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MSc Information Systems

Research Dissertation

A Qualitative Exploration Of The Concept Of
Dehumanisation As Experienced By Nurses Within
The Context Of Information Systems.

Adam Keen

Abstract.

The aim of the presented research project was to begin an exploration of the concept of dehumanisation within the context of Information Systems (IS). Dehumanisation is presented as a high level concept that is normally associated with negative connotations.

A qualitative survey is presented based on an interpretivist research paradigm. Analysis was based on the various strategies of grounded theory; this was limited to the application of microanalysis and axial coding. Data codes identified from microanalysis were collated into thirty-five sub-categories and grouped into eight abstract data categories. Links within and between the data categories were identified.

The study found that nurses as a subset of IS users perceived IS and dehumanisation in a variety of ways. This has potentially far reaching consequences including a direct correlation to an increase in clinical risk. The study also identified IS as having a dehumanising effect, correlating well with the themes identified within the cognitive framework devised for interviews. Further secondary themes were identified as being associated with dehumanisation within the context of IS.

This work is original and has not been previously submitted in support of any other course or qualification.

Signed:_____

For Shirley, in appreciation of your never-ending love, support and patience without which I would be lost.

Acknowledgements.

I wish to acknowledge all those who have aided me in the completion of this project. In particular my gratitude goes out to those who agreed to participate in the interview process: although your names cannot be listed due to confidentiality reasons, your participation was fundamental, and I only hope to have done you justice in my interpretations.

Specific acknowledgements go to David Brown, MSc Programme Leader and dissertation supervisor whose opinions and thoughts often acted as a catalyst for my own. I would also like to thank Janet Thorniley, Post Graduate Programmes Administrator, for never failing to smile and acting as a go between whenever necessary.

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Introduction

It has been acknowledged that the domain of Information Systems (IS) within the context of intellectual study remains in its infancy (Paul, 2002). In consequence many fields of study that fall into the domain of IS tend to lean heavily on the methods, approaches, and theories of more established social sciences. Paul (2002) underpins this argument with a brief exploration of how in his opinion:

"IS is young, immature, a subject seeking a body of knowledge" (Paul, 2002, p.176).

Given that the aims of research are to extend or gain knowledge and understanding, it is easy to see the relationship between the fledgling domain of IS and the exploration of new fields through research. An essential part of the process is the development of theory grounded in empirical evidence.

The methods by which users interact with, and a consequence of, technology is a developing field of IS based research. Exploration into the physical, sociological and psychological effects of IS and technology are easily identifiable sub-domains in what can be broadly termed Human Computer Interaction (HCI). However, despite a considerable body of research on the effects of implementing IS, little has been done to examine and clarify the meaning of some concepts reported within the results of this research within the specific context of IS; for example, the concept of dehumanisation (Atkinson & Lam, 1999, Nissembaum & Walker, 1998a, Nissembaum & Walker, 1998b, Barzel, 1998).

Dehumanisation is an example of a high-level concept and is therefore difficult to define; each individual is likely to have a different opinion as to what constitutes dehumanisation. The context of definition is subsequently crucial to how the concept is understood within a particular area of study. According to Gerring (2001) concept formation is at the heart of social science research. The context associated with the concept is one means of attempting to remove ambiguity from a concept's meaning. However, Gerring (2002) also argues that this common sense method of seeking clarification is not without its complications, a definition of "context" as a concept in-

itself is required, along with a method to apply context in the process of concept formation. The need to clarify definitions of concepts such as dehumanisation should be central to any IS investigation pertaining to identify dehumanisation as a research finding. If the concept is not defined how could it be distinguished from other concepts?

The term dehumanisation is often found accompanied by commentary related to technology both in academic work (Atkinson & Lam, 1999, Nissembaum & Walker, 1998a, Nissembaum & Walker, 1998b, Barzel, 1998, Cosgrove, 1996, Caillé & Trigano, 2002, Calne, 1994) and popular film and fiction (see Appendix 1). Yet there is little or no evidence that the term has ever been described or explored within the context of IS research. This is curious given that the association is normally negative; that is the effect of dehumanisation being to the disadvantage of the individual(s) being dehumanised.

IS are argued to be a representation of 'organisational culture' (Hijikata, 1993). This culture in turn represents the values, attitudes, and beliefs of the members within the organisation (Daft, 2001); as such Information Systems are representative of social systems. Assuming then that a "user" of an information system, through a specific and often technological interface, is interacting with the culture of an organisation, it is reasonable to postulate that the technology or the organisation's culture may be responsible for any dehumanising effect.

It is the author's pretension that an exploration of dehumanisation within the specific context of IS represents both a novel and necessary research endeavour. Findings from such an exploration will extend and be of benefit to the domains of HCI, organisational and business studies among others.

The aim of this research is to begin the exploration of dehumanisation within the specific context of IS by the identification of closely related themes from empirical evidence.

From this aim one main and two subsidiary research questions were identified:

1. Do users of IS perceive the information systems they use as having a dehumanising effect?
2. If so:
   a. How do users describe the manifestation of this effect?
   b. What are the common themes associated with a dehumanising effect within the specific context of IS.

Following the completion of the pilot interview it became clear that an assumption had been made as to the participant's understanding of the terms *information systems*, and *dehumanisation*. This led to the potential for researcher bias. Therefore an additional question was formulated:

3. How do nurses describe information systems and the concept of dehumanisation?

In order to achieve the aim of the research the following approach was proposed: an application of grounded theory techniques to analyse data from semi-structured interviews using an interpretivist research paradigm.

Together these elements of aim, questions and intent combine to form a definition of the intended project scope. Using conventional project management techniques a plan for the research was devised, and although this plan changed dramatically in the early stages of the project, a summary of the plan is provided as a Gantt chart in Appendix 2.

Literature Review

Method

Carroll & Swatman (2000) stress the importance of a literature review in the planning stages of any Information Systems research endeavour; this is placed within the context of building a conceptual framework on which to balance the interests of effectiveness and efficiency. They argue that the review should be multidisciplinary in order to gain a broader perspective of the subject under study. Denscombe (1998) and Blaxter et al (2001) stress the importance of maintaining the review throughout the project life cycle. Consequently an extensive review of related literature was conducted in order to formulate a conceptual framework of dehumanisation both within the context of IS and a wider multidisciplinary context. The conceptual framework is summarised in Figure 1 and an exploration of the methods and literature used is now provided. The literature review concludes with a definition of key terms used within the study.

An initial literature search was conducted on several databases (CINAHL, Emerald Abstracts, Aslib, Infotrac, Blackwell Synergy) and Internet search engines (Yahoo, Ask, Google, Excite & AltaVista) using the search term "dehumanisation" and its alternative American spelling. From this initial search only two IS research papers centralising on a theme of dehumanisation were identified (Nissembaum & Walker, 1998a, Nissembaum & Walker, 1998b) both of which referred to the same study. However, two IS based papers were found to report dehumanisation as a research finding (Beckers & Schmidt, 2001, King & Sethi, 1997). By contrast numerous research and discussion papers were identified examining the concept of dehumanisation within a wider multidisciplinary context. These papers, along with a review of existing definitions for dehumanisation, facilitated the identification of several primary themes assumed to be central to the concept of dehumanisation. These primary themes include: Alienation, Autonomy, Norms, Culture, Morality and Denial. A review of numerous dictionary definitions is now provided, along with a brief exploration of the themes found to be associated with dehumanisation. Figure 1 illustrates how each of the themes identified in the literature review relate to the core

concept of dehumanisation. Combined they represent an illustration of the overall conceptual framework.

Figure 1: A Conceptual Framework For Dehumanisation.

CONCEPTUAL FRAMEWORK

Alienation

Morality

DEHUMANISATION

Denial

Culture

Norms

Autonomy

Primary Themes
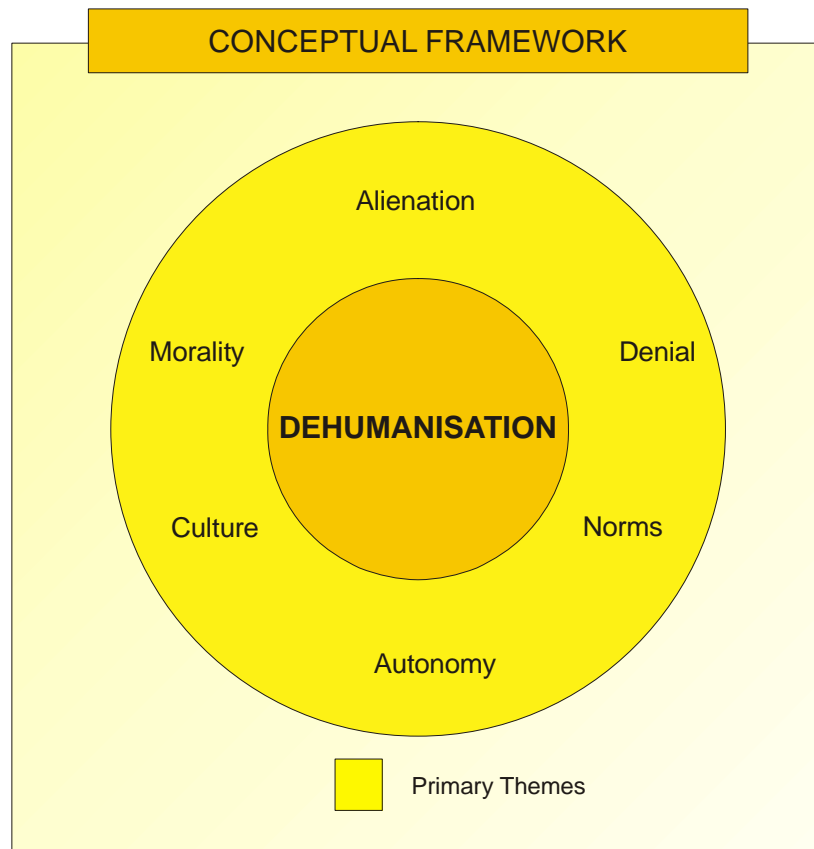
Defining Dehumanisation

Exactly what is meant by dehumanisation? Within the literature numerous differing perspectives can be identified; to some dehumanisation represents a philosophy or ideology (Kellerman, 2001, Szasz, 1974), a strategy or process (Seidelman, 2000, Calne, 1994, Bauman, 2002), or a tactic (Barnard & Sandelowski, 2001). The individual may be dehumanised, as often is described in the context of medicine (Calne, 1994, Barnard & Sandelowski, 2001, Pawlikowski, 2002, Szasz, 1974). Dehumanisation may also relate to a whole populace (Seidelman, 2000; Kellerman, 2001, Stanton, 1996), for example, the holocaust (Bauman, 2002). Some consider an unborn foetus to be the potential victim of dehumanisation (Gargaro, 1998), whilst the development of artificial intelligence and increased technology adds a further

complex domain – the dehumanisation of that which is not human itself but is used to better the human condition (Soukhanov, 2001, Barnard & Sandleowski, 2001).

The Cambridge International Dictionary Of English defines the verb 'dehumanise' and gives examples of usage:

> To remove from (a person) the special human qualities of independent thought, feeling for other people, etc.
> It's a totalitarian regime that reduces and dehumanises its population.
> He said that disabled people are often treated in a dehumanising way.
>
> (Cambridge International Dictionary Of English, 2001).

Interestingly, this definition individualises the process to a singular person but then gives examples of how dehumanisation can be applied to a wider collective. The Oxford and Websters dictionaries are less specific still:

> 1 deprive of human characteristics.
> 2 make impersonal or machine-like.
>
> (Concise Oxford Dictionary 9th Edition, 2000)

> To divest of human qualities, such as pity, tenderness, etc.; as, dehumanising influences.
>
> (Webster Dictionary, 1913)

The process to "make impersonal" insinuates an association to the concepts of alienation and depersonalisation, whilst the term "machine-like" forms an association to technology. It could be argued that a theme of denial exists through all the definitions through the usage of words such as deprive, divest, remove and take away. Equally there is a common reference to the concept of 'human qualities', although these are poorly described in all the dictionary definitions of dehumanisation examined. Ironically Microsoft (Soukhanov (Ed), 2001, Encarta College Dictionary) offers the greater degree specificity in the qualities being denied:

1. To take away somebody's individuality, the creative & interesting aspects of his of her personality, or his or her compassion & sensitivity towards others.

2. To take away the qualities or features of something that makes it able to meet man's needs & desires or enhance people's lives.

Interestingly Microsoft also refers to the potential of dehumanisation to affect 'things' that may be used to enhance human life. However, the precise definition of the "something" they refer to remains ambiguous and presents strong undertones of anthropomorphism, the process of inferring human qualities on non-human objects (Cambridge International Dictionary Of English, 2001) a recurrent theme in HCI study.

It is clear that the review of existing definitions fails to provide an uncontested definition for dehumanisation; this is in line with the findings of Calne (1994). However it does illustrate that the concept of dehumanisation is dynamic and relates to several central themes and associated concepts. Gerring (2001) suggests that it is essential to examine how concepts inter-relate in order to form a re-conceptualisation of any given concept. Given that the formation of any conceptual framework (such as that illustrated in Figure 1) involves the process of re-conceptualisation on which to base data collection and analysis, it becomes essential to examine how referent phenomena and concepts relate.

Norms

The role of norms in regard to dehumanisation is exemplified in the work of Szasz (1974), Bauman (1996), and McPhail (1999). Szasz (1974) puts forward an ideology for the development of modern psychiatry based on the justification and comparisons of norms. According to Szasz mental illness is traditionally based on the medical ethic that a neurological cause lies behind each variance from normal behaviour and thought. Yet the judgement of "normal" is based on a complex interplay of sociological, ethical and political factors, and has therefore the potential to dehumanise.

As an example Szasz (1974) cites the 1964 prosecution of a poet in the former Soviet Union under charges of "pursuing a parasitic way of life". Szasz argues that this case represented a conflict between the common political belief of collectivism and the individual belief in autonomy. The prosecution exemplifies dehumanisation in that a wider collective suppresses the individual qualities of the poet, reducing him to a mere "tool" for labour. Resistance only reinforces the claims of the collective, in this case that the poet was a parasite of the state.

Bauman (1996) in his study of the holocaust describes how some social theorists compare the processes required for the implementation of the "Final Solution" to those of modern enterprise and the bureaucracy of modern business. Within the holocaust some 6 to 12 million people were put to death (Bauman, 2002). This outcome required the application of efficient business processes and technology to ensure the supply and processing of victims. Those involved in the process were arguably distanced from the moral implications of their actions through the "normality" imposed by the organisational process itself. Weber (as cited in Bauman, 2002, page 14) reinforces this point within the context of business,

"The 'objective' discharge of business primarily means a discharge of business according to calculable rules and 'without regard for persons'".

<div style="text-align: right;">Weber (as cited in Bauman, 2002, page 14).</div>

Assuming the legitimacy of the above argument, and given the common recommendation for the development of IS projects to mirror business processes used within an organisation (Lock, 1997, Turner, 1993), it becomes possible to see IS as a potential inadvertent instrument for dehumanisation.

McPhail (1999) supports the notion of norms within managerial bureaucracies having a dehumanising influence, especially in regard to accountancy. He argues that an organisation's structure often introduces a significant distance between those making decisions and those affected by them, facilitating the typification of individuals into collectives such as employees, customers and suppliers. The introduction of such distance can lead to the hiding of ethical obligations (McPhail, 1999). In so doing the organisation imposes detrimental norms onto individuals, resulting in their dehumanisation. Within the development of automated systems has come a

distribution of norm-based 'intelligent' software agents to assume the responsibilities and commitments of certain roles within an organisation (Kecheng, 2001), a prominent and everyday example is the use of automated switchboard systems. Arguably, such processes further increases the risk of dehumanisation as the chance for individuals within an organisation to perceive or challenge immoral, unethical or dehumanising practices is reduced.

Morality

Closely associated to the concept of norms are the concepts of morality and ethics. Authors such as Milgram (1974), Zimbardo et al (2000), Bauman (1996) and Bandura (2002) have examined the psychological and sociological views of morality, whereas some exploration of morality in the context of IS and technology has begun in the work of authors such as Barzel (1998) and Barnard (1997). According to Szasz (1974) moral conduct represents human behaviour within the boundaries of actual or potential choices. What governs the choices of an individual is often assumed to be the implied laws and rules of society and an individual sense of right and wrong. Ethics is defined as; "The study of what is morally right and what is not." (Cambridge Dictionaries Online, n.d., Accessed 12/3/03, http://dictionary.cambridge.org/). An ethic can also be a system of moral beliefs that control behaviour. An organisational culture can be said to incorporate a series of ethical beliefs.

Milgram (1974) conducted a series of controversial experiments testing obedience (Blass, 2002). His experiments involved "normal" people administrating increasingly painful electric shocks as a form of punishment to a distanced victim. The results of the study showed that the various control mechanisms for moral agency can be disengaged in "normal" people, and that this disengagement is inversely correlated to the distance between subject and victim (Milgram, 1974). This challenges a wider societal belief that immoral acts are normally associated to individuals who are predisposed to innately "evil" and cruel behaviour (Bauman, 2002, Blass, 2002).

In 1971 Zimbardo, Haney and Banks (as cited in Zimbardo et al, 1999) investigated the processes of dehumanisation and deindividuation in a controlled "total

environment". The two-week experiment known as the Stanford Prison Experiment in which 24 college students were assigned the roles of either prisoner or guard, was disbanded after only six days as altered behaviour within the study sample evoked serious ethical concerns. In consequence, the Standford Prison Experiment became as infamous for its approach as it is famous for its findings. The results both supported and built on the work of Milgram (Zimbardo et al, 1999). It was shown that individuals, who had been previously psychometrically tested for their "normality", could when placed in certain contrived situations adopt roles that incorporated immoral actions. Zimbardo et al (1999) stresses the importance of situational power in the process of disinhibiting individuals to play new roles beyond the boundaries of their previous norms, laws, ethics and morals. The experiment shows how situational power can be applied within an organisation to negate the moral agency of individuals leading to the dehumanisation of others.

The ability to disengage moral agency is discussed by Bandura (2002) who states:

"Moral standards do not function as fixed internal regulators of conduct. Self-regulatory mechanisms do not operate unless they are activated. There are many psychosocial manoeuvres by which moral self-sanctions can be disengaged from inhumane conduct." (Bandura, 2001, Online).

Moral actions are not only dependent on the beliefs of the individual but include a complex interplay of social influence. Social strategies can be employed to distance the individual from the perception of immoral acts (self-censure); such manoeuvres include the dehumanisation of victims (Bandura, 2002). Bandura explains that perceived similarities between humans cause the triggering of empathetic reactions, subsequently if one party perceives the other as less than human then moral self-sanction is avoided and immoral conduct easier to justify. Bauman (2002) uses this theory as an explanation for the torturous treatment and systematic dehumanisation of holocaust victims. German officers encouraged and instigated dehumanising tactics to distance those participating in the culling of other humans from the morality of their actions. However, self-censure from moral obligations is by no means restrained to genocide, but can be illustrated in modern society with particular reference to technology and IS.

Barnard (1997) provides a critical review of technology as perceived by nurses. He postulates that nurses are deterministic in their attitudes towards technology, asserting one predominant belief in regard to technology use. For example technology is seen to: advance nursing practice, transform nursing, or dehumanise healthcare. One attitude is that technology is neutral and nurses are "masters" to the technology employed in care. Being neutral, technology is said to have no social, cultural or moral influence on nursing practice. Such a view suggests the potential for technology to distance users from the moral implications of their actions; increasing the risk of dehumanisation if the patient is seen as an extension of this technology; a potential problem within high technology care environments such as Intensive Care (Calne, 1994, Dyer, 1995). For example: the artificial maintenance of body function after brain death to facilitate organ donation challenges commonly held definitions of what constitutes death (McCullagh, 1993).

The typification of individuals into collectives by modern organisations morally distances the individuals working within the organisation from those affected by the operation of the business processes (see page 16). The application of technology establishes a physical barrier between a system user and the organisation in addition to the psychosocial barrier discussed above. Therefore IS implementations may promote moral self-censure both psychosocially (as a function of the organisation), and physically.

According to Barzel (1998):

"The reduction of organic human reasoning to the computer's mechanism can end up in the human being's dehumanisation." (Barzel, 1998, Page 166).

In a discussion on natural versus artificial intelligence, Barzel (1998) concludes that it is the human ability to deceive that essentially differentiates the two. Deception requires creativity and choice, further it requires rational interpretation of context. All these factors uniquely related to human intelligence are believed to be counter-productive to artificial intelligence systems. A computer is "truth conditioned" whilst humans have the ability to judge the value of truth. In other words a computer will

always provide the truth, whereas a human can judge whether the use of truth is beneficial; for example, whether a truth fits with the morality or ethic of the situation. Take the situation of a nurse admitting a terminally ill patient using an Electronic Patient Record. Should the nurse mechanically govern her questioning of the patient to the fields required for the patient database or should she apply her clinical judgement and sensitivity to the specific situation and patient? Barzel postulates that a distinct danger exists for humans who adopt computer mechanisms over organic human reasoning, for to do so would damage "his humanness, his flexibility and creativity". Thus the human is dehumanised. Therefore it can be suggested that in using an IS a nurse disengages her moral agency and is at risk of dehumanising not only the patient, but also herself.

Alienation

It is possible to identify various connections to dehumanisation from theories on alienation within literature. Classical Marxist theory posits the concept of "Alienation of Labour" in which an individual becomes a commodity for sale in order to survive (Schacht, 1971); the cost of the commodity is driven down by the available market and the need to feed and propagate (Kolakowski, 1978). Here echoes of previous discussions resonate in that it is said that the individual is no longer perceived (even by himself) as a human, but as a tool in the wider collective of society (Kolakowski, 1978; Schacht, 1971). Menzies (Zuvela, 2001) argues that with an increasing technological culture people become little more than tools used by information systems; they are therefore relegated to work roles required to ensure their survival. This is in stark contrast to the commonly held belief that we use IS as a tool in itself, and echoes a current adaptation of Marxist theory leading to dehumanisation.

Bauman (2002) describes how the alienation of Jews within the holocaust from the jurisdiction of "normal" authorities led to the solicitation of the victims in their own demise and subsequent dehumanisation. According to Bauman this was largely due to the rationalisation of decision-making through a specialised and oppressive bureaucracy. He states as an example of one aspect of bureaucratic oppression:

"The ability of modern, rational, bureaucratically organized power to induce actions functionally indispensable to its purposes while jarringly at odds with the vital interests of the actors." (Bauman, 2002, page 122)

Although it is acknowledged that most bureaucracies do not intend the slaughter (or even harm) of individuals, Bauman does illustrate how the objectives of an organisation can at times be at odds with those of the individual; a concept examined within the discussion of norms as having a likely dehumanising result. Such an argument is supported by Postman (1993) who charges modern bureaucracy as "the master" of social institutions, not only responsible for the solving of social problems, but also their definition and creation. According to Postman all problems within a bureaucracy are defined in terms of "efficiency" and the control of information and the application of technology is frequently given as the common solution.

The role specialisation is highlighted within the work of both Bauman (2002) and Postman (1993). Bauman argues that bureaucracies use specialisation in two ways, firstly the targeting of 'objects' to reduce the risk of outside interference. Arguably an example can be found in the specific implementation of an IS within health care. Here interference from agencies outside the sphere of health care is kept to a minimum, as exposure to the system is limited to those with system access. Although patients (or staff) may experience the potentially negative effects of a system, an individual operator or supervisor is distanced from any moral responsibility due to the physical limitations of the system interface and also the imposed controls of the bureaucracy, which, according to Postman (1993), must be protected at all costs. Should the targeted 'object' appeal to resources outside the domain of the specialised bureaucracy, the second method of using specialisation comes into effect; that of keeping competence or expertise within the specialist bureaucracy. By retaining expertise the bureaucracy effectively denies an individual a right to action by alienating them from any other source of information; in effect the specialised organisation(s) has a monopoly on information and can therefore control its application.

Postman (1993) argues that modern experts within specialised bureaucracies have developed two defining characteristics beyond those that previously distinguished an expert from a novice. Namely the ignorance of the expert beyond their specialist field,

and the tendency for experts to claim dominion for social, psychological and moral affairs in addition to the control of technical matters. According to Postman this has had the effect of relegating all aspects of human relations to the technical domain of experts. This is said to result from the predominance of mechanistic bureaucracies in society, the weakening of social institutions, and an overload of information. Experts are therefore alienated from a holistic view, and those who consult with experts are as a consequence also alienated from a wider perspective. Postman argues that where experts are of benefit is when a solution to a problem is purely technical; where "human processes" become involved the fit to technology becomes less convincing.

For example: It has been suggested that technology hinders the personal contact nurses have with their patients (Barnard & Sandleowski, 1997). It is therefore possible to argue that technology can add to a patient's perception of alienation, and that the nurse may be in reality (if not in perception) alienated from her patient. Given the acceleration in the use of IS within the clinical environment (Department of Health, 1998; Arnott, 2003) it can be hypothesised that this alienation results in an increased risk of dehumanisation.

The study of human computer interaction (HCI) and humanistic design is intended to close the perceived gap between computer technology and the social systems in which it is employed, thereby reducing the potential for alienation. Vaske & Grantham (1993) identified how the majority of early research into IS related to the design and implementations of systems rather than the social and psychological impact such systems have. Arguably the same holds true today, albeit the total volume of published material on IS has increased. It is possible within academic literature to identify studies intent on humanising both how IS are used and the computer interface with which users interact. Examples of such research include studies into the self confidence and self empowerment of IS users (Briggs et al, 1998; Psionos et al, 2000), the development of decision support systems (Pereira, 1999), and computer mediated communication (Ngwenyama, 1997; Markus, 1996; Fisher, 1999), and even the use of humour (Binsted, 1995). In an apparent paradox to the intent of HCI it is possible to identify strongly with Postman's themes of efficiency and bureaucracy within each paper, some of which show a high degree of acceptance for the "technicalisation" of

basic human processes to the extent, in the case of Binsted (1995), of encouraging anthropomorphism as an alternative to computer induced alienation.

Culture

Johnson (1997) argues that technology and culture have been long-term partners. He remarks in the opening of his book "Interface Culture" (1997):

"Any professional trend-spotter will tell you that the worlds of technology and culture are colliding. But it's not the collision itself that surprises – it's that the collision is considered news." (Johnson, 1997, page 2).

He goes onto argue that only the speed of technological development, and the inevitable cultural implications it causes, leads us into the current trend of techno culture debate. The fact that technology influences our culture is a given; it is the pace of such change that is remarkable.

To a degree Johnson's comments relate to the work of Postman (1993). Postman argues that technology is gradually pervading and eroding traditional cultural attitudes, values and beliefs forming a new culture that pushes the necessity for efficiency and rationalism – a developing state of "technopoly – the submission of all forms of cultural life to the sovereignty of technique and technology" (Postman, 1993, page 52).

Similarly the work of Menzies (Zuvela, 2001) and Bauman (2002) support the notion that technology is somehow counter-cultural and that as a result dehumanisation occurs. Nissenbaum & Walker (1998b) criticise the counter-cultural approach to examining any dehumanising effect of technology in that such "grand ideological disputation" (Nissenbaum & Walker, 1998b, page 241) is not grounded by concrete examples and is therefore unlikely to influence change. For example, although one may argue that Bauman's study and interpretation of the holocaust (Bauman, 2002) shows a specific example of the potential dehumanising effect from cultural change, it can be also argued that Bauman's work lacks empiricism and therefore remains a

singular interpretation of history. What Nissenbaum & Walker (1998b) attempt is to provide a grounded study into the potential for computers to dehumanise education, in conclusion they identify the need to understand more about how choices for the use of computers are made within education and a need for research to investigate the actual effects of using computers. Nissenbaum & Walker also make an interesting cultural observation within their concluding remarks:

"We spoke with many educators who worried that they might be laughed at or dismissed as ignorant, old fashioned, or obstructionist if they expressed concerns about using computers" (Nissenbaum & Walker, 1998b, Page 269).

Given the pervasion of technology within society, and the pace of change that results, is it possible that the sheer volume of information within modern day culture leaves many within society behind. This links well with as yet unpublished research conducted at Chester University College on the effects of information overload (Wilkinson, 2001). Here an experiment illustrated that both accuracy and efficiency of skills performance are significantly altered by information overload. Such a finding illustrates the need for modern cultures to adopt strategies for the management of large amounts of information.

Autonomy & Denial

The concepts of autonomy and denial are intrinsically linked to dehumanisation. To be autonomous is said to be "independent and having the power to make your own decisions" (Cambridge Advanced Learners Dictionary, Accessed Online: 25th March, 2003, http://dictionary.cambridge.org). Whereas denial is "when someone is not allowed to do or have something" (Cambridge Advanced Learners Dictionary, Accessed Online: 25th March, 2003, http://dictionary.cambridge.org). According to Arendt (1968, as cited in Peterson, 2001) human rights are only recognised when one is first perceived as human. Given that dehumanisation is often a consequence of neglecting to recognise the human condition (Arendt, 1968, as cited in Peterson, 2001), the denial of human rights, including the right to a freedom of choice and to

govern one's own actions, illustrates how denial and autonomy are concepts central to dehumanisation theory.

The ethical principle of autonomy has been considered from several different perspectives and in relation to numerous applications (Dworkin, 1988; Alterman, 2000; Tasota & Hoffman, 1996; Robb, 1997). For example, it is said that autonomy is the fundamental ethical principle within the medical profession (Dworkin, 1988); informed consent for treatment or for the participation in research is determined upon the ethic of autonomy (Tasota & Hoffman, 1996, Robb, 1997). However, some believe the concept of autonomy to be assumed (Alterman, 2000). Within society individuals do not live in isolation, they are subject to the constant influence of others, this leads to adaptive behaviour, which according to Alterman (2000) is non autonomous. He states:

"If the availability of information provided by another is a necessary condition of success in accomplishing a task in the everyday world, then the idea that people are thinking and acting in a "purely autonomous manner" is at best problematic"

(Alterman, 2000, Page 19)

Dworkin (1988) also examines a similar argument to that of Alterman (2000) in relation to autonomy and morality. Dworkin asks whether a person's moral principles are his own and whether moral agency is a true application of autonomy. He postulates that moral development is an issue; here common agents of society prevail – family, schools, and employment. Yet even if our moral principles are shared with a larger culture, as individuals do we not retain the right to choose and accept a particular moral framework? The answer to this question is complex and beyond the scope of this project, enough to say that our autonomy may be at times treated flippantly as in "who else makes my decisions" or falsely by the denial of influence from authority and culture (Dworkin, 1988).

Assuming that autonomy only exists in a form where an individual accepts the influence (covert or overt) in any decision by another (via environment, culture or past experience), one can see the potential for a relationship to exist between the concept of autonomy and those of culture, morality and denial. For example, if an organisational culture is predominantly focused on the internal operation of systems to the expense of any recognition of an individual beyond the role of "user" or "customer", the influence of the organisational culture could lead to the denial of moral agency within employees (as previously discussed). This would result in the apparent autonomous decisions by the employee being influenced by the wider organisational culture and its denial of individualism at the expense of the collective humanitarianism (humanism) of other users, be they employees or "outsiders".

Denial of autonomy is arguably a predominant feature of many computerised IS. Take for example the preset choices presented to an individual by an automated telephone switchboard. Here the automated switchboard represents the interface to the organisation's IS, and autonomy is influenced by the limitation of options available to navigate the system; i.e. the user is denied the right to decide what their reason for calling is beyond the limitations set by the organisation.

As an example for potential dehumanisation, such an automated interface illustrates several potential sources. Firstly, the assumed norms of the organisation and the integration of these norms within the specific work culture influence the development of the automated system and the specific options available to the end user and the subsequent denial of individual expression or interpretation. Any one employee does not determine the morality of the system, and as no human interface is applied, therefore all employees are distanced from any potentially immoral behaviour. The user is alienated from the system by having to categorise their specific need into one of the preset options of the automated system, equally the employees of the organisation are alienated from the users – protecting them from feeling responsibility for the specific actions of the organisation as a whole (e.g. frustration at the limitation of options available or becoming lost in a myriad of sub-menus).

Such an example raises a number of significant questions. Firstly, do individuals perceive dehumanisation per se and if so how does this perception manifest? In simple

terms – what are the signs and symptoms of dehumanisation? Can a particular interface be separated from an organisation in regard to the potential for dehumanisation? Or can an organisation that strives to recognise the importance of the individual cause dehumanisation through the application of poorly designed IS? Perhaps more importantly, can an organisation limit the potential for dehumanisation through design? These questions are reflected in the research questions of this study (page11).

Definition Of Key Terms

Each of the identified primary themes within the conceptual framework has been discussed at length. However, it is also important to clarify what is meant by the key terms applied to any research project in order to substantiate a degree of validity to the research tools used. Therefore each of the key terms used within this project are now defined in a summary form:

Dehumanise:

"To remove from (a person) the special human qualities of independent thought, feeling for other people, etc."

(Cambridge International Dictionary of English, 2002)

Information Systems:

"The effective analysis, design, delivery and use of information for organisations and society using information technology" (Fitzgerald, 2002, as cited in Paul, 2002).

Context:

"The circumstances in which an event occurs; a setting."

(Cambridge International Dictionary of English, 2002)

Methodology

Research Paradigm

Blaxter et al (2001) argue that a *research methodology* is composed of the underlying paradigm and approach used within a project, as compared to *research methods* which apply to the specific techniques of data collection. In defining what a paradigm is Ritzer (1975, as cited in Galliers, 1992) states:

"A paradigm…serves to define what should be studied, what questions should be asked, and what rules should be followed in interpreting the answers obtained. The paradigm is the broadest unit of consensus within a science and serves to differentiate one scientific community (or sub community) from another."

Although there have been calls for a unique IS research paradigm (Galliers, 1992), there is currently an acknowledged reliance on social science research methods within IS research (Paul, 2002, Daft, 2001). This arguably stems from the belief that IS are themselves social systems (Cornford & Smithson, 1996). Such an association brings with it several established research paradigms. Each of these can be applied to provide an influence towards the strategy, methods, and interpretation of results. In addition, each paradigm has wider implications for the projects management, including the resources required. Although a discussion of the advantages and disadvantages of each paradigm type is beyond the scope of this project, some justification as to the choice of research paradigm used is necessary.

Unlike positivism, which traditionally seeks to explain and measure the natural world (Blaxter et al, 2001), the interpretivist paradigm is arguably more suited to the social sciences giving more credence to the understanding of themes (Blaxter et al, 2001). Consequently it has less stringent claims of causation and the overall generalisability of results (Denscombe, 2002). The interpretivist sees the results of research as an individual interpretation of fact, based firmly on a systematic approach to analysis and the maintenance of an open mind (Denscombe, 2002). However, the basis of interpretation leads to the potential for researcher bias; no matter how rigorous the methods, the researcher may still look predominantly for what he wants to see.

Combined with this is the dynamic nature of the social world itself; at best a social scientist can expect to gain a snapshot of time and place, as the complex array of variables associated with social life are arguably impossible to control or replicate (Denscombe, 1998). The use of the interpretivist approach therefore is at the cost of reduced generalisability of the findings of the research. The advantage is a study that is not restricted by the physical limitations of the natural sciences, but one in which a rich and detailed theory related to the individual perception of social issues (Arksey & Knight, 1999) by the researcher may emerge.

The interpretivist paradigm has been criticised for a lack in rigour (Weinberg, 2002, Denscombe, 2002). This is said to be associated to the lack of statistical analysis and the use of emergent samples (Denscombe, 2002). Yet through the application of a systematic research approach it is said to be possible to maintain a high degree of rigour within interpretivist research (Denscombe, 2002). One such approach is the use of the strategies described by Glaser & Strauss (1967) leading to the development of grounded theory. The application of such techniques has collectively become known as 'Grounded Theory', synonymous with methods of data collection, analysis, and ultimately, result. Grounded theory is said to be suitable for research in which the intention is to form new theory (Strauss & Corbin, 1998, Glaser & Strauss, 1967), therefore its use in exploratory research is well placed. Yet, the thorough application of grounded theory is arguably unsuited to small-scale projects as it places heavy demands on resources. Nevertheless theme-based analysis techniques rooted in the principle of grounded theory can offer an acceptable compromise to the small-scale researcher. Such an approach has been adopted within this project.

Research Strategy

Given the unknown nature of dehumanisation within the context of information systems and the need to explore the phenomenon, it is clear that an experimental research strategy is ill suited. Experiments require both the tight control of and definition of variables and have been criticised for using contrived research settings (Blaxter et al, 2001). Given the unknown extent of variables related to dehumanisation an experimental approach would be at best unreliable.

Action research is also ill-suited as this approach depends on the participation of others to both investigate and change behaviour (Blaxter et al, 2001, Denscombe, 1998). In regard to an exploration of dehumanisation such a study would lead to potential ethical difficulties; an investigative team does not work in isolation (Denscombe, 1998) and an organisation, or individuals within it, would need to accept an assumption that they potentially dehumanise others.

A Case Study strategy is feasible from the perspective of exploration and offering a realistic research setting. However, case studies have limitations in regard to the generalisability of research findings and maintaining an acceptable level of rigour (Denscombe, 1998). Similarly the strategy of ethnography shares many of the limitations of the case study approach. This is combined with an increased demand on resources given the common association with participant observation (Denscombe, 1998, Bell, 2000). Both the case study and ethnographic approaches have been criticised as been less than objective (Weinberg, 2002).

This leaves the survey as the most likely strategy for the project. Surveys are suited to either quantitative or qualitative research methods (Denscombe, 1998, Arksey & Knight, 1999) and therefore offer enough flexibility to facilitate an exploratory study. According to Denscombe (1998) the premise underpinning the survey strategy is based on gaining a broad and encompassing perspective at a single moment in time using empirical data. In this case a qualitative survey would provide an in-depth exploration of participant's opinions of dehumanisation and information systems, but would be limited in terms of generalisability. In contrast, the use of quantitative methods (for example, a questionnaire) provides greater breadth of sample, but less depth of exploration. The focus of a single moment in time is reflective of the application of the interpretivist paradigm, reflecting the complexity of the social world. The use of empirical data refers to the use of new data found within the 'field' of the research project and requires the researcher deliberately seek information (Denscombe, 1998).

Sample Methods

Surveys require careful consideration in regard to the sample population to be studied (Bell, 2000, Blaxter et al, 2001). This is largely related to the common use of the survey in the quantitative measurement of a given population. According to Tryfos (1996) research sampling is primarily stimulated by a need to learn from the "aggregate" of the population. How representative a sample is depends on the randomness with which it is drawn from the specified sampling frame. A non-representative sample will increase the element of bias within the findings and reduce the reliability and generalisability of the study. Subsequently, it is vital for any survey to define a suitable sampling frame and method.

This project uses nurses as a sub-set of IS users as part of a set sampling frame. Nurses are of a specific interest to those involved in the development of health informatics systems and represent the largest employed body of staff within the NHS (Wilson, 2002). With an expected increase in expenditure of £5 billion within the NHS for health informatics over the next 5 years (Arnott, 2003), the decision to investigate the impact of health informatics is timely. The geographic boundaries of the Local Research Ethics Committee (LREC) defined the physical boundaries of the sample frame to be used. This encompassed the majority of South Cheshire and included three major district general hospitals. Specific inclusion and exclusion criteria were set in order to define the sample frame further. These can be seen as part of Appendix 3. By using a multi-site approach it was hoped that any bias from a single centre would be reduced and opinions would be gained from a broad geographical cross section of nurses.

It was thought essential to set a maximum limit to sample numbers due to the restricted resources available to the project. Initially this was set to 15 nurses across all sites. In reality this still proved too heavy for the projects limited resources and was therefore amended to a planned total of 10. Limiting the sample changed the sample frame dynamics to a predominantly hospital focus; however several participants worked between hospital and community settings and were therefore able to give insights from both perspectives.

Due to the constraints of available resources, in particular time and finance, the use of non-probability sampling methods was thought most appropriate. The planned sampling method was based on the principal of "Theoretical Sampling" as originally described by Glaser & Strauss (1967), an example of "emergent sampling". Combined with this was an inevitable element of convenience sampling (Denscombe, 1998). Theoretical sampling is well suited to the use of grounded theory analysis methods as the developing theory guides the choice of the next subject (Strauss & Corbin, 1998). Within this study the convenience element related simply to the locality of hospitals and community nursing teams to the principal researcher, and the presence of existing links with staff to act as intermediaries within the relevant institutions.

The LREC review insisted on the use of intermediaries for the initial contact with possible research participants. An initial contact letter was drafted and three intermediaries were approached to represent the project from each hospital site. The initial plan was for the intermediaries to identify potentially suitable participants on guidance from the principal researcher as the analysis of previous interviews took place. Each of the intermediaries worked within a different nursing speciality, these were selected to give access to as broad a spectrum of sample as possible. This included intensive care nurses who are constantly exposed to a high technological environment, general ward nurses who represent the majority of nursing staff working within a hospital environment, and midwives. Midwives were selected due to their status as independent practitioners and exposure to both hospital and community settings.

In practice the plan to use emergent sampling was dropped when it became clear that insufficient time had been planned for data collection and analysis. This is a frequent problem associated with novice research projects (Arksey & Knight, 1999) and was compounded in this case by an underestimation of the time required to gain ethical approval. The intermediaries were therefore asked to identify nurses on a basis of varying grade and experience. The aim here was to gain a cross section of nursing experience within the specialities from what was now predominantly a convenience sample.

Ethical Considerations

As the study involved the participation of third parties it was thought necessary to seek ethical approval for the research. Given that the intended participants were to be nurses working within NHS hospitals throughout the North West of England the relevant NHS Local Regional Ethics Committee (LREC) was approached and approval applied for. A thorough research protocol needed to be drafted (see appendix 3) and submitted along with the relevant and extensive application form. Complete with the research protocol were copies of an information sheet to be given to all potential participants and a consent form. The process of gaining LREC approval proved considerably more time consuming than anticipated by either the researcher or research supervisor. As a consequence the commencement of data collection was delayed by over a month.

The purpose of the LREC review is to "protect the dignity, rights, safety and well-being of all actual or potential research participants" (Central Office For Research Ethics Committees, 2003). As such the protocol had to detail fully the intended methodological approach in addition to the specific ethical principles of: beneficence, avoidance of maleficence, equal opportunities, data protection and the technical competence of the research team (See appendix 3).

The application was taken forward to a full meeting of the LREC committee and passed subject to minor clarifications and changes. These included the use of intermediaries when approaching potential participants (as detailed) and minor additions to the participant information sheet. Only after these changes were made to the research protocol and approved by the Chair of the LREC could data collection commence.

Research Methods

According to Denscombe (1998) the terms 'quantitative' and 'qualitative' are interpreted as being "contrasting positions in relation to a number of dimensions of social research". Denscombe goes on to argue that such a classification is simplistic, and that the terms refer more to the treatment of data than the methods of data collection. Arksey & Knight (1999) stress that research methods have to be "fit for purpose". Therefore, consideration to the type of data needed, and correspondingly the type of analysis to be applied, is crucial in the development stages of any research project.

Exploratory studies often represent an initial investigation into a particular topic. They tend to be descriptive and lay a foundation for further study. Data and the methods used to collect it therefore need to facilitate this exploration to a sufficient depth and not be limited to a surface examination. In order to investigate dehumanisation, it is first necessary to describe and define the phenomena of dehumanisation itself; such logic is described by the 'progressive focusing' method of research (Arksey & Knight, 1999). Quantitative research methods, for example a questionnaire, when used in isolation were thought to be inappropriate for this project given the aim to explore the phenomena. The stated research questions require a depth of exploration to provide sufficient evidence on which to base an interpretation of the data generated.

Mixed method studies, combining both quantitative and qualitative techniques, would have provide both an adequate depth of description for the concept of dehumanisation, and a degree of quantitative measurement. This would have facilitated the triangulation of results and potentially increased both the reliability and generalisability of findings (Denscome, 1998, Blaxter et al, 2001, Arksey & Knight, 1999). Multiple method research designs are said to represent the current trend in social science research (Arksey & Knight, 1999) and although this approach was originally considered for the study, it was eventually dismissed due to the limited resources available.

A purely qualitative approach to data collection remained the only viable compromise between the intended research objectives and available resources. Qualitative studies facilitate the level of description required in an exploratory study, but are usually limited in regards to the sample size used and generalisability of results, especially in small-scale projects (Denscombe, 1998). However qualitative methods are well matched to the interpretivist research paradigm.

Data Collection

Interviews are used in 90% of all social science investigations in one form or another (Briggs, 1986 as cited in Weinberg, 2002). Interviews add considerable demands to the resources required within any given project (Denscombe, 1998; Blaxter et al, 2001; Dey, 1993), however their strengths have been described as fulfilling all the areas for which a quantitative questionnaire is weak (Cornford & Smithson, 1996, Arksey & Knight, 1999), for example, providing the respondent the opportunity to clarify the meaning or context of a particular question and the researcher a gauge of the honesty of the reply. The use of semi-structured interviews represents the primary method of data collection for this study.

Ideally the preparation for interviewing should be as rigorous as that used for quantitative data collection tools. Consideration to validity (the degree to which the study investigates what it purports to) of the planned interview is required (Arksey & Knight, 1999). Arksey & Knight (1999) describe validity in qualitative interviews as a matter of judgement, where the data gained is always likely to be compromised in some way. After all interviews are not without their weaknesses, for example, the reluctance of a respondent to voice an opinion within a face-to-face encounter. However the degree to which validity is compromised can be reduced by good preparation for the interview in regard to the questions set and asked, for example, the relevance of set and follow-up questions to the underlying research question and the degree to which questions link with literature and piloting results. Issues related to the reliability of interview data have a similar problem in that reliability will always to a degree be compromised (Arksey & Knight, 1999). Reliability works from an assumption that everything in the universe is stable; this assumption is at odds with

interpretivist enquiry where it is acknowledged that interpretations within interviews are collaborative between the researchers and respondent (Weinberg, 2002).

Several measures were taken to ensure the validity of the semi-structured interviews used within the project. Firstly questions for the interview template were formulated by relating each question back to the study's overall research questions. A variety of secondary "probing" questions were also suggested based on the cognitive framework. These secondary questions could be used in any order or left unasked depending on the dynamics of each interview and the interviewer's perception that the issue had already been addressed. The project supervisor also reviewed the initial interview questions to check for validity. Finally the questions were piloted.

To promote reliability within the survey and minimise any potential bias of the interviewer (through forming preconceived perceptions) a non-nursing participant was sought for the pilot interview. This interview was conducted to test the semi-structured questioning tool (refer to Appendix 4 for a list of questions piloted), the requirement for clarification to the questions asked, and the skills of the interviewer in arranging and completing an interview. Data gained was not included in the final data analysis of the study.

Many lessons were learned during the pilot interview, for example: Denscombe (1998) suggests a shortlist of equipment checks prior to conducting an interview, one of which includes ensuring the audio recorder is able to reproduce an adequate level of sound. Despite a test of the equipment once in situ, it was found that the quality of pick up on the respondent was very poor. On reflection this was caused by a simple error in testing. Other practicalities were also identified, such as the risk of ambient interference and interruption. Lessons in regard to interviewer skill were also immediately evident, including the degree to which the interviewer would interrupt the respondent or give unnecessarily long explanations.

In regard to validity several observations were made before a final list of interview questions was drafted (see Appendix 5). Firstly several questions required rewording, as they appeared to cause misunderstanding or participant anxiety. It was noted that the respondent had difficulty in defining what was meant by both the terms

information systems and *dehumanisation*. This was felt to relate to both how the question was phrased and how much consideration the respondent had given to the subject prior to the interview. It was subsequently decided to introduce two definitions to the respondents in the actual interviews after initially asking for their thoughts on what the terms meant. Prior to introducing either definition respondents were reassured that their opinion was valid. They were then shown the corresponding definition and asked to comment on difference between the two. This was intended to serve a dual purpose; firstly to gain a better understanding of the context of the respondent's initial definition, and secondly to act as a prompt (if required) for participants who had not considered either of the terms before.

A level of interviewer bias was also noted within the transcript of the pilot interview through the inadvertent leading of questions with the phrase "Do you think…?". As with several other interviewer errors this natural conversational tendency was much harder to correct than first thought. Qualitative interviews are modelled on conversations (Arksey & Knight, 1999, Denscombe, 1998) and natural habits in conversation are hard to break. In order to develop a rapport with the participant it was felt important that the questions should not simply be read out loud as this would potentially make the situation feel more formal than intended and stifle open responses.

Methods Of Analysis

In order to facilitate textual analysis, each semi-structured interview was recorded using audiotape and later transcribed. Audio recording is said to potentially stifle responses to questions and raise issues of trust between participant and researcher (Denscombe, 1998, Blaxter et al, 2001). Therefore the type of recorder used was selected for the benefit of a remote microphone that facilitated the hiding of the recorder body from the direct view of the respondent. By minimising the visual presence of the audio equipment it was hoped that the respondent would settle more quickly into the interview. However, all respondents were made aware of the recording process prior to interview and the recording was started only after the participant gave verbal consent.

A template was created for the transcription process; this facilitated the plotting of position (interview number against line number) and a space for additional notes or comments to be added. Arksey & Knight (1999) and Weinberg (2002) both make reference to how much data is lost during the recording and transcription process. For example, in recording the interview visual signals and the environmental context are lost, whilst in the transcribing; intonation, the use of silence and pauses, and quite often the voice itself can be lost. Any loss of data can have relevance to the interpretation of findings. An example of a transcribed interview is provided in Appendix 8.

Strauss & Corbin (1998) detail the many possible stages of textual analysis required to generate new theory. Included in this process are the stages of microanalysis, axial coding, selective coding and coding for process. Although these processes can be described in a linear fashion, in application they do not necessarily need to be applied in such a way (Strauss & Corbin, 1998). The use of these procedures provides a degree of rigour to the analysis process (Denscombe, 2002) helping to ensure that attention is paid to the roles of validity and reliability across the research process. Given the limitations of this project in regard to sample and resources it was decided to apply the stages of microanalysis and axial coding only. This would result in a list of categories and related sub-categories, with evidence on existing links but little

exploration of processes involved. In other words the results of the study would be descriptive and ordered, but not sufficiently theorized to form a complete or saturated grounded theory.

Miles and Huberman (1994) identify three approaches to coding qualitative data: pre-emptive start-lists, the inductive approach, and general accounting schemes. Each tactic has recognised advantages and disadvantages, however the inductive approach is recognised as more suited to a grounded theory based analysis methodology as numerous varieties of code can be identified within context and without preconception of meaning. It has been stressed that a degree of selection of codes is "not a completely unstructured process" (Miles & Huberman, 1994, page 58), in that whichever method of coding is used a researcher is looking to find a fit between noted observations to developing theory or data constructs.

Microanalysis is the process of examining and coding text for meaning at a micro level. Each word within the text is examined and its meaning questioned in order to generate initial coding categories. The process of qualitative coding helps to combat the danger of information overload (Miles & Huberman, 1994), it also facilitates the formation of conceptual abstractions in which sub-categories can be ordered to form an interpretation of questions relating to who, why, where, what and how (Strauss & Corbin, 1998). A degree of selection of the data coded is according to Miles & Hubberman (1994), inevitable, however by applying microanalysis at the word level for the first two or three transcripts a researcher is forced to challenge any preconceptions as to the meaning of data (Strauss & Corbin, 1998). In doing so the impact of researcher bias is reduced and the processes relating to validity and rigour increased.

The process of microanalysis was applied at various levels to the interview transcripts. The first 2 transcripts were subjected to a word level analysis to generate initial coding categories as recommended by Strauss & Corbin (1998) to reduce the potential for researcher bias in the interpretation of the data. Microanalysis is recognised as a time consuming activity. Each word, sentence, paragraph, or even interview transcript is examined for alternative meanings. This may involve high or low level comparisons and challenging pre-existing interpretations of meaning. Each of the 9 transcripts was

analysed in turn with a progressively less detailed analysis being completed on the later transcripts as category types emerged from earlier analysis. If an area of data was specifically interesting a higher level of analysis was completed for that section and the category added to the list if necessary. For example, take the excerpt below:

At the moment [Specific Time]… inputting [Computer Interaction] admissions [Controlled System Entry], discharges [Controlled System Release], also delivery [Arrival Process] details for birth notifications, which are then sent [Transport Of Information] to the birth notification registrars and are then forwarded on to the registrar's.

MEMO [Admissions= letting somebody into a controlled system, controlling entry, confessing. Discharges= Release of people from a controlled system, an ooze of pus, a shot of artillery or a release of a weapon. Delivery= arrival, birthing process. Details= specific data, a predefined data set, a description something, minutia. Notification= the act of passing on information from one source to another, to give warning. Sent= passed from one source to another by a means of transportation.]

The black and highlighted text is the transcription of the interview. The bracketed code e.g. [Specific Time], is the category code assigned from microanalysis. In vivo codes are codes made directly from the text.

The red text is the microanalysis of highlighted area within the transcript. The blue text is the specific word or phrase the microanalysis is considering.

Appendix 9 gives a complete example of the word level microanalysis completed within initial stages of the study. Each microanalysis code was entered into a simple Microsoft Access database and related to examples of transcript text in order to ease the process of data collation. Had more time been available this database could have been extended to provide detailed information on the links between and within the data codes and abstract categories, alternatively a dedicated qualitative analysis tool such as NUDIST could have been utilised.

Axial coding is the process of relating categories to sub-categories (Strauss & Corbin, 1998). It is termed axial as the category acts as a hub from which sub categories branch out. Relationships between the hub category and sub-categories examine the

who, where, why, what and how of the category types and their relationship (Strauss & Corbin, 1998). The formation of data categories involves the grouping of sub-categories identified through microanalysis and forming new and abstract categories.

Axial analysis is also said to facilitate the linking of structure to process (Strauss & Corbin, 1998). Given the limited resources available to this project a predominantly structural form of axial analysis was applied. This facilitated a diagrammatic perspective of structure and a crude measure of relationship within and between data categories. Had the scope of the project (and associated resources) permitted the nature of these links could have been investigated further in subsequent interviews (Strauss & Corbin, 1998). Figure 2 illustrates an example of an axial analysis diagram below. Note the number of microanalysis codes linking each category type were used to weight the line of the link within the structural diagram, therefore the heavier the line the stronger the link. This was intended to provide a crude measure of the strength of link between category types.

Figure 2: An example of Axial Analysis
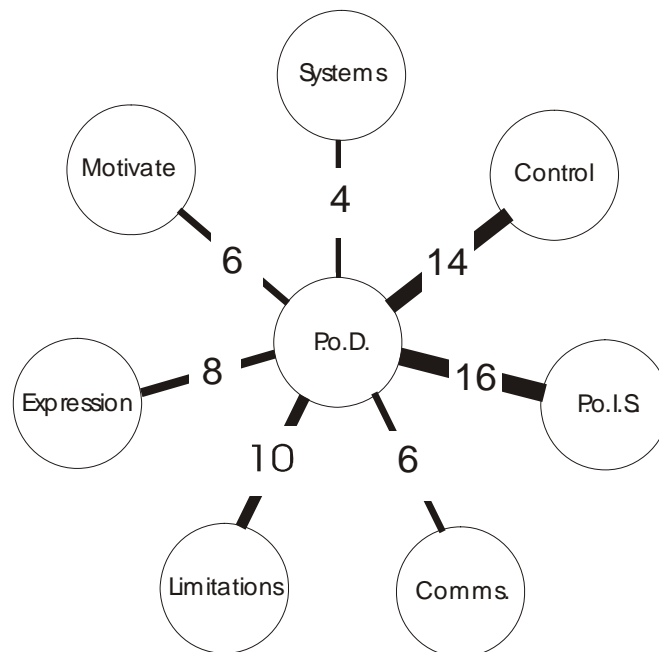
Results

Data collection commenced at the end of April and continued to the end of June. Nine semi-structured interviews were completed in this time with a tenth cancelled in early July due to extraneous circumstances. Given the late date of this final interview and the amount of data collected at that point in time, a halt was called to the fieldwork. Miles & Huberman (1994) discuss the importance of maintaining a tight control on the duration of fieldwork. This in part is due to the nature of the data retrieved; as Miles & Huberman (1994, page 56) state "Words are fatter than numbers and usually have multiple meanings." The nine interviews provided approximately 10 hours of audio taped conversation for transcription leading to a collective total of 85,594 words.

The microanalysis of the first two transcripts provided a total of 468 codes and proved essential in the interpretation process. Numerous preconceptions of the interviewer as to the meaning of participant responses were challenged, these fed into later interviews in the form of new or adapted questions. For example, numerous uses for the word "system" were identified including reference to both discrete systems and abstractions of working culture.

Once a word level microanalysis was completed on the first 2 transcripts the transcripts were re-read and coded on a paragraph or section level. A return to word level microanalysis was completed in areas of specific interest within the transcripts in order to establish a high level of rigour. The paragraph/ section level microanalysis was applied to all nine transcripts in turn. As new data categories were identified in later transcripts a return to earlier transcripts was made to ensure consistency in the coding process as recommended by Miles & Huberman (1994). A total of 129 data codes were identified. These coded interpretations were grounded within the data and the earlier word level analysis helped to establish context.

The data codes resulting from the microanalysis of all transcripts were then examined for similarities in the first stage of axial analysis. This facilitated the formation of more abstract categories and subcategories of related codes and ultimately associated

text. This process is recommended by Strauss & Corbin (1998) as a way of gaining an early interpretation of the mass of data collected from fieldwork. A total of eight categories were identified with thirty-five associated subcategories. Table 1 lists each of the data categories and their associated subcategories. Appendix 10 provides a breakdown of category, subcategory and analysis code, for each of the eight categories identified.

Many of the 129 data codes were spread across numerous category and sub category types. Further, many codes found within a specific category recurred in numerous associated subcategory types. This indicated the existence of links between and within the category types. To facilitate the examination of links between categories a predominantly structural form of axial analysis diagram was applied (Strauss & Corbin, 1998). This structural analysis indicated complex links between and across category types. Figure 3 provides a summary diagram of the links that exist between the category types. The results indicated that with the exception of the category types System and Expressions, each category linked to all other category types. Appendix 11 illustrates the nature of these links in greater detail.

Table 1

Category	Subcategory
Systems	Types of system
	Purpose of system
	Consequences of system (links to all other categories)
Perceptions of dehumanisation (P.o.D.)	Traits
	Uses
	Effects
	Advantages
	Disadvantages
Perceptions of information systems (P.o.I.S.)	Traits
	Uses
	Effects
	Advantages
	Disadvantages
	Scope of information systems
Control Mechanisms (Control)	Implied operational mechanisms
	Physical operational mechanisms
	Implicit tactics
	Explicit tactics
Motivations (Motivate)	Rewards
	Overt incentives
	Covert incentives
Communication (Comms.)	Systems of communication
	Barriers to communication
	Purpose of communication
	Types of communication
Limitations	Legal limitations
	Psychological limitations
	Social limitations
	Training limitations
	Limitations of time
Expressions (Expression)	Expressions of inevitability
	Expressions of effect
	Expressions of threat
	Expressions of dissatisfaction

Figure 3. Summary Diagram Of Structural Analysis.
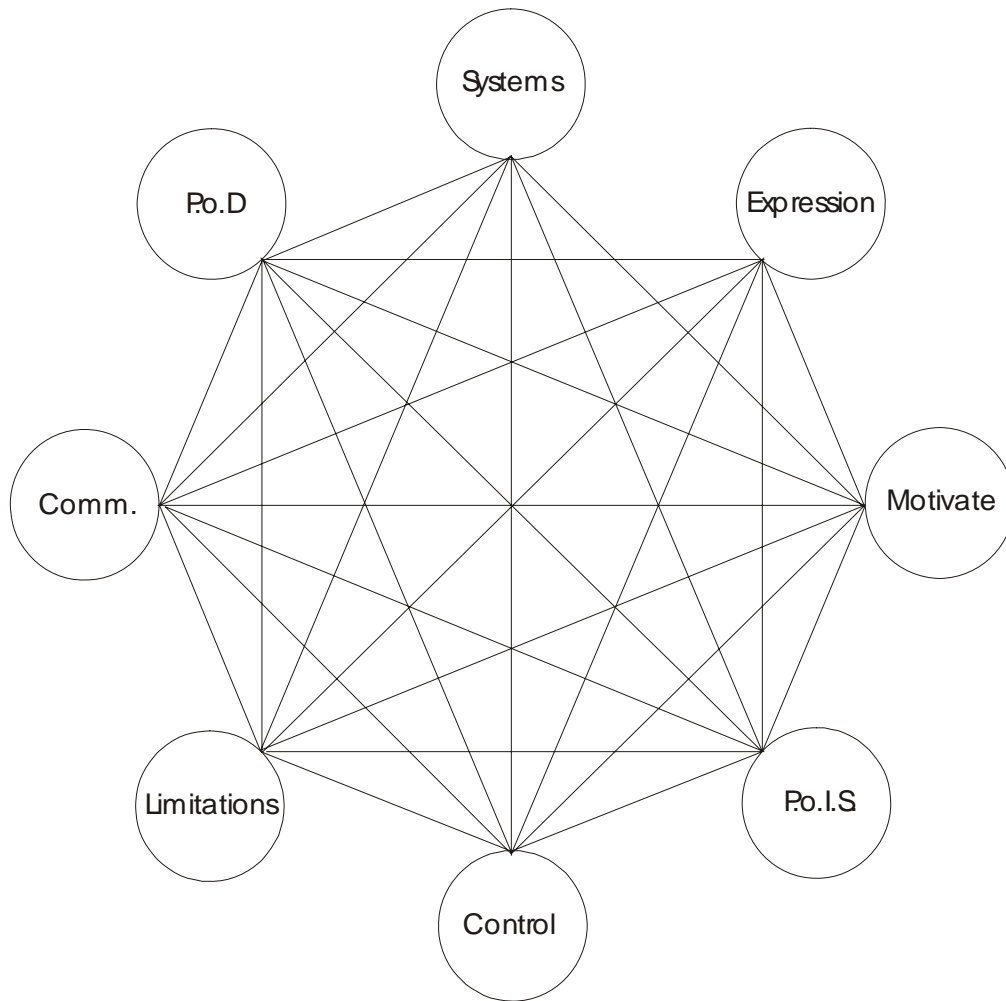
Please refer to Appendix 11 for detailed summary of axial analysis.

Discussion Of Findings

How do nurses describe information systems and the concept of dehumanisation?

The way in which we each perceive dehumanisation and information systems bears directly on the way in which we are likely to discuss related issues. Within the pilot interview it was clear that the respondent's definition of information systems differed from that of the researcher. Given that the context of the original research questions related to the perception of the individual respondents, it was thought necessary to extend these questions to also explore the descriptions that respondents provided for the key concepts of dehumanisation and IS. In this way it was hoped that a degree of insight in regard to the context of answers would be gained. In order to achieve this objective each respondent was asked to describe how he or she defined the terms information systems and dehumanisation. They were then given the adopted project definitions for each term and asked to form a comparison between the two. The results of this process are now discussed below.

Information systems were widely described by respondents as either systems that provided information storage or that communicated information in some way. For example;

"…The use of, the use of databases. Putting information in, being able to get different pieces of information from it…" (Respondent 1)

"A system that would inform me of what I am looking for…" (Respondent 4)

Some respondents perceived information systems to be synonymous or linked with communication systems:

"All an information system is, I would say, is a way of communicating." (Respondent 9)

Several of the more experienced nurses interviewed were careful to draw a distinction between computerised information systems and non-computerised information systems, for example:

"Well I don't just think it comes under computerised information systems. I think it comes under information systems. A broad spectrum of information systems that can be, verbal, written, on the computer it covers a whole load of ways of communication and information and the internet and everything." (Respondent 8)

These comments are interesting when compared to the synonymous relationship between information technology and information systems made in Fitzgerald's definition (2002, as cited in Paul 2002). Given the limitations of a qualitative study it is unclear whether there is significance in the age and experience of the nurses identifying this distinction, however speculation of such a distinction shows experience of changing societal and organisational norms; from a predominantly non-technological norm to one that is a technologically driven. This relates to some extent to the arguments of Postman (1993) and Johnson (1997) where the prevalence of technology within our society is perceived to be accelerating and therefore impacting upon our culture. It also represents a hypothesis of process, which could be explored further if the study was to be expanded.

Further examples of normalisation in regard to information systems were prominent within the interview transcripts especially when related to clinical systems as the following vignette illustrates:

"Well only in that we see that [points to desk top computer] as a computer but we see a ventilator as a ventilator. Even though it has got microchips and whatever within it we still don't perhaps make the link between that technology and this technology being sort of related." (Respondent 7)

It was clear from the transcripts that many of the participants believed that information systems were related to computers and when asked to describe a computer most gave the physical description of a monitor, keyboard and mouse. However within health care there exist numerous clinical examples of IS which don't

conform to such a physical description; for example, an infusion pump or vital signs monitoring system. In interviews 2 to 9 respondents were asked to identify examples of IS from a list of terms (see Appendix 12), that could all be argued to be representative of IS, but were presented as a mix of clinical and non-clinical terms. Several respondents acknowledged that all the items were examples of IS, but some differentiated the clinical systems from the non-clinical. Combined with this was a commonly associated sense of being in control of the clinical IS used; whereas for the non-clinical IS described there often existed a poor or compromised perception of personal control:

"No that [new patient ventilator] doesn't bother me at all. It's the computer on the desk that bothers me." (Respondent 6)

Several issues are raised by this observation. Firstly the gradual normalisation of clinical technology into the roles of nurses and midwives has potentially led to a sense of security and mastery in regard to its use. Such security is ill founded if one accepts the arguments of Barnard (1997) who describes a neutral perception of technology as one having no social, cultural or moral influence on nursing practice. An experiment by Briggs et al (1998) also showed that poor levels of correlation existed between judgements of anticipated performance and actual performance in a computer based task, with users usually over estimating their ability. Secondly, given that the Medical Device Agency (MDA), the statutory body for the control and use of medical equipment, state that 80% of the adverse incidents reported per annum relate to user error and not device faults (MDA, 2000) such confidence in the personal mastery of clinical IS is ill placed. As such, the normalisation of clinically based IS can be argued to both increase clinical risk.

Respondents commonly defined dehumanisation as a process of mechanisation.

"I think when something becomes dehumanised it's...it's more mechanised than it is social." (Respondent 2)

Several respondents described the concept by providing an example of what they considered a dehumanising event or circumstance. For example:

"I mean yeah, that probably... they do mean by dehumanise, but I would say for example if you were bullying somebody." (Respondent 9)

When asked to compare their own definitions for dehumanisation to that taken from the Cambridge International Dictionary of English (2002) (see page 27) most respondents felt that their definitions correlated well to that provided. In addition it was possible to identify links between denial, reduced autonomy, and alienation from most respondents descriptions of dehumanisation. For example:

"It's preventing you, me as an individual, from being me and being able to perform as me and being impeded by something or other. Perhaps in this dehumanisation something is preventing me from being able to be hands on and do what I want to do." (Respondent 8)

This corresponds well with the cognitive framework presented within the literature review of this project. Further, the structural analysis of data category "Perception of Dehumanisation" (page 47) highlights strong links to the categories of control, limitations and perception of information systems. Although no significance as to the strength of the link can reasonably be judged within the limits of this study, the presence of a link at all is interesting and can be argued to logically correspond to the perception of denial, reduced autonomy and alienation. For example, control mechanisms are designed to purposely limit behaviour and this may be seen as a form of denial, impeding personal choice and effectively alienating one individual from another by the use of power.

Do users of IS perceive the information systems they use as having a dehumanising effect and if so how do users describe the manifestation of this effect?

In order to answer these two questions several tactic approaches were used. Firstly, after each participant had clarified what they understood by the term dehumanisation they were asked to provide details of any personal experience of dehumanisation. These experiences were explored further in order to seek clarification in regard to context and meaning. This process was completed before the dictionary definition of dehumanisation was discussed in order to limit a potential for leading the participant's response. Once the dictionary definition had been discussed the participant was then asked if they had ever experienced a feeling of dehumanisation as a consequence of the information systems at work. Again where it was deemed necessary clarification was sought as to context and meaning of responses. Finally the respondents were asked several questions based on the cognitive framework developed in the literature review of the project (see page13).

The participants described few experiences of dehumanisation on open questioning; however most examples provided related to either systems or technology. Automated call centres were the most frequently cited examples of dehumanisation on initial questioning (4 respondents).

"Only in terms of contacting …err… call centres or things like that where, you know, you're just a person, a voice waiting at the end of the phone …umm… particularly if you try and call to obtain some information and you're just hit with, you know, various different choices but none of them are the one you want." (Respondent 1)

These were described physically by the respondents and associated with a variety of feelings including; frustration, anger, stress, and humour. On further questioning one respondent described the feelings of alienation and being controlled by automated call centres as the reason why he felt dehumanised.

"I think it does [cause dehumanisation] because say... because then you get to the point where you are feeling that you are reliant on a machine to give you the information that you want and solely reliant on that machine and there is no other way around you know?" (Respondent 7)

Bennington, Cummane and Conn (2000) detail numerous advantages and disadvantages to the use of call centres in relation to customer satisfaction. They acknowledge that the perceived advantages of this type of IS relate predominantly to improvements in the effectiveness and efficiency of the organisation. This echoes the earlier arguments of Postman (1998) in regard to how modern bureaucracy classifies problems in terms of efficiency leading to the alienation of users.

Computerised clinical equipment was also cited as being dehumanising either directly to the nursing staff or to the patient. One participant when asked how Cardiotocograph (CTG) machines led to her feeling dehumanised stated:

"I think that they can be useful pieces of equipment... but especially the computerised CTG, they are asked for more and more now and I feel that we're going away from been able to use a skill - from originally listening to a foetal heart with a foetal stethoscope and analysing it yourself - to using a machine, so you have something visual and been able to analyse that, to now depending on the computer to analyse what we were doing ourselves anyway." (Respondent 4)

Here dehumanisation is perceived as the result in a perceived loss of a skill and the automation and mechanisation of particular process. This was enhanced further by the culture of the organisation and team members within, where the need for technological evidence often overshadowed the clinical judgement of the practitioner and led to a potential conflict in opinion. For example, one participant recounted an experience where a doctor had been called to review a patient with a periodic arrhythmia (altered heart rhythm):

"And the doctor comes to review them and they have got a perfect sinus rhythm and a perfect blood pressure, and because it is there for that one minute on the monitor, then it is not happening. Do you know what I mean? And it's almost a case of "what

are you worrying about, don't be stupid". And the minute they are off the unit it happens again." (Respondent 5)

This can be argued to reflect the hypothesis of Barzel (1998) who postulates that there exists a danger to adopt computer mechanisms over human reasoning; does the doctor in this circumstance adopt what he sees on the monitor and dismiss the clinical reasoning of the nurse? To answer this question requires further research and illustrates some of the limitations of the current study in terms of sample. However, it is likely that within this scenario a multitude of motivations exist, for example, the perception of accountability and the risk of litigation. As one respondent stated when asked why technology was perceived to be preferable to clinical judgement:

"Litigation. I think they are scared of litigation. I think that a lot of people think that [technology] will give proof, evidence, whatever you want to say, of good care or bad care or whatever. That backs them up on what they are saying." (Respondent 4)

Although this was an opinion not shared by all those interviewed.

One participant confessed to using clinical equipment to deliberately dehumanise patients; this was intended to facilitate the shielding of the practitioner from the often-intense emotions evoked through care giving.

"I think we would crack up if we didn't dehumanise patients, because if every patient was such a body with three children and they were only this age, and they had a good life and wasn't it tragic. We would end up grieving for, you know... I don't mean just upset, but properly grieving for every single patient." (Respondent 5)

Emotional labour has been directly related to nursing practice (Smith, 1992), and is a concept that is under-recognised within the work place (Hayes & Kliener, 2001). When in subsequent interviews the issue of using technology as a shield was raised, a variety of denial responses were given. These ranged from implications of weakness on the part of the practitioner using such tactics, to an abrupt denial of ever using such an approach. This perhaps relates to the various strategies practitioners employ in the management of emotional labour and less to the absence of similar tactics in each

individual carers practice. For example, Smith (1992) describes numerous strategies for coping with emotional labour including distancing; one type of which is the projection of a "hardened" approach.

The reliance on technology and resulting dehumanisation became an established category within the microanalysis of interview transcripts. Particularly interesting was an apparent difference between the perceptions of this reliance on technology by staff with varying levels of experience. Several experienced nurses referred to an increased reliance on technology resulting in a dehumanising effect:

"The thing about the nursing world is you become more reliant on the technology and stop using your brain." (Respondent 9)

Differences in the emphasis of nurse training and occupation were cited as a common reason for a different outlook on technology and its use. How participants prioritised care emerged as one illustration of perceived differences in how experience related to a reliance on technology. Participants with higher levels of experience were more confident in dismissing the need to use technology and portrayed a greater level of self-confidence in terms of clinical judgement:

"They might feel that they have got to do it [use the computer] because it is part of the job and you know they might get into trouble if they don't. Or they might feel not as competent if they don't do it. Whereas it doesn't bother me." (Respondent 3)

Several participants with intermediate levels of experience showed signs of acknowledging the limitations a reliance on the technology brings:

"You know you are relying on them [computerised monitors] to give you accurate information, but like at the same time you know you've still got to be aware that they are their to aid you not replace you." (Respondent 7)

This leads to the hypothesis that a reliance on technology is related to experience. However, such a hypothesis requires testing and this may require the use of

observational methods in addition to interviewing, as what nurses claim to do in practice and what is reality are often separate entities (Ashworth, 1980).

The spectre of wider organisational and cultural systems being the cause of dehumanisation was raised late in the data collection process. In one interview the respondent stated that the computer system she was using led her to feel dehumanised. However, when probed further the respondent stated;

"No it's not the computer it's the system under which I am working." (Respondent 8)

Further clarification led to a description of interplay between specific systems of work (i.e. the limitations of a specific computer system), organisational and managerial expectations, and wider governmental policy. When asked if it was the computer system or the method of work as set by the organisation that led to dehumanisation the respondent replied:

"It's both because of the government and them wanting the figures and things, my clerical workload has increased phenomenally... ... So with a better system my work would be much, much quicker and when we are looking at collecting statistics we are having to do all that by hand because the system isn't good enough." (Respondent 8)

Such a statement adds to the complexity of dehumanisation theory substantially. If both the IS and employing organisation can be causes of dehumanisation, then perhaps both elements need to be designed as to prevent dehumanisation. Such a hypothesis requires further study.

A final observation in regard to how participants perceived dehumanisation relates closely to the cognitive framework used. Five participants stated that either they were unsure if they were dehumanised by the IS at work or denied categorically that they were dehumanised. However, as the cognitive framework was explored it became evident that each participant could relate IS to many of the central themes of the cognitive framework (norms, alienation, culture, denial and autonomy), often giving illustrated examples. This raises the question of whether all nurses are indeed dehumanised by IS or whether they are unable to recognise that they are

dehumanised? This has some similarities to the question: did the Jews during the holocaust recognise the tactics of Nazi occupation as dehumanising, or as claimed by Bauman (2001) did they just try to survive?

It subsequently becomes possible to hypothesise that the subconscious masking or hiding of dehumanisation is a common practice by those being dehumanised. This perhaps can be in part explained by the culture in which we work and live. For example, the research of O'Riain (2002) into technical communities details how some modern working cultures can often lead to the isolation of employees despite the development of wide (cross organisational) collaborative networks. According to O'Riain, this often results in a cultural play-off between individualist and collectivist interests; employees become happy to perceive themselves as products to market, their employability being a prized asset. Such a theory has undertones of Marxism (see page 20).

What are the common themes associated with a dehumanising effect within the specific context of IS?

Perceptions of Dehumanisation

The perception of dehumanisation became a discrete data category within the textual analysis process. Five distinct subcategories were identified and these included: Traits, Uses, Advantages, Disadvantages, and Effects. Across these sub-categories were found several common themes including alienation, automation, control, denial, intimidation, labelling, and mechanisation. Alienation and denial can be mapped directly to the conceptual framework used, providing a degree of validity to the tool. Other themes can be seen to share a connection, for example mechanisation and automation; i.e. automation is often seen as an objective of mechanisation. Control, denial and alienation can also be linked, for example by the control of resources such as training:

"Unfortunately those who don't have the skills or haven't had the training can't use the computer so they have to rely on staff that can." (Respondent 2)

All references to intimidation (2 participants) were unrelated to IS, but accounted to the experience of bullying in the workplace.

Examples of labelling were referred to as an example of dehumanisation in practice:

"(I would probably err)... depersonalising people, maybe losing identity, making them umm...a woman in room three in labour" (Respondent 3)

This ties in with the work of McPhail (1999) in that a distance is created between the carer and the patient (or other professionals) through the categorisation of the patient into a collective; e.g. a woman in labour. Such a distance could theoretically increase the risk of circumnavigating moral regulatory mechanisms resulting in the disengagement of internal regulators of conduct, the potential result of which could be the immoral treatment of patients and a failure to recognise such behaviour as wrong; for example, an inadvertent breach of confidentiality about a specific patient to a colleague unconnected to the patients care.

Systems & Perceptions of Information Systems

Six sub-category data types were identified within the category 'Perceptions of Information Systems' (PoIS). These included: traits, uses, effects, advantages, disadvantages, and scope of information systems. A further three related to the more general data category of 'Systems' including; type, purpose and consequence. The sub categories for systems type related simply to generalised descriptions of systems, for example, paper based systems or manual systems. The code 'layers of system' emerged as a theme and related to the inter-connectedness of systems. For example, an IS may relate directly to a system of work. Numerous participants perceived a 'fitness for purpose' as an essential prerequisite to system use. Where such a fit was lacking, negative expressions followed. The consequences of systems were seen to connect directly with each of the other 8 data categories. Thus systems can be seen as the hub from which all other data categories extend.

The traits associated to information systems were largely unsurprising in that IS was frequently perceived as being related to improvements in efficiency; specifically in

regard to the clarity, accuracy and access of information. These were also largely seen as the advantages of IS. However, it was also interesting to note that an increase in workload was associated with IS. According to some participants this was unrecognised by management and led to the distancing of patients. For example:

"I have no problems with computers if it is a good system and this system remains up and running, but I actually sat down and worked out how long it took to admit a patient, deliver a woman, make the baby [create a new record on the system for mother and child], do other things and it actually takes and I'm quick, and the system is up and running effectively, that puts another 45 minutes on my workload." *(Respondent 8)*

The types and reasons for IS use related closely to these perceived traits, especially in regard to the administration of nursing practice. This included patient administration, the use of clinical databases, and monitoring practice through audit. Regional differences in regard to use and user satisfaction of administrative IS were evident. For example, in centre 1 users found high levels of duplication in administrative workload, whereas in centre 2 this was not the case unless access to the computerised IS was denied. In centre 3 minimal nurse contact with administrative IS was found. Such regional differences are arguably reflective of the individual Hospital Trust's interpretation and implementation of governmental policy.

The effects associated with IS were perceived to be wide ranging. Dehumanisation was directly associated with both clinical and non clinical IS. Central themes from the cognitive framework were also recognised, as effects of using IS namely alienation and normalisation. These were occasionally connected with the codes reliance on technology, dependence and automation.

It is worth noting that the number of analysis codes associated with the PoIS category were substantially higher than any other data category. This was expected given IS was a central theme of nearly all the interview questions. The crude measure of frequency used within the structural analysis is therefore skewed with comparatively high numbers associated with each separate data category. It is however interesting that links to the control and limitations categories are proportionally higher than those

to other category types. This may be reflective of how IS are used. For example, numerous references were made to the permissions required to gain access to various IS (including the internet).

Communication

The use of IS as a medium for communication was also a prominent theme associated with dehumanisation. Four sub-category types were identified: systems of communication, types of communication, purpose of communication and barriers to communication. Feelings of stress, alienation and frustration were often related, especially when attempting to communicate directly with a computer system. Systems generating such responses ranged from automated call centres, the World Wide Web and electronic communication media such as email, and various administrative systems. For example:

"Some body else has done all the thinking for you, so you're not doing it [documenting care] as an individual person or a nurse (you're not doing it)...somebody has already pre ordained what's going to be answered and I suppose there are elements outside of those questions..." (Respondent 2)

The barriers to communication were often cited and included: automation, information overload, increasing reliance on technology and self-confidence. References to automation tended to relate to the use of automated call centres, whereas information overload was often associated to email systems:

"It's annoying, you get these blanket emails off people who send them to every body in the trust." (Respondent 5)

Respondents perceived this to affect the efficiency of communication, a finding in line with that of Wilkinson (2001) who showed information overload to reduce skills efficiency. An increasing reliance on technology was also seen to represent a physical barrier to communication, which needed to be managed to reduce interference with the carer to patient relationship. In turn this was perceived as a learnt skill that came with experience.

Self-confidence was at times portrayed as a dynamic construct. All interview participants stated belief in their ability to control clinical IS. Whereas several participants were less then confident on more traditionally perceived computers:

"Of all the machinery around the bed, and of all the machinery I use for patient care within the bed areas I feel confident with. Touch wood. It is the computer on the desk which is the thing that I wish that I was a lot more experienced with, a lot more knowledge of and I felt confident with." (Respondent 6)

This lack in self-confidence often manifested in a reluctance to use computer based communication media. This resulted in several respondents reporting that they checked their email infrequently and as a consequence experienced information overload. Such a negative experience could potentially reinforce computer anxiety. In a study conducted to examine a six-factor model of computer anxiety Beckers & Schmidt (2001) acknowledge that a reluctance to interact with a computer is one symptom of computer anxiety. Further, they include dehumanisation as one of the six dimensional constructs related to the phenomenon. The specifics on how dehumanisation was defined are not stated within the paper, nor are the specific findings discussed. However, example questions on dehumanisation included Likert scales on the themes of isolation and creativity.

Control Mechanisms and Limitations

The theme of 'control' was recurrent within the interview transcripts. Four sub categories were identified which categorised broadly either the mechanism or tactic used. These were entitled; physical mechanisms, implied mechanisms, implied tactics, explicit tactics. Equally, given that the nature of control is often to impose limits on others it is perhaps unsurprising that a separate data category of 'limitations' was also identified. This category had six associated sub-categories that broadly categorised the limitation described. These included; physical limitations, social limitations, legal limitations, psychological limitations, training limitations and limitations of time.

Physical methods of control saw a return to the theme of mechanisation. Several participants believed that a mechanisation of process reduced their individual ability to control a situation; this potentially led to a conflict of opinion or a loss of skill (for example please see vignette 2 on page 51). Other physical controls included access to and availability of resources. Here the organisation could be perceived to influence control. One participant related a potentially isolating or alienating circumstance less to dehumanisation and more to her status within the organisation:

"I don't think it labels me as dehumanised no, I think it puts me lower down the pecking order. Junior if you like, you have to be senior to have your own computer. So it puts me in place let's say." (Respondent 3)

Such a statement helps to illustrate how labelling may be used by an organisation as a tactic method of control. In turn, a label can be argued to facilitate moral distancing and thus dehumanisation. This argument is supported by the work of McPhail (1999) and that by the philosopher Hannah Arendt who described non-recognition as essentially dehumanising (Peterson, 2001). Equally links between the categories 'control' and 'limitations' also become evident in that an availability of resources represents both a physical and training limitation.

Implied mechanisms of control related to numerous data codes but included were those of culture, normalisation, autonomy, and alienation. This can be seen to fit closely with the primary themes of dehumanisation described within the cognitive framework of the study. It was also interesting to find accountability as an implied mechanism of control as this indicates a link to the theme of morality. Here several participants stated having accountability to the patient in regard to ethical issues, for example advocacy:

"Definitely [patients are at risk of becoming dehumanised] because you become their advocate especially when they are sedated and ventilated, you know you become their advocate and you have to protect and respect their individuality and you have to maintain that." (Respondent 5)

According to Keen (2000) among others nurses are not well placed to accept the role of advocate given their limited knowledge of ethics and the law. Confusion in regard to this role was also evident, potentially indicating a readiness for moral distancing; for example in the following vignette both the family and the doctors are seen to have advocacy role in regard to decision making.

"And you can all see that things are going to go nowhere, but they [the family] can't. So the doctors are quite resistant to making a decision because the family haven't caught up with everyone else yet." (Respondent 7)

Motivations

'Motivations' represented the final data category to emerge from the analysis of the interview transcripts. Three associated sub-categories were identified and these included; rewards, covert incentives and overt incentives. Numerous rewards were perceived to be connected with the use of IS. These included clarity of presentation and ease of finding information and improved efficiency. Interestingly all of these are data codes were also found to be traits of IS. Modernity was also seen as a powerful reward based motivator:

"I actually saw it as a challenge. It's time I got myself up [to date]; because I was leaving school as they were bringing computers in you know?" (Respondent 9)

This is perhaps indicative of a technologically driven culture such as that described by Postman (1993). Further exploration is required to establish whether such a reward is indicative of a relationship between modernity and normalisation, and whether the incentive of social inclusion is a powerful enough driver to limit the perception of potential limitations; as hinted at by the same participant:

"You either get into the 21st centaury and start using this technology or you are not dehumanised; you are just not in the loop" (Respondent 9)

Overt incentives shared many of the same data codes as rewards, however also included were issues related to the rationalising and prioritisation of workload,

managing risk and monitoring practice. Here the hypothesis that the political culture of an organisation acts as a motivator in the use of IS and equally in any subsequent dehumanisation that takes place exists. This argument is based on the perceived political agenda mentioned by numerous participants involving the need to use IS in order to rationalise practice. Again further research is required to substantiate such a hypothesis.

Participants also described numerous covert incentives hidden by either the organisation or the individual. For example, an increase in workload was associated with the use of IS by several participants. However, this increase would often be hidden by the organisation under the guise of improvements in efficiency (how or where efficiency was measured was often unknown by participants). This led to the questioning of IS use; for example:

"So with a better system my work would be much, much quicker and when we are looking at collecting statistics we are having to do all that by hand because the system isn't good enough." (Respondent 8)

Expressions

Finally a data category emerged that related directly to the expression of feelings and emotions connected with the perception of IS and dehumanisation. This data category entitled 'Expressions' contained four sub categories: Expressions of inevitability, expressions of dissatisfaction, expressions of effect, and expressions of threat. Expressions of inevitability related in the majority to the negative consequences of automation and IS use. Data codes identified included fatalism, despondency and deskilling. Expressions of dissatisfaction ranged from irritation and annoyance to feelings of intimidation, denial and stress. It is interesting to note that dehumanisation was found in the context of an expression for both sub-categories inevitability and dissatisfaction. Does this indicate that users perceive dehumanisation as unsatisfactory, but an inevitable consequence of IS use? Such hypothetical questions could have been probed further if resources facilitated a larger sample and a fully grounded approach.

Expressions of effect were related to either how a participant personally felt affected by IS or dehumanisation. Included were feelings of control, mastery, self-confidence and power. Here the data can be seen to support the notions of Barnard (1997) as previously discussed. In terms of expressions of threat IS were directly or indirectly perceived to include feelings of awe, nervousness and fear, especially to those unfamiliar with a care environment. Further threats related to expressions of risk, denial and loss tended to be more associated with the adoption of new technology or the use of ineffective technology.

Limitations Of Study

The application of an interpretivist research paradigm combined with qualitative methods generates a number of fundamental limitations within the research described. Firstly the rigour associated with interpretivist studies has been called into question (Weinberg, 2002, Denscombe, 2002). Although the application of grounded theory strategies such as those described by Glaser & Strauss (1967) add rigour to the interpretivist approach (Denscombe, 20002), resource limitations have facilitated the application of only two such strategies within this study, both related to theme based data analysis. The author believes that this provides a measure of rigour, but as the analysis used lacks any exploration of process it therefore limits the discussion of results to descriptive structures and speculative hypothesis. Given more resources it would have been possible to extend the sample to test some of hypothesises generated and present a more fully grounded theory.

Equally an extension of resources would have enabled the initial plan of theoretical sampling. As the project stands the sample used is predominantly convenience based, and this adds to limits on the generalisability of the study. In using a small number of participants the study captures only a very narrow perspective at a singular moment in time. The use of only one sub set of IS users narrows this focus further. An expansion of the sample into other associated disciplines would have enriched the findings by providing contrasting opinions.

The exclusive use of interviews and text based data analysis techniques add further limitations to the study. The interview process used relies on the rapid development of rapport between the interviewer and interviewee. Any such rapport can lead to the interviewer inadvertently biasing the respondent (Denscombe, 1998). Further, interview skills need to be learned and practised and this again requires time. To this end a pilot interview was used; although the author believes that the learning process continued throughout each interview, for example, in the inadvertent leading of numerous questions by the phrase "do you think". The use of definitions to explore and clarify meanings may also have introduced a bias through leading the respondent to adopt the given definition and abandon their own perspective.

Text based data analysis is also subject to an inevitable bias through the use of the interpretivist approach and the perspective of a single researcher. Although measures such as microanalysis challenge core assumptions as to the meaning of responses, the interpretation of results is ultimately the opinion of one person. This results in an unverified study, which ideally requires repeating in order to establish overall validity. In addition the use of data transcription results in a loss of data, for example, body language and silence, and the risk of inaccuracy during transcription. Although video presented one alternative method of minimising such effects, it use was seen to potentially increase the discomfort of participants and introduces new implications to already stretched resources. The author did not maintain a detailed field diary, which may have enhanced data analysis further by prompting an initial reflective analysis of each interview.

Overall the study presents an initial exploration of dehumanisation in the context of IS; it was never intended within the original project scope to present a generalisable set of findings nor a fully grounded theory. Although overall validity has to be questioned through the use of a convenience sample, and several potentially leading questions, the results of the study do show a degree of correlation to the cognitive framework used.

Conclusions

The individual perception of IS and dehumanisation bears on the way in which related issues are discussed. Within the specified sample, users were found to describe IS in a broader sense then that described by the definition of Fitzgerald (2002, as cited in Paul, 2002). A strong correlation was found between descriptions of information systems and communication systems. IS were also seen to be non-dependent on technology. Clinical technology was seldom perceived as an example of IS; here a high degree of normalisation existed along with strong feelings of mastery over the technology used, supporting the work of Barnard (1997). These findings require further exploration especially in regard to any potential effect to clinical risk.

Most users within the sample associated IS as having a direct dehumanising effect. However, the sample was split in regard to whether the IS encountered at work resulted in their dehumanisation or not. It is interesting to note that questions based on the cognitive framework usually resulted in an association of all the central themes to IS, even in those purporting no previous experience of dehumanisation. This leads to questions about the perception of dehumanisation and potentially to the application of the cognitive framework used; i.e. does dehumanisation require a composite of all primary themes within the framework used?

Dehumanisation was described as affecting the individual participant, their patient(s), or their colleagues and was associated with an increased reliance on technology and the emotional labour of caring. A reliance on technology was found to relate to experience. The nature of this relationship is unclear and leads to the question; do health care practitioners develop an understanding of the limitations of technology with experience, which impacts on the dehumanising effect? To answer this question is beyond the scope of this project, but indicates a further direction for future research.

A strong correlation between the primary themes of the cognitive framework and the respondents descriptions of dehumanisation has been shown to exist within the analysis of the transcripts. Further, it was possible to identify potential secondary themes within the 8 abstract data categories for the specific context of IS. These

included; reliance on technology, communication, automation, mechanisation, dependence, self-confidence, labelling, perception, motivation and control mechanisms. Figure 4 summarises these findings in diagrammatic form as a model of dehumanisation within the context of IS.

Figure 4: A Theoretical Model Of Dehumanisation & IS

A Model Of Dehumanisation In The Context Of Information Systems

Control Mechanisms
Communication
Self-Confidence
Alienation
Labelling
Morality
Denial
Motivation
DEHUMANISATION
Perception
Culture
Norms
Automation
Autonomy
Dependence
Mechanisation
Reliance on Technology

Primary Themes   Secondary Themes
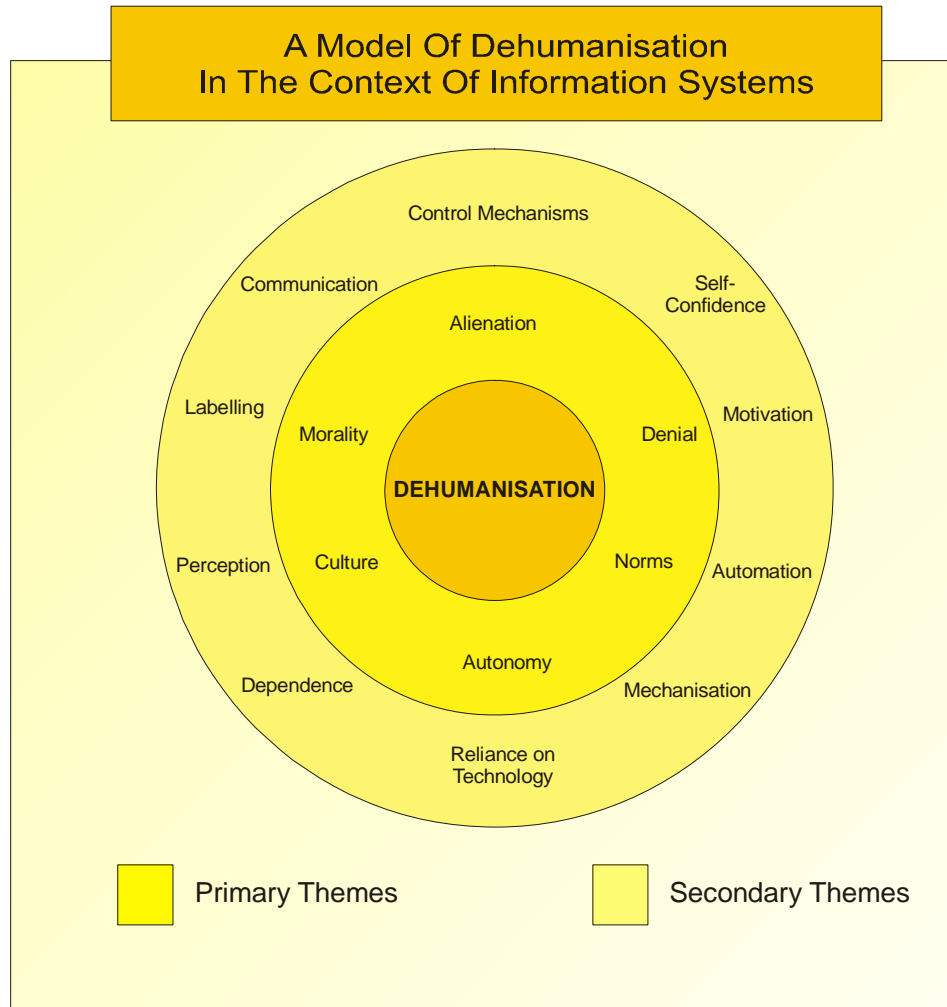
Dehumanisation was also perceived to relate to more than just the IS used, but also to wider organisational issues and systems of work. This finding came late in the data collection process and requires further exploration. However, dehumanisation may be a product of both an organisation and the IS used. If either or both have dehumanising elements then dehumanisation may result. This has implications for disciplines other than IS, for example business and organisational studies.

Finally the objective of this study was to begin the exploration of dehumanisation within the specific context of IS. To this end the study described represents nothing more than a beginning. As indicated within the discussion, research into dehumanisation and IS must continue if we are to better our understanding of the phenomenon and ultimately reduce the potential for the perception of such a negative association. This study has described several key limitations, however it also has raised a number of important questions in regard to how we perceive information systems and the organisations that employ them. Ultimately dehumanisation may prove to be impossible to prevent, but the author would question whether such a factor should limit our endeavour to do so.

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Appendix 1: Dehumanisation, Fiction And Film

Of the many examples of dehumanisation present within modern fiction several works stand out as being significant in the use of dehumanisation as a central theme. In the early twentieth centaury the works of Orwell and Huxley stand as clear examples of fictional representations of dehumanisation within a totalitarian regime. Orwell explores the development of one such regime in the work *Animal Farm* (1946). This is said to be symbolic of the development of communism and the political reign of Stalin (Kollar, 2003). In the work *1984* Orwell (1949) projects a futuristic society under the governance of *"Big Brother"*; a dictatorial regime that dehumanises the majority of the population through a tightly controlled culture based on fear and political confusion. Interestingly the use of technology within the policing of this culture is a significant theme; remember, "big brother is watching you".

In Huxley's book *The Brave New World* (1932) a nightmarish description of a technologically driven society is projected: even the biological processes of birth and death are controlled by cultural conditioning, technology and the need for rationalism and efficiency. Postman (1993) would perhaps cite such a society as the ultimate example of technopoly. Interestingly, reference is made within the text to "Our lord Ford" a parody for the development of scientific management first made popular by Fredrick Taylor in 1911. Taylorism has been criticised for an apparent exploitation of labour and for furthering the movement away from individualism to collectivism within industry; a prominent step in the bureaucratic fixation on rational thinking and efficiency. Huxley's description of the treatment and eventual demise of the character "Mr Savage" presents an interesting ideology: that those involved in dehumanisation commonly fail to recognise that their actions are at all amiss; even those being dehumanised are often too culturally conditioned to notice. Such an ideology is of particular interest given the results of the study described.

The role of technology in dehumanisation is a prominent theme in science fiction. The collaboration of Arthur C. Clarke and Stanley Kubrick in the creation of *2001: A Space Odyssey* (1968) indicates a strong theme of dehumanisation as a result of anthropomorphism and blind adaptation of technology; the consequences of which are

typically catastrophic. Other examples of anthropomorphism and associated dehumanisation can be found, for example *Artificial Intelligence* by Steven Speilberg (2001) based on the short story by Brian Aldiss *Super-Toys Last All Summer Long* (1969). Here androids are manufactured with limited intelligence and emotion for the purpose reducing human loneliness only to be dropped when no longer needed. This form of dehumanisation relates well to the definition of dehumanisation provided by Microsoft (see page 15) in which the qualities (or features) of something that enhances people's lives are removed.

Michel Faber is a relatively new author to use the theme of dehumanisation within modern fiction, however in his book *Under The Skin* (2000) Faber crafts an original story that highlights how culture, alienation, and normalisation can all be central to a reduction in morality and therefore lead to dehumanisation. Similar themes are also identifiable in the film *The Pianist* by Roman Polanski (2002). Here the subject matter is more in keeping with reality as Polanski follows the fate of the Jewish pianist Wladyslaw Szpilman through the horrors of the German occupation of Warsaw in 1938.

The few texts and films listed here represent just a small proportion of the many works that use the concept of dehumanisation. The authors intention in including this appendix is not to present a thorough review of dehumanisation as a theme within literature or film, but more to provide a flavour of how dehumanisation has become a prominent concept within modern film and fiction.

Appendix 2: Project Plan

Appendix 3: Ethics Committee Application & Research Protocol

Research Protocol

A Qualitative Exploration Of The Concept Of Dehumanisation As Experienced By Nurses Within The Context Of Information Systems.

Principal Researcher:

Adam Keen, Nurse Lecturer, Chester College of Higher Education.

Research Supervisor:

David Brown, MSc Programme Leader, Chester College of Higher Education.

Introduction.

The study detailed within this research protocol relates to the final dissertation for submission for an MSc in Information Systems. Although the lead researcher is a nurse and the proposed sample comprises of nurses of various grades, the overall perspective of the project is geared towards the exploration and development of theory within the fledgling social science of Information Systems. This protocol endeavours to provide the necessary information required to establish the need for the research, the specific procedures and safeguards built into the research process including the intended analysis methods and management of subjects within the sample. To this end the protocol first describes the context of the proposed research before making explicit the research questions. The intended methods of the research are then detailed with specific consideration provided to the practicalities and procedures of the proposed study. The ethical posture of the study is also discussed with specific reference to the concepts of beneficence, potential maleficence, equality of opportunity, and the technical ability of the researcher to successfully conduct the study.

The Research Context.

It has been acknowledged that the domain of Information Systems (IS) within the context of intellectual study remains in its infancy (Paul, 2002). In consequence many fields of study, which fall into the domain of IS, tend to lean heavily on the methods, approaches, and theories of more established social sciences. Given that the aims of research are to extend or gain knowledge and understanding, it is easy to see the relationship between the fledgling domain of IS and the exploration of new fields through research. An essential part of the process is the development of theory grounded in empirical evidence.

The methods users employ to interact with technology is a developing field of IS based research. Exploration into the physical, sociological and psychological effects of IS and technology are easily identifiable sub-domains in what can be broadly termed Human Computer Interaction (HCI). However, despite a considerable body of research on the effects of implementing new IS, little has been done to examine and clarify the meaning of some concepts reported within the results of this research within the specific context of IS; for example, the concept of dehumanisation (Atkinson & Lam, 1999, Nissembaum & Walker, 1998a, Nissembaum & Walker, 1998b, Barzel, 1998).

Dehumanisation is an example of a broad and high-level concept. It is therefore difficult to define; each individual is likely to have a different opinion as to what constitutes dehumanisation to him or her. The context of definition is subsequently crucial to how the concept is understood within a particular area of study. According to Gerring (2001) concept formation is at the heart of social science research. The context associated with the concept is one means of attempting to remove ambiguity from a concepts meaning. The need to clarify definitions of concepts such as dehumanisation should be central to any IS investigation pertaining to identify dehumanisation as a research finding. If the concept is not defined how could it be distinguished from other concepts?

The term dehumanisation is often found in accompaniment with commentary related to technology both in academic work and popular fiction (Atkinson & Lam, 1999, Nissembaum & Walker, 1998a, Nissembaum & Walker, 1998b, Barzel, 1998, Cosgrove, 1996, Caillé & Trigano, 2002, Calne, 1994, Huxley, 1932, Kubrick, 1968). Yet there is little or no evidence that the term has ever been described or explored within the context of IS research. This is curious given that the association is normally made in a negative way; that is the effect of dehumanisation being to the disadvantage of the individual(s) been dehumanised.

IS are argued to be a representation of an organisations 'culture' (Hijikata, 1993), in turn an organisations culture represents the values, attitudes, and beliefs of the members within it (Daft, 2001). Information Systems are therefore argued to be representative of social systems. Assuming that a "user" of an information system, through a specific and often technological interface, is interacting with the culture of an organisation, it is reasonable to postulate that: the technology or the organisations culture may be responsible for the dehumanising effect.

It is the author's assertion that an exploration of dehumanisation within the specific context of IS represents both a novel and necessary research endeavour. Findings from such an exploration will extend and be of benefit to the domains of HCI, organisational and business studies.

For the purpose of this study the term Information System is defined as,

"The effective analysis, design, delivery and use of information for organisations and society using information technology" (Fitzgerald, 2002).

The term "dehumanisation" represents the dependent variable to be explored and therefore the definition of this concept is to be developed, however the following definition is accepted as a starting position for the research:

"to remove from (a person) the special human qualities of independent thought, feeling for other people, etc."

<div align="right">(Cambridge International Dictionary of English, 2002)</div>

Research Aim & Research Questions.

The express aim of the research is to begin the exploration of dehumanisation, and subsequent development of theory, within the specific context of IS. The research questions are:

1. Do nurses using Computerised Information Systems perceive these systems as having a dehumanising effect?
2. How do users describe the manifestation of this effect?
3. What are the common themes associated with a dehumanising effect within the specific context of Computerised Information Systems?

Project Scope – Intended Methodology In Brief.

In order to achieve the aim of the research and the development of theory based on empirical evidence, it is proposed to use an interpretivist research paradigm, in the application of a grounded theory analysis of qualitative data from semi-structured interview transcripts.

Grounded theory has been established as an influential and widely used research methodology within projects seeking to develop new theory (Strauss & Corbin, 1997). The main strength of this approach to research is not merely the development of new theory, but that the theory is grounded in empirical data (Strauss & Corbin, 1998). The analysis of such data is not based on statistical methods and the disproving (or substantiation) of a singular hypothesis stated at the onset of the research process. Rather the emergence of eventual theory, application of research methods, and data collection are closely entwined with numerous hypothesise generated and tested within the research process. Semi-structured interviews provide a suitable method of testing and developing new theory. Audio recording of all interviews, and subsequent transcription, is deemed necessary to facilitate data analysis. Together these elements combine to form a definition of the intended project scope.

Project Timing.

Using conventional project management techniques a plan for the research was devised and although this plan changed dramatically in the early stages of the project planning process, a summary of the plan is provided as a Gantt chart in Appendix 1. Note that the intended duration for data collection is two months (April & May 2003, subject to ethics committee approval).

Intended Sample.

Sample Methods.

Due to the constraints of available resources (in particular time and finance) the use of non-probability sampling methods are required. The proposed sampling method is based on the principals of "Theoretical Sampling" (Denscombe, 1998), with an element of convenience also being applied. Theoretical sampling is well suited to the use of grounded theory analysis methods as the developing theory guides the choice of the next subject. Within this study the convenience element relates simply to the locality of hospitals and community nursing teams to the principal researcher, and the established links with staff within these institutions through the School of Nursing & Midwifery at Chester College.

Nurses as a sub-set of IS users are of specific interest to those involved in developing health informatics systems. With the development of Electronic Patient Records (EPR), including computerised care planning, and an increased expected expenditure of £5 billion in the next 5 years (Arnott, 2003), the decision to investigate the impact of health informatics is timely. Nurses represent a large body of end users and therefore present a legitimate sample for the exploration of computerised information systems.

In regard to the intended numbers of nursing staff to be included within the sample it is essential to limit the maximum to a total of 15 across all sites (due to resources available). It is likely that this number will enable the development of some useful

theory therefore meeting the research aim, however it is acknowledged that it is possible that the theory will not have reached a comprehensive ending (Strauss & Corbin, 1998). It is thought that the likely distribution of the sample will include 3 nurses from each hospital (Countess Of Chester Hospital, Leighton Hospital, Macclesfield General Hospital), and up to 6 community based nurses (for example, District nurses, Community Midwives, and Practice Nurses). The inclusion and exclusion criteria for entry on to the study are now provided.

Inclusion Criteria.

A person may only be entered into the study providing they meet all the following entry criteria:

1. They hold a position that requires a minimum of a first-level registered nurse qualification.
2. They have read and signed the "Research Participation Information Sheet" and have been given the opportunity to ask the principal researcher any questions about the study.
3. Have signed a consent form to be entered into the study sample.
4. Have access to at least one information system (computerised).
5. English Speaking.

Exclusion Criteria.

A person will be excluded from the sample if any of the following criteria are met:

1. They do not meet all of the entry criteria stated above.
2. They decide at any time to withdraw from the study without being obliged to give a reason for their withdrawal.
3. Their participation in the study is likely to lead to any omission or delay of their duties or an endangerment of patients.

It is the responsibility of the principal researcher to arrange a convenient and suitable venue for the interviews. All interviews must be conducted in a quiet environment that is comfortable for both the participant and interviewer, where it is unlikely that the interview will be disturbed, or the audio recording hindered by outside

interference. The interview should be postponed and re-arranged if a suitable environment is unavailable.

Ethical Considerations.

Beneficence.

The studies aims revolve around the exploration of "dehumanisation", as nurses perceive it, whilst using computerised information systems. Within literature dehumanisation tends to be largely connected to both technology and negative emotions, such as the feeling of isolation and alienation. It is necessary to explore the concept of dehumanisation to isolate what the likely causes of such negative perceptions are. This study hopes to offer designers of information systems information to reduce the potential of dehumanisation and therefore ultimately improve the end experience for users. The researcher firmly believes that these intentions are based on the ethic of beneficence, however acknowledges that as with any discussion of negative emotions a potential exists for a detrimental effect.

Avoidance of Maleficence.

To avoid any potential maleficent effect the proposed study has considered the format of the semi-structured interviews carefully. Specifically the interview is partitioned into three broad categories: an opening, middle, and a close. The opening section of the interview is designed to set the subject at ease, to further introduce the types of question they will encounter, to reassure the subject that the interview can be terminated at any time and that the disclosure of information is their choice. The middle portion of the interview is set for the bulk of data collection and if signs of distress are noted the interview will be brought to a close. The closure of the interview is set to bring a sense of closure to the topics been discussed. This includes summarising the key areas identified within the interview and placing each into an everyday context.

Equality Of Opportunity.

The use of a 'theoretical sampling methodology' reduces the potential for equality in opportunities for subjects being entered into the sample frame. This is further reduced by the limitations placed on sample size by the availability of resources.

However, there exists a high degree of equality of opportunity for subjects to respond to the questions posed within the interview. Although the questions will be subject to some modification as the process of grounded theory analysis progresses, all subjects will be given an opportunity to express their opinions fully with minimal input from the researcher.

Technical Competence Of Research Team.

The research team (constructed of the principal researcher and supervisor) have a varied experience in regard to research. The principal researcher, who will be responsible for all data collection, analysis and design of the study, has worked on numerous previous research projects and clinical evaluations. This experience, which includes working as the principle research nurse on two clinical drug trials and bank work with the North West Medicine Evaluations Unit (based at Wythenshaw Hospital, Manchester), has provided a working knowledge of the Good Clinical Guidelines of Clinical Research as published by (Ref). Further, as an experienced nurse formally working in ICU, the researcher has an insight into both the culture of the nursing profession and the dehumanising effect of technology.

In order to ensure the research is performed to suitable academic and ethical standards the project and principal researcher is held under the close supervision of the MSc IS Programme Leader based at Chester College (David Brown). Further, the study is subject to the scrutiny of the Local Research Ethics Committee and that of Chester College.

Data Protection.

The anonymity of all sample entrants and institutions is guaranteed within the following documentation: interview transcripts, research journals, the final thesis or any subsequent publication based on the study. This will principally be achieved by the deletion of the participants name and place of work from any transcript made from original audio recordings. Equally the identity of participants known to the principal researcher will not be disclosed by any means to third parties. Signed consent forms, study information sheets, and all audio recordings will be filed in a locked cabinet which may be accessed only by the principal researcher and research supervisor (on request). Any reference made to the location of institutions within the study will be limited to the broad classification of the "a North West [of England] hospital".

An audio backup of each interview will be made for use only by the principal researcher. Although transcripts of the interviews may be used in later research, audio recordings will not be released or copied further.

Participants of the study will be assured of measures used to protect their confidentiality prior to entry to the study, and will not be contacted after their interview, in connection to the study unless expressly requested by them to do so (E.g. forwarding research findings).

Research Procedures.

Normal Procedure Summary.

1. Literature review & formulation of conceptual framework.
2. Formulation of interview structure.
3. Subject identified.
4. Subject contacted by phone by principal researcher and:
    a. Introduced to the project
    b. Initial assessment for inclusion into the study.
    c. Explanation of likely involvement in project, namely:
        i. Reading "Research Participation Information Sheet"
        ii. Signing consent form
        iii. Taped interview lasting up to 1 hour
    d. Initial verbal consent to continue.
    e. Arrangement for interview.
5. Prior to commencing interview provided time for:
    a. Participant to read & sign "Research Participation Information Sheet"
    b. Ask any questions.
    c. Sign "Research Consent Form"
        Note: This will normally be completed immediately before interview.
6. Ensure all inclusion criteria are met and no exclusion criteria.
7. Commence taped interview.
8. Conclude interview by thanking participant.
9. Complete entry into research diary.
10. Make copy of interview tape.
11. Transcription of interview from tape with supplemental notes from research diary.
12. Analysis of major themes, hypothesis generation and theory development.
13. Return to step 2 unless theory is saturated or total number of participants is equal to 15.

Withdrawal From Study Procedure.

The (prospective) participant may withdraw from the study at any time and for any reason. The reason for wanting to withdraw does not have to be stated.

1. Notice of wanting to withdraw from study received (verbally or in writing).
2. Confirmation of desire to withdraw sought verbally.
3. Withdrawal of all study data made by:
    a. Destruction of any interview tapes.
    b. Non-inclusion of any interview transcripts.
    c. Consent forms marked with date of study withdrawal.

Note: Consent forms of withdrawing participants will be filed in a locked cupboard available only to the principal researcher and the research supervisor (on request). This is intended to afford a degree of legal protection to the researcher.

Format Of Semi-structure Interviews

It is intended to conduct each interview using the basic premise of a brief opening segment reviewing the ground rules of the interview, a middle section for the bulk of data collection, and an end section with which to bring a sense of conclusion and closure. Each section is now considered in more detail.

The Opening Section.

Thanking the subject for their participation and confirming the completion of a consent form will form the opening to each interview. The subject will then be shown the tape recorder used for making the audio recording and be reassured as to their confidentiality. Each participant will be informed that they should not feel obliged to provide any information that they are uncomfortable in divulging. Confirmation of the subjects understanding of these basic ground rules will be sought. Basic definitions will also be agreed, e.g. the "system" referring to the computerised information system.

Initial questions, aimed at developing a rapport between subject and interviewer, will then be asked. These questions will focus on some basic demographic information, including age when starting nursing, length in practice as a nurse, time in current employment and types of computer systems exposed to at both work and home.

The Middle Section.

The initial choice of questions used within the semi-structured format will depend on the ultimate conceptual framework developed at the end of the literature review. However, each subject will likely receive slightly different questions in this stage of the interview as the process of analysis develops. It is important to realise that the format of semi-structured interviews allows the researcher to seek further clarification on the answers the subject provides, cues for this process may be both verbal and non-verbal. Likely questions (and examples of clarifying remarks and prompts) for use in the first interview include:

1. Do you ever have the feeling of isolation when using the [computerised information] system?

<ol type="a">
If yes – Could you expand on why you believe you have these feelings?
If no – In your opinion what is it that stops you from feeling isolated?

<ol start="2">
Do you think that the use of these systems increases the isolation the patient feels?
<ol type="a">
If yes – Why do you think this is so?

What or whom do you blame when you feel the [computerised information] system has let you down?
Does the use of the system alter how you carry out your other duties?
Does using the system influence the choices you make whilst planning your workload?

The End Section.

Each interview will last for approximately 1 hour. Given the semi-structured format of the interview, it may be necessary to go over the hour to prevent cutting the subject's narration short. Equally if the narration has become saturated before the hour is complete the interview can be brought to an early close.

Closure of the interview will commence with a concluding statement and opportunity for the subject to ask questions. For example,

"Well that completes all my questions. Thank you very much for agreeing to take part your help is really appreciated. I hope you have enjoyed the last hour, perhaps you might have a few questions of your own?"

This is intended to provide an opportunity for the subject to seek clarification on anything said within the interview or about the study in general. If no questions are asked then the subject will be thanked again and the interview closed. If questions are poised that the interviewer cannot answer, for example, a specific question about the systems used within that hospital, an honest response ("I don't know") shall be given.

Anticipated Costs.

There are no anticipated costs to the individual participants of the study other than the loss of time required during the interview stage of the research process. No financial (or other) incentives are to be offered to the individual participants or institutions.

In arranging to interview participants it is acknowledged that there exists a risk of the employing institution bearing the cost of the participants time. All interviews will therefore be arranged out of the hours the individual participant is scheduled to work, therefore avoiding this risk.

All associated cost incurred during the research (E.g. research materials) will be met by the principal researcher.

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Research Participation Information Sheet.

Below is the proposed text of the "Research Participation Information Sheet".

<div align="center">

[Institution Headed Paper]

An Exploration Of The Concept Of Dehumanisation

Within The Context Of Information Systems.

</div>

Dear [Insert Potential Participant Name],

You are being invited to take part in a research study. Before you decide it is important that you understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Ask us if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

Computerised information systems are becoming more commonplace in our work environments – especially within health care. It is therefore important to examine the effects of these systems on our everyday lives. One common claim associated with computerised information systems is that they are dehumanising to those who use them, yet what is meant by "dehumanisation" is never explored or explained.

This study aims to explore the notion of dehumanisation in relation to computerised information systems. To achieve this aim nurses in several hospitals, who have experience of using a variety of computerised information systems, are been asked to volunteer for a short interview lasting a maximum of one hour.

In the interview you will be asked to describe and discuss several elements of your experience with computerised information systems. All information, which is collected about you, and your experiences, during the course of the research, will be kept strictly confidential.

A tape recording of the interview will be made to assist in the analysis of research data. A written copy of this recording will be made with the removal of all mention of

names and places. The recordings of the interview, and any subsequent written copies, will remain in the care of the principal researcher and be kept secure No access to these recordings or any documents will be permitted by anyone outside of the study.

The anonymous written copies of the interview will be used in the analysis of this study and excerpts may be used in any subsequent publication of the results. You will not be identified, nor your work place, in any way during any publication of the research results. For your protection, and in order to ensure ethical standards are met during the research, the study has undergone review by the Local Research Ethics Committee.

Copies of the results of the research will be available to those who participate in the study after September this year by contacting the principal researcher Adam Keen at the above address.

Further information about the study and your possible part in it is available by asking the principal researcher prior to interview. Please do not hesitate to ask any questions.

Please remember:
It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and asked to sign two consent forms (one for the researcher and one for you to keep). If you decide to take part you are still free to withdraw at any time without giving a reason. A decision to withdraw, or a decision not to take part, will not affect your future dealings with Chester College.

Yours truly,

Adam Keen
(Principal Researcher)

Research Consent Form.

Below is the proposed text for the consent form to be signed by both the participant of the study and the principal researcher.

[Institution Headed Paper]

Centre Number:
Study Number:

CONSENT FORM

Title of Project:
A Qualitative Exploration Of The Concept Of Dehumanisation As Experienced By Nurses Within The Context Of Information Systems.

Name of Researcher: Adam Keen

Please initial box

1. I confirm that I have read and understand the information sheet dated .... (version ....) for the above study and have had the opportunity to ask questions.

2. I understand that my participation is voluntary and that I am free to withdraw at any time,   without giving any reason, without my medical care or legal rights being affected.

4. I agree to take part in the above study.

_____   _____   _____
Name of Patient   Date   Signature

_____   _____   _____
Name of Person taking consent   Date   Signature
(if different from researcher)

_____   _____   _____
Researcher   Date   Signature

1 for subject; 1 for researcher

Appendix 4: Pilot Interview Questions

Notes: The intended interviews will follow a semi-structured format. To this end the key questions to be asked are provided below under the heading of main structured questions. A variety of secondary questions are also provided, these represent prompts for the interviewer, as such they can be used in any order and may or may not be asked. Highlighted questions should be used with caution (or be removed) as early opinion suggests they may confuse participants.

Main structured questions:

1. Welcome and introduction to the interview.
    a. Thank interviewee
    b. Introduction to interviewer and research
    c. Discuss reasons for recording of interview
    d. Discuss reasons for taking occasional notes
    e. Complete consent form

2. Demographics:
    a. Years in nursing
    b. Grade

3. What do you understand by the term dehumanisation?

4. What computerised information systems do you currently use at work?
    a. What do you believe is the main purpose of each system?

5. Do you ever feel dehumanised as a consequence of using the computer systems at work?
    a. Why?
    b. Lead into secondary questions as appropriate.

Ideas For Secondary Questions Dependent On Participant Response:

Norms

- Is there any alternative to any of the computerised systems?

- How are the systems you use essential to your job?

- Has the use of Information Systems become a "norm" in your job?

- In what way?

Alienation

- Do you feel distanced from your organisation as a consequence of using the systems?

- Do you feel distanced from your patients as a consequence of using the systems?

- Do you ever feel that you have lost connection with either your patients or organisation as a consequence of using any particular system?

Morality

- Do you think that the systems in use affect your ability to provide the care you believe is needed?

- Do you think the computerised systems you use encourages the labelling of patients (for example, as disease types)?

- Do you feel in control of the computerised information systems that you use?

- Are there any moral implications to using the computerised IS?

Culture

- Do you believe the way you work has been changed by an introduction to computerised IS?

- Do you believe that IS are destroying the art of nursing? Why?

- Has your performance in the job changed as a consequence of computerised IS?

- Has the introduction of computerised information systems changed the your working culture?

Denial & Autonomy

- Do you ever feel that anything is been denied to you or your patient through the use of computerised IS?

- Do any of the systems limit the degree to which you or your patients may voice an opinion or make a decision (of any kind)?

- How does the use of any computerised system affect your autonomy?

Appendix 5: Initial Interview Questions

Interview 1 only.

Main structured questions:

1. Welcome and introduction to the interview.
   a. Thank interviewee
   b. Introduction to interviewer and research
   c. Discuss reasons for recording of interview
   d. Discuss reasons for taking occasional notes
   e. Complete consent form

2. Demographics:
   a. Grade
   b. Years in nursing
   c. What kind of changes have you seen in this time?

3. Do you use computers as part of your job?
   a. What kind of things do you use them for?
   b. Is there any alternative to the use of the computer?
   c. Would you prefer an alternative?
   d. What do you understand by the term Information Systems?
   e. Show dictionary definition
   f. How does this definition compare to that of your own?

4. Have you ever heard of the term dehumanisation?
   a. What do you think it means?
   b. Have you ever experienced dehumanisation, as you perceive it?
   c. Tell me about it.
   d. Show dictionary definition.
   e. How do you think this definition compares with your own?

5. Have you ever felt dehumanised as a consequence of using the computer systems at work?

a. Why? When? What made you feel that way? (separate questions).

Ideas For Secondary Questions Dependent On Participant Response:

Norms

- How are the systems you use essential to your job?
- Could you do your job (as well) without them?
- How do you feel about the systems that you use?
- Have they become the accepted norm?

Alienation

- Have you ever felt that communication is reduced (in any way) due to the use of computerised systems?
- Has the use of computers ever distanced you from your patients? When?

Morality

- Have the systems in use affected your ability to provide the care you believe is needed?
- Do the computerised systems you use encourage the labelling of patients (for example, as disease types)?
- Do you always feel in control of the computerised systems that you use? Why?
- Do you ever have doubts about the morality or ethics of using computerised systems?

Culture

- Has the way you work been changed by an introduction to computerised IS?
- Do you agree with the following statement:
  "Computers are damaging the art of nursing"
  Why?
- Has your performance in the job changed as a consequence of computerised IS?

Denial & Autonomy

- Have you ever felt that your professional judgement has been denied through the use of computerised IS?

- Do any of the systems limit the degree to which you or your patient's may voice an opinion (of any kind)?

- Has the use of computers in your work limited your ability to make "human choices"?

Appendix 6: Interview Questions Revision 1

(Interviews 2 – 7)

Main structured questions:

1. Welcome and introduction to the interview.
   a. Thank interviewee
   b. Introduction to interviewer and research
   c. Discuss reasons for recording of interview
   d. Discuss reasons for taking occasional notes
   e. Complete consent form

2. Demographics:
   a. Grade
   b. Years in nursing
   c. What kind of changes have you seen in this time?

3. Do you use computers as part of your job?
   a. What kind of things do you use them for?
   b. Is there any alternative to the use of the computer?
   c. Would you prefer an alternative?
   d. Show list of IS, ask participant to identify which are IS and why?
   e. What do you understand by the term Information Systems?
   f. Show dictionary definition
   g. How does this definition compare to that of your own?

4. Have you ever heard of the term dehumanisation?
   a. What do you think it means?
   b. Have you ever experienced feeling dehumanised, as you perceive it?
   c. Tell me about it.
   d. Show dictionary definition.
   e. How do you think this definition compares with your own?

5. Have you ever felt dehumanised as a consequence of using the computer systems at work?
   a. Why? When? What made you feel that way? (separate questions).

Ideas For Secondary Questions Dependent On Participant Response:

Norms

- How are the systems you use essential to your job?

- Could you do your job (as well) without them?

- How do you feel about the systems that you use?

- Have they become the accepted norm?

Alienation

- Have you ever felt that communication is reduced (in any way) due to the use of computerised systems?

- Has the use of computers ever distanced you from your patients? When?

Morality

- Have the systems in use affected your ability to provide the care you believe is needed?

- Do the computerised systems you use encourage the labelling of patients (for example, as disease types)?

- Do you always feel in control of the computerised systems that you use? Why?

- Do you ever have doubts about the morality or ethics of using computerised systems?

Culture

- Has the way you work been changed by an introduction to computerised IS?

- Do you agree with the following statement:

  "Computers are damaging the art of nursing"

  Why?

- Has your performance in the job changed as a consequence of computerised IS?

- Have you ever felt that your professional judgement has been denied through the use of computerised IS?
- Do any of the systems limit the degree to which you or your patient's may voice an opinion (of any kind)?
- Has the use of computers in your work limited your ability to make "human choices"?

Definitions

Dehumanise

"To remove from (a person) the special human qualities of independent thought, feeling for other people, etc."
(Cambridge International Dictionary of English, 2002)

Information Systems

"The effective analysis, design, delivery and use of information for organisations and society using information technology"
(Fitzgerald, 2002, as cited in Paul, 2002).

List Of Terms Used

Desk Top Computer

Infusion Pump

Patient Management System

Vital Signs Monitoring System

Electronic Care Planning System

Syringe Pump (Syringe Driver)

ECG machine / CTG Machine (Depending on Nurse or Midwife)

Pathology Results System

Appointments System

Ventilator

Appendix 7: Interview Questions Version 2

(Interviews 7 – 10)

Main structured questions:

1. Welcome and introduction to the interview.
    a. Thank interviewee
    b. Introduction to interviewer and research
    c. Discuss reasons for recording of interview
    d. Discuss reasons for taking occasional notes
    e. Complete consent form

2. Demographics:
    a. Grade
    b. Years in nursing
    c. What kind of changes have you seen in this time?

3. Do you use computers as part of your job?
    a. What kind of things do you use them for?
    b. Is there any alternative to the use of the computer?
    c. Would you prefer an alternative?
    d. Show list of IS, ask participant to identify which are IS and why?
    e. What do you understand by the term Information Systems?
    f. Show dictionary definition
    g. How does this definition compare to that of your own?

4. Have you ever heard of the term dehumanisation?
    a. What do you think it means?
    b. Have you ever experienced feeling dehumanised, as you perceive it?
    c. Tell me about it.
    d. Show dictionary definition.
    e. How do you think this definition compares with your own?

5. Have you ever felt dehumanised as a consequence of using the computer systems at work?
    a. Why? When? What made you feel that way? (separate questions).

Ideas For Secondary Questions Dependent On Participant Response:

Norms

- How are the systems you use essential to your job?

- Could you do your job (as well) without them?

- How do you feel about the systems that you use?

- Have they become the accepted norm?

Alienation

- Have you ever felt that communication is reduced (in any way) due to the use of computerised systems?

- Have you ever used information systems to distance your self from a difficult situation? Tell me about it.

- Has the use of computers ever distanced you from your patients? When?

Morality

- Have the systems in use affected your ability to provide the care you believe is needed?

- Do the computerised systems you use encourage the labelling of patients (for example, as disease types)?

- Do you always feel in control of the computerised systems that you use? Why?

- Do you ever have doubts about the morality or ethics of using computerised systems?

Culture

- Has the way you work been changed by an introduction to computerised IS?

- Do you agree with the following statement:
  "Computers are damaging the art of midwifery"
  Why?

- Has your performance in the job changed as a consequence of computerised IS?

Denial & Autonomy

- Have you ever felt that your professional judgement has been denied through the use of computerised IS?

- Do any of the systems limit the degree to which your patients may voice an opinion (of any kind)?

Appendix 8: Transcript Of Interview One

1	*Interview one. The participant of this interview is a midwife working as*	
2	*member of a midwifery team. This involves a mixture of both hospital and*	
3	*community midwifery practice.*	
4		
5	(Pause at beginning of tape as participant reads participant information sheet)	
6	It's fine, thanks.	
7	*Excellent. So what I have basically got is err... if I just describe to you a little*	Participant hands
8	*bit more about the format...that's for you to keep so... first of all let me say*	over information
9	*thanks for agreeing to do it – that's the biggest priority really (Laughs) it is*	sheet.
10	*really helpful when people from the service side can spare the time to come*	
11	*out. My background is from Critical Care where I used to do a lot of work with*	
12	*all different kinds of technology and I really became interested in what the*	
13	*impact of that technology was on the patients and how we interact...*	
14	Yeah.	
15	*...and that's really where I come from in devising this study. As part of the*	
16	*study I am using a technique called grounded theory where...what I'm trying to*	
17	*do is come up with a new theory for this idea of dehumanisation and how it*	
18	*impacts on us, but to that I need to ground that into the discussion we are*	
19	*having in these interviews and hence the reason I am having to tape the*	
20	*interviews...*	
21	Yeah.	
22	*... because that's where the analysis comes from. And I will occasionally take*	
23	*some notes, if you are completely agreeable and you've read you information*	Need to state
24	*leaflet and your quite happy, then as part of the ethics approval for the study I*	clearly what
25	*have to get you to sign a consent form if your...*	consent is been
26	Yeah.	signed for.
27	*...agreeable, so I've got two copies. One for yourself and one for me and I have*	
28	*taken the liberty of filling some of the details at the bottom with out ticking the*	
29	*boxes saying what you have done...*	
30	So would you like me to sign it now or afterwards?	
31	*If you could sign it now, just tick whichever box is applicable. (Pause) I have*	
32	*spelt your surname right haven't I?*	
33	Err, no.	
34	*Oh I'm sorry.*	

35   Should I change it? It's not going to make much difference.

36   *If you sign it using the correct spelling that's fine.*

37   Ok. (Pause as participant signs). So all three are applicable aren't they?

38   *Yes. Your surname is like mine – there's that many ways of spelling it I wasn't*

39   *sure. That's wonderful thank you very much (participant name)... actually*

40   *that's yours to keep... that's great. Ok. So to business. What grade are you*

41   *currently as a midwife?*

42   Umm…somewhere between E to F. Probably.

43   *Somewhere in between (laughs)...right. So how long have you been in*

44   *midwifery for?*

45   Err…4 years.

46   *4 years. As that always been in this hospital?*

47   No. I was at (Location 1) for about a year. I was at (Location 2) for nearly a

48   year and I've been here for three years.

49   *So did you do your training in (Location 1)?*

50   Yes.

51   *And did you work as a nurse before that?*

52   No.

53   *So direct entry?*

54   Direct entry.

55   *Ok. So obviously you have worked in a number of centres and with four years*

56   *experience – I take it that's since qualifying?*

57   Yes.

58   *Yes. So really seven years experience.*

59   Yes.

60   *You must have seen some changes in that time.*

61   Err… it varies from centre to centre as well, you can go from one hospital to

62   another and you know, the amount of technology, the amount of you know, the

63   system they use will all be completely different. So yeah it does change. It's

64   changing here.

65   *Yeah? What kind of changes are you noticing here?*

66   There's more of a move to actually collect data, like input data onto some kind

67   of database, but there are still no moves towards actually collating it and

68   coming up with figures. Everything is still being sort of - well people are still

69	trawling through hand held records – written records – that kind of thing, and
70	eventually it will catch up with other hospitals where if they want some figures
71	for something they will just go into a system and pick those figures off.
72	*What kind of figures do you mean?*
73	Delivery figures, looking at umm…instances of certain, you know events
74	happening… at the moment they are audited by using case notes whereas they
75	could just as easily be audited by putting everything on to a computer, you
76	know at the time of the event or that kind of thing.
77	*Ok. So currently, am I right in assuming you use computers as part of your*
78	*job?*
79	Yes.
80	*Yes. Ok. So what kind of things do you use them for now?*
81	At the moment… inputting admissions, discharges, also delivery details for
82	birth notifications, which are then sent to the birth notification registrars and
83	are then forwarded on to the registrar's.
84	*Are all these different systems or are they all part of the same system?*
85	They are all linked, but the birth notifications are different to the main hospital
86	admission/ discharge system.
87	*Ok, so what are the links? How…*
88	One. When you are inputting the admission for a baby that's just been born, it
89	will ask for the babies registration number, which is then – you get that from
90	inputting all the information into the other system, so you've got to do one to
91	do the other.
92	*Right. That's what I was trying to drive at… although the systems are linked is*
93	*it you who is the link between those systems or are they linked electronically?*
94	Umm… in a way we are the link because we have to put the information in and
95	if we didn't do that, the link wouldn't be there.
96	*Ok, ok. So is there any alternative to using any of these computer systems?*
97	Written records.
98	*Written records yeah?*
99	Umm…
100	*Do you prefer written records or computer systems?*
101	No, I think computer systems are a good thing, but I think within the
102	environment we work in they have got to move it on a stage… and at the

103   moment there's a lot of replication , where you know, we are just writing things

104   down that we are also putting into the computer…

105   *So there's a lot of redundancy in what you are doing…?*

106   Yes.

107   *… and duplication?*

108   Yes.

109   *Ok. So when you say a good thing, what do you mean by a "good thing" how*

110   *do you define that?*

111   Umm… In terms of audit. Your looking at statistics and audit …umm… it's a

112   good thing to be able to just, you know, get information by just, you know,

113   typing in. If you had a database with all the information on it you could

114   actually get the information a lot quicker than by spending hours and hours and

115   hours just looking through case notes, just to get the same information. But the

116   system has got to be in place to get that information in the first place…umm

117   whether that's a funding thing (Pause).

118   *So as a grass routes midwife how is that information useful to you?*

119   Umm… just from, you know, everything that goes along with audit –

120   improving practice, improving, you know, standards of care by looking at

121   instances of problems, instances of complications, which if you have a database

122   with everything on you can get that information much quicker.

123   *So, without wanting to put words into your mouth, what… my interpretation of*

124   *what your saying is talking about evidence based practice…*

125   Umm hum.

126   *Would you agree with that?*

127   Yes.

128   *Yes, ok. So you prefer to use computer systems if they are available yourself?*

129   Yes.

130   *You said that you wanted them to be taken the next step on, could you give me*

131   *a little bit more detail on what you mean?*

132   In terms of …umm…particularly in midwifery when, when your looking

133   after… a new born baby. You are putting all that babies details into the

134   computer, you are linking it to the mother, but you are still writing a lot of

135   details in the case notes for that baby, but your putting all the information into

136   the computer.. if they could, if you could print what you are putting into the

137 computer, that could go into the case notes and you are not duplicating what

138 you have already done and that gives you extra time to spend elsewhere, like

139 with the mother and the baby or just doing something else, it would reduce the

140 amount of time.

141 *Ok, so what do you understand ... I mean have heard of the term information*

142 *systems before?*

143 Yes.

144 *What do you understand by that term? There's no right or wrong answer to*

145 *this, everybody's definitions are slightly different.*

146 Umm… just in… (Pause) I've hit a brick wall now (laughs).

147 *That's ok, it's all right...*

148 I see what you mean, the use of, the use of databases. Putting information in,

149 been able to get different pieces of information from it… umm…

150 *"It" being?*

151 The base of information that you have put in.

152 *The base of information, alright. Well what I've got, I've actually got a*

153 *definition for you which I took from a frequently cited paper... so basically if*

154 *you read the definition I have given you there, how does that fit with the*

155 *definition that you have just given? Is it along the same kind of lines? Or is it...*

156 Yes, it's put much better and err… (Laughs).

157 *It's the wonderful academic style of...*

158 Yep.

159 *...Mr Fitzgerald there. So you agree with that definition, it's pretty much what*

160 *you had assumed – round about...?*

161 Yes.

162 *Yes, ok. Ok. Right so the next question then is have you ever heard of the term*

163 *dehumanisation?*

164 Vaguely.

165 *Vaguely?*

166 From reading the initial letter from your research (laughs), and just putting my

167 own interpretation on what I thought it meant.

168 *So again, dehumanisation as information systems – I mean yes we hear about*

169 *information systems a lot in the… I wouldn't say everyday speech, but you*

170 *certainly hear it on the "tele" etc, etc…, but dehumanisation is probably a less*

171 *such common term and as you say you have heard of it from that letter, you've*

172 *put your own interpretation on it – there's no – there really isn't any right or*

173 *wrong in defining dehumanisation, but I am really interested in what*

174 *interpretation you are putting on the term?*

175 It's taking away the human element of umm… of any kind of activities or by if

176 something is sort of dehumanised the way I see it would be there's no, it's a

177 machine, operated by a machine or something that doesn't just function or

178 think it just sort of gets figures and does things.

179 *That's really interesting. You mention a human element what to you would*

180 *make that human element?(Pause) What do you value as a human element – do*

181 *you think?*

182 The actual, the different thought processes that go behind some kind of activity

183 or thing … umm… if you've got… you know, a machine that's giving you

184 statistics and figures, what you can't do is sometimes say "well how about this"

185 and "what if that" …umm… it doesn't give you every answer for everything,

186 whereas we can sort of analyse things.

187 *Ok, so some of the sorts of things you are on about are our abilities to be*

188 *analytical?*

189 Yes.

190 *That's in your interpretation, ok. Well I've got another definition for you.*

191 *Which, I dare say you could of written from what you have just told me. So a*

192 *repeat of the last question really. How do you think that definition compares to*

193 *the one you have just said?*

194 Defiantly thought, thought processes, and feeling … umm… (Long pause).

195 *So again you feel that it compare fairly well to what you've just said about the*   No need to clarify
                                                                                       until she answered.
196 *term. Good. Do you… Have you ever experienced a feeling of dehumanisation?*

197 *Not just related to computers, but generally?*

198 (Pause). I don't think so.

199 *Given the definition that you've used. The feeling that you've just been talking*

200 *about – you may not have thought "ooh I'm feeling dehumanised right now",*

201 *but given those feelings, have those feelings ever come up in a pattern that you*

202 *can reflect back and think "oh well perhaps yes – that was a dehumanising*

203 *experience"?*

204   Umm… only in terms of contacting …err… call centres or things like that

205   where, you know, your just a person, a voice waiting at the end of the phone

206   …umm… particularly if you try and call to obtain some information and your

207   just hit with, you know, various different choices but none of them are the one

208   you want … and there is not other option, and there is no option to speak to

209   somebody…so in that way yeah.

210   *The reason I am beaming at this point is because that's where the insight into*

211   *this study came in. I was on the phone to my bank and thought dehumanisation*

212   *…*

213   Yeah.

214   *… and that's where this thing all triggered from, so it's really interesting to*

215   *hear you say it. Ok, so you've got these experiences of call centres etc, etc, you*

216   *know what the dictionary definition is of dehumanisation, and you know what*

217   *the dictionary definition is of information systems, and you've said that those*

218   *definitions compare well to those you hold yourself, is there anyway in which*

219   *you have felt dehumanised as a consequence of an information system?*

220   (Long Pause) Again, I …don't…think so.

221   *Don't let me lead you into assuming that you must have felt that, if you don't*

222   *think you have …*

223   Not in the same way as to the experience I have just described.

224   *Yeah.*

225   Umm… I don't think so.

226   *Ok, righty oh. In terms of the information systems you are using at work*

227   *what's, well going by the definition there it assumes where talking about IT, so*

228   *lets simplify the terms and say computers for information systems, what kind of*

229   *computer systems are you using right now? In your interpretation, I don't want*

230   *the model number or anything like that, it's not a technical question it's just to*

231   *give me a description of the kind of things you're doing on them.*

232   They are fairly simple. Patient admissions, inputting date and time of

233   admission, what kind of patient they are and all of our patients are the same

234   category… umm, and discharging them or transferring them around the

235   hospital. That's a fairly simple system. Umm… and registering new babies

236   which again is fairly simple, almost multiple-choice options.

237   *Do you ever use a computer for anything else?*

238   Umm… oh err… for sort of obtaining blood results, results of tests, that kind of

239   thing.

240   *Ok. Do you think that within health care we use a lot of technology, do you*

241   *think sometimes that we don't perhaps see that technology as a computer?*

242   (Long Pause) In terms of…umm… monitoring equipment?

243   *Umm. Perhaps monitoring would be a good example.*

244   So intensive monitoring, I suppose that's a computer in a way.

245   *Does that... I mean lets explore that, ok. You've got this monitoring system*

246   *does that provide you with information of some kind?*

247   Yeah. Yes it does. So, so it is effectively.

248   *So would you accept that a computerised monitoring system is a variance of a*

249   *type of information system?*

250   Yes.

251   *Has that ever led to those feelings of dehumanisation?*

252   No…No. Although sometime it…in…for the patients your actually looking

253   after it's almost, although the thing you first look at is the actual screen rather

254   than the patient themselves.

255   *Right. That's interesting. Ok, so would you say that the systems you use – hang*

256   *on let me re-phrase that, how are the systems that you are currently using*

257   *essential to your job?*

258   Patient admissions and discharges, that's sort of been integrated into the role of

259   midwife where as previously – maybe 10 years ago – that may have been done

260   by somebody else who was employed to input data. Oh, and something else I

261   haven't talked about, the GP's surgery, when we have clinics, all of the patients

262   ante natal care is put into the computer and again that's not – that's

263   dehumanising for the patients themselves because you spend far more time

264   actually putting the details in then you do sometimes talking to them. And

265   everything that you do is sort of categorised in terms of where it appears on the

266   computer. So if the computers listed such as blood pressure then urine then

267   everything else, then you do things in that order to run through it, whereas I

268   might not want to do it that way.

269   *Do you think that might affect your own thought processes to a degree?*

270   Yes, I think so. Because you are constantly thinking, "right the next step is this

271   and the next step is this", and err… at one surgery the computer won't let you

272 make a further appointment for the patient until you have gone through

273 everything. So.

274 *So that affects your clinical judgement?*

275 It, yes, it just affects the way…I think it effects the way you treat the people

276 that you are caring for because you always do everything in the same order,

277 because that's the way it's telling you to do it.

278 *Would you, if it wasn't for the computer system... If you took the computer*

279 *system out would always do everything that is said on that specific system?*

280 Usually yes. Because there are certain essential things, but maybe not in that

281 order, maybe …maybe it would be a little more patient led in terms of talking

282 to them and just… everything would get done, just in a different way probably.

283 In a round about way.

284 *Ok. Does it ever…in terms of ordering it… I think there's an element of clinical*

285 *judgement in how that done, but also an element of some basic human common*

286 *sense really isn't it. The human choices that we make. Do the systems that you*

287 *use ever affect those choices that you make, either clinical or human, in any*

288 *other way?*

289 Umm…(long pause)…umm I'm not sure, I need a little more guidance on

290 where your heading with this.

291 *Well we'll come back to that one, we'll come back to that one. Ok. So, to*

292 *reiterate; we have looked at how computers are essential to your job. Could*

293 *you do your job as well with out them?*

294 Yeah.

295 *You could?*

296 Yeah, yeah.

297 *And if you say you could do your job as well without them, you've mentioned*

298 *you prefer to do it with computers, what is it about the computer system that*

299 *makes you think – well this is better than...*

300 Particularly chasing up blood results, just ease of access. You know the

301 computer makes it so easy to access the information you need… umm…

302 without making a telephone call or without personally chasing up blood results

303 and that kind of thing, so definitely in terms of results and results reporting,

304 ease of access.

305 *Ok. How do you feel about the systems that you use?*

306   I think they need…

307   *Generically*

308   Oh. They are mostly straightforward, easy to use.

309   *Mostly straightforward. Now I just interrupted you. You were about to say*

310   *"You think they..." (Pause) … Sorry I cut in just as you were about to give an*

311   *answer so I will restate the question again – how do you feel about the systems*

312   *you use?*

313   I think they need updating.

314   *Right… in what way?*

315   Umm… a lot of unnecessary information is requested by the ones we use in

316   midwifery in particularly, and there the only experience that I have.

317   *Yeah sure. Do you find them easy to use?*

318   Yeah.

319   *Yes, good. Do you think that computers within your own job, and perhaps*

320   *within the perception of some of your colleagues, have become accepted as a*

321   *norm?*

322   Yeah… yes in, particularly in terms of registering babies, now means that any

323   of my colleagues who previously didn't like using the computer would ask

324   another colleague to use the computer to put the details in for them, now they

325   have to do that for themselves. So it's almost been made part of, you know,

326   their role to use them and, you know, know how to use them…whether they

327   want to or not or whether they are comfortable with it or not.

328   *Ok. So have you ever felt that communication is reduced in any way due to the*

329   *use of the computer systems?*

330   Yes. Going back to the GP surgery, just my experiences of doing that…

331   *So the communication there would be between?*

332   Between myself and the patient.

333   *Ok, in other circumstances away from the GP surgery, perhaps in the hospital*

334   *is communication affected in any way?*

335   Umm…communication between?

336   *Between… it could be between yourself and your peers, or your self and your*

337   *managers or your self patients…yourself and other departments…anything…*

338   Only, I mean between ourselves and the patients in the time it takes to put

339   those details in. Definitely communication is affected because… if terminals

Miss read cues from participant, I thought she was having difficulty understanding the question and cut her off. Must learn to shut up a little and take some risks.

340   were provided in every room that there was a patient in you would be able to

341   input those details and spend time with the patient, but that just isn't going to

342   happen.

343   *And you mentioned that there is duplication of information with your writing in*

344   *the notes as well, do you tend to write the notes in the room with the patient*

345   *or...*

346   No, you tend to do it before you put all the details into the computer.

347   *So potentially you are doubling the time that you are away from the patient?*

348   Yes.

349   *Ok and that actually takes me on quite nicely to the next question which is:*

350   *Have computers ever distanced you from your patients?*

351   In that way, definitely.

352   *Is there any other way that it has distanced you do you feel?*

353   Again, going back to the GP's surgery, you feel that it is a three way process

354   and you've got yourself, the screen and the patient umm…

355   *So would you compare it to having an interpreter? Is that a fair comparison?*

356   Not so much an interpreter, but almost a sort of little electronic assistant who's

357   sort of saying, "Now your going to this, now your going to do this".

358   *Have the systems you use affected your ability to provide the care that you*

359   *think is <mark>required</mark> to your patients? Now this isn't intended as a judgmental*

360   *question.*

361   Err… again, in terms of time… and… did you say affected?

362   *Yes, so either resulted in a different result or has just changed in some*

363   *way…the care, … if you feel that you believe that this level of care, or*

364   *attention, is needed for this particular patient, has it in any way changed, or*

365   *altered, the care that you were able to give?*

366   (Long Pause) Umm… I am not sure, although I'm sure that in about an hour

367   I'll think of some instances…(Laughs).. but of the top of my head I'm not sure,

368   it probably has even if I am not quite aware of it. Particularly when using

369   monitoring systems in terms of, I can't think what it's called the great big

370   machine that does everything, blood pressures, CVP…

371   *Dynamap?*

372   No bigger than that. The great big computer screen…

373   *Oh, the Marquette?*

Could have asked why details were written first?

Influence may have been a better term?

374 That's it. You know, setting it up. Making sure it's running properly. Resetting

375 the controls, resetting, you know, timings of it, maybe umm… Concentrating

376 on that can take away your attention from what the actual patient is saying or

377 what's going on in the room at the time. Those kind of things.

378 *What5 you've just said to me makes me think of prioritisation. Does the*

379 *machine take the priority?*

380 It depends on how critical the case is. And that varies from person to person,

381 you never get two who are the same. But in a way, especially in recovery care,

382 a lot of patients have had spinals so they are fully awake and conscious when

383 they get into the recovery room and they do have a lot of questions. They are

384 asking questions, they want to spend time with their baby, and your trying to

385 set up the machine to record their obs. every five minutes. So then it does affect

386 the care that you are giving.

387 *So when you said critical, what do you mean by it?*

388 Umm... the more high-risk cases. People who've, you know, have had a

389 massive haemorrhage those are the kind of things, when we tend to use that

390 machine more often. I mean the Dynamap is not so much of a problem,

391 because we use it all the time and it's very easy to operate, whereas the larger

392 machine we use less often… I use less often… and so it takes longer to

393 remember how it's used.

394 *That's a fair point. Do the computer systems you use encourage the labelling of*

395 *patients? (Long pause) Now would you like me to expand on that?*

396 Yes please.

397 *Ok, I expected to have to expand on this because I had this debate with my wife*

398 *this morning (laughs). I think that there is a recognised danger within health*

399 *care that we tend to label our patients as disease types, almost, so it would be*

400 *the "multi in bed three" or the "pre eclamptic in bed four" etc. And obviously*

401 *with inputting a lot of data into the computers and I am wondering whether the*

402 *use of the computer encourages that process.*

403 Err… probably the more equipment that you are using suggests that, that

404 patient is more of a high risk, so then yes you are labelling the patients.

405 *Ok, could you expand on that? You say in terms of the equipment your using,*

406 *what do you mean by that?*

407 If you have umm… If you have a patient who is, again going back to again a

408 massive haemorrhage or pre eclampsia, or something like that, you have a great

409 deal of monitoring equipment which effectively comes back to having some

410 kind of computer in somewhere, so the more equipment you are using, such as

411 infusion pumps, which again must work on some kind of computerised

412 technology equipment or whatever…

413 *Absolutely...*

414   They tend to become labelled in that way. In terms of high risk or as you say

415 pre eclampsia,

416 *Ok, so do you think the patient is lost behind the equipment?*

417 Yes.

418 *Do you always feel in control of the systems you use?*

419 (Long pause) Yeesss, because we don't have, we don't really have really high

420 tech so yes most of the time.

421 *What happens when the systems break? So for example, do you use a password*

422 *system currently on your computers to...*

423 Oh yes.

424 *Have you ever experienced a problem where you haven't been able to log in*

425 *with your password?*

426 Yes, but there are support systems in place which most of the time will sort that

427 out.

428 *Do you ever have any doubts of the morality or the ethics of some of the*

429 *systems you use? (Long Pause) Of the impact that the systems?*

Could have
challenged with
her example on
communication.

430 No, I think it's a good thing. I don't think they are immoral.

431 *You say a good thing, whats…what do you mean by that?*

432 Storing a lot of patient information on a computer will eventually lead to

433 written case notes been filed, stored, something happening to them so that

434 patients who have a lot of hospital admissions don't have five or six volumes

435 of notes because all their information should be made available just by calling

436 that patients records up, but I think we are a long way off that happening. But I

437 don't think… I don't see that as being a problem if that were to happen, if

438 eventually there were no written case notes, I don't view that, that would be a

439 problem.

440 *Has the way you worked changed by the introduction of computers?*

441   No, but then I have only been a midwife for a relatively short period of time

442   umm… but I am aware of other colleagues who have noticed a big change.

443   *From your own perspective?*

444   It's always been, so as I say I haven't known anything different about it.

445   *Ok. Now I've got a statement here, and umm... what I'm not intending to do is*

446   *put words into your mouth with this statement, but what I want to look at is*

447   *whether you agree with it or not, and that's "Computers are damaging the art*

448   *of midwifery". Would you agree or would you disagree and why?*

449   I would lean towards disagree umm… again for the reasons I have previously

450   stated. In terms of ease of access to records, results, those kind of things. If

451   you can call those up without having to spend time looking through case notes,

452   then if … in theory you should have more time to spend with your patient…

453   umm…and as to the art of midwifery part, again it comes down to whether it's

454   an art or a science doesn't it? (Laughs)

455   *Which is a debate which is beyond (laughs) …*

456   There is no good answer to that so…

457   *Ok, that's fine. Has your performance in the job changed as a consequence of*

458   *computerised systems?*

459   No, but only again because I have only been a midwife for quite a short period

460   of time.

461   *You mentioned there that as systems develop you can access the patient*

462   *information, results etc etc in a short period of time, now my interpretation of*

463   *that – what you were talking about – relates to the word efficiency, would you*

464   *say that was fair?*

465   Yes. It's lots more efficient.

466   *Therefore, where you say you have worked in different hospitals and you*

467   *implied, or once again my interpretation of what you were saying, is that you*

468   *have used different levels of systems in different hospitals...*

469   Yes.

470   *Where you have worked with different computer systems indifferent hospitals,*

471   *compared to those your working with here, does that affect the level of*

472   *efficiency?*

473   Here I think it is not too bad. You can access information that you need quite

474   easily, but again going back to audit, figures for audit aren't available for the

475 system that is currently in use and that is something, you know, does need
476 addressing, because there may be 10 other people who are given the role of
477 finding figures for audit and they are having to just go through sets of case
478 notes and it just seems time wasting, time consuming, when information could
479 be put in – and is put in, but there just doesn't seem to be any way that we are
480 shown as midwives of actually getting that information back. So you put all the
481 information in, but nobody has come along and said that this is how you get
482 these figures from the computer, which would save a lot of people a lot of time.

483 *Have you ever thought that your professional judgement is been denied*
484 *through the use of computers?*

485 No, because the computers aren't telling us what to do, we are not using any
486 kind of pathway system, or a sort of flow chart where it's got a "if yes this" or
487 a "if no that". So err… no.

488 *Ok. You mentioned earlier on the example of the computer in the GP's surgery*
489 *has a set order – would you class that as an alteration to clinical judgement?*

490 Not as such, but I do think the computer is telling you what to think of next and
491 altering your thought processes in that way. In saying that, "Now your going to
492 think about doing this and now your going to look at that, now your going to
493 look at that".

494 *Ok, so it's prompting rather than altering?*

495 Yeah.

496 *Do any of the systems you use limit the degree to which your patients may*
497 *voice an opinion?*

498 (Long Pause) No…but, I think they – again – if it's patients opinion on their
499 own care then the machines themselves are set up with parameters which
500 perhaps do categorise the patient into this that or whatever. Umm…but they
501 don't limit the ability of the patient to voice an opinion.

502 *So what you've said is really quite interesting, you've said that computers have*
503 *their own parameters that are set and that categorises the patients – if the right*
504 *term that you used – how does it categorise patients?*

Participant
confirms by
nodding head.

505 If a umm… the machines we use for foetal monitoring – which again have
506 some element of microchip in them somewhere – will show us whether a baby
507 in utero is happy or supposedly not happy, and we base a lot of decisions on

508　that. Umm… sorry could we go back to the question again? I'm heading off at

509　a tangent.

510　*Sure. When we were looking at the idea of voicing an opinion, when your*

511　*answer came we were talking about computer systems categorising patients...*

512　Alright. Ok…

513　*I was wondering how computer systems categorise patients?*

514　Alright. Well going back – I knew that was where I has heading (laughs) …

515　*It's alright...*

516　It's just… going back to foetal monitoring if the information given out by that

517　system would say this baby is not happy we would then categorise that patient

518　into one that needs further monitoring, sometimes we are intensive and that can

519　lead to some quite invasive procedures.

520　*Ok, so does the CTG tracing... I know in my own experience that certain ECG*

521　*monitors will actually give you an interpretation...*

522　Yes.

523　*Does that happen with CTG monitors?*

524　We do have one that does give an interpretation.

525　*And do people use that interpretation?*

526　Yes. They use that religiously. Umm…but that's quite a new thing over the last

527　12 months.

528　*Do you feel that in your own experience of using perhaps that piece of*

529　*equipment that the CTG tracing that is displayed is always reflected positively*

530　*or accurately by the interpretation...*

531　It has been as far as I am aware. I have never come across one that hasn't fitted

532　in to what I thought about it, but I also have never had one that has had a

533　negative interpretation…

534　*Right.*

535　… or an interpretation that may lead to further treatment or monitoring.

536　*So how do you use the computers interpretation of what's happening within*

537　*your own clinical judgement choices?*

538　Err… the computers interpretation, if that were to suggest everything was Ok,

539　then everybody, from consultant down to the most junior midwife would go

540　along with that, and if that was reassuring then maybe a plan would be made to

541　actually monitor that baby for perhaps another week or so.

542   *If you had a patient who had a CTG monitoring with out an interpreter...*

543   Which the majority of them are with.

544   *...would you pay...I know that this question could be quite sensitive and*

545   *perhaps I should again raise the confidentiality of the whole study as a*

546   *consequence of it – would you honestly say that you would spend as much time*

547   *interpreting the tracing on the one that gives you the interpretation finding as*

548   *you do the one which doesn't?*

549   No. I think you would probably recognise something that is grossly abnormal,

550   but probably if it looked to be satisfactory at a glance you would go along with

551   it's interpretation of it.

552   *So you would spend more time interpreting the one which...*

553   Had no interpretation with it.

554   *Ok, that's smashing. The reason I was a bit cagey there was I know that some*

555   *people may think – what's he trying to drive at? It is just an open question from*

556   *my own experience of intensive care where we had these interpreting...*

557   I think you would use your own judgement, and if at glance it looked

558   satisfactory you would think "yes we'll go along with it". If it looked really

559   abnormal I don't think you can. At the end of day it is just a piece of

560   equipment.

561   *Have computers in your work limited your ability to make choices?*

562   Only in that way that… in that a machine that gives an interpreting system

563   then, would then lead you on to your next choice. Umm… maybe in use of

564   blood pressure machine – dynamaps – if the information that gave us – the

565   information that would give you would then lead you to make your next choice

566   as to what you are going to do next. So (pause), but then you would probably

567   make those choices anyway if you were recording blood pressure manually.

568   *How about if you were using systems for inputting patient information, so*

569   *obviously umm… the patient management systems that you use… do those*

570   *affect your ability to make choices in any way?*

571   No. It's very much admission and discharging really. It doesn't give you any

572   guidance as to what to do or where to go it just wants just dates and times most

573   of the time.

574   *Excellent. Well we've actually gone through my whole list of questions, so*

575   *really this is an opportunity for you to ask any questions that you might have at*

576 *all. About any of the things we have gone through or anything else that you*

577 *might want to …*

578 Umm… just a I do think in the back of my mind think there must be far more

579 information systems that we actually use within a hospital environment and I

580 just can't think of them.

581 *The… Basically the definition I provided you with there… if we go back to it…*

582 *the effective analysis, design, delivery and use of information for organisations*

583 *and society using information technology, basically to me my interpretation of*

584 *that is anything that uses a microprocessor to a degree is an information*

585 *system…*

586 Yes. Yeah, that did sort of occur to me as time went on…

587 *However I thought it was interesting, and perhaps I have led you more than a*

588 *little bit, looking at monitoring systems. It's easy to interpret information*

589 *systems into just the computer, the computer has got a monitor a box and a*

590 *keyboard and perhaps a mouse on the side…*

591 Yeah…

592 *And within health care certainly information systems are certainly a little bit*

593 *more prominent than that, for example community CTG monitors have a*

594 *modem for communicating that information across…*

595 Yeah…

596 *…and I think that sometimes that… well it would be interesting to hear your*

597 *opinion of this so let me phrase it as a question… do you think that sometimes*

598 *there's a way that we fail to see these pieces of technology as systems*

599 Yes…

600 *and that we internalise them in such a way…*

601 …it's just part of our everyday work. Yes, in that way, yes. Because it is only

602 as we started talking about systems – initially I was just thinking of computers

603 – and even a CTG machine.

604 *And that prompts just one more question. Do you feel that we humanise those*

605 *systems in anyway? Do you ever put human qualities on to them?*

606 Err…if we use our own clinical judgement to interpret the information their

607 giving us then yes. But, if they have got some kind of auto analysis then maybe

608 we are just acting up on what it is telling us to do and then maybe anyone can

609 act upon the information they are giving out. So we don't need to go through

610 all that training to actually know what's normal and what's not normal because

611 it could tell anybody. It could tell a man on the street, you know that this going

612 to do next. So you wouldn't like to think of them going that far. I wouldn't like

613 to think about every machine, or every piece of equipment we use saying do

614 this do that because it takes away the need for clinical judgment. But, the ones

615 where we just get the information from and act upon it… (long pause).

616 *Excellent, well I've got no more questions for you and if you've got no more for*

617 *me...*

618 No I think that's it.

619 T*hen we will call a halt to the interview – which is wonderful so thank you very*

620 *very much indeed...*

621 It's all right.

622 *And I will turn this dreadful tape recorder off now.*

Appendix 9: Microanalysis

1   *Interview one. The participant of this interview is a midwife working as*

2   *member of a midwifery team. This involves a mixture of both hospital and*

3   *community midwifery practice.*

4

5   (Pause at beginning of tape as participant reads participant information sheet)

6   It's fine, thanks.

7   *Excellent. So what I have basically got is err... if I just describe to you a little*   Participant hands

8   *bit more about the format...that's for you to keep so... first of all let me say*   over information

9   *thanks for agreeing to do it – that's the biggest priority really (Laughs) it is*   sheet.

10 *really helpful when people from the service side can spare the time to come*

11 *out. My background is from Critical Care where I used to do a lot of work with*

12 *all different kinds of technology and I really became interested in what the*

13 *impact of that technology was on the patients and how we interact...*

14 Yeah.

15 *...and that's really where I come from in devising this study. As part of the*

16 *study I am using a technique called grounded theory where...what I'm trying to*

17 *do is come up with a new theory for this idea of dehumanisation and how it*

18 *impacts on us, but to that I need to ground that into the discussion we are*

19 *having in these interviews and hence the reason I am having to tape the*

20 *interviews...*

21 Yeah.

22 *... because that's where the analysis comes from. And I will occasionally take*

23 *some notes, if you are completely agreeable and you've read you information*

24 *leaflet and your quite happy, then as part of the ethics approval for the study I*   Need to state

25 *have to get you to sign a consent form if your...*   clearly what

26 Yeah.   consent is been

27 *...agreeable, so I've got two copies. One for yourself and one for me and I*   signed for.

28 *have taken the liberty of filling some of the details at the bottom with out*

29 *ticking the boxes saying what you have done...*

30 So would you like me to sign it now or afterwards?

31 *If you could sign it now, just tick whichever box is applicable. (Pause) I have*

32 *spelt your surname right haven't I?*

33 Err, no.

34 *Oh I'm sorry.*

35 Should I change it? It's not going to make much difference.	
36 *If you sign it using the correct spelling that's fine.*	
37 Ok. (Pause as participant signs). So all three are applicable aren't they?	
38 *Yes. Your surname is like mine – there's that many ways of spelling it I wasn't*	Grade
39 *sure. That's wonderful thank you very much (participant name)... actually*	
40 *that's yours to keep... that's great. Ok. So to business. What grade are you*	Qualified Time
41 *currently as a midwife?*	
42 Umm…somewhere between E to F. Probably. [Grade]	Experience
43 *Somewhere in between (laughs)...right. So how long have you been in*	
44 *midwifery for?*	
45 Err…4 years.[Qualified Time]	
46 *4 years. As that always been in this hospital?*	
47 No. I was at (Location 1) for about a year. I was at (Location 2) for nearly a	
48 year and I've been here for three years. [Experience]	
49 *So did you do your training in (Location 1)?*	
50 Yes.	
51 *And did you work as a nurse before that?*	Training Type
52 No.[Training Type]	
53 *So direct entry?*	
54 Direct entry. [Training Type]	
55 *Ok. So obviously you have worked in a number of centres and with four years*	
56 *experience – I take it that's since qualifying?*	
57 Yes.[Experience]	
58 *Yes. So really seven years experience.*	
59 Yes. [Experience]	Employment Base
60 *You must have seen some changes in that time.*	Point
61 Err… it varies from centre to centre [Employment Base Point] as well, you can	
62 go from one hospital to another and you know, the amount of technology	Technology
63 [Technology in vivo], the amount of you know, the system [System in vivo]	System
64 they use will all be completely different. So yeah it does change [Change in	
65 vivo]. It's changing here. MEMO [Varies= changes from one thing to another.	Change
66 Never the same in any two cases. Centre= middle, where things are based, from	
67 where all things extend or branch from. Technology= machines,	
68 computerisation, skills, high technology (sophistication) and low technology	

69	(simplistic). System= a complete method, a sequence, a process that requires
70	order, a solution, a pattern of work, the application of a computerised method
71	of work. Changing= transition from one thing to another, in process of
72	development or alteration, a process within a system for meeting variable
73	needs, developing maturity and independence. As in child: children grow
74	physically and go through puberty, they develop social and psychological
75	maturity and independence, a transition from child to adult.]
76	*Yeah? What kind of changes are you noticing here?*
77	There's more of a move [change] to actually collect data [gather items of
78	interest], like input [computer interaction] data onto some kind of database
79	[Database in vivo], but there are still no moves [Change] towards actually
80	collating [Interpretation of Data] it and coming up with figures [Statistics].
81	Everything is still being sort of - well people are still trawling through hand
82	held records – written records [Hand Written Notes] – that kind of thing, and
83	eventually it will catch up [change] with other hospitals where if they want
84	some figures [Statistics] for something they will just go into a system [System]
85	and pick [Informed Selection] those figures [Statistics] off.
86	MEMO [Move= a change from one thing to another, to physically shift.
87	Collect= to gather or count something of interest, to hoard, a hobby or business
88	process, to pick something up from storage. Data= items, individual things of
89	interest, definable singular items, information without interpretation, as having
90	definable parameters. Input= to enter something into a computer, to throw an
91	idea into a discussion, to take part in a conversation. Database= A store for
92	data, a part of or a complete computer system, a file, a program used on a
93	computer to organise information. Compares with a bank: money is entered
94	into and out of a bank like data into a database (everything is recorded),
95	interest builds on money in bank, interest in data develops as context is added
96	or interpretation is given, a system of operation must be adhered to. Collating=
97	interpretation of data into categories, putting things in the correct order or
98	sequence as when printing a document, collating data into information, putting
99	singular items into a readable format. Figures= numbers or statistics, a defined
100	shape, information, numeric data based on other data types. Written records=
101	paper based records with specific or non-specific data fields, hand written
102	medical notes, paper based data collection tools. Eventually= sometime in the

Change

Gather items of interest

Computer Interaction

Database

Interpretation Of Data

Statistics

Hand Written Notes

Informed Selection

103	future, an event that has not happened yet but will, a premonition, gamble or a	
104	consequence. Catch up= change in order to equalize, accelerate to a point of	
105	been equal with ones peers or competition, a negative comparison. Pick= to	
106	make a specific selection from a range available, to choose, to scratch or scrape	
107	at the surface of something.]	
108	*What kind of figures do you mean?*	
109	Delivery figures [Statistics], looking at umm…instances of certain	Specificity
110	[Specificity], you know, events happening. At the moment [Specific Time]	Specific Time
111	they are audited by using case notes [Hand Written Records] whereas they	Audit
112	could just as easily be audited [Audit in vivo] by putting everything on to a	
113	computer [Computer in vivo], you know at the time of the event [Specific	Computer
114	Time] or that kind of thing.	
115	MEMO [Instances= specific data, one example of one moment in time.	
116	Certain= completely sure of meaning, a particular item out of many. Events=	
117	happenings, an arranged action or series of actions at one moment in time.	
118	Moment= one point in time, an undefined period of time (usually short), a	
119	pause in events or speech. Audited= studied and interpreted, measured (usually	
120	counted) and compared with standards, comparisons with other known data or	
121	information. Computer= an electronic system for the inputting, storage and	
122	processing of data and the outputting of information, comprising of a keyboard	
123	and monitor, allows processes to be programmed and controlled. As in human:	
124	the human receives a number of stimuli (data) and processes this in varying	
125	ways depending on needs (processes data into information), places events into	
126	memory (to be accessed in future processes) and outputs activity. Time of the	
127	event= one moment in time defined by the duration of the event.]	
128	*Ok. So currently, am I right in assuming you use computers as part of your*	
129	*job?*	
130	Yes.	Controlled System Entry
131	*Yes. Ok. So what kind of things do you use them for now?*	
132	At the moment [Specific Time]… inputting [Computer Interaction] admissions	Controlled System Release
133	[Controlled System Entry], discharges [Controlled System Release], also	
134	delivery [Arrival Process] details for birth notifications, which are then sent	Arrival Process
135	[Transport Of Information] to the birth notification registrars and are then	Transport of Information
136	forwarded on to the registrar's.	

137 MEMO [Admissions= letting somebody into a controlled system, controlling	
138 entry, confessing. Discharges= Release of people from a controlled system, an	
139 ooze of puss, a shot of artillery or a release of a weapon. Delivery= arrival,	
140 birthing process. Details= specific data, a predefined data set, a description	
141 something, minutia. Notification= the act of passing on information from one	Connection
142 source to another, to give warning. Sent= passed from one source to another by	
143 a means of transportation.]	
144 Are all these different systems or are they all part of the same system?	
145 They are all linked [Connection], but the birth notifications are different to the	
146 main hospital admission/ discharge system [System].	System also relates to computer system, but how?
147 MEMO [Linked= connected one to another, joined by something, sharing a	
148 similar property]	
149 Ok, so what are the links? How…	
150 One. When you are inputting [Computer Interaction] the admission [Controlled	
151 System Entry] for a baby that's just been born, it will ask for the babies	
152 registration number, which is then – you get that from inputting [Computer	A Collective
153 Interaction] all the information into the other system [System], so you've got to	
154 do one to do the other.	
155 Right. That's what I was trying to drive at… although the systems are linked is	
156 it you who is the link between those systems or are they linked electronically?	
157 Umm… in a way we [A Collective] are the link [Connection] because we have	
158 to put the information [Information in vivo] in and if we didn't do that, the link	
159 [Connection] wouldn't be there.	
160 MEMO [We= you and me, myself and others, a collective, a royal singular	
161 form. Put information in= inputting data into a system, putting information into	
162 a store of some nature – a database??? Information= processed data, useful	
163 data, data in a specific context, a requirement for decision processing.]	
164 Ok, ok. So is there any alternative to using any of these computer systems?	Computer Systems
165 Written records. [Hand written Records]	Positive Judgement
166 Written records yeah?	
167 Umm…	Develop
168 Do you prefer written records or computer systems?	
169 No, I think computer systems [Computer Systems in vivo] are a good thing	Redundancy
170 [Positive Judgement], but I think within the environment [Working	Inputting

136

171   Environment] we work in they have got to move it on a stage [Develop]… and

172   at the moment [Specific Time] there's a lot of replication [Redundancy], where

173   you know, we are just writing things down [Hand Written Records] that we are

174   also putting into the computer [Inputting]…

175   MEMO [Computer systems= a process or series of processes which require the

176   use of a computer in some way, a complete solution, a computer based part of a

177   larger solution. Solutions indicate a pleural – more than one. Systems could be

178   connected or disparate – how and when are they linked? Do users perceive the

179   links or are the users the links? Good thing= a positive as opposed to a

180   negative, as opposed to evil, to the greater benefit (of who?), beneficence over

181   maleficence, a decision or judgement, an opinion. Environment= specific area

182   or territory, elemental material e.g. the air we breathe, set with defined

183   boundaries. They= not me, or any within my immediate circle (Who is they?);

184   others. Move it on= progress, pass on responsibility, develop, and let others   Waste of effort

185   have a go. Replication= repetition in exact form, producing a duplicate,

186   cloning, repeating as an experiment, needlessly producing a duplicate -

187   redundancy. Writing things down = Hand written records. Putting into the

188   computer = inputting.   Exact Replication

189   *So there's a lot of redundancy [Waste of effort] in what you are doing…?*

190   *MEMO [Redundancy= a waste of time or effort, a worker being sacked due to*

191   *a lack of work or business restructuring, replication without purpose.]*

192   Yes.

193   *… and duplication [Exact Replication] ?*

194   *MEMO [Duplication= exact reproduction or replication without a positive or*

195   *negative context.]*

196   Yes.   Computer Input

197   *Ok. So when you say a good thing, what do you mean by a "good thing" how*

198   *do you define that?*   Speed

199   Umm… In terms of audit [Audit]. Your looking at statistics [Statistics] and   Financial Issue

200   audit [Audit] …umm… it's a good thing [Positive Judgement] to be able to

201   just, you know, get information [Information] by just, you know, typing in

202   [Computer Input]. If you had a database [Database] with all the information

203   [Information] on it you could actually get the information [Information] a lot

204   quicker [Speed] than by spending hours and hours and hours just looking

205   through case notes [Hand Written Records], just to get the same information

206   [Information]. But the system [System] has got to be in place to get that

207   information [Information] in the first place…umm whether that's a funding

208   [Financial Issue] thing

209   (Pause).

210   MEMO [Statistics= specific processed data, data that has under gone some

211   mathematical processes to test significance, numbers, "there's lies, damn lies

212   and then there's statistics", a measurement or a series of measurements relating

213   to something e.g. a specific object or body. Typing in= Inputting into a

214   computer system, entering characters by a keyboard into a mechanical system.

215   Quicker= speed, faster than before, comparison with another e.g. object or

216   process. Funding= availability of finance, money or currency of some sort, to

217   provide capital or to finance another.].

218   *So as a grass routes midwife how is that information useful to you?*

219   Umm… just from, you know, everything that goes along with audit [audit] –

220   improving [Positive Development] practice [Practice in vivo], improving

221   [Positive Development], you know, standards [Standard] of care by looking at

222   instances [Moment in time] of problems, instances of complications, which if

223   you have a database [Database] with everything [Complete Data Set] on you

224   can get that information [Information] much quicker [Speed].

225   MEMO [Improving= making better, installing an improvement to a system or a

226   method of working, instigating a change for a beneficial effect, a positive

227   development. Practice= the application or repetition of skills in order improve

228   performance, working to a certain standard or code of conduct. Standard= a

229   gauge to which performance can be measured, a specific goal at which to aim

230   performance, a flag or banner, a method of identification. Everything= all,

231   including all minutia and larger objects, an abstract, a complete data set.]

232   *So, without wanting to put words into your mouth, what… my interpretation of*

233   *what your saying is talking about evidence based practice [Research Based]…*

234   *MEMO [Evidence Based Practice= Research based practice, skills performed*

235   *in a certain way shown to be beneficial or better by research (usually*

236   *quantitative).]*

237   Umm hum.

238   *Would you agree with that?*

Positive Development

Practice

Standard

Complete Data Set

Research Based

Confirmation

239   Yes.[Confirmation]

240   *Yes, ok. So you prefer to use computer systems if they are available yourself?*

241   Yes.[Confirmation]

242   MEMO [Yes= confirmation, agreement]   Output

243   *You said that you wanted them to be taken the next step on, could you give me*

244   *a little bit more detail on what you mean?*   Extra Time

245   In terms of …umm…particularly in midwifery when, when your looking

246   after… a new born baby. You are putting all that babies details into the

247   computer [Inputting], you are linking [Connection] it to the mother, but you

248   are still writing a lot of details in the case notes [Hand written Records] for that

249   baby, but your putting all the information into the computer [Inputting]... if

250   they could, if you could print [Output] what you are putting into the computer

251   [Inputting], that could go into the case notes [Hand written Records) and you

252   are not duplicating [Redundancy] what you have already done and that gives

253   you extra time [Extra Time in vivo] to spend elsewhere, like with the mother

254   and the baby or just doing something else, it would reduce the amount of time

255   [Speed].

256   MEMO [Print= Outputting to paper, to write out without joining letters

257   together, to write a character precisely, to produce a batch of typed material, a

258   verb or a noun. Extra Time= Efficiency, a bonus period of time, the provision

259   of time beyond the normal limits (e.g. football). Elsewhere= other than here, in

260   a different place]

261   *Ok, so what do you understand … I mean have heard of the term information*

262   *systems before?*   Computer Storage

263   Yes.[Confirmation]

264   *What do you understand by that term? There's no right or wrong answer to*

265   *this, everybody's definitions are slightly different.*

266   Umm… just in… (Pause) I've hit a brick wall now (laughs).

267   *That's ok, it's all right…*

268   I see what you mean, the use of, the use of databases [Databases]. Putting

269   information in [Inputting], been able to get different pieces of information from

270   it [Output]… umm…

271   *"It" being?*

272 The base [Computer Storage] of information [information] that you have put

273 in.

274 MEMO [Base= Foundation, basic or existing store of data.]

275 *The base of information, alright. Well what I've got, I've actually got a*

276 *definition for you which I took from a frequently cited paper... so basically if*

277 *you read the definition I have given you there, how does that fit with the*

278 *definition that you have just given? Is it along the same kind of lines? Or is it...*

279 Yes, it's put much better and err… (Laughs). [Confirmation]

280 *It's the wonderful academic style of...*

281 Yep.

282 *...Mr Fitzgerald there. So you agree with that definition, it's pretty much what*

283 *you had assumed – round about...?*   Vague

284 Yes.[Confirmation]

285 *Yes, ok. Ok. Right so the next question then is have you ever heard of the term*

286 *dehumanisation?*

287 Vaguely. [Vague in vivo]   Interpretation

288 MEMO [Vaguely= in imprecise terms, not well defined.]

289 *Vaguely?*

290 From reading the initial letter from your research (laughs), and just putting my

291 own interpretation [Interpretation in vivo] on what I thought it meant.

292 MEMO [Interpretation= A process of understanding, changing a format from

293 one thing into another – as in language, making a judgement on an uncertain

294 level of facts, drawing a conclusion based on evidence].

295 *So again, dehumanisation as information systems – I mean yes we hear about*

296 *information systems a lot in the... I wouldn't say everyday speech, but you*

297 *certainly hear it on the "television" etc, etc..., but dehumanisation is probably*

298 *a less such common term and as you say you have heard of it from that letter,*   Human Element

299 *you've put your own interpretation on it – there's no – there really isn't any*   Control

300 *right or wrong in defining dehumanisation, but I am really interested in what*   Function

301 *interpretation you are putting on the term?*

302 It's taking away the human element [Human Element in vivo] of umm… of   Consider

303 any kind of activities [Actions] or by if something is sort of dehumanised the

304 way I see it would be there's no, it's a machine, operated [Control] by a   Pre-defined
                                                                                    Applications
305 machine or something that doesn't just function [Function in vivo] or think

140

306 [Consider] it just sort of gets figures [Statistics] and does things [Pre-defined
307 Applications].
308 MEMO [Human Element= the individual characteristics of a human, the ability
309 to think, to judge, to deceive, create etc. etc. The core of being human.
310 Something which is too complex to describe, but is unique to each individual,
311 the essence of what makes us individuals of the human species. Activities=
312 multiple actions, things to do and things that are done. Reference to verbs –
313 doing words. Operated= controlled by, when procedure is completed by a set
314 process under the control of someone or something. Function= to carry out a
315 set procedure or operation, to do ones job, or to work within ones limits e.g. as
316 a human to walk, talk, interact, procreate etc, a mathematical sum or equation,
317 to be assigned a particular role or job. Think= to independently be able to
318 reason, to process information and data into abstraction and to be able to apply
319 abstraction into interpretations of data, a process, to judge, to weigh up the
320 influence of differing factors in the application of an independent pattern or
321 decision. To be creative, use imagination, to ponder. Does things= predefined
322 applications, what it is told or programmed to do, is part of a process.]

Mental
Consideration

Technology

323 *That's really interesting. You mention a human element what to you would*
324 *make that human element?(Pause) What do you value as a human element – do*
325 *you think?*
326 The actual, the different thought processes [Mental Consideration] that go
327 behind some kind of activity or thing … umm… if you've got… you know, a
328 machine [Technology] that's giving you statistics [Statistics] and figures
329 [Statistics], what you can't do is sometimes say "well how about this" and
330 "what if that" [Mental Consideration] …umm… it doesn't give you every
331 answer for everything, whereas we can sort of analyse things [Mental
332 Consideration].
333 MEMO [Processes= parts of a system, actions on something e.g. data or
334 physical material, a subset of a larger system i.e. a system comprises of many
335 processes. Thought processes= mental consideration, the interpretation of
336 events based on available evidence and past experience. Machine= a form of
337 technology, something mechanical which carries out pre-defined functions.
338 Analyse Things= to rationally consider events and form an interpretation, to
339 mentally consider and interpret experience.]

141

340   *Ok, so some of the sorts of things you are on about are our abilities to be*

341   *analytical?*

342   Yes. [Confirmation]

343   *That's in your interpretation, ok. Well I've got another definition for you.*

344   *Which, I dare say you could of written from what you have just told me. So a*

345   *repeat of the last question really. How do you think that definition compares to*

346   *the one you have just said?*

347   Defiantly thought [Confirmation], thought processes [Mental Consideration],

348   and feeling … umm… (Long pause).

349   *So again you feel that it compare fairly well to what you've just said about the*

350   *term. Good. Do you… Have you ever experienced a feeling of dehumanisation?*

351   *Not just related to computers, but generally?*

352   (Pause). I don't think so. [Uncertainty]

353   MEMO [I don't think so= a rejection of an idea, an uncertainty, not a clear cut

354   no, but a considered opinion weighted to the negative.]

355   *Given the definition that you've used. The feeling that you've just been talking*

356   *about – you may not have thought "ooh I'm feeling dehumanised right now",*

357   *but given those feelings, have those feelings ever come up in a pattern that you*

358   *can reflect back and think "oh well perhaps yes – that was a dehumanising*

359   *experience"?*

360   Umm… only in terms of contacting [Communication] …err… call centres

361   [Computer Automated Answer Services] or things like that where, you know,

362   your just a person [Identity Removed], a voice [Identity Removed] waiting at

363   the end of the phone …umm… particularly if you try and call to obtain some

364   information [Information] and your just hit with, you know, various different

365   choices [Computer Output] but none of them are the one you want

366   [Interpretation]… and there is no other option [Limiting Choice], and there is

367   no option to speak to somebody [Alienation]…so in that way yeah.

368   MEMO [Contacting= communication, reaching out and touching another in

369   some way, making an electrical contact, completing a circuit. Call Centres=

370   bases for telephony within a company, a point of origin from which a call

371   originates, computer automated answer services. Person= individual human,

372   someone without a known identity, a unit for counting humans. Compares with

373   car: single case whereas cars are pleural – people – is pleural for person, the

Communication

Computer
Automated
Answer Services

Identity Removed

Limiting Choice

Alienation

374 removal of individual identity in order to count. Voice= vocal sounds, in

375 humans the ability to speak requires a voice, song, singular perspective i.e. a

376 voice, to state an opinion or enter into a debate, to lodge a protest, mimicry. A

377 Voice= singular and disembodied, detached and inhuman, not part of a whole,

378 bravery, lost, lack of identity. And There is no other option= limitation of

379 choice, reduction in autonomy, pigeon holing, categorisation and abstraction,

380 enforcement of rules. No option to speak to somebody= alienation, distancing

381 caller from those they are trying to contact, there is no body (human)

382 available.]

383 *The reason I am beaming at this point is because that's where the insight into*

384 *this study came in. I was on the phone to my bank and thought dehumanisation*

385 *…*

386 Yeah.

387 *… and that's where this thing all triggered from, so it's really interesting to*

388 *hear you say it. Ok, so you've got these experiences of call centres etc, etc, you*

389 *know what the dictionary definition is of dehumanisation, and you know what*

390 *the dictionary definition is of information systems, and you've said that those*

391 *definitions compare well to those you hold yourself, is there anyway in which*

392 *you have felt dehumanised as a consequence of an information system?*

393 (Long Pause) Again, I …don't…think so. [Uncertainty]

394 *Don't let me lead you into assuming that you must have felt that, if you don't*

395 *think you have …*

396 Not in the same way as to the experience I have just described. [Uncertainty]

397 *Yeah.*

398 Umm… I don't think so. [Uncertainty]

399 *Ok, righty oh. In terms of the information systems you are using at work*   Easy To Use

400 *what's, well going by the definition there it assumes where talking about IT, so*   Processing Data

401 *lets simplify the terms and say computers for information systems, what kind of*

402 *computer systems are you using right now? In your interpretation, I don't want*   Easy to use system

403 *the model number or anything like that, it's not a technical question it's just to*

404 *give me a description of the kind of things you're doing on them.*

405 They are fairly simple [Easy To Use]. Patient admissions, inputting date and

406 time of admission [Computer Input], what kind of patient they are and all of

407 our patients are the same category… umm, and discharging them or

408 transferring them around the hospital [Processing Data]. That's a fairly simple

409 system [Easy to Use System]. Umm… and registering new babies which again

410 is fairly simple [Easy to use system], almost multiple-choice options.

411 MEMO [Simple= easy to use, easy to understand, a solution that is easy to

412 calculate or apply, a label for someone who is unintelligent, basic – not

413 complicated. Discharging them or transferring them around the hospital=

414 processing data – including inputting and outputting from the local system to

415 other terminals within the hospital system. Physically moving patients. Simple

416 system= easy to use system, a system that is uncomplicated, straightforward.]

417 *Do you ever use a computer for anything else?*

418 Umm… oh err… for sort of obtaining blood results, results of tests, that kind of

419 thing. [Computer Output]

420 *Ok. Do you think that within health care we use a lot of technology, do you*

421 *think sometimes that we don't perhaps see that technology as a computer?*

422 (Long Pause) In terms of…umm… monitoring equipment? [Covert IS]

423 MEMO [Monitoring Equipment= equipment used to monitor something,

424 technology applied to monitor patients, covert information systems,

425 internalised information systems, measurement devices.]

426 *Umm. Perhaps monitoring would be a good example.*

427 So intensive monitoring [Covert IS], I suppose that's a computer [Covert IS] in

428 a way.

429 *Does that… I mean lets explore that, ok. You've got this monitoring system*

430 *does that provide you with information of some kind?*

431 Yeah. Yes it does. So, so it is effectively. [Confirmation]

432 *So would you accept that a computerised monitoring system is a variance of a*

433 *type of information system?*

434 Yes. [Confirmation]

435 *Has that ever led to those feelings of dehumanisation?*

436 No…No. Although sometime it…in…for the patients [Label] your actually

437 looking after it's almost, although the thing you first look at is the actual screen

438 rather than the patient themselves [Prioritisation].

439 MEMO [Patient(s)= label used to describe individuals using the health service

440 system. You first look at= prioritisation, attention grabbing. Why is it that the

441 screen grabs the midwives attention before the patient? Is it that the midwife

Leading questions by the use of the statement "do you"

Covert IS

Label

Prioritisation

442 perceives this technology as a method of communication between the patient

443 and herself?]

444 *Right. That's interesting. Ok, so would you say that the systems you use – hang*

445 *on let me re-phrase that, how are the systems that you are currently using*

446 *essential to your job?*

447 Patient admissions and discharges [Processing Data], that's sort of been

448 integrated into the role of midwife [Role expansion] where as previously –

449 maybe 10 years ago – that may have been done by somebody else who was

450 employed to input data [Computer Input]. Oh, and something else I haven't

451 talked about, the GP's surgery [Community Clinic], when we have clinics, all

452 of the patients ante natal care is put into the computer [Computer Input] and

453 again that's not … That's dehumanising [Dehumanisation in vivo] for the

454 patients themselves because you spend far more time actually putting the

455 details in [Computer Input] then you do sometimes talking to them [Patient

456 Communication]. And everything that you do is sort of categorised in terms of

457 where it appears on the computer [Limiting Choice]. So if the computers listed

458 such as blood pressure then urine then everything else, then you do things in

459 that order to run through it, whereas I might not want to do it that way

460 [Personal Choice].

461 MEMO [Integrated into the role of midwife= Combined, adopted into, merged

462 with, role expansion. GP's Surgery= General Practitioners surgery, a

463 community based doctors surgery, and example of primary health care. Talking

464 to them= discussing care with patients, telling someone something, addressing

465 somebody directly, communicating through speech. I might not want to do it

466 that way= disagreement, uncertainty over method, room for personal choice,

467 imposing a method.]

468 *Do you think that might affect your own thought processes to a degree?*   Automation

469 Yes, I think so [Confirmation]. Because you are constantly thinking, "right the   Reduced Control

470 next step is this and the next step is this" [Automation], and err… at one

471 surgery the computer won't let you make a further appointment for the patient

472 until you have gone through everything [Reduced Control]. So.

473 MEMO [Because you are constantly thinking, "right the next step is this and

474 the next step is this"= ordered thought processes, doing it by numbers,

475 breaking down a task or problem into smaller chunks, automatic sequencing

476   e.g. a.b.c.d.e.f. Been led. The computer won't let you make a further

477   appointment until you have gone through everything= reduced control, quality

478   control, restriction.]

479   *So that affects your clinical judgement?*

480   It, yes, it just affects the way…I think it effects the way you treat the people

481   that you are caring for because you always do everything in the same order

482   [Impersonal Care], because that's the way it's telling you to do it [Computer

483   Controlled].

484   MEMO [you always do everything in the same order= not modified to the

485   specific person been treated, impersonal to the individuals been cared for,

486   automated. Because that's the way it's telling you to do it= inflexible,

487   computer controlled, out of my hands, non disputable, opinionated.]

488   *Would you, if it wasn't for the computer system... If you took the computer*

489   *system out would always do everything that is said on that specific system?*

490   Usually yes [Confirmation]. Because there are certain essential things

491   [Essential Care Elements], but maybe not in that order, maybe …maybe it

492   would be a little more patient led [Patient Directed] in terms of talking to them

493   [Patient Communication] and just… everything would get done, just in a

494   different way probably, in an around about way.

495   MEMO [Essential things= items which must be adhered to, things which are

496   not to be without. Patient led= directed by the needs of the specific patient, led

497   by the needs of the patient group, the individual patient guides the practitioner.

498   *Ok. Does it ever…in terms of ordering it… I think there's an element of clinical*

499   *judgement in how that's done, but also an element of some basic human*

500   *common sense really isn't it. The human choices that we make. Do the systems*

501   *that you use ever affect those choices that you make, either clinical or human,*

502   *in any other way?*

503   Umm…(long pause)…umm I'm not sure, I need a little more guidance on

504   where your heading with this.

505   *Well we'll come back to that one, we'll come back to that one. Ok. So, to*

506   *reiterate; we have looked at how computers are essential to your job. Could*

507   *you do your job as well with out them?*

508   Yeah. [Confirmation]

509   *You could?*

510   Yeah, yeah. [Confirmation]

511   *And if you say you could do your job as well without them, you've mentioned*

512   *you prefer to do it with computers, what is it about the computer system that*

513   *makes you think – well this is better than...*   Ease Of Access

514   Particularly chasing up blood results, just ease of access [Ease of Access in

515   vivo]. You know the computer makes it so easy to access the information you

516   need [Ease of access]… umm… without making a telephone call or without

517   personally chasing up blood results and that kind of thing, so definitely in

518   terms of results and results reporting, ease of access [Ease of access].

519   MEMO [Above paragraph= refers to chasing up blood results on a computer,

520   tense of sentence indicates that blood results are not reported by an automated

521   system, that the midwife must go hunting for the relevant information.

522   Reference is made to making a call…this probably relates to an internal phone

523   call to pathology, but could refer to making an external phone call or making a

524   personal visit. Indicates a process of chasing, this could mean hunting results in

525   the patients notes or through making numerous calls or visits, the intonation is

526   such that the reader gains a sense of extension to what other wise should be a

527   straight forward process. Difficulty in deciding whether ease of access is the

528   category code term or whether this always relates to a computer system???]

529   *Ok. How do you feel about the systems that you use?*

530   I think they need…

531   *Generically*

532   Oh. They are mostly straightforward, easy to use.[Easy To Use System]

533   *Mostly straightforward. Now I just interrupted you. You were about to say*

534   *"You think they..." (Pause) … Sorry I cut in just as you were about to give an*

535   *answer so I will restate the question again – how do you feel about the systems*

536   *you use?*

537   I think they need updating. [Develop]

538   *Right… in what way?*

539   Umm… a lot of unnecessary information is requested by the ones we use in

540   midwifery in particularly [Redundancy], and there the only experience that I

541   have.

Miss read cues from participant, I thought she was having difficulty understanding the question and cut her off. Must learn to shut up a little and take some risks.

542   MEMO [Sentence implies a waste of effort or energy, the term unnecessary

543   implies a dispute over what information is deemed appropriate to the user,

544   unnecessary to who? The patient, the midwife or the administrator?]

545   *Yeah sure. Do you find them easy to use?*

546   Yeah. [Confirmation]

547   *Yes, good. Do you think that computers within your own job, and perhaps*

548   *within the perception of some of your colleagues, have become accepted as a*

549   *norm?*

550   Yeah… yes in, particularly in terms of registering babies [Computer Input],

551   now means that any of my colleagues who previously didn't like using the

552   computer [Computer Dislike] would ask another colleague to use the computer

553   to put the details in for them [Computer Avoidance], now they have to do that

554   for themselves [Policy Enforcement]. So it's almost been made part of, you

555   know, their role to use them and, you know, know how to use them [Role

556   Expansion]…whether they want to or not or whether they are comfortable with

557   it or not [Policy Enforcement].

558   MEMO [Colleagues who previously didn't like using the computer=

559   previously refers to as in before, what happened before now does not happen

560   any longer, didn't like refers to past rejection or disapproval, left with a sense

561   of dislike. Would ask another colleague to use the computer= avoidance,

562   passing the buck to someone else, increasing the workload of others. Does this

563   sentence carry with it a sense of reproach for those who do like to use the

564   system? Now they have to do it that for themselves= have to indicates an

565   enforcement of some kind, a threat of action if they don't do it, ???reproach.]

566   *Ok. So have you ever felt that communication is reduced in any way due to the*

567   *use of the computer systems?*

568   Yes. Going back to the GP surgery [Community Setting], just my experiences

569   of doing that… [Work Experience]

570   *So the communication there would be between?*

571   Between myself and the patient. [Patient Communication]

572   *Ok, in other circumstances away from the GP surgery, perhaps in the hospital*

573   *is communication affected in any way?*

574   Umm…communication between?

575 *Between... it could be between yourself and your peers, or your self and your*

576 *managers or your self patients...yourself and other departments...anything...*

577 Only, I mean between ourselves and the patients in the time it takes to put

578 those details in [Patient Communication]. Definitely communication is affected

579 [Confirmation] because… if terminals were provided in every room that there

580 was a patient in you would be able to input those details and spend time with

581 the patient [Computer Interference], but that just isn't going to happen

582 [Finality].

583 MEMO [if terminals were provided in every room that there was a patient in

584 you would be able to input those details and spend time with the patient=

585 indicates a sense of expansion, of increasing the penetration of computer

586 systems into the clinical arena, but also a sense of frustration, of painting an

587 ideal rather than a realistic solution, apparent contradiction of spending time on

588 a terminal in the room with the patient and spending time with the patient.

589 Contradiction exemplified earlier in reference to dehumanisation in community

590 settings. But that just isn't going to happen= indicates a pessimistic finality, it

591 is saying no, but in a unknown context – why is this not going to happen?]

592 *And you mentioned that there is duplication of information with your writing in*

593 *the notes as well, do you tend to write the notes in the room with the patient*

594 *or...*

595 No, you tend to do it before you put all the details into the computer.

596 [Prioritisation]

597 *So potentially you are doubling the time that you are away from the patient?*

598 Yes.[Confirmation]

599 *Ok and that actually takes me on quite nicely to the next question which is:*

600 *Have computers ever distanced you from your patients?*

601 In that way, definitely .[Distancing]

602 *Is there any other way that it has distanced you do you feel?*

603 Again, going back to the GP's surgery, you feel that it is a three way process

604 [Computer Interference] and you've got yourself, the screen and the patient

605 umm…

606 *So would you compare it to having an interpreter? Is that a fair comparison?*

607 Not so much an interpreter, but almost a sort of little electronic assistant who's

608 sort of saying, "Now your going to this, now your going to do this" [Computer

609 Guidance].

610 *Have the systems you use affected your ability to provide the care that you*

611 *think is required to your patients? Now this isn't intended as a judgmental*

612 *question.*

613 Err… again, in terms of time [Care Interference]… and… did you say

614 affected?

615 *Yes, so either resulted in a different result or has just changed in some*

616 *way…the care, … if you feel that you believe that this level of care, or*

617 *attention, is needed for this particular patient, has it in any way changed, or*

618 *altered, the care that you were able to give?*

619 (Long Pause) Umm… I am not sure, although I'm sure that in about an hour

620 I'll think of some instances…(Laughs).. but of the top of my head I'm not sure,

621 it probably has even if I am not quite aware of it [Uncertainty]. Particularly

622 when using monitoring systems in terms of [Covert IS], I can't think what it's

623 called the great big machine that does everything, blood pressures, CVP…

624 *Dynamap?*

625 No bigger than that. The great big computer screen…

626 *Oh, the Marquette?*

627 That's it. You know, setting it up. Making sure it's running properly. Resetting

628 the controls, resetting, you know, timings of it, maybe umm… [Prioritisation]

629 Concentrating on that can take away your attention from what the actual patient

630 is saying [Patient Communication] or what's going on in the room at the time

631 [Environmental Factors]. Those kind of things.

632 *What5 you've just said to me makes me think of prioritisation. Does the*

633 *machine take the priority?*

634 It depends on how critical the case is [Label]. And that varies from person to

635 person; you never get two who are the same [Uniqueness]. But in a way

636 [Mechanical Prioritisation], especially in recovery care, a lot of patients have

637 had spinals so they are fully awake and conscious when they get into the

638 recovery room and they do have a lot of questions. They are asking questions;

639 they want to spend time with their baby, and your trying to set up the machine

640 to record their obs. [Mechanical Prioritisation, Computer Interference] every

641 five minutes. So then it does affect the care that you are giving.

642 MEMO [But in a way= a confirmation within a specific context, taken out of

643 this context and the confirmation is removed. Recovery Care= Immediate post

644 operative care, recovery from anaesthetic. Spinals= spinal anaesthesia.]

645 *So when you said critical, what do you mean by it?*

646 Umm... the more high-risk cases [Label, At Risk]. People who've, you know,   At Risk

647 have had a massive haemorrhage those are the kind of things, when we tend to

648 use that machine more often.[Computer System Use] I mean the Dynamap is   Computer System Use

649 not so much of a problem, because we use it all the time and it's very easy to

650 operate, whereas the larger machine we use less often… I use less often… and

651 so it takes longer to remember how it's used. [Usability]   Usability

652 MEMO [High risk cases= those in danger of dying, involving an above average

653 risk to the patient. Second sentence= refers to problem and qualifies statement

654 with a statement in regard to ease of use, could mean a belief in the technology,

655 a sense of trust. Then refers to Marquette system and implies that this is a

656 problem of the kind referred to previously. Issues connected to usability.]

657 *That's a fair point. Do the computer systems you use encourage the labelling of*

658 *patients? (Long pause) Now would you like me to expand on that?*

659 Yes please.

660 *Ok, I expected to have to expand on this because I had this debate with my wife*

661 *this morning (laughs). I think that there is a recognised danger within health*

662 *care that we tend to label our patients as disease types, almost, so it would be*

663 *the "multi in bed three" or the "pre eclamptic in bed four" etc. And obviously*

664 *with inputting a lot of data into the computers and I am wondering whether the*

665 *use of the computer encourages that process.*

666 Err… probably the more equipment that you are using suggests that, that

667 patient is more of a high risk, so then yes you are labelling the   Labelling Process

668 patients.[Labelling Process]

669 *Ok, could you expand on that? You say in terms of the equipment your using,*

670 *what do you mean by that?*

671 If you have umm… If you have a patient who is, again going back to again a

672 massive haemorrhage or pre eclampsia, or something like that, you have a great

673 deal of monitoring equipment which effectively comes back to having some   Patient Based Equipment

151

674 kind of computer in somewhere, so the more equipment you are using [Patient	
675 Based Equipment], such as infusion pumps, which again must work on some	
676 kind of computerised technology equipment or whatever…	
677 *Absolutely…*	
678 They tend to become labelled in that way. In terms of high risk or as you say	
679 pre eclampsia, [Labelling Process]	
680 *Ok, so do you think the patient is lost behind the equipment?*	
681 Yes. [Patient Alienation]	Patient Alienation
682 *Do you always feel in control of the systems you use?*	
683 (Long pause) Yeesss, because we don't have, we don't really have really high	
684 tech so yes most of the time. [Control Issue]	Control Issue
685 MEMO [Sentence= Control in context of system use or equipment use. Could	
686 have explored further… What makes you feel in control of the system? What	
687 are the limits of your control?]	
688 *What happens when the systems break? So for example, do you use a password*	
689 *system currently on your computers to…*	
690 Oh yes.	Could have challenged with her example on communication.
691 *Have you ever experienced a problem where you haven't been able to log in*	
692 *with your password?*	
693 Yes, but there are support systems [Support Systems in vivo] in place which	Support Systems.
694 most of the time will sort that out.	
695 MEMO [Support Systems= Systems that support the user in the use of a system	
696 or a number of systems, a series of processes that provide guidance to the user	
697 of a system. In Place= in-situ, existing, already there, there if needed, fitted	
698 within a whole. Most of the Time= not always, high probability, are nearly	
699 always in use.]	
700 *Do you ever have any doubts of the morality or the ethics of some of the*	
701 *systems you use? (Long Pause) Of the impact that the systems?*	
702 No, I think it's a good thing [Approval]. I don't think they are immoral.	
703 MEMO [It's= generic to all IS or specific to what type of IS? Good thing=	
704 approval, acceptance, beneficence, to the benefit of (who?)]	
705 *You say a good thing, whats…what do you mean by that?*	Approval
706 Storing a lot of patient information on a computer [Computer Storage] will	
707 eventually lead to written case notes [Hand Written Notes] been filed, stored,	

708 [Archiving] something happening to them so that patients who have a lot of

709 hospital admissions don't have five or six volumes of notes because all their

710 information should be made available just by calling that patients records up

711 [Ease of access], but I think we are a long way off that happening [Disbelief].

712 But I don't think… I don't see that as being a problem if that were to happen

713 [Optimism], if eventually there were no written case notes, I don't view that   Optimism

714 that would be a problem.

715 MEMO [been filed, stored= put on a shelf for reference if required, put away

716 somewhere, placed onto a computer storage medium, microfiche. I think we

717 are along way off that happening= negative impression of current status or

718 planned progress, hints at political influence or disbelief in system

719 development. I don't see that as a problem if that were to happen= if written

720 records were to be ditched in preference for computer based records this would

721 be ok with me.]

722 *Has the way you worked changed by the introduction of computers?*

723 No, but then I have only been a midwife for a relatively short period of time

724 [Experience] umm… but I am aware of other colleagues who have noticed a

725 big change.

726 *From your own perspective?*   Experience
                                                                                          Limitation

727 It's always been, so as I say I haven't known anything different about it

728 [Experience Limitation].

729 *Ok. Now I've got a statement here, and umm... what I'm not intending to do is*

730 *put words into your mouth with this statement, but what I want to look at is*

731 *whether you agree with it or not, and that's "Computers are damaging the art*

732 *of midwifery". Would you agree or would you disagree and why?*

733 I would lean towards disagree umm… again for the reasons I have previously

734 stated. In terms of ease of access to records [Ease Of Access], results, those

735 kind of things. If you can call those up without having to spend time looking   Expected Benefit

736 through case notes, then [Ease Of Access] if … in theory you should have

737 more time to spend [Expected Benefit, Efficency] with your patient…   Efficency

738 umm…and as to the art of midwifery part, again it comes down to whether it's

739 an art or a science doesn't it ? (Laughs)

740 MEMO [In theory you should have more time= efficiency, doing more with

741 less, saving of time to use elsewhere, a benefit, something which should

153

742 happen but might not, an expectation of future events, an expectation of a
743 superior. It comes down to whether it's an art or a science doesn't it?= the
744 argument rests upon a notion under dispute, it depends on what you personally
745 believe.]
746 *Which is a debate which is beyond (laughs) …*
747 There is no good answer to that so…
748 *Ok, that's fine. Has your performance in the job changed as a consequence of*
749 *computerised systems?*
750 No, but only again because I have only been a midwife for quite a short period
751 of time. [Experience Limitation]
752 *You mentioned there that as systems develop you can access the patient*
753 *information, results etc etc in a short period of time, now my interpretation of*
754 *that – what you were talking about – relates to the word efficiency, would you*
755 *say that was fair?*
756 Yes. It's lots more efficient. [Efficiency]
757 *Therefore, where you say you have worked in different hospitals and you*
758 *implied, or once again my interpretation of what you were saying, is that you*
759 *have used different levels of systems in different hospitals...*
760 Yes.
761 *Where you have worked with different computer systems indifferent hospitals,*
762 *compared to those your working with here, does that affect the level of*
763 *efficiency?*

Positive Attitude

764 Here I think it is not too bad [Positive Attitude]. You can access information
765 that you need quite easily [Ease of Access], but again going back to audit
766 [Audit], figures for audit aren't available for the system that is currently in use

Developmental
Issue

767 and that is something, you know, does need addressing [Developmental Issue],
768 because there may be 10 other people who are given the role of finding figures

Limited
Deliverables

769 for audit and they are having to just go through sets of case notes and it just
770 seems time wasting [Inefficient], time consuming, when information could be
771 put in – and is put in [Computer Input], but there just doesn't seem to be any

Training
Limitation

772 way that we are shown as midwives of actually getting that information back
773 [Limited Deliverables]. So you put all the information in, but nobody has come

System Limitation

774 along and said that this is how you get these figures from the computer

775   [Training Limitation, System Limitation], which would save a lot of people a

776   lot of time [Efficiency].

777   MEMO [not too bad= on the whole a positive, something that is not perfect but

778   is generally better than others experienced, a positive attitude. Does need

779   addressing= a developmental need, needs to be given direction, an urgent

780   problem in need of a solution. Getting that information back= outputting of

781   information, but within the context of the paragraph it is not just the outputting

782   of data entered, but the accessing of processed data, limiting the deliverables of

783   the system, a lot of effort for not much out. Nobody has come along and said

784   this is how you get…from the computer= a limitation of knowledge, a

785   frustration at the training provided, a limitation of the wider system.]

786   *Have you ever thought that your professional judgement is been denied*

787   *through the use of computers?*

788   No, because the computers aren't telling us what to do [Practitioner

789   Independence], we are not using any kind of pathway system, or a sort of flow

790   chart where it's got a "if yes this" or a "if no that" [Decision Support System].

791   So err… no.

792   MEMO [Aren't telling us what to do= non directional, non enforcing, not

793   voicing an opinion, not using judgement, not thinking in the same capacity.

794   Pathway system= Integrated care pathway system, a decision support tool for

795   practitioners to use in clinical environments]

796   *Ok. You mentioned earlier on the example of the computer in the GP's surgery*

797   *has a set order – would you class that as an alteration to clinical judgement?*

798   Not as such [Ambiguity], but I do think the computer is telling you what to

799   think of next and altering your thought processes in that way [Computer

800   Guidance]. In saying that, "Now your going to think about doing this and now

801   your going to look at that, now your going to look at that".

802   MEMO [Not as such= ambiguity, not in the way that you mean, not in your

803   interpretation of what is been said, perhaps in one interpretation of clinical

804   judgement, but not in another, not in the literal sense.]

805   *Ok, so it's prompting rather than altering?*

806   Yeah. [Computer Guidance]

807   *Do any of the systems you use limit the degree to which your patients may*

808   *voice an opinion?*

809 (Long Pause) No…but, I think they – again – if it's patients opinion on their

810 own care then the machines themselves are set up with parameters which

811 perhaps do categorise the patient into this that or whatever [Labelling Process].

812 Umm…but they don't limit the ability of the patient to voice an opinion.

813 MEMO [Paragraph= this conjures the impression that the patients opinion of

814 their care needs may differ to those implied by a label given to them through

815 the use of technology e.g. critical or at risk. Does the use of technology alter

816 the prioritisation of care of the patient, or would the care priorities remain the

817 same without the technology?]

818 *So what you've said is really quite interesting, you've said that computers have*

819 *there own parameters that are set and that categorises the patients – if the*

820 *right term that you used – how does it categorise patients?*

Participant confirms by nodding head.

821 If a umm… the machines we use for foetal monitoring – which again have

822 some element of microchip in them somewhere [Covert IS] – will show us

823 whether a baby in-utero is happy or supposedly not happy, and we base a lot of

824 decisions on that [Decision Support]. Umm… sorry could we go back to the

825 question again? I'm heading off at a tangent.

826 *Sure. When we were looking at the idea of voicing an opinion, when your*

827 *answer came we were talking about computer systems categorising patients…*

828 Alright. Ok…

829 *I was wondering how computer systems categorise patients?*

830 Alright. Well going back – I knew that was where I has heading (laughs) …

831 *It's alright…*

832 It's just… going back to foetal monitoring if the information given out by that

833 system would say this baby is not happy we would then categorise that patient

834 [Labelling process, Decision Support] into one that needs further monitoring,

835 sometimes we are intensive [Intensive in vivo] and that can lead to some quite

836 invasive procedures.

837 MEMO [Intensive= a lot going on, providing a lot of care, a barrage with out a

838 break or let up in intensity, a sustained and high level of intensity, taking great

839 care over]

840 *Ok, so does the CTG tracing… I know in my own experience that certain ECG*

841 *monitors will actually give you an interpretation…*

842 Yes.[Decision Support]

843	*Does that happen with CTG monitors?*	
844	We do have one that does give an interpretation.[Decision Support Device]	
845	*And do people use that interpretation?*	
846	Yes. They use that religiously [Technological Reliance]. Umm…but that's	Technological
847	quite a new thing over the last 12 months.	Reliance
848	MEMO [religiously= all the time, with devout inspiration, without faltering, as	
849	if said by god or his agent. Complete trust and reliance.]	
850	*Do you feel that in your own experience of using perhaps that piece of*	
851	*equipment that the CTG tracing that is displayed is always reflected positively*	
852	*or accurately by the interpretation…*	
853	It has been as far as I am aware. [Experience Limitation] I have never come	
854	across one that hasn't fitted in to what I thought about it, but I also have never	
855	had one that has had a negative interpretation…[Experience Limitation]	Computer Based
856	*Right.*	Interpretation
857	… or an interpretation that may lead to further treatment or monitoring.	
858	[Experience Limitation]	
859	*So how do you use the computers interpretation of what's happening within*	Trust in Computer
860	*your own clinical judgement choices?*	
861	Err… the computers interpretation [Computer Based Interpretation], if that	
862	were to suggest everything was Ok [Labelling Process], then everybody, from	
863	consultant down to the most junior midwife would go along with that	
864	[Acceptance, Decision Support], and if that was reassuring [Trust In Computer]	
865	then maybe a plan would be made to actually monitor that baby for perhaps	
866	another week or so[Decision support].	
867	MEMO [Computers Interpretation= an interpretation made by the computer	
868	with out the assistance of a third party, an analysis at a level only possible by a	
869	computer, a scientific judgement on what a complex pattern means. If that	All this preamble
870	was= the uncontested acceptance of the technologies interpretation, evidence of	served to do was put the participant
871	trust is present, unchallenged.]	on her guard.
872	*If you had a patient who had a CTG monitoring with out an interpreter…*	
873	Which the majority of them are with.	
874	*…would you pay…I know that this question could be quite sensitive and*	Trust In Self
875	*perhaps I should again raise the confidentiality of the whole study as a*	
876	*consequence of it – would you honestly say that you would spend as much time*	

877 *interpreting the tracing on the one that gives you the interpretation finding as*

878 *you do the one which doesn't?*

879 No. I think you would probably recognise something that is grossly abnormal

880 [Trust In Self], but probably if it looked to be satisfactory at a glance you

881 would go along with it's interpretation of it [Trust In Computer].

882 MEMO [grossly abnormal= massively abnormal, an extreme example, a heavy

883 abnormality]

884 *So you would spend more time interpreting the one which...*

885 Had no interpretation with it.

886 *Ok, that's smashing. The reason I was a bit cagey there was I know that some*

887 *people may think – what's he trying to drive at? It is just an open question from*

888 *my own experience of intensive care where we had these interpreting...*

889 I think you would use your own judgement [Trust In Self], and if at glance   Cursory

890 [Cursory Examination] it looked satisfactory you would think, "yes we'll go   Examination

891 along with it". If it looked really abnormal I don't think you can

892 [Accountability]. At the end of day it is just a piece of equipment.   Accountability

893 MEMO [Second use of the word you to describe first person. Highlights

894 superstition in that the event has not occurred and any action represents what

895 she believes she would do – but is not sure. Use of the word "you" to mean "I"

896 would indicate a confidence in own abilities to spot an obvious abnormality.

897 The context also portrays a degree of doubt that that would ever happen.]

898 *Have computers in your work limited your ability to make choices?*

899 Only in that way that… in that a machine that gives an interpreting system

900 then, would then lead you on to your next choice [Limitation of choice].

901 Umm… maybe in use of blood pressure machine [Covert IS] – dynamaps – if

902 the information that gave us – the information that would give you would then

903 lead you to make your next choice as to what you are going to do next. So

904 (pause), but then you would probably make those choices anyway if you were

905 recording blood pressure manually.

906 MEMO [Is there an apparent mix of interpretations here: the question relates to

907 the personal limitation of choice through the use of computers, the participants

908 response is that an application of a computer leads her to make a decision – but

909 this is not a limited choice rather it represents the purpose behind the use of the

910 computer.]

911 *How about if you were using systems for inputting patient information, so*

912 *obviously umm… the patient management systems that you use… do those*

913 *affect your ability to make choices in any way?*

914 No. It's very much admission and discharging really. It doesn't give you any

915 guidance as to what to do or where to go it just wants just dates and times most

916 of the time [Administration System].

917 *Excellent. Well we've actually gone through my whole list of questions, so*

918 *really this is an opportunity for you to ask any questions that you might have at*

919 *all. About any of the things we have gone through or anything else that you*

920 *might want to …*

921 Umm… just I do think in the back of my mind think there must be far more

922 information systems that we actually use within a hospital environment and I

923 just can't think of them.[Covert IS]

924 *The… Basically the definition I provided you with there… if we go back to it…*

925 *the effective analysis, design, delivery and use of information for organisations*

926 *and society using information technology, basically to me my interpretation of*

927 *that is anything that uses a microprocessor to a degree is an information*

928 *system…*

929 Yes. Yeah, that did sort of occur to me as time went on…

930 *However I thought it was interesting, and perhaps I have led you more than a*

931 *little bit, looking at monitoring systems. It's easy to interpret information*

932 *systems into just the computer, the computer has got a monitor a box and a*

933 *keyboard and perhaps a mouse on the side…*

934 Yeah…

935 *And within health care certainly information systems are certainly a little bit*

936 *more prominent than that, for example community CTG monitors have a*

937 *modem for communicating that information across…*

938 Yeah…

939 *…and I think that sometimes that… well it would be interesting to hear your*

940 *opinion of this so let me phrase it as a question… do you think that sometimes*

941 *there's a way that we fail to see these pieces of technology as systems*

942 Yes…[Covert IS]

943 *and that we internalise them in such a way…*

Perhaps a question for other interviews is presented here. Each participant is given a list of systems and asked which are IS?

159

944   …it's just part of our everyday work [Norms]. Yes, in that way, yes. Because it

945   is only as we started talking about systems – initially I was just thinking of

946   computers – and even a CTG machine.

947   *And that prompts just one more question. Do you feel that we humanise those*

948   *systems in anyway? Do you ever put human qualities on to them?*

949   Err…if we use our own clinical judgement to interpret the information their

950   giving us then yes [Anthropomorphism]. But, if they have got some kind of

951   auto analysis then maybe we are just acting on what it is telling us to do and

952   then maybe anyone can act upon the information they are giving out

953   [Anthropomorphism, Decision Support Systems]. So we don't need to go

954   through all that training to actually know what's normal and what's not normal

955   because it could tell anybody. It could tell a man on the street, you know that

956   this going to do next. So you wouldn't like to think of them going that far

957   [System Limitation]. I wouldn't like to think about every machine, or every

958   piece of equipment we use saying do this do that because it takes away the

959   need for clinical judgment [Decision Support]. But, the ones where we just get

960   the information from and act upon it… (long pause).

961   *Excellent, well I've got no more questions for you and if you've got no more for*

962   *me…*

963   No I think that's it.

964   *Then we will call a halt to the interview – which is wonderful so thank you very*

965   *very much indeed…*

966   It's all right.

967   *And I will turn this dreadful tape recorder off now.*

Appendix 10: Data Categories

Category	Subcategory	Analysis Code
Systems	Type	Clinical computerisation
		Clinical information system
		Computerised communication
		Computerisation at work
		Paper based systems
		Manual systems (Non Paper)
		Layers of system
		Scope of information system
	Purpose	Automation
		Clinical computerisation
		Computerised communication
		Efficiency
		Expectations of computerised information systems
		Fitness for purpose
		Information systems = communication systems
		Mechanisation
		Monitoring Practice
	Consequences	Links to following categories:
		- Limitations - Perceptions - Expressions - Motivation - Communication - Control Mechanisms
		Computerisation at work
		Finding alternatives
		Contingency planning
		System failure
		System development
		Clinical computerisation
		Automation
		Mechanisation
		Layers of system

Category	Subcategory	Analysis Code
Limitations (Limits)	Physical limitations	Access to resources
		Automation
		Availability of resources
		Distancing
		Duplication
		Paper based systems
		Security
		Skills
		Usability
		Increasing workload
	Social limitations	Alienation
		Automation
		Clarity of information
		Conflict of opinions
		Culture of work
		Freedom of expression
		Mechanisation
		Morality
		Reducing communication
		Distancing
		Team work
		Autonomy
		Dependence
		Layers of system
		Information systems = communication systems
	Legal limitations	Legal limitations
		Limits of use
		Morality
		Risk
		Security
		Informed consent
		Skills
		Confidentiality

Category	Subcategory	Analysis Code
Limitations continued…	Psychological limitations	Alienation
		Automation
		Awareness of limitations
		Deskilling
		Familiarity
		Fear
		Interpretation
		Morality
		Perception
		Distancing
		Resistance to change
		Autonomy
	Training limitations	Access to resources
		Availability of resources
		Awareness of limitations
		Deskilling
		Duplication
		Familiarity
		Legal limitations
		Limits of use
		Prioritisation
		Resistance to change
		Risk
		Scope of IS
		Skills
		Training issues
		Usability
		Mastery

Category	Subcategory	Analysis Code
Limitations continued…	Limitations of time	Automation
		Awareness of limitations
		Clarity of information
		Contingency planning
		Duplication
		Fitness for purpose
		Freedom of expression
		Increasing workload
		Informed consent
		Prioritisation
		Reducing communication
		Short term measures
		System failure
		Training issues
		Usability
		Mastery

Category	Subcategory	Analysis Code
Motivations (Motivate)	Overt incentives	Accuracy
		Clarity of information
		Confidentiality
		Control
		Efficiency
		Taylorism
		Equality
		Evidencing
		Advocacy
		Risk
		Security
		Monitoring practice
		Influencing change
		Power
		Prioritisation
		Rationalising work load
		Clinical judgement
		Roles
	Rewards	Clarity of information
		Confidentiality
		Control
		Efficiency
		Equality
		Evidencing
		Familiarity
		Finding information
		Security
		Monitoring practice
		Holism
		Modernity
		Normalisation
		Power

Category	Subcategory	Analysis Code
Motivations continued…	Covert incentives	Conflict of interest
		Consumerism
		Culture of work
		Denial
		Delegation
		Expectations
		Fear
		Stress
		System Failure
		Limitations
		Increasing workload
		Morals
		Neutrality
		Normalisation
		Past experience
		Perception
		Power
		Proximity
		Reliance on technology

Category	Subcategory	Analysis Code
Expressions (Expression)	Of inevitability	Deskilling
		Devalued
		Despondency
		Fatalism
		Dehumanisation
	Of dissatisfaction	Annoyance
		Denial
		Depersonalisation
		Dehumanisation
		Intimidation
		Irritation
		Stress
		Dissatisfaction
		Frustration
		Loss
	Of effect	Alienation
		Control
		Efficiency
		Equality
		Familiarity
		Morale
		Power
		Self-confidence
		Trust
		Mastery

Category	Subcategory	Analysis Code
Expressions continued…	Of threat	Awe
		Denial
		Devalued
		Fear
		Nervousness
		Privacy
		Risk
		Security
		Stress
		Loss
		Uncertainty
		Intimidation
		Power

Category	Subcategory	Analysis Code
Communication (Comms)	Types	Automation
		Computerised communication
		Familiarity
		Freedom of expression
		Distributing information
	Systems of communication	Automation
		Computerised communication
		Information systems = communication systems
		Paper based systems
		Standards
		Delegation
	Purpose of communication	Accuracy
		Clarity of information
		Confidentiality
		Cues
		Delegation
		Finding information
		Freedom of expression
		Informed consent
		Interpretation
		Distributing information

Category	Subcategory	Analysis Code
Communication continued…	Barriers to communication	Automation
		Awareness of limitations
		Clarity of information
		Computerised communication
		Confidentiality
		Cues
		Finding information
		Formality
		Interpretation
		Limits of use
		Reducing communication
		Reliance on technology
		Self confidence
		Loss
		Proximity
		Distancing

Category	Subcategory	Analysis Code
Perception of dehumanisation (PoD)	Traits	Alienation
		Control
		Denial
		Depersonalisation
		Deskilling
		Devalued
		Intimidation
		Mechanisation
		Autonomy (Non)
	Uses	Alienation
		Automation
		Clinical information systems
		Computerised communication
		Control
		Influencing change
		Intimidation
		Labelling
		Mechanisation
	Disadvantages	Alienation
		Automation
		Clinical information systems
		Computerised communication (overload)
		Control
		Denial
		Deskilling
		Devalued
		Influencing change
		Intimidation
		Labelling
		Mechanisation
		Reliance on technology
		Automation
		Frustration
		Distancing

Category	Subcategory	Analysis Code
Perception of dehumanisation continued…	Advantages	Distancing
		Alienation
		Automation
		Clinical information systems
		Computerised communication
		Control
		Denial
		Equality
		Labelling
		Mechanisation
	Effects	Alienation
		Automation
		Control
		Denial
		Depersonalisation
		Devalued
		Equality (non)
		Intimidation
		Labelling
		Mechanisation
		Reliance on technology
		Frustration

Category	Subcategory	Analysis Code
Perceptions of information systems (PoIS)	Traits	Accuracy
		Automation
		Clarity of information
		Finding
		Information
		Efficiency
		Increasing workload
		Information systems = communication systems
		Distributing information
	Uses	Administration
		Automation
		Clarity of information
		Clinical information systems
		Computerised communication
		Control
		Databases
		Dehumanisation
		Distancing
		Distributing information
		Governance
		Influencing change
		Information systems = communication systems
		Processing
		Clinical computerisation
		Computers at work
		Monitoring practice

Category	Subcategory	Analysis Code
Perceptions of information systems continued…	Scope of information systems	Manual systems
		Paper based systems
		Computers at work
		Clinical computerisation
		Clinical information systems
		Systems development
		Layers of information system
		Expectations of computerised information systems
		Information systems = communication systems
		Scope of information systems
		Computerised communication
		Databases
	Advantages	Accuracy
		Automation
		Clarity of information
		Computerised communication
		Control
		Dehumanisation
		Distancing
		Evidencing
		Influencing change
		Power
		Usability
		Monitoring practice
		Efficiency

Category	Subcategory	Analysis Code
Perceptions of information systems continued…	Disadvantages	Administration
		Alienation
		Annoyance
		Awe
		Consumerism
		Control
		Dehumanisation
		Depersonalisation
		Deskilling
		Distancing
		Duplication
		Evidencing
		Fear
		Fitness for purpose
		Increasing workload
		Irritation
		Limits of use
		Power
		Redundancy
		Reliance on technology
		Risk
		Systems failure
		Usability
		Frustration
		Dependence

Category	Subcategory	Analysis Code
Perceptions of information systems continued…	Effects	Alienation
		Annoyance
		Anthropomorphism
		Automation
		Awe
		Dehumanisation
		Depersonalisation
		Deskilling
		Distancing
		Distributing information
		Duplication
		Efficiency
		Fear
		Humanisation
		Increasing workload
		Influencing change
		Irritation
		Normalsiation
		Prioritisation
		Reducing communication
		Redundancy
		Reliance on technology
		Dependence
		Frustration
		Uncertainty
		Self confidence

Category	Subcategory	Analysis Code
Control mechanisms (Control)	Physical mechanisms	Access to resources
		Availability of resources
		Mechanisation
		Reliance on technology
		Security
		Fear
		System development
	Implied mechanisms	Accountability
		Alienation
		Culture of work
		Autonomy
		Dependence
		Governance
		Intimidation
		Judgement
		Legal limitations
		Limits of use
		Normalisation
		Power
		Standards
		Security

Category	Subcategory	Analysis Code
Control mechanisms continued…	Implied tactics	Accountability
		Advocacy
		Alienation
		Contingency planning
		Dehumanisation
		Denial
		Depersonalisation
		Distancing
		Evidencing
		Autonomy
		Fear
		Intimidation
		Labelling
		Normalisation
		Prioritisation
		Rationalising workload
		Redundancy
		Standards
	Explicit tactics	Access to resources
		Accountability
		Administration
		Automation
		Clinical information systems
		Contingency planning
		Delegation
		Evidencing
		Governance
		Mechanisation
		Ownership of information
		Prioritisation
		Rationalising work load
		Reducing communication
		Redundancy
		Standards
		Taylorism

Appendix 11: Diagrammatic Results Of Axial Analysis

Figure 5: Structural Analysis Based On The Category "Systems".
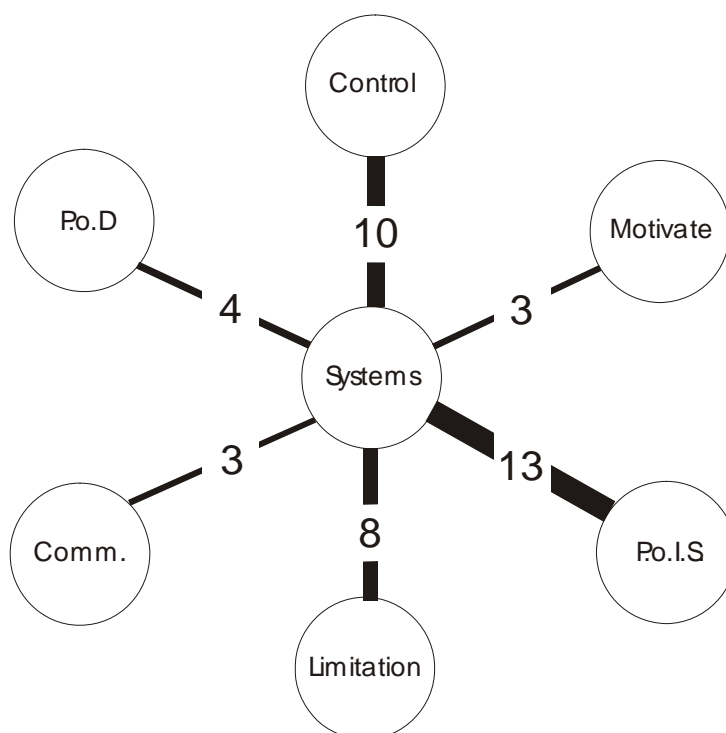
The category of *Systems* emerged as distinct from the category type *Perception Of Information Systems* (PoIS) in that reference was made to non-computer based systems and generic systems that used a mixture of computer and manual methods. It is interesting to note that relatively strong links are indicated to the categories *Control* and *Limitations*. This is very similar to the pattern found in the axial analysis of *PoIS* (see figure 5). It is subsequently possible to hypothesise that the use of a system imposes control and therefore limitations on users. This in turn raises questions relating to what causes a user to perceive dehumanisation; is it the control and limitations of a system of work or is it the information system per sae that leads to dehumanisation?

Figure 6: Structural Analysis Based On The Category "Perception Of Information Systems".
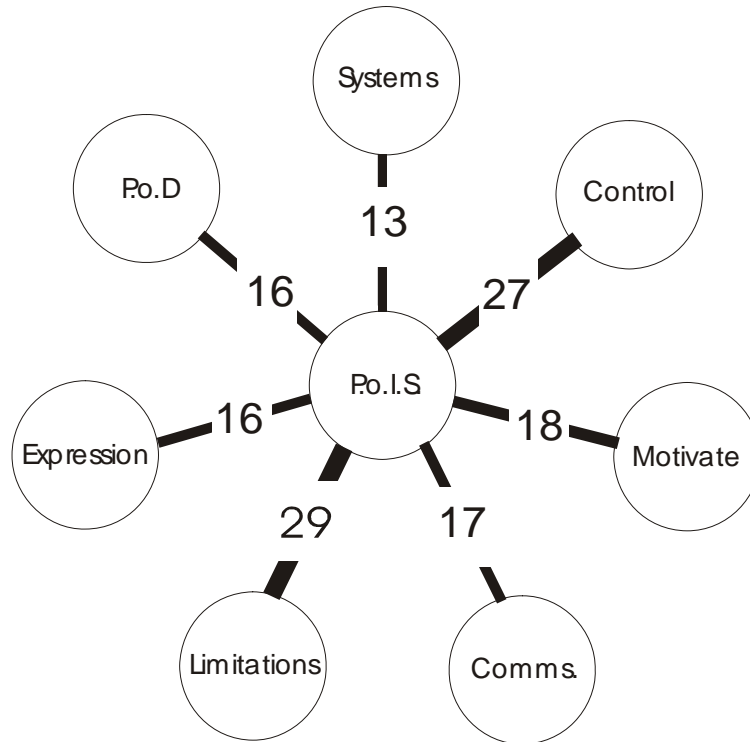

The most obvious finding when examining the structure and links of *PoIS* is high number of connections found to each data category type when compared to each of the other category diagrams. On the surface this could indicate a strong relationship to each, however given that each question used was based in the context of information systems it becomes obvious to see how a degree of bias infiltrates the results. This is a limitation of using a crude measure for relationship strength. However, if one examines the proportional differences between the linking groups it becomes evident that *Control* and *Limitations* are by far the most significant categories in relation to *PoIS* (*Control* = 27 and *Limitations* = 29). It can be argued that this is significant, and may be related to the nature of systems of work, although further research to explore the processes involved is required (see figure 4).

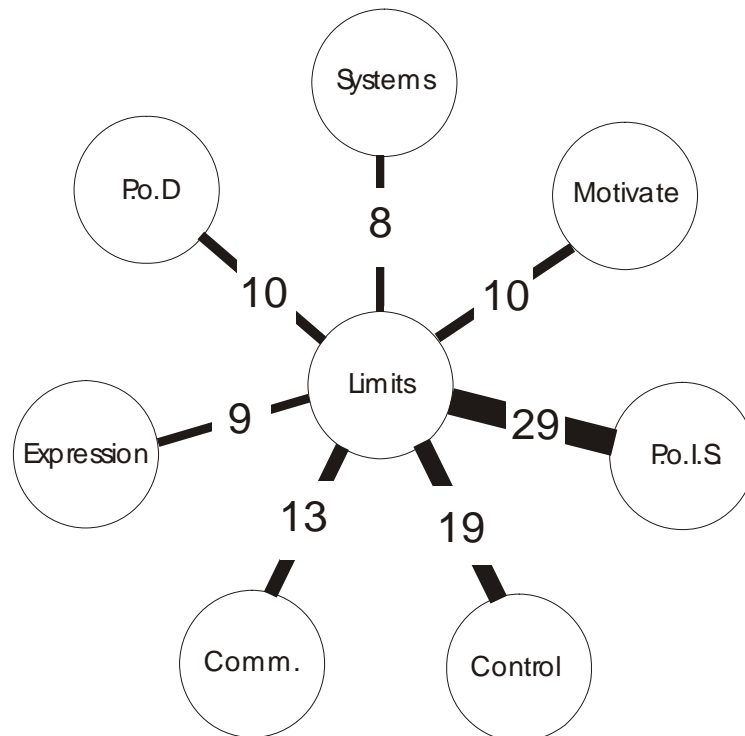*Figure 7: Structural Analysis Based On The Category "Perception Of Dehumanisation".*
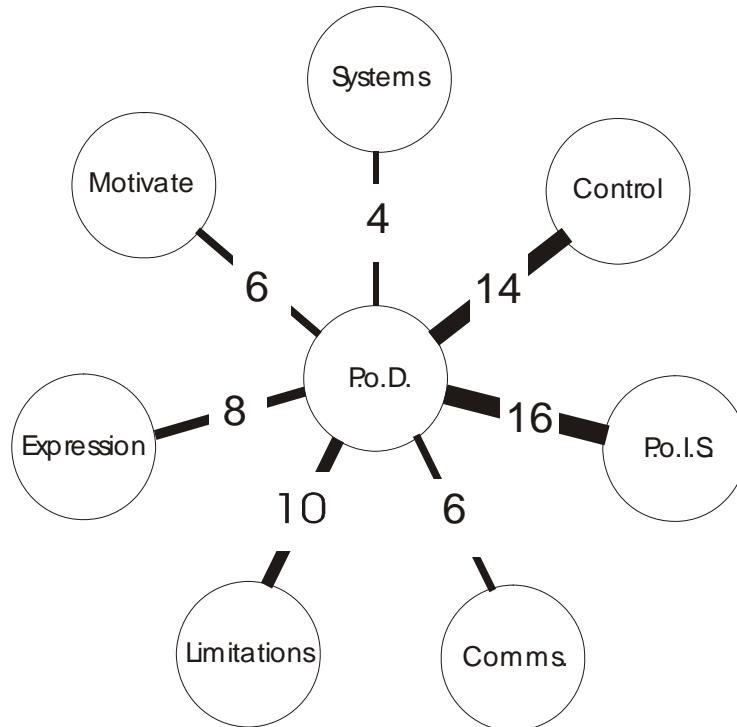
As discussed above (see figure 5) the strength of the link between the *PoD* and *PoIS* is likely to be biased by the questions used. Interestingly the proportional links found to the categories *Control* and *Limitations* are relatively strong adding some weight to the hypothesis that systems of work rather than IS per sae lead to the perception of dehumanisation. There is also a relatively strong link to *Expressions*, this is perhaps connected with the generally negative connotation participants had for dehumanisation. Finally, the fact that *PoD* connects at all to the category *Motivations* is interesting and worthy of further exploration; for example, are individuals motivated to use IS to dehumanise others as a method of managing emotional labour?

*Figure 8: Structural Analysis Based On The Category "Control Mechanisms".*
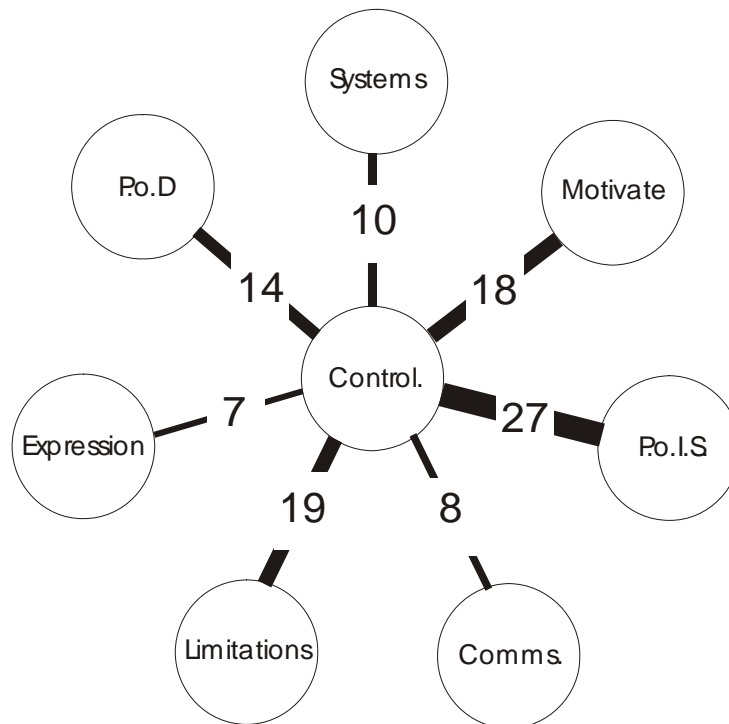
Given the nature of control is to apply a degree of authority, restraint or regulation over a given situation or circumstance it is perhaps unsurprising to find that there is a high proportional link with the data category *Limitations*. However, it is interesting to note that there is also a relatively strong link to the category *Motivation*. This is possibly connected to the cultural influence of an organisation, for example the need to provide adequate documentation and administration in order to promote efficiency within the work place. Once again this hypothesis is in need of testing and could have been explored further had the required resources been available. The proportionally strong link to the *PoIS* category is likely to be biased given the nature of the questions used.

*Figure 9: Structural Analysis Based On The Category "Limitations".*

It is interesting to note that with the exception of *PoIS* and *Control* there is very little proportional difference noted in the strength of links presented to other category types. As previously discussed the proportionally high link to *PoIS* is likely to be biased due to the questions used within the interviews themselves (see figure 5). Equally the link to *Control* is logical as argued above (see figure 7).

Figure 10: Structural Analysis Based On The Category "Communication"
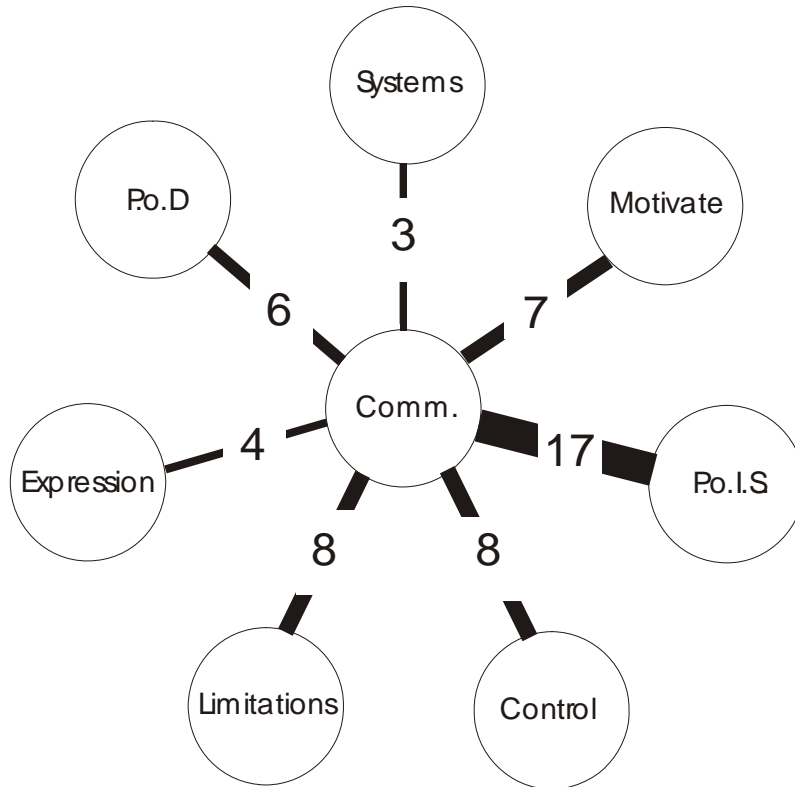

Although the strength of the link to *PoIS* is likely to be exaggerated it is possible to speculate a strong link between *PoIS* and *Communication* would be logical. This is based on the perception of numerous respondents perceiving IS as synonymous to communication systems. As for the category *Limitations* (figure 8) there is little proportional difference noted between any of the other category types. The link to PoD is interesting in that it highlights a perceived symptom of dehumanisation – reduced communication.

Figure 11: Structural Analysis Based On The Category "Motivation"
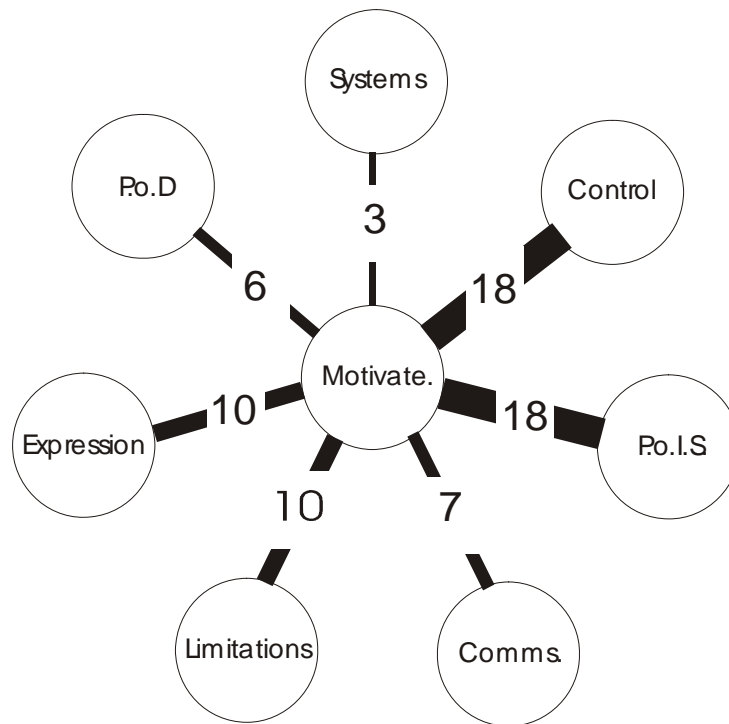
The proportionally strong link between Motivation and Control is again perhaps symbolic of the potential motivation of an organisation to impose control for the benefit of efficiency (see figure 7). Once again the link to PoIS is likely to be biased due to the context of the interview questions. The link between Motivations and PoD has already been discussed (see figure 6).

Figure 12: Structural Analysis Based On The Category "Expressions"
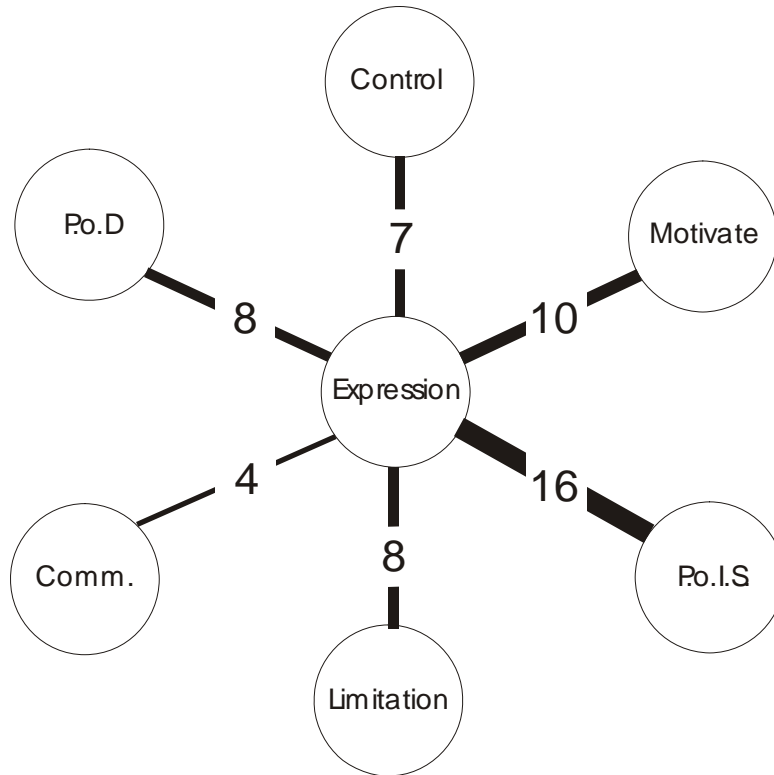
The connection between *Expressions* and *PoIS* is likely to be once more exaggerated as a consequence of bias within the interview questions. The failure to establish a link to the category *Systems* can probably be attributed to the small scale of the study and the primary focus on IS rather than systems of work per sae. Equally the proportionally small link to *Communication* could be similarly affected although this warrants further examination as communication was seen to be significant to the perception of dehumanisation.

Appendix 12: Equipment Lists

Two versions of the equipment list were used within 8 interviews. Changes were made to items of clinical equipment used within the respondent's speciality area; this was to ensure the respondent would be familiar with the clinical equipment listed. Respondents were typically asked to describe their own definition of IS and then using that definition to classify which items were to them information systems.

Desk Top Computer

Infusion Pump

Patient Management System

Vital Signs Monitoring System

Electronic Care Planning System

Syringe Pump (Syringe Driver)

ECG machine (Switched to CTG machine for midwives)

Pathology Results System

Appointments System

Ventilator