

The information
Messiah: Issues
and debates
within the NHS

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1: Introduction

Availability and accessibility of the right information, in the right format, at the right time has appeared as the 'messiah' to address all healthcare service delivery needs of our times. The intention of this paper is to highlight the ever-growing attention towards knowledge management and information systems as the panacea to effective and efficient healthcare service delivery, and to highlight the fact that technical strategies may only be effectively designed if there is equal recognition of the social, cultural and political dimensions of the situation under consideration. This paper is centred around a cardiac informatics research and development project, and its parallel academic research, informed by a set of five research questions. In this paper, I will discuss the background within which this paper is positioned, introduce the academic and operational approaches to this project, talk about some of the preliminary findings and introduce some of the initial insights from the study.

I will also discuss the importance of information and knowledge management at the present time, and how valid information has almost come to play the role of a 'messiah'. Finally, I aim to introduce the project on which this paper is based.

1.1 The information messiah

Healthcare is an area which is continually changing. Not only does understanding about health conditions change, the perception about what counts as effective healthcare management has also been undergoing change over time. For instance, in the middle ages, it was believed that the management of some divine power and a secret blessing could enable a shaman to relieve someone's pain; then came the pre-industrial era, where a doctor's capability would be defined by his [*sic*] ability to administer more pain to a patient to counter-effect the pain the patient had already had; the industrial age followed, where medicine was established as a Science and medical professionalism came to be defined within the boundaries of clinical laboratories, the hospital and the mortuary; and finally we have arrived at the present time, where power to address medical conditions seems to lie in the amount of information the clinician has and the degree of knowledge they can play with as a result of this information. The more informed one is, the more empowered s/he is believed to be. It is little wonder that we now experience Management Information System (MIS) as a buzzword, and that we are today part of an estimated £6.2 billion Information Technology (IT) mega project of the National Health Service (NHS), called the National Programme for Information Technology (NPFIT) – the biggest civil IT engineering project the world has ever seen. Along with this, not only there is growing attention towards what to define as information, but also how to categorise, present and transmit information in the most effective way. In such a climate, where scepticism is almost a swear word and pessimism a loser's perspective, the NHS heralds its nouveaux IT strategies as set to transform the character of patients and their public treatment from one that is outdated and flawed to one that would be modern and dependable. The implementation of the IT Godzilla, NPFIT, is in full flow, along with a wide range of other knowledge management initiatives including the establishment of the NKS or the National Knowledge Service.

My intention is to investigate the effectiveness of such initiatives in information and knowledge management and to present some of the early findings of a research project on cardiac informatics managed together by the University of Hull and the West Hull Primary Care Trust (PCT). Along with this, I will try to relate knowledge management with organisational learning for the creation of an atmosphere where learning, rather than immediate results, ought to be the mission of the organisation. The content of this paper, however, is the personal opinion of the author, and it does not necessarily represent the views of the University of Hull or that of the West Hull PCT.

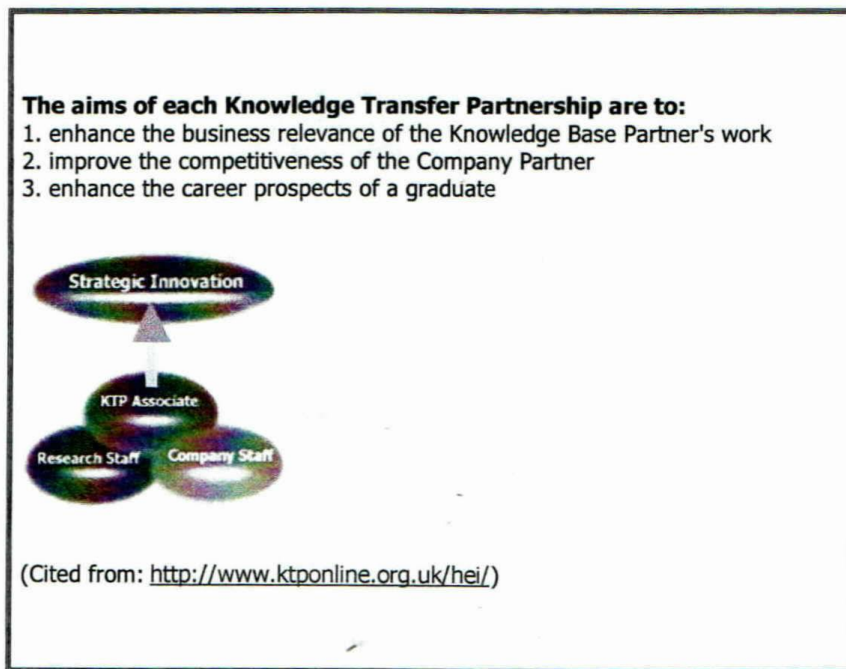


Figure 1: The KTP vision

1.2 Locating the project

This project on cardiac informatics is under the remit of the *Knowledge Transfer Partnership* (KTP) programme, supported by the *Department of Trade and Industry* (DTI) and the *Economic and Social Research Council* (ESRC). The KTP programme offers the opportunity to a higher education institution and a public or private organisation to work in partnership to promote strategic innovation for the company and high quality research for the educational establishment. The programme is managed by an Associate (the author in this case) with joint input from both the partners.

2: Background to this paper

This chapter provides the background to how this research project came about and introduces the character of the situation under consideration.

2.1 The Policy Context

Coronary Heart Disease (CHD) is the biggest killer in the UK; more than 1.4 million suffer from angina [1], 300,000 have heart attacks every year, and over 110,000 people die of CHD every year in England alone (NSF 2000) making it the single most common cause of premature death in the UK (*Ibid.*). Hence in March 2000, the Department of Health appeared with the National Services Framework (NSF) to combat CHD in a 10 year ambitious programme. Led by Professor Sir George Alberti, President of the Royal College of Physicians, the NSF has been prepared by an independent expert group. The NSF has set a 12 Standard table which, according to the then Secretary of State for Health, Alan Milburn, is expected to 'transform the prevention, diagnosis and treatment' (NSF 2000: 3) of CHD. The 12 Standards in Figure 2 outline the NHS targets.

As far as quality healthcare service provision is concerned, information plays a significant role; and this has been appropriately recognised in the CHD NSF, which places information in the list of 'fundamental values and guiding principles' (CHD NSF 2000: 8). Published in September 2001, the CHD Information Strategy (CHDIS) sets out the rationale for an information strategy for work to support modern, co-ordinated cardiac care, including the policy and strategic context, and suggestions for the implementation and monitoring of the strategy. The objectives of the information strategy for CHD are to develop and support:

access to consistent information about effective health care for patients, the public, health (and where appropriate social care) commissioners and providers; integrated information systems to support the delivery of co-ordinated patient care through CHD networks; and the provision of robust information to develop and plan services and monitor their quality (CHD Information Strategy 2001: 2).

¹ Angina literally means pain in the chest. Usually gripping or crushing in nature in the chest and/or left arm and jaw felt when there is insufficient blood supply to the heart muscle (NSF for CHD, 2000: 117).

Standards table

<p>Standards 1 & 2: Reducing heart disease in the population</p>	<p><i>1. The NHS and partner agencies should</i> develop, implement and monitor policies that reduce the prevalence of coronary risk factors in the population, and reduce inequalities in risks of developing heart disease.</p> <p><i>2. The NHS and partner agencies should</i> contribute to a reduction in the prevalence of smoking in the local population.</p>
<p>Standards 3 & 4: Preventing CHD in high risk patients</p>	<p><i>3. General practitioners and primary care teams should</i> identify all people with established cardiovascular disease and offer them comprehensive advice and appropriate treatment to reduce their risks.</p> <p><i>4. General practitioners and primary health care teams should</i> identify all people at significant risk of cardiovascular disease but who have not developed symptoms and offer them appropriate advice and treatment to reduce their risks.</p>
<p>Standards 5, 6 & 7: Heart attack and other acute coronary syndromes</p>	<p><i>5. People with symptoms of a possible heart attack should</i> receive help from an individual equipped with and appropriately trained in the use of a defibrillator within 8 minutes of calling for help, to maximise the benefits of resuscitation should it be necessary.</p> <p><i>6. People thought to be suffering from a heart attack should</i> be assessed professionally and, if indicated, receive aspirin. Thrombolysis should be given within 60 minutes of calling for professional help.</p> <p><i>7. NHS Trusts should</i> put in place agreed protocols/systems of care so that people admitted to hospital with proven heart attack are appropriately assessed and offered treatments of proven clinical and cost effectiveness to reduce their risk of disability and death.</p>
<p>Standard 8: Stable angina</p>	<p><i>8. People with symptoms of angina or suspected angina should</i> receive appropriate investigation and treatment to relieve their pain and reduce their risk of secondary events.</p>
<p>Standards 9 & 10: Revascularisation</p>	<p><i>9. People with angina that is increasing in frequency or severity should</i> be referred to a cardiologist urgently or, for those at greatest risk, as an emergency.</p> <p><i>10. NHS Trusts should</i> put in place hospital-wide systems of care so that patients with suspected or confirmed coronary heart disease receive timely and appropriate investigation and treatment to relieve their symptoms and reduce their risk of subsequent coronary events.</p>
<p>Standard 11: Heart failure</p>	<p><i>11. Doctors should</i> arrange for people with suspected heart failure to be offered appropriate investigations (eg electrocardiography, echocardiography) that will confirm or refute the diagnosis. For those in whom heart failure is confirmed, its cause should be identified – treatments most likely to both relieve their symptoms and reduce their risk of death should be offered.</p>
<p>Standard 12: Cardiac rehabilitation</p>	<p><i>12. NHS Trusts should</i> put in place agreed protocols/systems of care so that, prior to leaving hospital, people admitted to hospital suffering from coronary heart disease have been invited to participate in a multidisciplinary programme of secondary prevention and cardiac rehabilitation. The aim of the programme will be to reduce their risk of subsequent cardiac problems and to promote their return to a full and normal life.</p>

Figure 2: NHS CHD Standards Table

In line with the recognition of the importance of information, there have been substantial investments in the development of information systems. For instance, in 2001/02, £1.3 million was being spent on information developments to support CHD. The NSF talks not only about the availability of information both amongst clinicians and the public, but also about how this information may be communicated, considering risk analysis and mitigation. Very importantly, it talks about 'understanding' (CHD NSF 2000: 8) of illnesses by patients and families. This implies that information may not just be received, but also be internalised, so that knowledge may be surfaced and utilised, allowing stakeholders 'access to consistent and comparable information for the purposes of clinical governance, performance management, service planning and public health' (CHDIS 2001: 3).

Hence, information has come to be accepted as a strategic asset by the power of which the entire domain of CHD services may be radically transformed. Indeed, we are well-versed with the term 'information society', which has almost taken the form of a political concept entailing the exchange of technology-enabled exchange of knowledge (Gore 1998).

2.2 Initial proposal

West Hull Primary Care Trust (PCT) was formed on the 1st April 2001 to serve a population of 162,000. As a PCT, the implementation of the government NSF strategies is a high priority within local communities. The initial proposal for this project was to inform the development and implementation of a local strategy for the national CHD work programme for services, through the development of appropriate information infrastructure, systems infrastructure, systems and services. The possibility was seen that learning from this project could be 'cascaded' to neighbouring NHS Trusts including Grimsby and Goole, Scarborough and Whitby, Leeds NHS and Pontefract NHS Trust. (Government policy precludes NHS Trusts from referring to other public sector organisations as competition.) This programme intended to investigate how knowledge could be most effectively disseminated amongst Acute Trusts and Primary Care workers such as GPs, community nurses, the Ambulance and other paramedical services. Additionally, the programme also intended to investigate how knowledge could most effectively be disseminated to the community at large and it could use it to promote the meeting of its own needs. The outcomes of this programme would benefit the NHS generally if there were to be effective dissemination of the results through appropriate channels. As one of the main aims of the CHD NSF was to help people to stay healthy, it was thought that this represents one of the major challenges of the programme. The effectiveness of the local strategy would depend on valid research outcomes related to the needs of people within the community, and on the most effective means of knowledge dissemination to health professionals within the Trust area. These are skills that would be (and now are) enhanced within the Trust management by the University.

However, as the project progressed, it underwent several transformations, yet still maintaining the overall vision. The changes were in terms of expectations and deliverables, with changes within the partner organisations, in the local level, and overall policy changes of the Department of Health, in the wider context.

3: Methodology

In this chapter, I discuss the methodology that I undertake in approaching this project, and the paradigmatic underpinnings that shaped my approach. I will also attempt to offer a taste of the ontological and epistemological debates that have influenced the methodology and my general approach.

3.1 Systems thinking and research

Healthcare management at the present time is a complex interplay of medical, social, political, organisational and ethical issues. In this kind of climate, discrete isolative thinking is ineffective and inefficient. What is now required is an approach infused with criticality, holism and flexibility. This is the foundation of systems thinking – a particular perspective in management thought, which seeks to approach a situation with an holistic view, rather than considering parts in themselves. It operates with the philosophy that *the whole is more than the sum of its parts*. Hence, rather than concentrating on parts *per se*, a systems approach would encourage one to observe the dynamics between the parts and how they interact and give character to the whole. It encourages the observer to be *systemic* rather than being *systematic* – a fundamental critique to Descartes' (1968) 'reductionism'. Tracing back to established writers like Bernard, Wiener and Von Bertalanffy in the 1940s and 1950s (Jackson 2000: 2), systems thinking emerged as a challenging state of mind to visualise organisations as 'goal-directed', 'purposive', 'structurally inter-dependent' entities which exist in a 'dimensional domain', yet which change its domain by its action. Reed (1992) remarks

... the starting point for the systems framework is a conception of organisation as a goal-oriented, purposeful system constituted through a set of common underlying abstract variables or dimensions relating to structural properties which are geared to the functional needs of a more inclusive social system' (p. 7).

Considering the scope of this project and the dynamics in which the NHS is involved, I perceived this project as multi-disciplinary and multi-dimensional, and hence a critical systems approach appeared to provide an effective strategy to approach it. I realised that no single academic strategy would lead to its satisfactory progress. The approach has to be as critical as the subject itself. This is where the beauty of Critical Systems Thinking (CST) comes into play. According to Midgley (1996), there are three fundamental concomitants of CST:

Critical awareness: examining and re-examining taken-for-granted assumptions, along with the conditions that give rise to them

Emancipation: ensuring that research is focussed on 'improvement', defined temporarily and locally, taking issues of power (which may affect the definition) into account

Methodological pluralism: using a variety of research methods in a

theoretically coherent manner, becoming aware of their strengths and weaknesses, to address a corresponding variety of issues (p. 11).

The Critical Systems Thinking mindset enables the constant negotiation and renegotiation with rigid organisational boundaries, particularly relevant to healthcare management where issues are a complex interplay of inter- and intra-organisational dynamics.

The problem of managing health systems can no longer be dealt with piecemeal by components within the system sub-optimising without regard to the performance of the overall system. Patient care, for example, cannot be understood or explained by looking just at nurse-patient interaction. Integration and co-ordination can only be acquired by looking at system components in interaction (Howland 1976: 109).

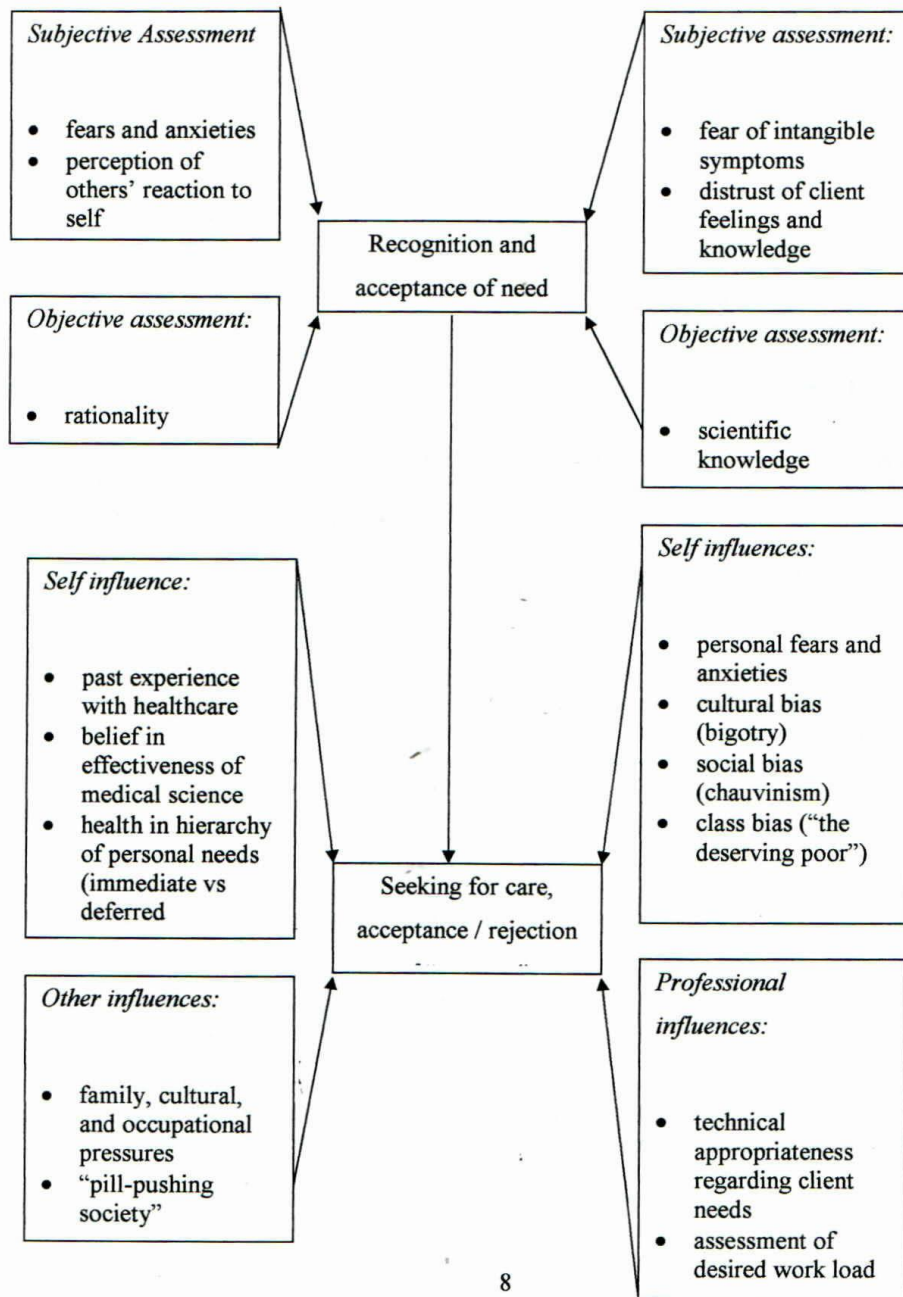
In this context, Figure 3 (below) very effectively exhibits this interplay or dynamics.

3.2 A multi-methodology approach

From the above discussion, it can be seen that in order to intervene into the present situation effectively, the approach adopted needs to transcend conventional paradigms and academic boundaries. Let me discuss what is meant by a paradigm and why it is important to look beyond paradigms. Kuhn (1962) was the first to conceptualise the term 'paradigm', to describe a well-defined 'scientific community' working under a shared understanding of consensus and uncontested agreement during the operation of 'normal science' – a paradigm which is closely bound by its strong beliefs and propositions. A particular paradigm incorporates a particular set of 'philosophical assumptions that define the nature of possible research and intervention' (Mingers & Brocklesby 1997: 490). The work of Burrell and Morgan (1979) has been very influential in the context of social science paradigms. They talked about four paradigms in approaching the social world:

First, there is the *Functionalist* paradigm which enables us to look into the world as an easily identifiable arrangement of a system and sub-systems, which are coherently connected, enabling the existence of the system with prediction and control. Functionalism lends the understanding that society can be studied and evaluated from an external perspective by a social scientist, just as a bacterium can be externally studied by a biologist. Quantitative understanding and statistical methods are widely used in a typical functionalist research project. This paradigm has dominated social research for a long time in history with tremendous influence (Hanson 1958). To talk about information systems and knowledge management projects, functionalism may tend to exclude the participants from the development and implementation strategies of information systems, with the idea that the 'real world' and human perception are mutually exclusive – an approach that supports and perpetuates the existing *status-quo* (Clarke 2001).

Figure 3: The dimensions of healthcare service (Meyer and Collins 1971,1976:187)



Second, is the *Interpretive* paradigm, by which we identify 'soft' issues regarding how the involved human beings interpret the system around them and what meaning they attach to it. Drawing heavily from hermeneutics, the interpretive paradigm lends the perspective that human society can only be understood when the researcher can place themselves in the shoes of the people who form the subject of social research. However, this knowledge may be used to further regulate existing structures by bringing about consensus (Clarke, 2001). This carries the message that research in the interpretive paradigm may be utilised to perpetuate functionalist strategies. In the context of information systems and knowledge management, this approach will certainly consider users' perspectives, but users may not receive an ideal opportunity to shape the imperative mechanisms of functionality. For instance, in implementing an information system project in a large organisation, end-users may be consulted about the *what* and *how* of the project, but the *why* may be dictated from a much higher authority, from which end-users are kept completely separated.

Third, the paradigm of *Radical Structuralism* which advocates that all that human beings can do, is just to build models to understand reality as systems of reality have an existence extrinsic to us. This paradigm is driven by the perspective that it is not very important to understand human intention, and that models of human behaviour may be built (Jackson, 2000) to understand 'causal regularities governing their behaviour' (p. 24). This may enable our understanding of systemic conflicts, which may further facilitate emancipation (Jackson 2000). Approaching an information system and knowledge management project with this paradigm may lead us to understand how different groups perceive IT and create models to generalise the system. However, the danger here is that such models may be esoteric and abstract, driven by the strength of discrete deduction, as human intention is relegated to the back-stage.

Finally, there is the *Radical Humanist* paradigm, which brings human beings to the centre-stage as the creator and interpreter of structural systems of the world; and to understand the systems, we need to understand the intentions of the people who have created them. As Jackson (2000) writes:

The way to learn about these systems is to involve ourselves in their activities. Emphasis is placed upon gaining understanding of the current social arrangements that are seen as constraining human development. This facilitates the emancipation of people from presently existing social structures. (p. 24).

Relating to my project of the analysis of information systems and knowledge management, the radical humanist paradigm will propel me to analyse how present systems of information technology networks and provisions may act as limiting mechanisms for people to work within, although the organisational members may themselves be responsible in the sense of establishing those systems.

From the above discussion, we see that classically, the four paradigms are founded upon four different ontological bases, with supposedly impermeable walls between them. Thought and perspective from singular paradigms have inspired different methodologies and techniques in social science in general, and systems science in

particular. These paradigms have the potential to approach the same situation in radically different manners, which has brought about the notion of paradigmatic isolationism. In this context, Kuhn (1970) referred to an intellectual deafness where researchers working under one paradigm remain largely and intentionally deaf to arguments from other paradigms. It is what White and Taket (1994) would compare to how humans construct constellations: a process of demarcation of particular stars and ignoring others to make some sense. According to them, researchers embark on the same misadventure in their approaches by drawing boundaries around thought. A great deal of this also stems from the preferences people have for particular ways of working which become '*cultural artefacts that are intricately bound up with individuals' competencies and their self-identities*' (Mingers & Brocklesby 1997: 498). This gets manifested in the methodologies researchers use and the way they choose to interpret the findings. Hence preference and inclination to particular paradigms define the very *modus operandi* of conducting research; and as a result of this, as Mingers and Brocklesby (1997) advocate, moving between paradigms may have resonances of '*political overtones*'. Conventional paradigms are hence blocks of strictly-bounded thought schema constantly under politico-intellectual surveillance.

However, the complexity of healthcare management can only be approached with a range of methodologies and techniques applied in conjunction with one another; in other words, a multi-paradigm multi-methodology approach. With the philosophical understanding of critical systems thinking, my application of multi-methodology was to analyse the following, which can be applied in attaining the deliverables of the project:

- (1) What the organisation, as a whole, is involved in;
- (2) What the organisational members perceive, at an entirely personal level; and
- (3) How the members relate to the organisation and operate within it.

The above analyses will therefore be at the levels of objectivity, subjectivity and inter-subjectivity. Habermas (1984) similarly talks of three co-existing 'worlds': 'The material world' which 'we observe', 'My personal world', which 'we experience', and 'Our social world', which 'we participate in' (Habermas; cited in Mingers & Brocklesby 1997: 493). Concurrent analysis and research of objective, subjective and inter-subjective dimensions of 'life' within the NHS cardiac services will require approaches and perspectives from a multi-methodological standpoint, where '*multimethodology's anti-foundationalist antipathy towards orthodoxy is evidenced by its predilection to combine methods from supposedly incommensurable paradigms*' (Ibid.: 495). The power of anti-foundationalism will lend the perspective of understanding situations, not in isolation, but in coherence and with multiple variations. This application of mixed methods in the healthcare setting will not be an isolated case. In Forthofer's (2003) study of breast and cervical cancer patients in Florida, she realised that as the attempt was made to '*address the need for generalisable, population-based research while minimising the threats to the internal validity of such research, mixed methods seemed to be a necessary feature of the research design*' (p. 531). Implementation of IT programmes will not only be solely understood in terms of numbers of computers installed or the speed of the intranet/internet connection, but also in terms of how the users relate to it, and in terms of how, by understanding the user-perspective better, this will enable a better understanding of the effectiveness of such systems. Borrowing from Habermas (1984) again, in an objective view, an IT

system may be seen to have an independent existence by itself, beyond the power grips of individual users; it may also have a subjective element, in terms of how the users perceive it; finally, it may also be said to have an inter-subjective character in sense of how users interact with IT and how the wider system evolves as a result of it.

For the application of multi-methodology, I employed a specialist multi-paradigm technique called *multimethodology*, pioneered by Mingers and Brocklesby (1997), involving four stages:

Appreciation of the problem situation as experienced by the agents involved.

Analysis of the underlying structure/constraints generating the situation as experienced.

Assessment of the ways in which the situation could be other than it is; of the extent to which the constraints could be altered.

Action to bring about desirable changes (p. 494).

I intend to support these stages by a range of techniques such as the use of questionnaires, interviews, cognitive mapping, soft systems methodology, critical systems heuristics and viable systems model[2].

² For a detailed description of these methodologies, please refer to: Jackson, Michael C. (2003), *Systems Thinking: Creative Holism for Managers*, John Wiley & Sons, Chichester.

4: Insights into the situation under consideration

Tenney (1967) talks of two strands of tasks in healthcare: first is the clinical, which is 'patient care' or 'problem processing' and second is support, which is 'management or information processing'. The latter are the tasks which normally exist in the background, and therefore often get overlooked. However, it is this background or backstage existence which creates challenges and difficulties in the effective management of healthcare (or for that matter any) services. My observation is that what the NHS is presently trying to address is the latter task factor through the provision of an effective and efficient Management Information System (MIS). Lucey (1997) defines MIS as '*The combination of human and computer-based resources that result in the collection, storage, retrieval, communication and use of data for the purpose of efficient management of operations ...*' (p. 1). In this quote, it is crucial that we understand that what is important is both the human and the technical element; hence the 'combination' of 'human' and 'computer-based' resources.

Use of internet, specialist patient information portals, and increased awareness created by the media have given rise to a new generation of patients who are more aware of their own health conditions than ever before. A recent survey found that health was the number one topic for which the internet was used in the year 2004 in the UK. It is true that if the right information is made available in an effective manner, it may offer considerable liberating power. Therefore, it is reasonable to suggest that the information revolution might have played a great role in the liberation of the people. Present times have witnessed a redefinition of the doctor-patient relationship with the individual accessing much more information about their own health condition than ever before. This kind of a climate has created tremendous impact on the information-balance and on the way services are provided, as a result of which administrators, front-line staff, doctors and nurses have witnessed a great transform in their interaction with one another. However, with new technology and strategic knowledge innovation, there arrive new challenges in the organisational and professional levels. I have categorised two aspects of such challenges. Below I address each of them in detail.

First: resistance to innovation and change. With new technological provisions, information has come to be seen as a liberator and the intellect as the main form of capital rather than physical resources or money. However, as the biggest employer in the UK, the NHS is comparable to a mammoth public sector giant with policies and procedures akin to a junk of acculturated and ingrained logic of bureaucratic work-style. Conventional practitioners may be highly conservative about the way they have been doing a particular job for quite some time, and they may not want to bring about changes in their working patterns. Hence, this is a cultural challenge and may be addressed as a change management process. Whilst bringing about this kind of change, it has to be recognised that the technology suits the users, and the users are adept in the usage of the technology. This to be a reason behind the fact that in spite of technological innovation and the introduction of nouvelle provisions, there may be many service providers who may not be willing to accept change. Hence, change management has appeared to be a challenge, and innovation acceptance, a threat to established practices, both ¹²therefore considered as risks. In this

context, it is relevant to cite the concept of 'organisational defensive routines', meaning those policies/actions that are risk-averse. These routines are averse to innovation and change and consider them as risks. 'Organisational defensive routines are anti-learning and over-protective' (Argyris 1993: p. 15); hence they hamper the organisation's prospects of progress by creating roadblocks for the realisation of innovative ideas.

Second: the politics of involvement of stakeholders in project planning and implementation. Information is empowering, but the power over what is to be defined as information and who actually commands the decision-making process to utilise this information may have differentials impact upon the facilitative and liberating dimension of information itself. It has been mentioned before that the analysis and understanding of the human element is of utmost importance in considering the successful introduction of new IT/communication systems. Unfortunately, planners tend to pay more attention to the technology element rather than the human element. Let me elucidate this point in more depth here. According to Clarke (2001), although the development of information systems is functionally a technological and networking exercise, the system essentially has to work within a 'social framework' (p. 7). The inability to recognise this has led to a large number of high profile failures in IT systems' implementation, including cases like the failures of the systems of the London Ambulance Service and the London Stock Exchange System. As Clarke (2001) notes:

The London Ambulance Service (LAS) computer-aided dispatch system failed on 26 October 1992, its first day in operation. From its inception, the system has been treated as a technical problem, to which a viable solution could be found. But LAS exhibited social and political dimensions which the technology-based approach proved ill-equipped to address (p. 10).

My experience in the NHS reveals that at times it so happens that IT support systems are available, but they are simply not effective because of a clash of interests and priorities about their usage between those who decide how they should be used, and those who actually use it. This occurs as result of a lack of involvement of actual users in the project, leading to mis-prioritisation, disloyalty of users and ineffective work strategies. The key lies in getting the balance right. This perspective is very true of Mumford's (1995) work; this talks of a socio-technical methodology called ETHICS – Effective Technical and Human Implementation of Computer-based Systems.

4.1 Knowledge Management in the NHS

Knowledge Management (KM) is the ability to harness the existing and potential capabilities of an organisation and its members and to exploit the same to build a competitive advantage. In the context of KM, we ought to realise that strategising with IT should not be the sole organisational mission, but that such striving ought to be towards recognising how availability and accessibility of information may enable members to maximise on their understanding and engage in conscious action to create betterment - in other words, the use of information as raw-material to create knowledge. Information, *per se*, has no relevance unless it instigates an informed

perception to yield results. There ought to be a leap from information management to knowledge management, without which the former remains restricted at just the level of availability and accessibility of required meaningful data, lacking the perception to utilise the same to result in creative action.

Concepts of Knowledge Management and Organisational Learning are not entirely new to the NHS. Documents produced by the Department of Health (DoH) like *The New NHS – modern, dependable* (1997), *Our Information Age* (1998), *Information For Health* (1998), *An organisation with a memory* (2000), amongst others, specifically inform to strategise the management of knowledge in a learning environment. The NHS has also established the NKS, where the 'K', which stands for Knowledge, replaces the 'H', which stands for Health. The NKS seeks to 'meet the needs of professionals, patients and the public for up-to-date, cross-referenced, evidence-based information by fully integrating the development of NHS knowledge systems' (*Learning from Bristol*, DoH 2002). Organisational design, inspired by concepts like KM and OL, are more common in the corporate sector, rather than in the public and voluntary sector. However, the NHS experience shows that it has adapted considerably from the corporate sector to keep in tune with changing circumstances, and the competitive environment imposed by it. The present investment of £6.2 billion to put in place the NPfIT will electronically deliver all management services like patient booking, patient choice, prescription, and information sharing between the primary, secondary and tertiary sectors. The *Modernisation Agency* of the NHS is generally responsible to translate the KM agenda into practice, which has also devised a 'Knowledge Management toolkit'[3]. The *Modernisation Agency*, in turn, has appointed regional and local teams to implement the overall vision.

The NHS established the *Modernisation Agency* in 2001, and this lent a corporate image to the biggest employer in the UK. The emphasis on maximisation of production in the corporate sector has had considerable bearing on the redesign of the NHS. It is to be noted here that the production of results has taken a very dubious turn in the NHS management, where results have almost become equated with targets. From this perspective, there appears to be little difference between the maximisation of production in the corporate sector and the meeting of targets in the NHS. I remember watching one of the talk-shows in television where a General Practitioner (GP) suggested that the National Health Service should be renamed as a Target Chasing Organisation. Targets have become such an overwhelming propaganda for service delivery that quality of services seem to have been accorded a second status. Therefore, the issues not only relate to the 'how' of KM, but also the 'what' and 'why'.

4.2 The learning angle

Knowledge is not a static entity but is a dynamic process. And when we speak of competitive organisations, we usually speak of them as the ones who are adept in constantly acquiring, utilising and transforming the knowledge of its environment –

³ http://www.nelh.nhs.uk/knowledge_management/km1/nhs.asp

the so-called 'learning angle'. In this regard, KM can only be effective in a context of Organisational Learning (OL) and further, OL is only possible where there is effective KM. Davenport (1998)[4] underlines this point: '*one reason that KM never ends is that the categories of required knowledge are always changing*'.

Learning and management of knowledge is best attained in a context where there is constant sharing and exchange of knowledge, in the continual quest for new knowledge. Drawing from the NHS, the creation of *Networks* by the Department of Health (DoH) can be cited as a good example. To cite the National Service Framework for CHD:

Primary care trusts, NHS trusts, including ambulance trusts and tertiary centres, should come together to form a local network of cardiac care. The network will then agree and then use common referral criteria, treatment protocols and quality improvement processes (NSF for CHD 2000; cited in Establishing and Developing Cardiac Networks 2004: 8).

Networks are formal bodies to bring together a range of care providers into a system of co-ordination and team learning. This contributes a great deal to looking beyond organisational boundaries and working towards achieving an integration at a high level of understanding and working. *Networks*, therefore provide a framework or platform where knowledge can be constructed and reconstructed in an atmosphere of inter-organisational assimilation and creative tension. This can result in service improvement and organisational learning. Cardiac Networks have already made significant achievements in the field of revascularisation⁵, cardiac rehabilitation, and the development, implementation and audition of an acute coronary syndrome protocol (*Establishing and Developing Cardiac Networks 2004: 13*).

The work of Argyris and Schön are significant in alluding to the philosophy of OL. They closely related learning to the detection and correction of error and, therefore, the significance of 'action' (Argyris 1993). They speak of 'organisational defensive routines' which are policies or actions that insulate organisations from the threat of the new or revolutionary. Hence, these are actions that are unproductive or 'anti-learning'. For effective KM and efficient OL, 'organisational defensive routines' should be got rid of. Moreover, as information is the raw material for valid knowledge, we must realise that 'valid information is information that can be subjected to test, to disconfirmation' (Argyris 1982: 173). Breaking away from the shield of defensive routines, to test and disconfirmation, is the prime step towards the creation of 'valid' information, and hence, 'valid' knowledge. The idea that is forwarded here is that a fundamental test of knowledge validity is its consequential invalidity; because the indices of valid knowledge are always changing. Argyris (1982) strongly adheres to the iterative nature of the concept of learning and says:

⁴ <http://www.bus.utexas.edu/kman/kmprin.htm>

⁵ A procedure to improve the blood supply (NSF for CHD 2000: 121).

Learning may be described as a process within which people discover a problem, invent a solution to the problem, produce the solution, and evaluate the outcome, leading to the discovery of new problems (p. 38).

The above statement carries unique significance in a situation specific to healthcare management, where, when every case is unique, every specific action is derived on general knowledge producing generic learning. The 'process' of discovery of a problem, 'invention' and 'production' in an iterative manner, leads to the genesis of valid knowledge itself. This is no stasis, but as an ongoing dialogue, which has been recognised a great deal in modern Action Research projects (Gustavsen 1992), facilitating an environment for 'co-generative learning' (Elden & Levin 1991).

Healthcare is an area where there is continual need for evaluation and examination of where services stand. In this sector, where services are always live, the system cannot come to a standstill just because it is being evaluated or researched; this arena provides an excellent platform for simultaneous learning and execution. Research is integral for quality evaluation and examination, and for suggestions for improvement. Hence, simultaneous research and practice are integral for the healthcare sector. The concept of democratisation plays a very important role as, in present times, patients are more aware than ever before about their medical condition and the expert model of the clinician seem to be democratically de-expertised, as patients become experts of their own health and condition. This has created increased openness in society. Similarly, as a Researcher, I do not occupy any privileged position. My intention is to learn about the situation from the 'researched' and facilitate the learning to enable improvements in the field. Hence, this project is akin to an Action Research project, which is a learning process. In relation to the concept of openness in society, it is also important to draw from Flood and Romm (1996) who equate openness in society with democratisation.

Winn (1990) similarly talks about the increasing realisation that healthcare services should be adequately informed by research and should be delivered in consultation with clients. In a similar vein, Peckham (1991) talks about the importance of the application of research findings by clinicians and managers. This is a process

to study a situation and a set of problems, to determine what the facts are, and to recommend a course of action ... Those aiming to develop organisations carry through major processes of socio-technical change have come to recognise the limitation of the professional expert model. In such situations, we need to develop a process of change, resulting in organisational learning, over a considerable period of time (Whyte 1991: 9).

Research and understanding about healthcare support services is the key to the management of knowledge in a continual basis. This operates with the philosophy that there is no one right answer to address situations and that insights from different people, occupying different positions, are equally valuable. This is an anti-thesis to the 'professional expert model' cited above (Whyte 1991), which is a top-down approach where action, understanding, evaluation and learning are structurally

cocooned as non-interactive stages of management.

Hence, organisations ought to move towards a philosophy driven by learning rather than performance. Guns (1996) says that a major difference between a performance-based organisation and a learning-based organisation is that success and performance for the former is quick, but temporal and momentary; for the latter, performance indicators evolve slowly, but learning is sustainable and stands the test of time.

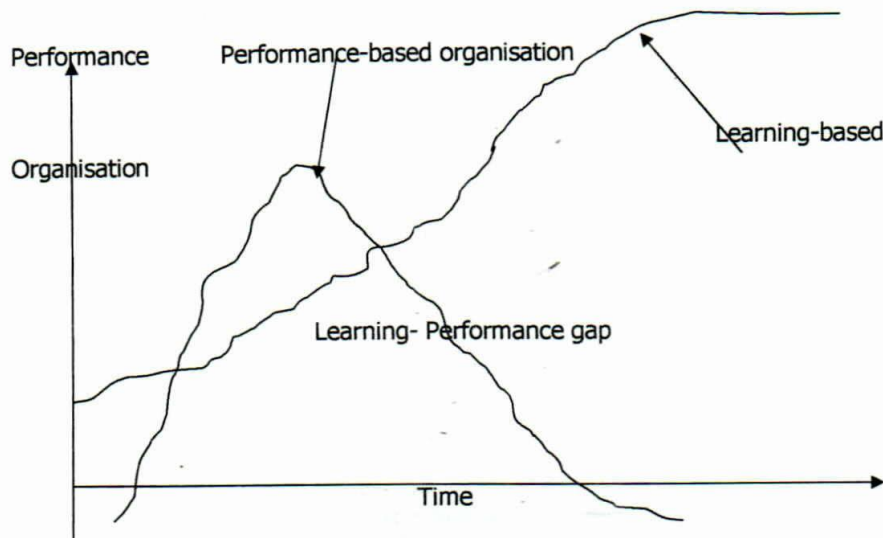


Figure 4: The Learning-Performance graph (Guns 1996: 4).

In the above graph, Guns (1996) represents his idea that performance in the learning-based organisation is slow since the driving force is not achievement-centred, but learning-centred. However performance is more enduring and sustained as it is free of artificial achievements, which are often hurriedly reached to fulfil benchmarked targets. There is a great deal of learning to be transferred to the NHS from this. Britain, under New Labour, has witnessed the NHS buried beneath an avalanche of target chasing measures (in fact the NHS seeks to scrap many of them now) which has become a doyen for managers, but most unwelcome to clinicians[6].

My intention in this section has been to tie together the close relationship between KM and OL, and bring home the realisation that continued research-supported

⁶ <http://news.bbc.co.uk/1/hi/health/3912933.stm>

perspectives in strategic planning is the way forward for information systems knowledge management projects, in general, and those akin to healthcare management projects, in particular. Learning and appreciation of the user perspective is paramount for the success of information systems projects. Concentration of immediate results may not only be detrimental to information systems projects, it may also adversely affect employee morale.

Therefore, to lend the research aspect a more rigorous strand, and to understand the user perspective better, I have structured the analysis of this project under a set of five research questions, which I introduce in the next chapter.

5: Defining the research questions

To approach the situation I have outlined above, I have formulated the following research questions, to which I will attempt to find clues during this 3 year research project.

Research Question 1: Has the West Hull PCT taken into account user opinion and perspective in implementing new IT strategies?

The WHPCT, as an NHS Trust, is responsible for implementing new IT strategies. The NHS places great weight on modernisation and has also established a Modernisation Agency to translate its vision into reality. The Modernisation Agency has 9 teams to manage specific projects⁷; these Teams are: Clinical Governance Support Team (CGST), Innovation and Knowledge Group (IKG), National Institute for Mental Health in England (NIMHE), National Primary and Care Trust Development Programme (NatPaCT), National Primary Care Development Team (NPDT), New Ways of Working Team (NWW), NHS Leadership Centre, Partnership Development Group (PDG), Service Improvement Team (SIT), and Technologies in Health Group. At the same time, the NHS is presently investing over £6.2 billion on the National Programme for Information Technology (NPIIT), which is a central element of the modernisation agenda. My interest will be to explore the extent to which the West Hull PCT considers the importance of stakeholder input in implementing the NHS modernisation agenda. A technical agenda will witness only IT investments without complete stakeholder participation; whereas a human-oriented definition of modernisation will entail people's opinions and stakeholder participation in the forefront, without letting new systems getting imposed on organisational members.

It follows from the above that certain policies and initiatives may either be inspirational or detrimental for staff morale or work productivity. This will lead us to the second research question.

Research Question 2: Are modernisation strategies of the NHS – targets, IT strategies and 'Network' structures – helping clinical and non-clinical members to work effectively?

For recognition and realisation of knowledge to occur, organisations must provide a supportive atmosphere where employees receive opportunities to understand work dynamics, exploit knowledge maximally and increase productivity. Drawing from systems thinking, reflection on one's knowledge also encompasses the realisation of how knowledge is acquired. Boothroyd adroitly labels it as 'reflexive reflection' (cited

⁷ This information is obtained from <http://www.content.modern.nhs.uk/cmsWISE/teams/Teams.htm>

in Brocklesby 1993: 78), which carries the idea that the systems thinker does not only reflect on what s/he knows but also why and under what circumstances that knowledge is acquired. The NHS at present is redefining itself with a corporate image with imposing targets, IT investments and establishing 'Networks' of service improvement, and striving towards cost reduction and quality maximisation. Doctors have been bombarded with targets to achieve, on which managers keep a close eye. In such circumstances, it becomes crucial to reflect on the nature of the work culture in the NHS – whether it enables members to work to their best ability for a high quality healthcare service, or whether it is detrimental to them in maximising their own potential.

Research Question 3: How is information managed within the West Hull PCT and what does the local KM strategy entail?

The above question stems from the crucial distinction between data, information and knowledge. Drawing from the above point of targets (mentioned under Research Question 2), it is important to understand who the results are intended for. For some, this may be valuable information and for others these figures may be just data without any meaning. It may also be the case that some figures are collected, just to satisfy national directives, which have no meaning for people who work locally. It is essential that the distinction is drawn between data, information and knowledge, to understand how information is managed within the Trust.

The challenging exercise here is what to classify as knowledge. The confusion between 'data', 'information' and 'knowledge' (Checkland & Howell 1997; cited in Howell 2002) is often commented upon. 'Data' are disconnected representations *in* perception. 'Information' is the conscious recognition of data *by* perception, which arises out of what McKenzie (2003)⁸ would call a process of 'interpretation'. 'Knowledge' is a holistic realisation of information *with* perception, what McKenzie advocates to arise out of 'theoretical concepts and abstract ideas' to arrive at a 'personalised evidence-based belief that something is true'. This question will entail the understanding of the underlying structures, which is likely to generate organisational perceptions of value and meaning related to intangible resources (including data, information and knowledge).

There is a Knowledge Management and Library Service, which is to serve the local area, and one task will be to study its KM strategy.

Research Question 4: How does the power/knowledge dynamic define relations between clinical and non-clinical staff, between clinicians and patients, between clinicians themselves, and between managers and administrative staff?

⁸ <http://www.btinternet.com/~bioneural.net/informatics.html>

The modern NHS comprises of a multi-disciplinary team which has made an attempt to bring together doctors, nurses, managers, patient representation and community involvement as an ambitious project. However, it may be important to study how these different groups relate to one another and whether or not all of them actually have a say in the decision-making process. My involvement with the NHS to date has certainly conveyed the message that unconstructive divisions do exist between clinicians and non-clinicians, managers and front-line staff, doctors and nurses, and between the NHS members and patient or community representation, where the former may still be believed to be the repository of all knowledge, and play the expert model. A Foucaudian (1980) power/knowledge dynamic still looms large. I intend also to study in greater depth how this perception and involvement of the expert model may affect service provision and how it may interfere with the larger vision of the NHS, which is the integration of all stakeholders with a whole systems approach.

An analysis of power relations between stakeholders will enable me to understand how knowledge is defined and how valuable learning may be hampered in negative power dynamics within the organisation. Valuable learning towards how things may be different or better will certainly follow from this perspective. This will bring us to determine a strategy by which learning can become a continual process, encompassing all levels of stakeholder relationships, and KM steered by the philosophy of holism. This brings us to the final research question.

Research Question 5: How can my research results be used to inform improvement of KM strategies within the West Hull PCT, on a continual basis, so that the organisation treads a path of OL?

KM is not a one-off event. KM involves the continual appreciation of changing indices of the organisation's internal and external dynamics. Hence, organisations have to continually learn. It follows from this that KM is best realised when the organisation is learning-centric rather than achievement-centric. Knowledge is not a static *entity* but is a dynamic *process*. And when we speak of competitive organisations, we usually speak of them as the ones who are adept in acquiring, utilising and transforming the knowledge of their respective environments. Hence, KM can only be effective in a platform of OL and further, OL is only possible where there is effective KM. *'One reason that Knowledge Management never ends is that the categories of required knowledge are always changing'* (Davenport 1998)⁹. This project will make an attempt to explore how this realisation may be brought into the NHS and what systems may be put in place for employees to recognise that KM is not a one-off event, brought about by some impressive IT investment, but a philosophy that is accompanied by learning and perseverance.

⁹ <http://www.mccombs.utexas.edu/kman/kmprin.htm>

6: The research tools & its outcomes

Good research is the backbone of any good project. In progressing with this project and in arriving at some of the findings for the research questions set out above, I have been conducting thorough research using a range of techniques and evaluating differing systems methodologies. In this section, I will discuss a few of such exercises, conducted as a series of pilots for this research project, together with some important outcomes.

6.1 Soft Systems Methodology (SSM)

In May 2004, I conducted a Soft Systems Methodology (SSM) (Checkland & Scholes 1990) exercise with a core service improvement team. SSM is a 7 - stage methodology – identify concern(s), draw rich pictures, formulate root definition, formulate conceptual model, compare the above with the real world, debate changes, and implement agreed changes – initiated by bringing together a diverse group of people to share issues of concern. This methodology has been placed in the 'interpretive' domain of sociological thinking, as it offers a platform to elicit personal and differential worldviews, and to lead to a constructive debate to make changes. The participants of this exercise were 1 consultant, 1 administrative staff and 5 senior managers. My objective for this exercise was to throw light on some of the basic tensions that exist in information-sharing mechanisms. In the following I have discussed the exercise in some detail, which enables a better appreciation of the situation.

6.1.1 Identify concern(s)

The first stage here is the identification of a concern in the way information is handled. I facilitated a brainstorming session to enable participants to talk about the problems the group thinks have arisen. The most pertinent issues, identified, can be classified as follows:

- *What (?) information:* There was a confusion highlighted regarding what can be defined as information. What may be very valuable to one group of people may not be relevant to another group. Sometimes there is also an issue of the collection of too much data under the banner of information and which may not be useful at all. Some scepticism was also highlighted about why certain information is being compiled in the first place.
- *Scope of information:* It was noted that there is considerable duplication of information; this overlapping has caused the collection of similar data over and over again. There is a lack of understanding about who inputs the data, which leads to a lack of completeness in the scope of data. As far as the *definition of information is concerned, the dividing line between primary and secondary care is very broad.*
- *Information support systems:* There are already information

support systems like IT systems, READ codes etc. but there is a lack of consistency in the way these systems are used throughout the departments. For instance, the READ codes are being used in primary care but not in secondary care. Similarly, there is a lack of clarity in the definition of the information.

- *Managing information:* Sometimes it so happens that information is available, but not accessible; or that people are just not aware that that information is available. There also is a lack of understanding of differing jargons between the clinical and non-clinical staff and the service users. It has not been seriously considered that information is available for more than one audience which have striking differences between them. There is an issue about confidentiality, and it was mentioned that the non-clinical staff are not very motivated to preserve patient and organisational confidentiality. Moreover, many times, the clinical staff make assumptions that other clinicians and non-clinical managers are aware of knowledge codes, which is not necessarily the case.

6.1.2 Rich Pictures

Rich-pictures (RP) are pictorial depictions of the roles individuals play in their respective statuses and the environment within which they work. This is an informal exercise and gives an opportunity to individuals freely to reflect upon their positions, problems and their relationship with others within the organisation. This is also an ideal method of giving a chance to people to reflect upon conflict patterns, without necessarily exposing a 'grudge'. I introduced the fun-and-substance of the rich picture exercise and it was very well accepted. Overpage is an example of a rich picture drawn by one of the participants.

A major theme noticed in many of the pictures was that most of the participants are involved in initiating an improvement in the way the whole CHD service system works. And what is impressive is that most of them have developed inter-organisational and inter-departmental networks. These boundaries extend not only to services in Hull, but the whole of North & East Yorkshire, and Northern Lincolnshire.

6.1.3 Root Definitions

Root definitions (RD) are verbal ways of conveying the role the person concerned plays within the system. It involves choosing a relevant human activity system, taking into consideration Customers, Actors, Transformation process, World view, Owners and Environmental constraints (CATWOE). Invariably the Root Definitions of all participants indicate working towards improving experiences and outcome of patients. The NSF is a fundamental element that the organisation is working towards making real, within the constraints of time and resources.

However for the interest of my project, I highlight two particular RDs that may be of aid to my project. One of them is: 'Provide information management support, including provision of routine and *ad hoc* information as required, to support the improvement of services for patients and carers'. The other is: 'To develop a

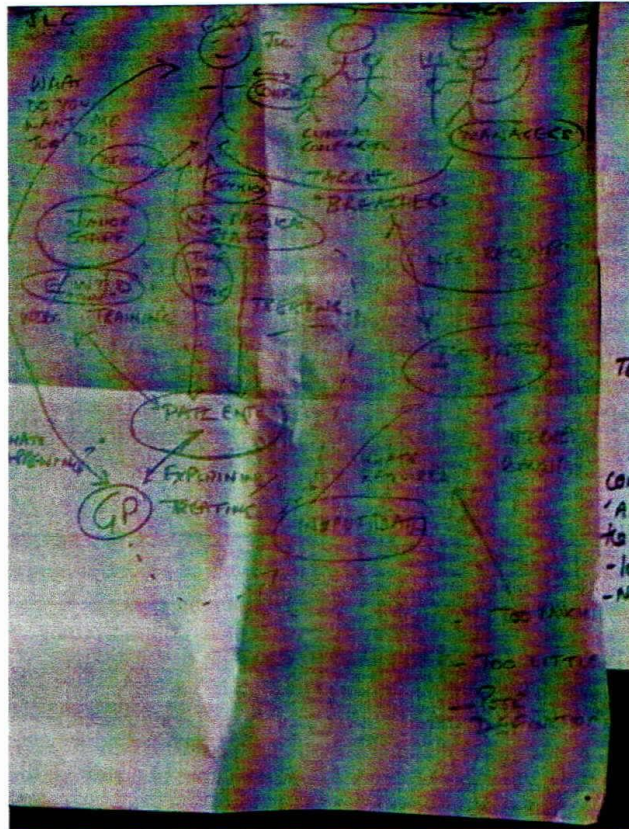


Figure 5: Rich Picture

communication system to enable dissemination and sharing of information between all the key stakeholders in the network area in conjunction with the collaborative way of working to improve CHD services in the area, and provide a more consistent approach to patient services'. These RDs are opening up valuable contacts for my project. However, what these RDs lack is an ability to identify challenges or 'environmental constraints' for/to their role in the system.

The appreciable element in all the RDs was that there is an indication of a whole systems approach. However, I will later argue that this approach needs to be more articulated and there should be an established mechanism of systems inter-linking for the organisation to work in a more competent fashion.

6.1.4 Conceptual Models

The next stage, the building of Conceptual Models (CM), involves the expression of the minimum activities required to achieve the purpose of the root-definition. If the RD depicts what the system 'is', the CM depicts what the system 'does' (Jackson

2000). The CM consists of precise verbs to reach this intention. Since the CMs are derived from the RDs, both are similar.

6.1.5 Comparison with the real world

This is the stage where the systems concepts discussed above are brought into the real life and a critical comparison is initiated regarding what role is actually played by the participating members within the organisation. In my opinion, this is particularly an important stage in the SSM where differences are likely to surface, which then need to be debated and discussed in the next stage. The important issues that surfaced were regarding the nature of change and the character of strategic fora. Some of the changes that have been initiated due to several projects were identified as change just for the sake of it; and they were not necessarily improvements. Moreover there have been several meetings and routine discussions to share ideas about change initiation; but these have stayed at the level of discussions and there has been no follow-up action. Hence, their value in the empirical world has been very minimal. All impressive strategies regarding information protocol and interchange, indicated in the RPs, RDs and CMs were challenged at this stage and it appeared that there is no established mechanism in place by which information can be transmitted within the larger organisation, and in fact there is sometimes miscommunication between the parties involved.

6.1.6 Debate and discussion

This is the stage where differing opinions are discussed and options are considered about how best differences may be overcome and challenges met. In this case, it was quite evident that there was a requirement to establish a common language which can be shared and understood by all clinical and non-clinical staff. Moreover, there is a requirement of an established protocol of information dissemination and sharing by the Trust and all Practices. There is also a lack of communication between service providers (like doctors and nurses) and decision-makers (like finance and IT departments), which lead to situations where the former is not made aware of why an action has been taken by the latter.

The Rich Pictures offered a facilitative mechanism to expose situations where challenges/conflict/problems may lie. The conflict between the direct service providers and the decision-making bodies came to the forefront at this stage. I call this 'covert conflict' within the organisation; in my opinion, this SSM offered them an excellent opportunity to discuss openly about the gaps in communication between doctors and managers (and GPs and specialists), which places one party in a difficult position due to the lack of comprehensiveness about what the other party means or wants. This may also lead to conflicting demands from different parties to one person, who may act as the information co-ordinator. Together with this, a lack of required support and time from departments, all make the work of the Information Co-ordinator a challenging one.

There is also no clear understanding among the specialists about what is exactly happening, in the information management level, within the general practices. This may lead to a difference in expectations from one to the other within the professional community. It also emerged that there is a difference of opinion, about what information should be kept confidential, between the doctors and the IT people

(and managers), when the latter may at times allegedly act as 'breachers' of boundaries regarding such information. Similarly, there is the possibility of conflict between nurses and managers, and between the national and local strategies. The overarching objective of everyone, working within the organisation, is to ensure that patients may receive quality service as expected by the patients. But the doctors do not have time to liaise with patients to explore what their expectations are.

A strong challenge has been posed by the availability of an infinite pool of information itself. One picture indicated that information is available, but what is not available is the information about what to do with the information, and how to make improvement in people's lives with the information. Related to this is the issue that information is efficient, but is it effective? This means that information has been rightly collected, but is this the right information? – in reality, if information is not effective, it is not information at all. It is just data. Data has to be both effective and efficient to make it information. Moreover there is also a doubt regarding the consistency of measurement indices across organisations and also national requirements.

It was also commented during these discussions that the person who oversees all strategies and projects may themselves be at doubt about 'who's who?' and 'who has responsibility?'. This has clearly arisen from a lack of a clear channel of communication between project managers, and different service organisation, which are overseen by them.

There was also a healthy debate regarding why there was an effort to cut the CHD rehabilitation services, when rehabilitation forms a crucial element of the care-pathway. It was also identified that there should be more time and effort invested to explore what the patients' perspectives are, and what the patients really want from the NHS. This of course is a common critique across most elements of the NHS.

6.1.7 Strategy for action

This is the final stage of the SSM. However, it has to be noted that this exercise is a part of a larger project and many of the findings have been used in informing a wider medical informatics strategy. I have applied other techniques and methodologies and I will discuss the recommendations and findings later in a more general discussion.

6.1.8 Reflection on the SSM

The application of the pilot SSM revealed a number of challenges for this KM and information systems research project, especially regarding definitions of information and knowledge themselves. It helped develop an understanding of the basic issues that need to be addressed and evaluated to enable the research questions to be fully addressed and to contribute to the improvement of KM initiatives within the West Hull PCT.

6.2 The questionnaire

The purpose of the questionnaire technique was to elicit the perspective of the General Practices regarding information sharing and dissemination, given that GPs are the first point of contact for patients. IT initiatives for perceived KM benefits has led the Department of Health to devise new systems for information recording and retrieval in the Practices along with devising modern systems of exchange of clinical information between the primary and secondary sectors. Apart from these perceived benefits, this has, however, also resulted in negative implications for the people who actually work within these systems. Taking this into account, I administered a questionnaire, addressed to the practice managers in a pilot stage in May 2004. The questionnaire asked specific questions about the nature and character of information records, existing protocols to share information between primary and the acute care, and about the existence of specialised CHD services within the Practice. A total of 27 questionnaires were sent to all the West Hull practices and 11 completed questionnaires were returned. This exercise was akin to the CHD audit that was carried out by the West Hull PCT in 2004. The following are some of the results to be noted:

1. 7 Practices have a CHD GP lead, 4 do not.
2. 5 Practices use evidence-based decision support systems like PRODIGY or HIP for CHD, 6 do not or they do not know.
3. 7 Practices have a nurse-led CHD clinic, 4 do not.
4. 11 Practices maintain a electronic dataset of patients which is updated every time a patient visits.
5. Many of the electronic dataset systems for the different Practices were found to be different.
6. 10 Practices have some system in place by which the Practice team meet (regularly) to discuss information and improvement issues, 1 does not.
7. 3 Practices use a template to pass on information to the RACPC, 8 do not.
8. 2 Practices, from the above 2, provide the Rapid Access Chest Pain Clinic (RACPC) a template to pass on information back to them, 1 does not. The other 8, from the above, do not provide any template to the RACPC to pass information back to the Practices.
9. 4 Practices said that the RACPC send information back to them every time. 7 are not sure or they said that they do not receive information back every time from the RACPC.
10. 10 Practices receive information about their patients from the acute care sector who have been admitted by A&E, 1 does not.
11. It was generally noted that about 50% of the GPs and nurses in the Practices are competent in the use of IT or may be willing to undertake further professional training to improve their IT skills.

To many of the open-ended questions, respondents replied that there should be efficient IT linkages between the primary and acute care and the trusts. It was noted that there should be systems at place which can 'talk to each other'; and the importance of information dissemination between different pathways of care should be recognised across organisational boundaries.

6.2.1 Reflections on the questionnaire survey

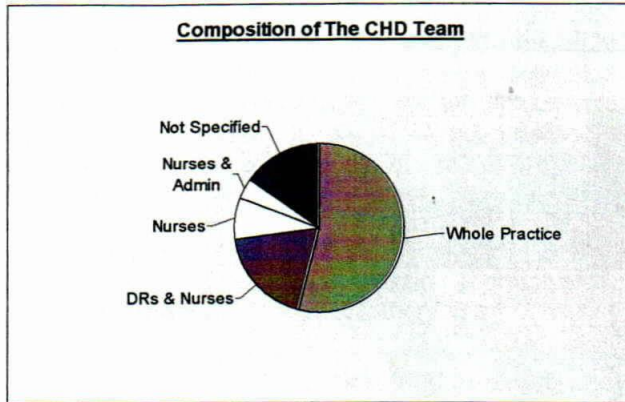
It was noted that, although there has been consistent efforts made to share information appropriately between care pathways, there appear to be little attempt to standardise the dissemination of information. Only 3 Practices use a standard template to pass on information to the acute care, which is a discouraging figure. When 7 Practices comment that they do not know (or they are not sure) whether or not the RACPC sends information back to them, this implies that patients' records are likely to be outdated. It is clear that not all Practices have a nurse-led CHD clinic, although it was strongly suggested in the past that all Practices should have one. Thus, national directives for KM have not resulted in significant impacts in the local level, at least in the situation under consideration. These findings, although in a pilot stage, carry very important messages when thinking about the research questions. KM strategies ought to function at the level of consistency across similar concerns within the same organisational umbrella so that learning from one concern can be generically conveyed to the other concerns. The *Networks* have a significant role to play in this in terms of cascading learning across boundaries and facilitating service improvement. This survey was an excellent start to initiate this research project, and some of the findings were received with both appreciation and concern by senior management within the West Hull PCT, when they were presented at a local seminar.

6.3 Relating findings to the Trust CHD audit

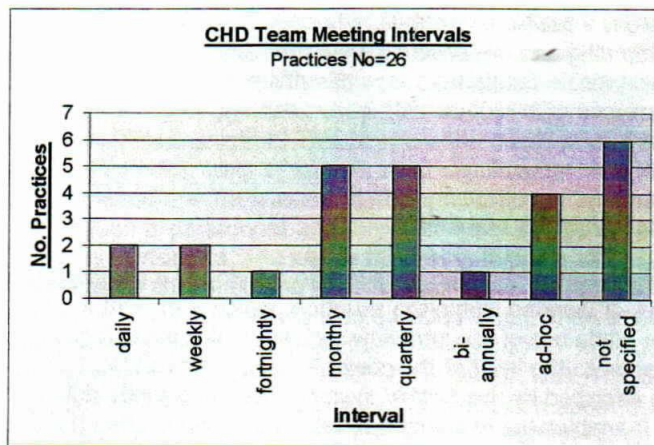
The CHD audit, carried out by the West Hull PCT has come up with results, which were complementary to the findings I analysed. My intention of providing this comparative analysis is to bring home the recognition that the findings of this project, although at a pilot stage, have significant bearings on the manner in which services ought to be understood. I am grateful to the West Hull PCT for allowing me to use certain sections of their audit findings.

The audit explored the practice management of CHD teams. Practices were asked to provide the names of the CHD Team. This data indicates how each team is made up from the differing specialities within each practice. The responses received indicate that the vast majority of Practices (14/26) have a CHD team that is multidisciplinary.

Whole Practice – 14 Practices
Doctors and Nurses – 5 Practices
Nurses – 2 Practices
Nurses and Admin – 1 Practice
Not specified – 4 Practices



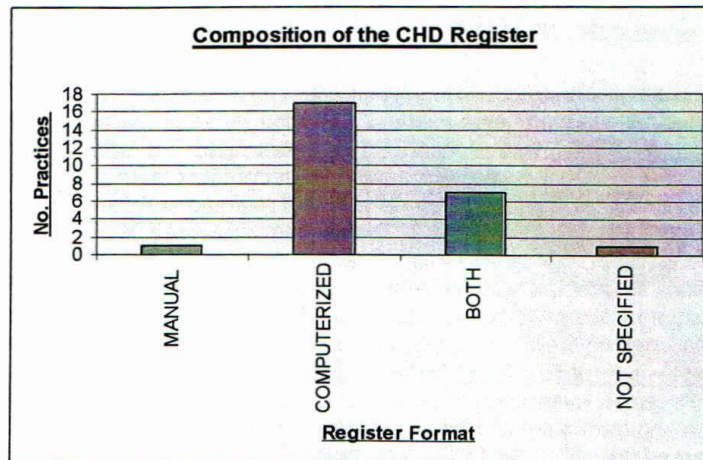
The Practices were asked how often the CHD Team meets. The data indicates that the most commonly occurring intervals are monthly (5/26) and quarterly (5/26).



Practices were also asked to specify if their CHD register is either held manually, computer based or both. The responses from Practices indicated that the vast majority of Practices (17/26) have a computerized CHD register. This is followed by Practices who have a combined electronic and manual register (7/26) and Practices with paper-based registers (1/26).

6.3.1 Reflections on the audit findings

The audit findings and their similarity to the findings of the questionnaire survey was a sound start to qualify the importance of this research project, in terms of the fact that the issues that this project seeks to explore are the ones that have real life significance and undertaking an informed academic perspective to approach the situation can only enable a better understanding of the situation. For KM strategies



to be fruitful, it is essential that there is a consistency in the general approach to service provision so that there is a realisation that work is undertaken under an umbrella of common understanding and organisational culture. Hence, mere introduction of IT systems and recommendations are not sufficient to bring about change for the better. Critically, what is required is the involvement and commitment of the people actually involved.

6.4 Interviews and critical systems heuristics

Having taken a critical approach to the situation, I have also developed a perspective the power and political issues of working within the situation, which is evident in Research Question 4. I have made use of the interview technique at a pilot stage to inform understanding in relation to the level of the power/knowledge dynamic. Few of the interviews have been informed by the *Critical Systems Heuristics* methodology (which I discuss below), as it enables the researcher to take into consideration the critical stake involved, and the role that affected parties play in design and implementation of projects. This project, dealing specifically in knowledge management and information systems, needs to appreciate the involvement of stakeholders in IT systems implementation under which they are expected to operate.

I intend now to introduce the *Critical System Heuristics* methodology, which I have employed to lend a more robust character to my interviews. *Critical Systems Heuristics* (CSH) is a methodology that may offer an understanding of the 'soft' issues like the core, intermediary and peripheral roles stakeholders play in the system, and to appreciate the social and personal worlds of the situation. Driven principally by the philosophy of Kant, Habermas and Popper, CSH is a methodology expounded by Ulrich (1983) which puts the position and activity of the involved and affected people, in social planning, into scrutiny. To be *critical* means 'to discern or to judge carefully' (Ulrich 1983: 19) the very norms and values one is situated within. Kant renders criticism an absolute status 'to which everything must be subjected' (cited in Ulrich 1983: 20). Ulrich's conceptualisation of *systems* is again heavily

drawn from Kant, where he says that Kant 'understands it [systems] as referring to the totality of relevant conditions on which theoretical or practical judgements depend, including basic metaphysical, ethical, political, and ideological *a priori* judgements' (Ulrich 1983: 21). This follows the concept of the 'whole system', which is always to be regarded critically as it is not possible to comprehend the totality of a whole system, because boundaries of systems are always changing. *Heuristics*, according to Ulrich (1983), is the art of discovery – the art of the usage of 'problem-relevant knowledge', that is to problematise the problem itself – an art which is beyond the scope of 'rational inquiry'. As Ulrich (1983) comments 'Accordingly, by heuristics we understand not a collection of prototypical problem solutions or problem-solving techniques, but rather the art of making "the problem" the problem' (p. 22).

CSH is typified by asking a set of 12 questions in the 'is' and the 'ought' modes. For example, we can elicit and understand the difference in answers when we ask the question, 'Who is the actual client of the systems design?', and 'Who ought to be the actual client of the systems design?.'

The interview schedules, informed by CSH, were mainly intended to explore issues around stakeholder participation and power in the wake of imposed policy directives and remote decision-making. My application of CSH indicated the requirement for, but the inability to generate, the inclusion of patient representation at the local level for the NPfIT programme. This is where the question of the actual clients of the programme arise, who, of course, most significantly include the patients. It is crucial to understand that for successful implementation of any project, stakeholder participation is paramount and there should exist a strategic meaning of why a project is envisioned. The key to this lies in taking a whole systems approach, where knowledge is cherished and benefits maximised. Remote decision-making and lack of actual user involvement was also revealed when, in an interview, one GP said that one of their patients was prescribed *Simvastatin* 40 mg, but the discharge letter did not say what the cholesterol level of the patient was. The GP thought 40 mg was too high, but could not come to any logical conclusion about the prescription as the cholesterol level was missing in the discharge summary. When I spoke to a consultant, they said that it this is not an important piece of information. Hence, there is a gap in perception of what is important and what is not, between the consultants and the GPs, and this clearly carries a message of non-participation of key people when discharge summaries are designed and 'imposed' upon users.

7: The road ahead

This afterword may, in a way, be regarded as also an introduction to the road ahead for this project. Through this paper, I have introduced the work that has been undertaken until recently and the outcomes that have been arrived at. The objective of this paper has been to bring home the message that as an extended 3-year academic research project, we are not seeking *solutions to problems*, but the *resolution of issues*. Hence my intention has been to raise concerns around the ambitious knowledge management and information systems' strategies of the biggest employer in the UK, and to reflect on how research into these concerns may enable a better understanding of how the systems may be better than it currently is. The learning perspective has been very decisive in the formulation of ideas and the approach that has been undertaken to understand and analyse situations in this project. This project is presently still in its initial phases and in the next phase we will be able to focus more strongly on the defined research questions. This will consequently inform the West Hull PCT of an appropriate strategy for a strategy for Knowledge Management and Information Systems design, where involvement, holism and criticality are central to the agenda. This project has also taken the opportunity to evaluate the appropriateness of certain systems methodologies and may also lead to the design of methodologies for specialist intervention in the healthcare setting.

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The availability and accessibility of the right information, in the right format, at the right time has appeared as the 'messiah' to address all healthcare service delivery needs of our times. Hence the title 'Information Messiah'. The intention of this paper is to highlight the ever-growing attention towards knowledge management and information systems as the panacea to effective and efficient healthcare service delivery, and to highlight the fact that technical strategies may only be effectively designed if there is equal recognition of the social, cultural and political dimensions of the situation under consideration. This paper is centred around a cardiac informatics research and development project, and its parallel academic research, informed by a set of five research questions. The paper discusses the background within which this paper is positioned, introduces the academic and operational approaches to this project, talks about some of the preliminary findings and introduces some of the initial research insights. It also discusses the importance of information and knowledge management at the present time, and how valid information has almost come to play the role of a 'messiah'. Finally, the paper introduces the project on which the study is based.

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