Networks, Knowledge and Power: 
Decision Making Politics and the Process of Innovation

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INTRODUCTION

The period since the mid-1980’s has seen a growing interest in the subjects of networks and networking and their contribution to organisational innovation, witnessed by an explosion of literature on the subject (see Grandori & Soda 1995, DeBresson & Amesse 1991 for reviews). However, in much of this writing there has been a deafening silence on the subject of organisational power and politics (Ibarra 1993, Knights et al 1993), as it is founded on a technocratic view of management. The problem with this view, which perceives management practice as neutral and largely concerned with processes of co-ordination and planning, is that it leads to the neglect of subjects such as conflict, hierarchical power, the control function of management, and their effect on processes of networking and knowledge management. This paper, based on the assumptions that politics play an inherent part of organisational evolution (Knights & Murray 1994) and particularly in relation to processes of organisational and technical change (Frost & Egri, 1989), addresses this absence and contributes to the development of the literature on this subject by placing power and politics at the centre of the analysis.

This is achieved by examining the implementation of IT based information management systems in two case study companies, focusing on the early search, evaluation and selection stages of the innovation process (Wolfe 1994). Examining the decision making processes at these early stages, where the character of change is still open to negotiation, reveals the political nature of networking and knowledge management practices undertaken by various interest groups. This reveals how power and politics shaped issues such as the framework within which the scope of change was discussed, general issues of agenda formation (such as what choices and issues were being considered), the type of people involved in (and excluded from) decision making processes, the way knowledge and expertise was utilised and controlled, the value that was attached to particular bodies of knowledge,
and the way meaning was managed to justify the decisions made. Fundamentally, it is shown that the development and utilisation of networking and knowledge resources has a dual character, in providing access to (often embodied and tacit) knowledge and artefacts necessary for the implementation of change, and as political tools in support of particular interests (Webb 1992).

The two case study companies described were both implementing Enterprise Resource Planning (ERP) systems with the purpose of allowing the more effective internal management of information. While they were both UK based manufacturing companies, they were from quite different sectors; one being a pharmaceuticals company, while the other manufactured industrial castings. In both companies the change projects were studied longitudinally, over a period of approximately one year, with the main source of data being interviews with relevant organisational personnel. Relevant here refers to both project staff who were directly involved in the change projects, and management staff who had decision making powers in relation to the projects studied.

The paper examines three power resources of crucial importance to the implementation of change in organisations: knowledge, networks and hierarchical authority. Knowledge management is central to the introduction of process innovations within any organisation, as such changes requires the identification and utilisation of both external and internal knowledge and expertise. For the type of innovations examined, knowledge and networks are inextricably linked, as networks provide the conduit through which important knowledge is accessed. Hierarchical power/authority is also important as it is an inherent characteristic within industrial organisations, and creates a power differential which affects the dynamics of change management processes.

The paper also contributes to the general debate on the issue of organisational power/politics. The paper critically examines the Foucauldian
paradigm which currently dominates the analysis of power in the organisational field. For example suggesting that it has retreated too far from viewing managers as autonomous subjects (Hardy & Leiba-O’Sullivan 1998; 459). Also, while it is important to understand the unintended nature of much human action, and organisational change (Knights & Murray 1994), it is equally important to retain a conception of action as deliberate. Using ideas drawn from Rational Action Theory (Goldthorpe 1998), it will be argued that this can be achieved without viewing management behaviour as always consistent, or managers as rationally omnipotent.

The following section of the paper provides an outline and review of the theoretical concerns addressed by the paper. This is followed by the empirical core of the paper, which describes the two change projects in detail. The paper concludes with a review of the empirical material presented, focusing on the issues of management power/authority, and the role of networks and networking in the management of change.

THEORETICAL FRAMEWORK AND REVIEW

This section of the paper has two central purposes which will be addressed simultaneously. Firstly, it will outline the theoretical framework around which the empirical cases presented later are based, and secondly it reviews existing, relevant theory. The three main theoretical areas addressed include the diverse body of literature examining the utilisation of knowledge/expertise, and networks in the implementation of innovations, and existing theorisation on the politicality of change management processes.

The importance of networks and networking to the appropriation of innovations emerged from the large amount of research which began to appear on this subject during the 1980's (see Grandori & Soda (1995) for a comprehensive review). However, much of this literature is based on a
number of problematic (and usually implicit) assumptions. These include
portraying management as a primarily technical function, concerned with
neutral tasks such as planning, co-ordination (Alvesson & Willmott 1998),
and neglecting the inherent, formal, hierarchical power differential which
exists within organisations (Fincham 1992). The result of this is that the
political nature of networking practices is downplayed, if not totally neglected
(Ibarra 1993, Knights et al 1993). One of the main purposes of this paper is to
redress this.

In stark contrast with the above view, implementing change within any
organisation must be seen as an inherently political process as it exposes the
sectional interests (both horizontal - across functions, and vertical - across
layers of the organisational hierarchy) which exist in all organisations (Frost &
Egli 1991). As outlined by Willmott (1987), the contested nature of
organisational life is related to the systemic contradictions of industrial
organisations. One of the realities of organisational life is that all staff often
do not have homogeneous interests (McCabe 1996, Fincham 1992), and the
introduction of change can bring this into sharp relief, as different interest
groups (attempt to) influence the change process. These dynamics are
clearly illustrated in the work of Pettigrew (1985), and subsequent analyses
based on a similar detailed, longitudinal methodological research approach

The importance of these processes are that they play an important role in
shaping the character of the changes being made, particularly at the very
eyear stages when the characteristics of a change programme are still largely
in flux. The central focus of the paper considers how the possession and
control of knowledge, and also the development and use of intra and extra-
organisational networks can be used as resources in the processes of
struggle which shape the introduction of change. The focus on these two
subjects is related to their centrality and importance in the management and
the implementation of technological innovations.
Knowledge and the innovation Process

The importance of knowledge in the management of change is that the appropriation of innovations is a complex process involving the mutual shaping of technology and organisation (Scarbrough & Corbett 1992, Webb 1992, Harris 1997, McCabe 1996, Clark & Staunton 1989). Central to this process is the utilisation and integration of 'new'\textsuperscript{1} knowledge and artefacts with existing organisational structures, practices and knowledge. The character of organisational and technical knowledge and expertise, much of which is tacit, rather than codified (Senker & Faulkner 1996), embodied in people and organisational structures (Blackler 1995, Sorensen and Levold 1992) and which tends to be widely distributed (Tsoukas 1996) makes these knowledge integration/creation process complex and difficult. The importance of these processes to the appropriation of innovations is thus what makes the control or possession of relevant knowledge/expertise such a significant political resource in the struggle to shape the character of innovations.

Networking and the Innovation Process

As outlined above, there has been a growing recognition of the importance of networking to the implementation of change. The emphasis of this research on external, inter-organisational networks showed how networking and external boundary spanning activities provided organisations with an important source of knowledge and ideas necessary for the implementation of change (Cohen and Levinthal 1990, Scarbrough 1996, Tidd et al 1997). However, internal, inter-personal networking within the organisation implementing change is equally important. This is due to both the importance

\textsuperscript{1} New to the organization implementing them
of coalition formation as a way of enrolling necessary resources (Pettigrew 1973), as well as providing a way of accessing and utilising necessary internal knowledge (see immediately above). The importance of such resources to the appropriation of innovations, means that networking activities are an essential and important part of the appropriation process. However, networking during the appropriation of innovations, both internally and externally, serves two purposes. Not only does it provide a way of mobilising any necessary knowledge, but equally importantly they can be used as political resources in negotiations over the character of the innovation (Web 1992; p. 485).

The Political Nature of Change Management and Decision Making

There has been a prolonged and persistent interest in the political nature of organisational decision making and the implementation of change, for example dating back from Bachrach and Baratz (1962), through to contemporary studies such as Knights and Murray (1992, 1994), or Starkey and McKinley (1988). While much contemporary writing is founded in the tradition of Pettigrew's (1985) 'processual' approach there have been persistent attempts to go beyond this approach by adding further levels of analysis. In this respect the use of Foucault appears to be emerging as the dominant contemporary paradigm of analysis not only for the study of change management, but also for the analysis of management in general (McKinlay & Starkey 1998, Thompson & Ackroyd 1995). One of the benefits of such an analysis, in relation to the analysis of power in organisations has been argued to be the addition of a fourth dimension of power which goes beyond the classical three dimensional analysis of power developed by Lukes (Hardy & Leiba O'Sullivan 1988). As outlined, one of the main theoretical objectives of this paper is to critically review some of the assumptions underlying Foucauldian analyses. This is not intended to be a wholesale review of these perspectives. Instead it is simply a critique of some elements of Foucauldian analyses which are important to the management of change in industrial
organisations. It is suggested that there are two main limitations in such analyses, one that they downplay, if not ignore, the distinctiveness of industrial organisations, and secondly that they are founded on a problematic model of the subject. The rest of this section will focus on developing these arguments.

One of the central strands of Thompson & Ackroyd’s argument in their polemical attack on the particular way Foucauldian perspectives had been applied to the study of industrial organisations was that in much of this work the specific and distinctive character of these organisations was lost (1995; p625). Such an omission is a major weakness, as the specificities of industrial organisations crucially shape the intra-organisational dynamics of change management processes (Hales 1993, p. 29). For example, the location of management within the organisational division of labour, which places them in the position of having to act in the interests of capital, imbues them with a level of formal, hierarchical authority and gives them an element of control over others (Clegg & Dunkerley 1980, Alvesson and Willmott 1998). In terms of managing change, the structural position of management creates a potential power asymmetry which is an important and inherent element in change management processes. For example, paraphrasing Newton (1996, p. 731-732), an individual’s location within the organisational hierarchy provides them with the potential to form and utilise networks more effectively than others without the same level of formal authority. However, the character, extent and importance of this hierarchical authority is likely to vary dependent upon the particular internal dynamics of individual organisations. For example, the way any formal authority is translated into actual power to influence the process of change will be shaped by the specificities of the organisational context (Hales 1993, p. 40). In the two cases examined significant differences were apparent in this area. What is constant though is that formal, hierarchical authority does not imbue management with the power to implement their vision of change unmodified. The implementation of change is a process which tends to be mediated through intra-organisational politics making the outcome of the process uncertain (McCabe 1996).
The second main criticism is the character of the subject within Foucauldian analyses, and the (limited) extent of their agency to change/affect/use power resources (Newton 1996, p. 718). Within such a framework the subject is considered to possess no fixed identity, and is instead constituted by multiple, fragmented identities which have no fixed qualities (Hardy & Leiba-O’Sullivan 1998). This, combined with the assumption that power is not a resource amenable to manipulation by autonomous subjects produces a subject which has virtually no ability to define their own interests, let alone use power resources to act in pursuit of them. It is suggested that insights drawn from Rational Action Theory (RAT - see Goldthorpe 1998 for a review) can provide a more robust, relevant and useful model of the subject, without going to the extreme of assuming behaviour is constantly rational and that subjects are omnipotent.

RAT is founded on a model of the subject which, while being socially constituted, possesses the ability to act in pursuit of self defined goals. This analysis is based on the three concepts of goals, beliefs and actions. The assumption is that for any self defined goals actors/subjects possess there is a corresponding relationship with beliefs regarding how to achieve them, and the actions which are then pursued. This does not suggest that all behaviour is rational all of the time, only that the tendency is to act rationally (Goldthorpe 168-9). It does not suggest that goals are rational (as say neo-classical economics does), nor that the beliefs held regarding how they could be achieved are also rational. However, it does suggest that there is a tendency for action in pursuit of goals and beliefs to be rational. While it is important to acknowledge the unplanned, and accidental nature of much management behaviour (Knights & Murray 1994), it is equally important to acknowledge the planned, deliberate character of much management behaviour (even if it does have unforeseen consequences). RAT therefore

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This analysis is founded on the distinction between action and behaviour. Action is regarded as a particular kind of behaviour, one that is intentional.
provides a model of the subject which is not as indeterminate and impotent as that based on Foucauldian analyses, and that further, it provides a better way of characterising agency.

The rest of the paper will examine two cases of change management, which is used to support and illustrate the ideas just presented.

TWO STORIES OF CHANGE MANAGEMENT

This section is the empirical heart of the paper. Before getting into the detail of the two stories of change management it is necessary to briefly outline some details on the organisations and innovation projects examined. The data presented is drawn from two case study organisations which were in the process of introducing IT based ERP systems. The research methodology adopted was to undertake longitudinal case studies, with the introduction of change in each organisation being tracked over time, from the early decision making stages through to implementation. This was achieved by visiting each company a number of times as the innovation projects evolved and progressed, interviewing the relevant 'key players' at each visit. Thus this methodology was intended to reveal more of the dynamics of the innovation process than a 'snap shot' methodology of a single visit would provide (Pettigrew 1987).

In Chem-co and Cast-co, the two case companies, the initial vision of change that was proposed was resisted and challenged from within. In both cases this produced two main interest groups competing to shape the character of change. The result of this negotiation process in both cases was that the implementation of change became extended beyond initial management expectations, and that the character of the planned changes also underwent
significant change. The empirical element of the paper examines the processes of negotiation which occurred, focusing on the use of knowledge and networking resources.

Chem-co is a UK company concerned with the development and production of nuclear medicine, and is one division of approximately 12 in an international pharmaceutical business, Chem-corp. Chem-co has close links to the corporate centre, as historically it has been one of the main parts of Chem-corp, with many of the international divisions of Chem-corp having only been acquired since the mid-1980’s as part of Chem-corp’s diversification strategy.

The focus of the research is on the introduction of an IT based information management system within Chem-co’s production function, which was one element of its ongoing strategy to introduce ‘commercial’ business methods, attitudes and practices. The information system that was being planned was intended to be an MRPII ‘type’ system, integrating production more fully with other functions such as sales & marketing and purchasing to improve demand planning and stock control.

Cast-co is an international casting and injection moulding business which has over 40 separate divisions globally. Historically, however, the divisions have operated autonomously, having very little interaction with each other, with the corporate centre playing little more than the role of a holding company. In an attempt to improve the level of integration between the businesses, and to move towards a standard financial reporting system a decision was taken at

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3 Until the early 1980’s Chem-co had been a research laboratory owned by the UK government. However, as part of the Conservative government’s privatization programme, it was sold to the private sector. Since then a wide range of change programmes have been adopted to replace its historical culture and operating practices, characterised as ‘civil service technicism’, with a more commercially, cost sensitive culture.

4 The project team did not have a convenient acronym with which to label their proposed change programme. The changes that were proposed could accurately be described as an MRPII type ERP system. The project team were reluctant to label their programme as an MRPII system, as Chem-co’s MD was very hostile to MRPII, due to his involvement in a failed implementation in a previous company.
the corporate centre to implement an MRPII system in all of its business units, beginning with the finance packages. In the early decision making stage of this innovation a significant disagreement emerged over whether to implement a single global solution across all divisions, or to implement three separate but compatible regional solutions.

The paper’s empirical focus is on the early stages of the innovation process by examining key decisions in the implementation of change. Using Wolfe’s (1994) categories, this extends from the initial ‘idea conception’ through to the ‘adoption decision’, where a commitment is made to a specific solution/system. This period of the innovation process provides fertile ground for examining the contested nature of change management, as the precise character of the changes to be implemented are open to negotiation. In the two cases examined the change processes are divided into two elements, one considering the catalysts to change, which was contested, and the second considering the explicit decision making over the character of the change to be made.

Catalysts to Change - The Management of Meaning

One of the main arenas within which processes of change are contested is in the struggle to manage meaning (Alvesson & Willmott 1998, Pettigrew 1985). Struggles over the control of symbolic resources are equally as important as any struggles to control physical, financial, or labour resources. The importance of symbolic resources is that can provide a way of legitimating particular courses of action, in this case, the specific character of change deemed to be necessary (Pfeffer 1981). For example, Knights & Murray (1992) show how attempts to define the character of a firm’s market or environment can play a crucial legitimating role for change. In both Chem-co and Cast-co such processes of struggle were equally visible. Further, different network and knowledge resources were enrolled/utilised to support the different cases being made. In both companies, the initial proposal of the
need for change came from senior management, and the change programmes that were proposed were legitimated by particular definitions in the character of their market environment. In both companies the proposals for change were not universally accepted, and challenges to these proposals developed which were founded on a different rationale.

In Cast-co, senior management’s dominant rhetoric to justify the implementation of a single information management system across all its divisions was that they were facing globalising pressures from their most important (international) customers. However, this very much challenged the dominant historical culture of the company, which was one of divisional autonomy. There had traditionally been little inter-divisional co-operation except at the regional level, with the divisions being divided into three geographic regions. The primary core of the challenge to corporate management’s proposal for a single IT system came from regional management staff and appeared to be based on the fact that this regional autonomy was being challenged. In opposition to the vision proposed by corporate management, the proposal from the regional headquarters was to implement three separate systems at the regional level. This was supported by a rhetoric equally as powerful as that of globalisation: the need to retain regional autonomy and be flexible to the specific needs of their own customers.

Within Cast-co there was a relatively poor knowledge of IT systems, as there had been a relative lack of investment in them at corporate, regional, and divisional levels. Thus, partly as a consequence of this both interest groups therefore made use of external, IT consultants to lend support to their visions of change. However, the advice received was relatively ambiguous, and could be used to support both cases, providing no clear support for either position. What the regional staff also possessed, and were able to utilise, was their detailed knowledge of the divisions businesses (customers, technical systems, manufacturing processes), which was somewhat lacking at the corporate centre due to their ‘hands off’ management style. This knowledge
was used to lend support for their argument for regional autonomy. Fundamentally, it was argued that the business in each region was so different that this would make the implementation of a single, global IT system difficult. Corporate management’s relative lack of detailed, divisional, business knowledge made challenging, or resisting this argument difficult. Other factors also influenced these positions, as will be seen below in the following section, which outlines the knowledge, and networking resources used in the protracted decision making process.

In Chem-co the dominant rhetoric used by senior management was of a substantial increase in the level of competitiveness of its markets, with the specific changes being proposed involving the adoption of new, ‘commercial’ manufacturing practices. Primarily this involved using an ERP system to change the way that levels of external product demand were identified, and using this information to better control internal inventory management. Chem-co’s World Manufacturing director (WMD), who acted as the sponsor for the project, had had experience working in other commercial pharmaceutical companies - unlike most other management staff within Chem-co - and was to some extent regarded as having a good understanding of their market’s dynamics and needs.

In Chem-co the main focus of resistance to the proposed changes came from production management staff. Their main objection’s to the proposed changes was that they were fundamentally unnecessary. This case was weakened by the fact that it was not supported by any over-arching rhetoric. However, the traditional culture which had been historically predominant within Chem-co was focused around production, and production management staff were regarded with importance. Their detailed knowledge of the production process, and their ability to ‘get product out the door’ was regarded as one of the main factors behind the company’s success. One of the main factors strengthening the argument of production management was their detailed knowledge of the company’s internal manufacturing practices. The conflict between these two interest groups evolved substantially
throughout the period of the research for a number of reasons, as will be seen in the following section.

**Negotiating the Character of Change**

This section of the paper examines the processes of negotiation which occurred following the initial catalysts to change had occurred. In this section the stories which unfolded in the case companies are told separately, as this provided the clearest way of showing their different dynamics.

**Chem-co**

One figure of importance to the change programme being examined was Chem-co’s World Manufacturing Director (WMD), who was one of the architects of the initial vision of change, and who attempted to have it implemented. His ability to do this was significantly related to the support that was given to him by Chem-corp. As part of Chem-co’s long term strategy of adopting more commercial and cost sensitive operating practices a need was identified to introduce such attitudes to its senior management, which was partly achieved by recruiting personnel with the relevant experience to ‘key’ senior positions. Chem-co’s World manufacturing director was one these recruits. The strength of his influence was therefore closely related to his knowledge and experience of commercial operating practices, which were skills deemed highly important by Chem-corp management. The level of power imbued by Chem-corp in Chem-co’s WMD, and his determination to implement his own vision of change was visible by the fact that during the early stages of the project management personnel within the production function were reorganised to remove ‘resisters’ and replace them with personnel with the ‘correct’ outlook and philosophy.
Initially the WMD’s strategy for designing their change programme was to exclude senior manufacturing management from the early decision making processes shaping the change programme. The rationale for this was that firstly, they would be likely to resist the type of changes being proposed, as they were regarded as being too firmly embedded in the companies historical ‘civil service’ culture, and secondly that they did not possess the knowledge of commercial production techniques that was deemed necessary to design the required changes. Instead a small hand picked project team was assembled to design the change programme, with these people being selected for their knowledge and experience both of introducing change, and also of the sort of manufacturing systems that were envisioned. The intention was thus to control the scope of the debate on the type of changes to be introduced to the production function and to only involve direct production management during the implementation phase.

While direct production management were excluded from the design phase of change programme, the project team found it necessary to involve lower level production management, and direct production staff, through a process mapping exercise. The necessity for the process mapping exercise, which was concerned with codifying and formalising internal production procedures, was related to the tacit, and embodied nature of the knowledge of the production process, which the project team needed to utilise to design their change programme. This knowledge had never been fully, formally, codified into documentation, and was instead possessed by production staff, who had acquired it through on the job learning. Thus, to tap into this knowledge/expertise the project team found it necessary to directly engage with the staff who possessed it.

While some of the most senior management within Chem-co’s production function were aware of the change programme being designed, and of their own exclusion from the core decision making processes shaping it, they were
unable to challenge the vision proposed by Chem-co’s WMD, or to take a more active role in the decision making process. The inability of these people to achieve either of these objectives was related to the fact that they were unable to build either vertical, hierarchical networks with the highest levels within Chem-co, or at the corporate level within Chem-corp. Historically, as illustrated earlier, production management had had strong vertical support networks with senior management, and the knowledge/expertise possessed by production management was highly valued. However, the move towards a more commercial culture, as outlined, involved the recruitment of a significant number of senior managers who had worked in more ‘commercial’ healthcare companies. One consequence of this was that Chem-co’s production management did not have strong support networks within this new layer of management, to some extent, because their knowledge/experience of traditional operating practices was not regarded as relevant to the new competitive environment facing Chem-co.

However, a number of factors intervened to substantially inhibit the progress of the project. Primarily, the effects of a major merger that Chem-corp has undertaken resulted in the reorganisation of Chem-co’s production function. This not only involved a substantial re-shuffling in senior production personnel, but also involved a major business and product re-organisation. These changes had two major impacts on the project, both of which inhibited its progress. Firstly, the re-organisation of personnel destabilised the networks that the project team had developed to gain support for the project with senior management personnel. This substantially weakened and disrupted the vertical networks of support that the project team had developed, and which had contributed to the project’s early momentum. Secondly, the product/business reorganisation benefited the production managers who were resistant to the proposed changes as they argued that there were now more pressing priorities to be addressed. Further, their detailed knowledge of production also became regarded as more important.

The project team disguised its motivation for conducting the process mapping exercise by telling the
as it was seen to be necessary for the large scale business restructuring that was to be undertaken. The major consequence of these changes for the project was that not only was it’s progress delayed, but also that it’s future became brought into question.

**Cast-co**

In a number of ways the case of Cast-co is different from Chem-co. Because of both the flatness of Cast-co’s organisational structure, and also because of the culture of informality with which even important decisions tended to be made, formal hierarchical authority played a less significant role in it’s decision making processes. In general the decision making culture was of negotiated consensus rather than the top down imposition of decisions. However, the building of support for decisions involved cultivating and utilising a lot of (largely informal) internal networks. This tended to occur outside of the formal meeting structure, with formal meetings often serving as a way of providing an official stamp for what was already occurring. The term ‘guerrilla warfare’ was used by one of the interviewees to describe the processes of network building which were used to shape decision making processes within Cast-co.

Thus while Cast-co’s corporate management team favoured the adoption of a single, standard, global IT system, it was not able to impose this desire on it’s regional or divisional managers. This was related to two main factors. Firstly there was a lack of technical expertise on MRPII systems at the corporate level, which made Connect-co corporate management unable to challenge the technical arguments against a global solution being made by the regional and divisional managers. Secondly, the culture of concensual decision making within Cast-co, made it possible for the regional and divisional management to prevent the development of a single global solution through production staff involved that it was related to new quality assurance certification.
not agreeing on a common technical standard. It was therefore decided to develop separate regional solutions, with the European region being the first to begin developing a specification for its system.

This decision was reversed following the appointment of a new corporate technology manager (CTM), who forcefully built the case for a single global solution, and got the decision to be reconsidered. In building support for a single global solution alliances were built with two main groups, one internal to Cast-co and the other external. Firstly, in order to counter the technical arguments that a single global solution was not possible, the CTM sought more detailed technical advice (from external technical consultants and from particular software system providers) than had been used earlier (see previous section), which concluded that it was technically possible to develop a common global solution. Thus the utilisation of technical expertise was important to building support for this solution. Secondly, internal alliances were developed by the CTM with the managing directors of Cast-co’s American divisions, in order to persuade them to participate in the development of a global system. This was important, as their approval was necessary to ensure that a global system was adopted. But, because of the historical animosity between the American and European regions successfully achieving this was extremely difficult. The CTM was able to obtain the commitment of the American management team through giving them a sense of ownership in the project, by centrally involving them in all decision making processes. This even involved taking potential implementers/consultants to their regional HQ in America to give presentations. Before this all such negotiations were managed at the corporate centre in the UK.

While it seemed for a period that the CTM had successfully created support for the global solution, very much challenging the traditional culture of Cast-co, the agreement he had achieved between the rivalrous European and

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6 At the corporate, regional and divisional levels there were few layers of management.
American divisions proved too fragile to be sustainable. When the initial proposal put to Cast-co’s board for financial approval was rejected as being too expensive the consensus broke up, and the European and American regions decided to develop their own regional systems.
DISCUSSION

While the previous section raised a large number of issues related to the implementation of IT based innovations, this sections will focus on two key issues. Firstly, it examines the issue of hierarchical authority, showing both how it shaped the two change projects examined, as well as how its use varied quite significantly between the two case companies. The second focus of the discussion is on the use of networks and knowledge during the implementation process, which were key, and which were found to be inseparably inter-linked.

Hierarchical Authority/power

In both cases hierarchical authority played an important role in the implementation of the innovations examined. The formal management hierarchy in both Chem-co and Cast-co provided a background framework which structured the organisational context within which the change projects examined were implemented. For example, it affected not only the range of people involved in the change processes, but also their ability to participate (or influence who participated) in relevant decision making processes, as well as influence the scope of the change projects. Fundamentally, the dynamics of the change processes examined cannot be fully understood or explained without consideration of the organisational hierarchical authority structure (Thompson & Ackroyd 1995). However, the way that such formal authority was translated into effective power to influence and affect change varied greatly between Chem-co and Cast-co. This suggests that a sensitivity is needed to the specificities of the organisational context. The rest of this section examines the different influences of the organisation hierarchy which were found in Chem-co and Cast-co.
One of the main differences between Chem-co and Cast-co was the extent to which formal hierarchical authority played a role shaping the implementation processes examined. While it played quite a decisive role in Chem-co, its role in Cast-co was substantially less. Overall, in Chem-co, the relevant organisational actors were more able to effectively translate their formal authority into actual, effective power to influence, if not affect change. In Chem-co there was a detailed, rigid and relatively explicit formal authority structure, which clearly differentiated the span of responsibilities of individual managers. Furthermore, the culture of decision making within Chem-co was formal, and tended to respect and reinforce this authority structure. In Cast-co the situation was quite different. Not only were there substantially fewer levels to their management structure, but the responsibilities of management staff were less clearly differentiated. Further, the culture of decision making was one of (informally) negotiated consensus which paid less respect to the formal authority structure. The effect of these differences was that the Chem-co managers involved in the change project examined were more successful in translating their formal authority into actual power.

Within Chem-co there was a significant power asymmetry, with the key change agents having substantially more power to shape their change programmes than the production management staff who opposed them. This was apparent not only at the surface level, in shaping open, obvious decisions, but also at less obvious structural levels, where conflict and decision making was less apparent (Frost & Egri 1991). For example, Chem-co’s WMD was to some extent able to control the agenda of change through utilising his formal authority to exclude direct production management staff from relevant decision making forum’s. Further, Chem-co’s WMD was also able achieve a significant level of closure to limit the scope of the change programme that was open to debate. This was constrained to issues such as what type of IT based manufacturing system should be adopted, what type and level of modifications would be made to such a system, and what implementation methodology should be used. Broader questions, such as what type of changes were necessary to address the problems being
experienced were addressed were to some extent kept off the agenda of direct production management. This corresponds to Lukes’ (1974) second level of power, the ability to influence non-decision making processes.

In comparison the situation in Cast-co was substantially different, as the regional management staff who did not want a single global IT system were able to use the dominant decision making culture of negotiated consensus to effectively block the changes proposed by corporate management. In Hales’ terms, one consequence of the decision making culture in Cast-co, was that the formal hierarchical authority of Cast-co corporate managers, in terms of the decision making examined, was not recognised by regional management, in practice (Hales 1993, p. 22). The rationale for this position was that corporate management had inadequately detailed knowledge of the needs/demands of their business. Thus, as indicated by McKinlay and Starkey (1988), elements such as culture can be used to inhibit, as much as facilitate change.

Networks and Knowledge

Equally important in shaping the change processes examined was the development and utilisation of networks, and the possession or control over particular types of knowledge. Fundamentally it is suggested that in the implementation of IT based innovations the relationship between networking and knowledge appropriation is extremely close and inter-linked, as the tacit, embodied and context specific character of relevant knowledge is such that effectively utilising it involves the development of social networks, both within and without the focal organisation. Networks thus provide the potential bridging mechanism by which important knowledge can be accessed.

The development and utilisation of networks was a key mechanism used in both cases by the competing interest groups to reinforce the different positions being supported and proposed. The large diversity in the type of
personal networks developed and individuals enrolled by the competing interest groups can be distilled into three core types:

1) external, boundary spanning networks  
2) horizontal intra-organizational networks  
3) vertical intra-organizational networks

Firstly, the development of boundary spanning networks, with individuals from external organisations, was a resource developed in both cases by the different interest groups, with the development of these networks serving two main functions. Firstly, in agreement with the findings of other studies into such external they provided access to external knowledge resources and information which would be essential to the implementation of change networks (Tushman & Scanlon 1981, Steward & Conway 1996, Tidd et al 1997). For example, external networks were developed to utilise and enrol knowledge which was perceived as not being possessed internally. In the case of Cast-co, for example, this involved utilising external organisations with detailed knowledge of relevant IT systems. However, these external networks were also developed for more than functional reasons of tapping into sources of knowledge. As argued by Webb (1992), this involves perceiving such sources of knowledge not only as purely neutral business resources but also as being potential political instruments. Thus, the second, and equally important purpose for the development of these networks was related to their value as political resources, to reinforce and support the visions of change supported by the different interest groups. Thus in Cast-co, both competing interest groups attempted to use the information obtained from external IT consultants to reinforce and support their particular visions of change.

Equally important to the implementation of the innovations examined was the development of intra-organisational, horizontal networks with organisational staff from across the function directly affected by the innovation being implemented. For example, in Chem-co this involved developing networks
with production staff through the process mapping exercise outlined earlier. As with the external networks, one reason for the development of these internal networks was to access and utilise knowledge, though of a different type to that provided by the external networks developed. The type of knowledge possessed by the internal individuals enrolled was knowledge of their own internal processes, products and markets, which is equally important to the implementation of change as knowledge on the particular innovation to be implemented (Sorenson & Levold 1992).

The development of these networks was necessary, as this knowledge and information, was largely tacit, embodied and functionally distributed, with little of it being codified in a form that was easily accessible or useful. In both companies examined there had historically been little normalisation, standardisation or codification of the organisational routines that were daily practice in their production functions. However, the utilisation of such knowledge was equally, if not more important to the implementation of change as the knowledge provided by external organisations. This therefore supports the findings of the literature outlined earlier (Blackler 1995, Senker & Faulkner 1996, Tsouaks 1996), that much of the knowledge necessary to the implementation of change is embodied in people, and not codified in a disembodied form. This is one of the main reasons that the development and utilisation of networks and networking activities is a key element of any change programme: accessing relevant knowledge involves the mobilization and utilisation of horizontal, intra-organisational networks.

Vertical, intra-organisational networks, were also important, because as they played an important role in the decision making processes examined through providing support, and financial resources to one of the competing interest groups. Thus the stronger vertical networks of Chem-co’s WMD, compared to those of the production management staff was crucial in providing Chem-co’s WMD with the ability to develop and implement his vision of change. Equally, when the strength of this vertical support network became reduced, following
the post-merger restructuring described earlier, the ability of Chem-co’s WMD to sustain his particular vision of change became significantly reduced.

CONCLUSION

One of the main purposes of this article was to provide an antidote to the plethora of implicitly functionalist literature on the subjects of networking and knowledge management during the implementation of technological innovations. The major weakness of such analyses is that they ignore issues of power and politics which are central to the implementation of such innovations.

The paper concentrated on the issues of networking and knowledge management, as both are of central importance to the implementation of the type of technological innovations being implemented. Knowledge is an important resource as the appropriation of innovations necessitates the utilisation and development of knowledge and expertise, which is located both internal and external to the organisation introducing change. The embodied nature of much of this knowledge means that accessing and utilising it involves the development of personal networks. However, the development of such networks serve two purposes: providing support to political interest groups involved in shaping decision making processes, as well as providing the conduit through which knowledge essential to the process is accessed.

The paper also illustrated and reinforced the arguments that were made concerning both the character of industrial organisations, and the nature of human agency. While there may be some universal characteristics to all organisations, privately owned work organisations differ in key ways from other types of organisation such as schools, prisons, or charities. For example, as illustrated, their hierarchical management structures are distinct, and provided an important structural context to the implementation processes.
examined. While power is not something that is owned by actors (Newton 1996, p. 718), the structure of these organisations results in certain actors having greater access to potential power resources, through their formal position within the formal, managerial, authority structure. Finally, the case material presented supported the ideas proposed by Rational Action Theory concerning human agency. Thus the relevant individuals in both case companies did not possess the type of fluid and fragmented sense of identity which inhibited agency. Instead these individuals both identified and sustained notions of their own self interest in relation to the innovations to be implemented, and pursued courses of action relatively consistent with these interests.
BIBLIOGRAPHY


