to the reinforcement of the broader process of change that was observed and is widely referred to in the literature and was, in itself, a trigger to engender new perspectives and new forms of intervention at the University.

It became then clear that to adopt a specific systems centric approach, focused on the immediate and proximate contexts of the implementation and use of the new management information systems, would be limitative and, instead, the focus should be in turning the perspective around and consider the multiple dimensions of its context, where different forces and tensions, articulated through the discursive practices and rhetorical strategies of the various interviewees, appeared to interplay and to enact and in turn weave a more complex situation. The crucial point at this stage was a departure from considering in isolation the different discursive categories that were identified to move on to a different stage of analysis, where mutual relationships between these categories were reflected upon. A key learning point was that relationships were as, if not more, important as the delimitation of analytical categories. This departure from analytical categories as ideal types considered in

isolation to a focus on interaction, tension and contacts, allowed the focus on the interplay between different discursive regimes and practices.

There are several learning points that were derived from this experience which are inter-related. The first concerns the dangers of over emphasizing the codification of data, and thus of typifying behaviours, which is at the heart of the schism between Glaser and Strauss (Glaser, 1978). As stated by Goulding (1998: 55), "[i]*t is important to recognise that most individuals engage in a type of behaviour without being typed by it; they engage in other behaviours as well*" and Grounded Theory categories are concerned with patterns in social practices, including discursive practices, rather than in types of persons and whether they are, as individuals, representative of particular categories of actors. It is the recognition of this stance that allows the identification of nuances in complex arenas and their social worlds.

A correlated aspect relates to acknowledging sensitising influences to the meaning and significance of emerging analytical categories and their inter-relations: "*This is vital, for without this grounding in extant knowledge, pattern recognition would be limited to the obvious and the superficial, depriving the analyst of the conceptual leverage from which to develop theory*" (Goulding, 1998:52). The introduction to this thesis acknowledges a framework constructed from multiple theoretical influences that provided a pre-understanding (McAuley, 2002) to the topic of study and an initial analytical framework. Other influences joined these during the various phases of analysis in an emergent, but not "atheoretical" (Goulding, 1998) way. As stated by Glaser (1978) and Goulding (1998), the development of Grounded Theory is based

upon an understanding of the interplay between theoretical influences and empirical work.

Other important influences, however, stem from the lived experience (Sullivan and McCarthy, 2004), that analysts bring to their work. While conducting this research the researcher also developed a lecturing career in information management and information systems in various institutions in the Higher Education sector. This brought a particular slant to the understanding of the focus of this thesis and, conversely, the study itself also brought new insights over work practices and changes in the sector. As mentioned in Chapter 1, McAuley (2004) refers to the interweaving of the personal experience of researchers, which forms a pre-understanding in hermeneutic studies, with the ways in which the subjects of the research develop and present understandings of the situation under study: *"Lying at the heart of the hermeneutic approach is this notion of openness to the data, the artful development of the interplay between the intuition of the researcher, the data (text or whatever) of the subjects of study, the interpretative frameworks that are brought to bear on the analysis of the text and, ultimately, the reader. If this openness is undertaken in good faith then the product of the research is on the one hand truthful (authentic) to the data but is, on the other hand, not the only truth (authentic account) that could be produced"* (McAuley: 2004:201).

Figure 2, in Chapter 1, reproduced below, attempted to express the process that was undertaken differently than linear representations sometimes found in the research methods literature (see Bryman, 2001:394) and instead as far more circular in the inter-relationship between different phases of research due to the interplay between

theoretical influences, the empirical study and lived experience in illuminating and discussing the implications of the findings.
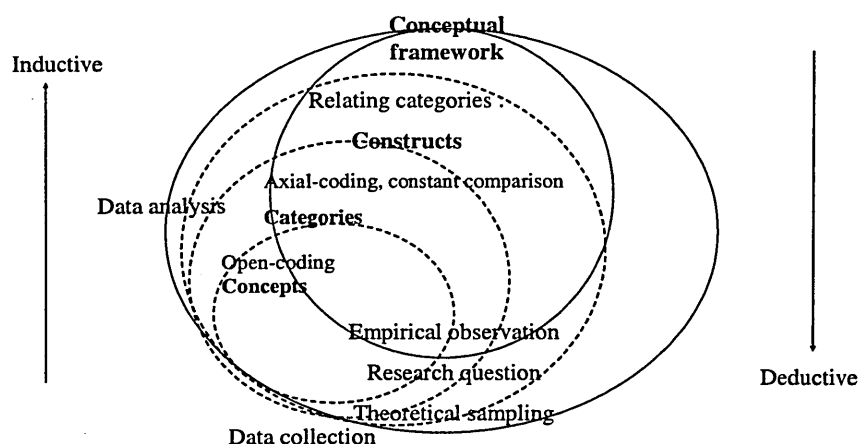
It was then stressed that the circles that represent these processes are not concentric and should be seen rather more as rotating ellipses that form contacts with each other at different points in the research in action. For example, the initial phases of analysis yielded a large number of loosely connected concepts. Constant comparison led to the formation of an understanding that these concepts could be conceptualised around the far more abstract discursive categories of centripetalism and centrifugalism, process and meanings, as well as underlying assumptions about complexity. Further constant revisits of the data, the literature and understandings around the subject led to revising not only the key analytical categories that were identified around those discursive practices, but also the relationships amongst these categories that ended up being conceptualised in a far more nuanced way than through simple opposition and antagonism.

Often, as was mentioned, this resembled 'going around in circles' although the important outcome of this process was that, each time a circle was completed, the research arrived at a different point and advanced towards what seemed a clearer outcome in terms of the interpretation of the inter-relationships between different elements of the argument and the construction of the conceptual framework that is proposed in this thesis. The methodological approach that was adopted throughout the study was inherently emergent, as was the understanding of the research problem that was derived through this process, but this allowed the need for the flexibility in planning and the shifts in the understanding of situations necessary to accommodate nuanced accounts inherent to *"the centrifugal messiness"* of complex professional arenas.

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The twelve interviewees were closely related to administrative and technical activities that were key to the implementation and use of the new information systems at the University.

The majority of them occupied positions in the middle management at the University, although some were senior administrators or technicians, as will be detailed individually. During the interviews, they all came across as very knowledgeable about the University environment and its administrative and technical practices. They were a very articulate group of people who were, by and large, educated to a high level – many of them held PhD degrees, for example.

A few notes follow on the background of each of them and on the reason for choosing to interview them. All the names of the individuals have been changed to ensure confidentiality.

ASO.1 – Dr. Peter Hardwick – was a senior administrator at the Academic Secretary Office, who was a key figure in the definition and implementation of information strategies at the University and had also followed closely the development of the MAC systems. He had been at the University for many years and was very familiar with the structure, composition and political backgrounds of its committees, as well as of the Higher Education policy changes, displaying an outward oriented view of the process of change.

ACS.1 – John Fletcher - was a senior technician the at the Academic Computing Services department. He had started his career at the University as a researcher and had moved into support services, because, as he stated, "[...] *because I realised what was motivating me in my research was solving everybody else's problems and I wasn't motivated to set my own goals and solve my own problems*" (ACS.1:). He was key to understanding different perspectives on the merger/take-over of ACS and to explaining the practical implications of the difference between being responsible to academic committees and to line management structures.

DF.1 – William Black - was the technical administrator in charge of managing the finance information systems at the University. He fostered clearly a centripetal view of the information environment and had a commitment towards maintaining control over these systems at his department, adopting openly the New Higher Education discourse and emphasizing the University as "[...] *a multi-million pound business and we've got to focus on getting things right, and we've got to get things right across the board, it's not a trade-off, we've got to make sure the business is being run efficiently [...]*" (DF.1).

CI.1 – Claire Lewis - was the project manager for the MAC system implementation at the Corporate Information Department. She was clearly committed to seeing the project completed with success, although she was clearly aware of the problems it had faced during the requirements definition and the software development stage, as well of potential problems during implementation. She had previously been the IT administrator at the Human resources department and had joined the Corporate Information Department and clearly perceived this move and her new role as having good career development potential.

CI.2 – Robert Bruce - also had moved from central support services to the new Corporate Information department and was a technician in charge of IT support to the administration, as well as collaborating in the development of the Web based corporate information services. He was clearly a people skills oriented and very motivated to help users at the administration in getting proficient in the use of the new services and was encouraged by success in the adoption of these services: *"You can usually find somebody in each department who is relatively computer literate and who is keen to develop their skills and the skills of their colleagues. If you can find somebody like that in a department it's good. But it is very difficult to - in some areas to get people to use some facilities that we just take for granted [...]. It's difficult. It's just down to gentle encouragement."* (CI.1:18). His account was very useful in providing an insight on how users and the Corporate Information Department interacted.

CI.3 – Dr. April Chase - held a PhD in an IT related field and had moved from the Library Services to the Corporate Information Department when the project she was in charge of, Web based corporate information services, moved to the new department. She displayed considerable knowledge on both technical issues but also on the organisational context and on how different structures operated. As with ACS.1, she was more familiar and at ease with committee based structures, than with line management based ones: *"Academics more or less do what they want, the service departments that I've been in were like the academics, the administration is more like working in a company. The roles are more defined, you have line managers. [...] it is difficult to do that when I've been used to doing what I liked, within certain boundaries, if there was something I found particularly interesting and it was relevant I could go ahead and work on it. It just seems more sort of regimented. Someone says "You will do this" and you have to go away and do it - but that's not how we used to work. It's not necessarily a good thing."* (CI.3).

CI.4 – David Prescott – was a deputy Director at the Corporate Information Department and had previously been in charge of the division that had been responsible for accompanying the development of the MAC systems and for liaising with the consultants and developers. He had been at the University for many years, working in the IT area and had developed strong knowledge and insight on reasons related to the changes in the administrative structures and systems.

SO.1 – Dr. Andrew Fellowes - was in charge of the central administration of student affairs at the Undergraduate Office and of implementing the MAC systems to the administration of student processes and information. He held a PhD and revealed particular understanding of the data structures and flows underlying both old and new systems.

GS.1 – Dr. Jennifer Black - was the equivalent Dr. Andrew Fellowes at the Graduate Office. She was originally a medical doctor, who had decided to enter University administration, having undergone a deep reconsideration of career options. She mentioned feelings of uncertainty regarding the pursuit of career administration.

DIS.1 – Chris Turner - was the technical manager at a department that was a heavy user of IT applications and where staff members were typically very computer literate. He liaised closely with Academic Computing Services in his role. He offered strong opinions over the merger/take-over of Academic Computing Services and had clearly had limited contact with the newly created Corporate Information Department.

DIS.2 – Dr Susan Wilson - was the head of administration at the same department (DIS) and extremely knowledgeable of the administrative processes at the University. She offered detailed information over both its formal structure and its informal workings. She held a PhD in an IT related field.

MS.1 – John Snow - was an academic that had been in charge of devising the legacy information systems at a department that unlike DIS tended to be less computer literate, although MS1, himself, was rather knowledgeable of IT applications for administration. He was heavily involved in administration and with the maintenance of the legacy systems he had devised at his department. Like the other respondents at academic departments, he portrayed an image of estrangement from the newly created central administration structures.