

26 THE ROLE OF GENDER IN USER RESISTANCE AND INFORMATION SYSTEMS FAILURE

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Abstract

Using the case study of a nursing information system, this paper demonstrates the applicability of a social shaping approach to software development for deconstructing the success/failure divide and providing a means to understand how failures occur within their social and organizational context. In contrast to many previous approaches to failure, we suspend disbelief concerning the inherent superiority of the dominant artifacts and challenge the “survival of the fittest” theory of production favored by technological determinists. Hence in this paper, we view success and failure as social constructions, the result of hindsight, and the victory of one version of the technology over contending accounts.

Two areas considered to be of central relevance to the case study are gender and nursing practice, which are posited as mutually defining. Presenting an argument for the substantial influence of gender on computer usage in organizations, and associating this to a gender perspective on nursing, the scene is set for the empirical research into how these complex and sometimes contradictory issues

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are played out in the local setting. In so doing, the dwindling struggle by sponsors of the case study to persuade the users to make the technology a success is witnessed. The role of gender in furnishing many nurses with a hostility to computers and the belief in the incompatibility of their roles as care givers and computer users are examined. Also attested is their ability to resist convincingly the implementation of undesirable technologies.

1. Introduction

In their influential account of the history of the development and implementation of computer-based systems, Friedman and Cornford (1989) formulate the drive to innovate as a reaction to commonly occurring failures of information systems development (ISD) in organizations. In this respect then, failure has played a pivotal role in shaping the dynamics of information and communication technologies (ICTs). It would seem that when we peer toward the horizon of information systems development, failures loom large (Flowers 1996; Lucas 1984). Consequently, the volume of work by academics and practitioners dealing with this phenomenon from the perspective of the relationship between organizational change and information technology has recently increased and includes, among others, Drummond (1996), Flowers (1996), Fortune and Peters (1995), Latour (1993), Sauer (1993), and Vaughan (1996). In addition, several writers have applied such a perspective to IT failures in the health service (Benyon-Davis 1995; Bloomfield 1995; Newman and Wastell 1996; Robinson 1994).

Although there is no “unified framework for understanding information systems failure” (Sauer 1993, p. 3), such “analyses that trade on the image of a predictable, controllable world” (Bloomfield and Vurdubakis 1995, p. 2) *by definition* neglect to problematize failure. In order to more fully understand information systems failure in organizations, it has been argued that we “need to appreciate and account for the way analyses of [failure]...operate within specific social contexts and professional milieus and are both an influence on, and shaped by, the cultural beliefs, norms and values that surround them” (Bloomfield and Vurdubakis 1995, p. 1). Accordingly, specifics of the organizational and social context in which failure takes place are of interest in this paper. The area of social life deemed significant in the case study described below is gender, given that women constitute the vast majority of end-users of nursing information systems (NIS).

The case is made for the value of a gender perspective for understanding organizations and the division of Latour, as well as technology and users. The literature review combines feminist writings on both technology and organization while challenging essentialist and determinist ideas about women’s inherent incompatibility with technology. This is accomplished by identifying an archetypal female role in the workplace. Hence we look at the social, cultural, and gendered nature of nursing as it occurs in the hospital setting and examine how this relates to automated systems and user attitudes to them.

The paper is structured as follows. In the next section, we argue the appropriateness of a social shaping approach to IS failure. The third section examines gender approaches to IS in organizations and highlights gaps in the literature. The subsequent section looks

more closely at gender and IT, specifically in relation to nursing practice. The case study begins in the fifth section with a description of the research approach adopted, while the case study proper is contained in the sixth section. The paper concludes with a discussion of the findings and their implications.

2. The Record of Hospital Information Systems Failure

The fate of any NIS must be considered in the light of accounts of previous hospital information systems failures. The prognosis is not a favorable one. Well publicized failures include the computer-aided despatching system at the London Ambulance Service (Benyon-Davis 1995; Dutton et al. 1995; Flowers 1994; LAS 1993; Newman and Wastell 1996; Robinson 1994; Watts 1992); the failed integration of computer systems at Wessex Health Authority (Kelsey and Brown 1993); and nurses' difficulties with data collection for NHS information systems (Brindle 1995).

While the NHS is not alone in its poor track record of implementing IT (Galliers 1994; Keen 1994), it does appear to be especially blighted by a lack of success and consistency (Grindley 1992):

The accident prone NHS Information Management Group which has overseen a succession of NHS computer disasters, is on the brink of another meltdown (Observer 29.3.98).

In relation to NIS, seemingly surmountable problems still persist (BCS Nursing Specialist Group and IMG 1995; Redmond 1983). This negative perception is deepened by the lack of evidence that the resultant systems (costing annually £220 million) have benefitted patient care (Audit Commission 1992).

Given the highly political nature of IS development in the NHS, admissions of doubt about a project's chances of success are unlikely on the part of original sponsors. It has often been remarked that setting out on these projects is risky because, once a large amount of money has been committed, those who sponsored the system have a lot to lose by an admission of failure (Sauer 1993). The escalator theory explored by Drummond (1996) suggests that projects proceed even when disaster looms partly due to politics, organizational culture, and psychological issues (Dutton et al. 1995). One such issue is that desisting from a project entails a writing off of prior activities and investments - an admission of being wrong (Quintas 1996; Keen 1994).

Of particular importance to this paper is the observation that *hostility* to an IS may also contribute to its downfall. A potential for a conflict of interests and differing perspectives with relation to the new technology is revealed on examination of the stated objectives of the NHS IT strategy. The resource management initiative took place within "a long-term, systematic, though uneven and variegated imposition of "scientific management" within the NHS" (Flynn 1992, p. 36). Further, Keen emphasizes the potency of the desire for central control over data and the way in which the power of IT prevails in this regard. That the introduction of the internal market reforms was rooted in "more fundamental attempts to reshape and reposition the NHS in the minds of employees, patients and the public in general" (Bloomfield, Coombs, and Owen 1994,

p. 135) is clearly significant for nurses as it affects them in a variety of ways and is fundamental to the outcome of the case study described below.

3. A Social Shaping Approach to IS Failure

Before discussing the role of gender in user resistance, we outline our framework concerning the nature of IS failure in organizations. We contend that this is necessary because of the gap that exists both in the IS literature concerning the sorry record of information systems development and in areas of social shaping research that fail to problematize common sense notions of “successful” innovations.

Although managerialist writers and those who favor technical solutions would very much like failures to be rare (Robinson 1994), it appears that they are perhaps as frequent an occurrence as success (Lyytinen and Hirschheim 1987). Much of the research by practitioners and academics concerned with explicating this poor record of ISD (Friedman and Cornford 1989; Laudon and Laudon 1998) has entailed the identification of social and technical “factors” (see Flowers 1996; Fortune and Peters 1995; Sauer 1993; Vaughan 1996) with associated solutions for their eradication. Such approaches have been criticized for their prescriptive orientation (Hirschheim and Klein 1989) and their cookbook solutions (Dutton et al. 1995). In addition, their erroneous simplification of the complexity of organizational life (Knights and Murray 1997) into problem situations to be solved betrays the many rationalist and managerialist assumptions (Robinson 1994) underpinning this type of writing.

In contrast, the reconceptualization of IS failure made possible by recent social studies of technology is not only desirable to overcome the weaknesses of technologically determinist and procedural analyses (Dutton et al. 1995), but is also useful for a new vantage point from which to see more clearly the process of technological development itself. This is because the controversy that surrounds failure reveals processes that are otherwise obscured in the case of successful projects (Bijker and Law 1992). By the same token, however, failure cannot be researched in isolation from stories of technological achievement (Bloomfield and Vurdubakis 1995).

Further, there is the notion that distinct “relevant social groups” will define technological problems differently and there will be disagreement over what constitutes success and failure (Pinch and Bijker 1987). This suggests that the definition of failure is a social one and not shared by all groups involved in technology development or use (Lyytinen 1988; Robinson 1994). Hence the terms success/failure contain within them the value-judgements of which they are an outcome. It is more appropriate, therefore, to ask *for whom* does a failure present itself as such? In place of these terms, social shaping has long since used “stabilization” (Callon 1993; Law and Bijker 1992; Law and Callon 1992) to describe in agnostic terms (Latour 1993) the process by which artifacts come into being and are displaced in the world. Such an alternative approach recognizes that the designation of failure to an innovation is the result of hindsight.

Our aim, therefore, is to produce an account which consciously attempts to employ a framework that entails the following elements:

- A rejection of managerialist and rationalist accounts of organizational life, thereby paving the way to take into consideration the significance of relevant social groups. This then encourages a less rigid view of failure and success, perceiving them as two sides of the same coin and potentially coexistent.
- An acknowledgment of the richness and complexity of organizational life that avoids a “black boxed” approach to social and technical issues, preferring to discuss the two in one breath.
- A resistance of the static approach to systems development, opting instead to emphasize the dynamic nature of a process whose parameters are difficult to delineate. This implies that failure be perceived as negotiable and a system rather than a discrete event.

Before moving on to explore the account of failure provided in the IS literature, it is necessary to look at another aspect of organizational culture that extends beyond the walls of institutions and into society at large: gender. This will serve to deepen our grasp of the world of the (mainly female) users of the NIS.

4. A Gendered Approach to IS in Organizations

Our main concern in this paper is an examination of the role of gender in the outcome of IT adoption and stabilization. In the previous section, we presented a case for a two-pronged approach to understanding failure: by asking *how* and *for* whom does the technology present itself as having failed and by analyzing the social and organizational setting in which failure takes place. Our assumptions are that gender is a vital social factor shaping organizational life and that it is inconceivable that the interaction of nurses (largely a female workforce and occupation) with information systems is not in some way shaped by the gendered spheres we inhabit. A historically contingent fact of life is that gender relations do not just involve difference “but inequality and power - male domination and female subordination” (Webster 1996b, p. 2).

Historically, a belief in the gender neutrality of technology has dominated (Knights and Murray 1994). However, over the last decade or so, within the computing domain, discussion concerning the inequity between men and women both within industry and education has opened up (see, for example, Frenkel 1990; Klawe and Leveson 1995). Nevertheless, the issue of gender is largely *under-theorized*. Recently, researchers into gender and computing have argued for the necessity of an alliance with social science (Lander and Adam 1997; Star 1995) in order to overcome the narrowness in perspective entailed in the “add-more-women” goal Adam 1997; (Grundy 1996). There are a number of limitations with this approach since, first, it assumes success is constituted by the victory of computer systems projects and thus entails a managerialist slant and, second, it is a product of liberal feminism and technological determinism with computers being seen *per force* to be a good thing. Thus resistance or rejection is deemed undesirable. Admittedly, given the feminist origins of much of this work, there is not a demonizing of users (Oliver and Langford 1987). Rather, inconfidence and cultural bias, among others, are relevant and necessary explanations employed to combat notions of women’s technological “ineptitude.”

Consequently, social studies of technology focusing on issues of gender (Cockburn 1983; 1986; 1988; Cockburn and Omerod 1993; Mackenzie and Wajcman 1985; Wajcman 1991; Webster 1996a, 1996b) can offer a starting point for understanding the organizational and broader societal context of nursing information systems development and implementation. The theoretical and empirical focus will be on those activities concerned with the sexual and social division of labor, the organization of work by management, and the allocation of skill labels, skilled status, prestige, and rewards (Webster 1996b). Against notions of technological and biological determinism, we set out to show that both technology and gender are socially constructed and mutually defining. Further, we offer explanations as to the disadvantage suffered by women in their relation to technology. Our intention in so doing is to play a part in reducing the power of “common sense ideas” that typically involve underestimating women's technological ability and are partially a consequence of how technology is defined in society. The social construction approach (accompanied by a materialist grounding) is intended to persuade that women's relationship with technology is not a fixed entity but rather due to social convention. One consequence of this is that the relationship is open to change—a non-incidental consideration given that “gender research...is clearly a political project” (Alvesson and Billing 1997, p. 11).

Within the exploration of the phenomenon of failure described above, users are brought into the foreground. In this paper, a case is made for the significance of users' perceptions of and responses to technology in determining the fate of an IS. In keeping with the agnosticism advocated by practitioners of social shaping, acceptance or rejection of the technology is not adjudged as good or bad. Rather, we seek to understand the subjective rationalization of their actions by the users especially with regard to the role of gender in this process. A sub-issue of the gender research is constituted by an exploration of the gendered sphere of nursing, deemed necessary if we are to get closer to the inner world of nurses. This is discussed in the next section.

5. Gender, Nursing Practice, and IS

Having established the need to examine the social and organizational context in which failure takes place, we develop some issues relating to nurses as potential users of information systems. It is not our intention to universalize the observations and explanations proffered here, for we believe culture to be a key element in any explication of the relationship of women with technology. This means by definition that divergent accounts of nurses and information systems are both possible and welcome (cf. Bjerknes, and Bratteteig 1987; Bowker, Timmermans, and Star 1995).

In the UK-specific literature, two main influences on nursing practice are delineated: hands-on care versus professionalization. Since the former has its roots in traditional roles of women in society, it is tentatively posited as pertaining to the female sphere, while the latter, with its association with rationality, scientism, clinical intervention, and standardization, is seen as derived from a more masculine domain. This proposition is examined in relation to the empirical research and the manner in which this plays out in the local setting described.

Nursing is evidently a gendered job (Davies and Rosser 1986), not only because women make up the vast majority of workers (Corby 1997), but because of the centrality of care (the customary duty of women) to the work they carry out (Brechin et al. 1998).

In addition, the gendered occupation of nursing is associated with the notion of “a good woman” (Davies 1995). In contrast to the expertise of doctors, which is seen as scientific and the result of acquired knowledge, the role of the nurse blurs with that of the ideal woman:

Some people believe “good nurses” have the right qualities through instinct, luck or an accident of birth, and need only a bare minimum of instruction, while others think nursing should be a graduate profession with every nurse taking a degree. [Salvage 1985, p. 51]

Thus we might say that health work is divided between the high status of curing, interventionist work (traditionally carried out by mainly male doctors) and the lower status supportive, caring work (carried out by nurses, who are mostly women) (Wagner 1993). This, we argue, makes sense only if conceived as a reflection of different and unequal roles found in society at large. Further, for nurses, proximity (both physical and emotional)—epitomized by the phrase hands-on—is deemed essential if good care is to be provided (Bowker, Timmermans, and Star 1995). Given that technology is often associated with masculine culture, we suggest that the implications for nurses’ relationships with computer technology are likely to be adverse: that is (1) using a computer distances the nurse from the patient, thereby preventing hands-on care being delivered, and (2) given the association of women with caring and not science (the prevail of doctors), it is unlikely that nurses will feel computers are within their realm of capabilities. The perceived negative effects of technology, combined with the lack of confidence on the part of nurses, are liable to influence the acceptance or rejection of nursing information systems in hospitals. Although popular perceptions do not anticipate that these “angels” will fight for improvements and resist unpopular changes, they nevertheless have a combative—albeit hidden—tradition (Bagguley 1992). This is portentous for the success/failure outcomes of information systems implementations.

6. Research Approach

The focus of the case study is directed to the care planning function of the Zenith Nurse Management System and its users at the Eldersite Hospital. A case study illustration is included below since it enables the researcher to ask penetrating questions and capture the richness of organizational behavior (Gable 1994). This was particularly relevant given the size and diversity of the organization in question. This approach is also recommended in instances where there is a desire to gain insight into emerging topics (the “how” and “why” questions), but there is no need to control behavioral events or variables (Benbasat, Goldstein, and Mead 1987; Yin 1989).

Multiple techniques of data collection were used. Since the research was primarily descriptive, interviews were the primary source of data collection. These have previously been identified as one of the most important sources of case study information (Yin 1989), enabling the respondents to propose their own insights as a basis for further enquiry. The interviews were semi-structured in nature. However, while not wishing to be bound by a rigid questionnaire that ensured the same questions were asked of all

interviewees in the same way, an interview questionnaire was nevertheless used, both to act as an *aide memoire* and to give some structure and consistency to the process. A copy of the interview guide is available from the authors on request. The questions aimed at eliciting views and information on issues directly raised by Zenith's implementation and presence, as well as the concerns developed in the first part of the paper.

The interviews took place during a ten-month period across the various hospital sites with a cross-section of those members of staff who were deemed to be affected by the introduction of the Zenith system. These included 15 nurses (three males), eight IT project nurses (six males), three key members of the IT team, and one member of the Zenith design group. In relation to the nurses, individual and personal statistics (in terms of gender, grade, number of years in post, and union membership) were gathered to ensure that a cross-section of staff had been represented. The interviews were both taped and notes taken by hand, and in line with qualitative research approaches, witnesses were encouraged to comment freely when important issues were raised. The field research continued until nothing new was being learned from the interviews and a state of "theoretical saturation" had been achieved. In terms of data analysis, the transcripts were organized according to topics or issues raised in the discussion. These were classified into a number of main categories, which were then further broken down into more detailed seed categories.

In addition to interviews, the study also entailed observations of nurses entering details to the care plans and informal evaluations of the NIS, along with an analysis of the various texts and representational practices associated with IS training and use. Indeed, much of the story which unfolds below was pieced together through "benefits realization" and update reports and correspondence written by members of the nursing implementation team or the IT manager. In terms of the documentation, a number of reports spanning a four-year period and concerning issues ranging from initial operational requirements through to sign-off were consulted.

7. Case Study

Zenith Nurse Management System is a database system whose purpose is "to support the decisions of managers and clinicians by providing informed, sensitive and timely information in ways which are effective and understandable." The care planning function consists of a database of Care Libraries, which can be edited individually and free text added to produce a printed and standardized document. These are intended to replace the hand-written notes used by nurses in the recording of their intended care delivery for patients.

The installation of Zenith formed part of a broader implementation project management. Three years prior to the study, the product had been purchased from a small software company, following a year-long extensive evaluation and procurement process and reported to reflect "the best available at the time." It was initially piloted with the intention that it met the recommendations of the Audit Commission in the use of the Care Planning and Rostering modules and as part of the Resource Management Project.

The project was steered by a Nursing Implementation group, chaired by the Director of Nursing. In this respect then, the importance of a high level of support for the Zenith

system was recognized from the outset. The implementation plan aimed to have full usage throughout the 100 wards of the Eldersite hospital within one year. This was seen as essential if hospital resources were to be used effectively, since nursing costs accounted for over 40% of revenue expenditure.

As is the case with many tales of IS in the NHS, the story of Zenith had begun with the desire and perceived need for standardized health care practice and methodological financial management (Keen 1994). Given the fact that many of the organizational changes taking place at that time were already quite unpopular with the nurses, the association in people's minds of new technology and these upheavals boded badly for the project nurses' efforts to enrol nurses to using the NIS.

7.1 The Job of Nursing and Record Keeping

Having established the importance placed upon user response to the technology in question, it is now necessary to understand the possible ways in which the Zenith system might change the way nurses do their job and the nurses' feelings toward the computers. We will begin by delineating their views of their role in the hospital and contextualizing their reaction to the new technology.

The scope of characteristics required to do the job well suggests a broad role for the nurse. Not surprisingly, the interviewees found it difficult to pin down what their job entails. The broadest response to the question, "What do nurses do?" was simply and assertively: "Care!" This was described by one nurse as "wanting the best for them." Some viewed themselves as the administrators of care prescribed by the doctors. In Mental Health the mainly male nurses were there to "help people come to terms with their illness." Finally, many expressed the sentiment that nurses tended to be "put upon." This was succinctly and forcefully communicated by an experienced Sister from Urology:

If no-one else will do it, it will be a nursing job.... We're easily pushed around. People play on our conscience and always have done.

Interestingly, psychiatric nurses interviewed (who were all males) were much more positive about their own standing in relation to other professions and generally in themselves. They felt highly valued, while highlighting the fact that Psychiatric nurses tend to be far more appreciated and listened to than their colleagues in General Nursing. As one staff nurse from a Mental Health ward endeavored to explain:

General Nurses do as they're told. Psychiatric nurses tell people what to do. I don't know whether it's the type of person you get doing Psychiatric nursing or it comes through with the training and the experience you get.

These observations are significant if related to nurses' attitudes to the introduction of IS on the wards, which were shaped by the way they feel they are treated in other respects. Nurses were viewed as information providers: it was recognized by Audit Commissions

and Trust Management that nurses were with the patients 24 hours a day, seven days a week and during this time collected lots of information. Therefore, they could now be required to carry out this task using NIS for the purpose of resource management. Hence, their eventual rejection of the Zenith systems should not simply be seen or explained in isolation. Rather, it incorporates and is a result of a resentment of being put upon generally: i.e., “if no one else will do it, ask the nurses.” After all, this is their experience of work being delegated down from the doctors. The significance for the role of gender enters since a strong case can be made that this treatment of nurses and their own sense of being undervalued is related to the job being gendered—and gendered female.

Furthermore, according to the region’s Project Nurses, another reason why there is hostility to the systems is that it takes nurses away from care. For many nurses, the Zenith system, as part of the administrative tasks they had to complete, took them away from hands-on care. This was partly because the location of terminals (in the nursing station or a rest room) meant that patients had to be interviewed and assessed in their bed, and then the nurse would leave the bedside to enter the information in the computer. This was explicitly counterposed to spending time talking to the patient by many of the interviewees. Even where the nurses did not immediately draw up a care plan following patient assessment, they felt they were having to prioritize record keeping over direct care. That nurses saw this as a choice they were forced to make is underlined by the following comment:

Care for the patients—that’s what we’re here to do. We’re not computer programmers.

7.2 Kardex, Assessment Documents, and Continuation Sheets

A good deal of duplication in record keeping was due to the continuing use of Kardex—the traditional form of card-based record keeping for nurses—alongside the care plans. Indeed, all the wards still used Kardex, and for nurses this was *the* record to trust, the anchor to their work even though there were varying types of documents. The care plan never became the sole means of recording nursing work. This is a significant point for the way the Zenith system was resisted. As one staff nurse put it:

We’re neither doing one thing nor the other, we’re doing a bit of both.

Information from the interviews suggests that nurses used up to four main documents to process the patient’s stay in the hospital: the assessment document was used first to gather all the main details of the patient’s state of health, as well as their vital statistics; this was then used as the basis for the care plan—the nurses responded to the diagnosis, detailing the care required; the Kardex was utilized to minute activities carried out—as per the plan; and finally this was backed up by the continuation sheets—which are bound. As one staff nurse recounts, the nurses were very loyal to this register:

We write it all up in the Kardex to cover ourselves....Kardex is the main stay of everything. If we were without Kardex we’d be lost.

By contrast, the Zenith care plans were criticized for either having too little or too much detail. Some believed that the standard care plans made nurses think less about what they were doing, and thus de-skilled them to an extent. On the other hand, where a plan existed, the nurses would have to type in all the details themselves, which was no mean feat since few were trained typists. Hence, it could take longer to produce an automated care plan, especially since the nurses had to wait for the rather slow network in order to call up the Patient Administration System and get the patient's details. Even when nurses had time to spend on administration, there would often be a queue for the one terminal on the ward. In addition, the nurses still had to take written notes from the patient upon their admission to the ward and then type in the details to the care plan, thereby duplicating the amount of their administrative work—perceived by many as the most unattractive aspect of the job. Finally, the shortage of time faced by nurses meant that the Zenith system did not “make visible” how hard the nurses worked: if they were not busy, they had time to type up the plan (in retrospect, rarely an advance); if they were busy, they could not do a plan. However, management had made it clear that the automated care plan would be taken as proof of work carried out. No plan meant they had not done the work.

7.3 User Resistance

Expectations of the information technology were rather high before the installation of the system with nurses believing that it could solve their problems, relieving them of unpopular administrative tasks and freeing up their time to deliver high-quality patient care. In addition, promises were made on behalf of the system, in terms of its potential, which would be realized if users committed themselves. Efforts were made to enrol nurses to the system by participation in implementation committees, via training sessions, and benefits realization seminars. Yet, it is doubtful that these were adequate to secure support for the system. First, participation was limited because of the selection process for user representation. It had been assumed that high-ranking nurses on the ward would make the most suitable candidates, but these were often older nurses, less familiar with computers, and hostile to the information system. Second, the training strategy was cascade training—with sisters as the ward tutors who were to initially train others. This was a problem since the sister was likely to be very busy and not familiar with computers prior to Zenith training. Third, the benefits realization sessions were attended voluntarily and, therefore, unlikely to make any impression on those who were hostile to the whole IS project since they simply elected not to attend. This is where a gender angle is important: they did not regard this expertise as technical in nature.

Despite the committees, user representation, and participation, many nurses felt that they were not “really” consulted about what they wanted: they had neither been asked nor listened to. This led to the outright refusal by some to use the system. Of course, all of this was intermingled with their own fear and lack of confidence concerning information technology. That is not to say nurses have no technical expertise. While the vast array of sophisticated machinery with which the nurses mediated patient care on a daily basis is a testament to their technical capabilities, they *themselves* did not acknowledge this. In relation to the system, alternative means of persuasion such as outright

coercion were evidenced, but not applied as systematically as some supporters of the system would have liked. Resistance, through non-usage, was both possible and effective: the outcome of political priorities, as well as gender-related assumptions about technology.

7.4 Management Response: Rhetoric of Retreat and the Achievement of Failure

Given the level of hostility described in this case study, it would not surprise the reader that the system was eventually withdrawn.

7.4.1 Dissent Legitimized

Nearly three years after the installation, the nurses' opinions were finally detailed in a report on the Zenith system. However, there is a good possibility that the looming decision of whether to carry on with the system (a significant cost of \$26,000 annually to the NHS Trust) promoted a less survival-oriented report from the project team. Whereas previous benefits realization reports were intended to convince the reader of the need to continue with the project, this particular one raised the question of whether it was worthwhile to continue and mobilized the nurses' views to do so. Included in the report were a few suggestions of what could be done to improve the situation. This entailed the setting up of a focus group of Clinical Nurse Specialists to meet bi-monthly and to carry out ward audits of the care planning system, monitoring the functionality, identifying problems, and assessing requests in relation to reports. But this proposal now concentrated on identifying failures with the system.

7.4.2 Dissent Mobilized

Six months on, the IT manager had prepared a report for the Information Management and Strategy group at Eldersite. It is clear from this report that the impetus to make a decision about the continued implementation of Zenith arose from the suppliers demand for the aforementioned outstanding structured support fee. Eldersite were in fact in dispute with the suppliers and were receiving no external software support at this time. In the meantime, the hospital had joined a consortium "in order to ensure that the Trust were being protected." In response to Eldersite's refusal to pay the maintenance fee, the suppliers declined to release the new "improved" version of the Zenith system. The report is said to be based on a specially organized Zenith workshop where users' views had been represented by managers and end-users. Significantly perhaps, Mental Health (who liked the system and were said previously to produce plans for 99% of patients) were not represented "due to former commitments. However their views were sought separately." It is at this stage that problems with the *system*, not just the users, were enunciated.

7.4.3 System Withdrawn

Later that year, coinciding with the end of the three year roll-out period of the RMI project, in a “sign off” report from Eldersite, the decided failure of the NIS is described as non-achievement. However, something is gleaned from the ashes:

The principal achievement of the Resource Management Project within Eldersite has been the implementation of organizational change.

8. Discussion

The case study raises a number of important issues related to gender, resistance, and failure.

8.1 Failure

Although the Zenith system was eventually regarded as a failure, there are several ways in which the project may be considered a success. First, Zenith was a success for its sponsors for a good proportion of its life before becoming a failure. Although the system had been a failure in the eyes of many nurses for some time, it was only when management and the implementation team decided to construct it as thus that the system was officially dubbed a failure. Hence, failure is here more appropriately viewed as a *process* rather than an event.

Second, Zenith was a success in other hospital trusts and was also a success in the Mental Health Unit. But this variation cannot simply be attributed to “mismatch.” Indeed, according to the Mental Health staff themselves, care plans were *least* appropriate on their wards because of the specificity of individual illness. Yet it is here that they have the most success. This, the IT manager writes, is because of the commitment of the staff and their willingness to adapt their working practices to the exigencies of the system.

This leads to the third success of the Zenith project: it had the effect of accustoming nurses to the use of computers and to keeping records of their work. This final point is significant for the future of systems development at Eldersite and further afield. Innovation in systems design entails not only the computers and software but also the new routines and organizational behavior that are required. The implementation of organizational change—a criteria of success for the RMI—is vaunted since nurses have accepted the fact of life of keeping electronic records.

Finally, from different perspectives, the *withdrawal* of Zenith was a success. Evidently, through fear of revealing the perceived technical incompetence on the part of senior nurses, the withdrawal of the system was a victory. However, an unwillingness to conform to a system (suspected of furthering the auditing and costing practices associated with the RMI) also forms part of the explanation for user resistance through the eyes of opponents to this government policy. In sum, successful resistance achieved the nurses’ objective: the withdrawal of the Zenith system.

A key point in the Zenith case study is the proven validity of arguments by social constructivists that for a technology to stabilize, the relevant social groups must be persuaded that they need to “pass this way” to solve their problem or accomplish their task. In the case of the Zenith system, an alternative route to recording nursing care was kept open. The automated care plans were *not* a substitute for all the other documentation that had preceded the installation of Zenith. Kardex remained the preferred record of delivered care. This preference was due in no small part to the persistence of an established culture and routine centered around the Kardex and reinforced by the care plan’s negative qualities: its physical location, aesthetic aspect and limited access to it due to a dearth of PCs. And, given the necessity, due to shortage of time, to choose between giving hands on care or writing records, nurses elected care.

8.2 Gender, Care, and Resistance

The role played by gender in the demise of the Zenith system is both fundamental and indirect. Gender did not appear to have any explanatory power among the nurses since they took for granted that women should be the care givers in society. This is precisely our connection of gender with the nurse as computer user. The dominant culture at ward level prioritized physical proximity to the patient and a caring approach.

The dissatisfaction among nurses in relation to their jobs hinged on their inability to deliver emotional and physical care. It is far from clear how this frustration could ever have been answered by an IS. In the example of the Zenith system, the hands-on culture was deemed incompatible with the use of computers. Conditions in general appeared to have deteriorated and, for many, the Zenith system had made the job of nursing harder at Eldersite because it was more “involved.” The changes inaugurated by Zenith’s installation had increased the proportion of administration tasks in their daily lives, reducing the proportion of time spent on direct patient care. In return, no great improvement in the nursing care of the patient resulted.

Interestingly, the apparent dominance on the ward of the hands-on culture does not preclude resistance, although it seems to have had a powerful shaping influence over the way that resistance was carried out. The demands of the ward and the hierarchical nature of nursing imply certain constraints curtailing nurses’ behavior. At the time of the empirical research, there was a high level of compliance with unpopular policies, according to the nurses at Eldersite. Yet disagreement festered beneath this surface. Thus, the senior nurses’ seemed especially angered at the way their own reluctance to endanger patient care was used against them. Many of the nurses from different grades on the General wards resented the devaluing of their work by other health care professionals. Their treatment and lack of self assurance stands in stark contrast with those in the Mental Health Unit, as described below.

It has been argued that the predominance of a culture of hands-on care, being intimately linked with femaleness, would exclude or be unfavorable to IT if viewed as masculine culture. Indeed, many nurses—especially more senior nurses—expressed the view that the term “technology” held problems for them, preferring the term “machines.” Further, the allegiance to technology was associated with climbing the ladder to management, thereby confirming the “away from care” view of technology on the part of

nurses. Given that hands-on care was valued above all else by nurses, this was unlikely to make the technology appear attractive. In fact, this association would have condemned the system still further in the eyes of many nurses on the wards.

The lack of self worth, evident in some of the things the nurses' recounted, concerned not only IT but also their standing. It is significant that the male nurses interviewed did not experience technophobia or inconfidence, even when they were older and/or skeptical of Zenith's usefulness. They appeared more self-confident and had a feeling of worth that was rarely observable among those in General Nursing. This is perhaps due to the nature of the work.¹ It is impossible here to say whether this state of affairs has arisen because of the nature of the work or because it is where male nurses are predominantly found. No doubt there is a dialectical relationship between the two.

9. Conclusion

It seems impossible to even begin to understand the lives of nurses without recourse to the existence of gendered spheres. Yet, this is an invisible phenomenon, being taken for granted as a natural state of affairs. In this paper, it has not been our intention to reveal a transparent causal relationship between gender and failure/resistance, but rather to indicate the centrality of "occupational segregation by sex" (Cockburn 1988, p. 29) for characterizing and patterning user relationships with information systems. Because of the crucial role of care to nursing practice, the latter has come to be thought of as the prerogative of women in our society, establishing a triangulation of mutual constructions between females, care, and nursing. That is not the same as saying all actors are thus structured entirely within this framework, such that, for example, there are no male nurses, or that they nurse in a fundamentally different way. But it does tell us why men are an *exception* and the social price individuals pay for acting out of synch with these so-called "natural" laws of behavior. Indeed, it is the *invisibility* of the gendered nature of nursing that is so interesting and menacing at the same time. The tendency in our culture toward dichotomous classifications of the world ensures that the association of technology with masculine culture, although not stated explicitly, will make IT alien to nurses who, when carrying out their duties effectively, act out the archetypal female role. Hence the corresponding construction of technology and "objectivity" (or intervention or cure, depending on the context) as male. Given the archetypal gendered roles in health care, the division of labour that pervades most organizations is extreme in its consequences for nurses who most definitely inhabit the female sphere. This implies that the priority of physical and emotional proximity to patients will mean hands-on care overrides all other concerns including the use of IT if it is seen to detract from this. Gender then, in this organization, plays a significant role in the fate of IS. We believe this may be generalized to other institutions, even in a more subtle and less clear-cut fashion.

¹"Curing" mental health patients is achieved in the main by verbal diagnosis and discussion. Nurses on psychiatric wards were providing interventionist health care, as well as looking after people's emotional and physical welfare. In this respect, their activities were not so distinct from the roles of the doctors working in that area. Thus they felt valued.

The combination of feminist writings on technology and organizations, applied to the empirical research, resulted in observing close to how technological expertise is mutually constructed by the particular definition of technology. Again, nurses *themselves* tended to call the sophisticated artifacts that they handled with ease machines, even though these may have been run by sophisticated software. Perhaps the association of computers with new technology increases the likelihood of this distinction being drawn. Whatever the case, nurses are, to all intents and purposes, technical experts, although they may not consider themselves to be. This further suggests that women's relationship with technology is indeed due to social convention and evolves over time.

The example of nurses' counteraction illustrates how resistance is shaped by the environment in which it takes place. We saw in the empirical study that despite the stifling images of acquiescence, nurses can and do resist measures they do not like. Ironically, perhaps it is precisely that they do so *because* they perceive themselves as angels, the guardians of the health service. So although the image can be a stifling one, it can also have the opposite effect, igniting rebellion, when the service appears threatened by official policy. In finishing, if we shift from an agnostic view and take a partisan view of nurses' ability to increase their control of the workplace and achieve a certain level of autonomy, then rhetoric about professionalism used to enrol nurses by management is seen in a poor light. It serves to cut off qualified nurses from other health workers and it acts a barrier, rather than a bridge, to autonomy because it can be mobilized to exert political and moral control over nurses. Finally, its uncritical advocating of compliance with IS fails to assess the validity of such systems and their potential effects on the working lives of women.

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