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Nursing on the line: Experiences from England and Quebec (Canada)

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ABSTRACT

Some industries, like telecommunications, finance and retail, have been operating call centres for several years and there has been growing academic interest in exploring the work experience of employees taking calls and answering telephone queries assisted by computers. Nurses who staff telephone centres in the healthcare industry are different from their counterparts in other fields. These are highly qualified workers with a strong occupational identity and distinct spheres of competence. However, occupation is not a constant as a mediator of technology and it is argued that the extent to which nurses were able to shape their call centre work differed cross-nationally owing to the simultaneous interplay of different societal constructions of nursing and the national–historical development of tele-health centres. This article uses cross-national qualitative case study research to examine the different effects of occupation, nation and timing of industry formation on the design and experience of call centre work in the healthcare industry.

KEYWORDS

call centre ▪ cross-national ▪ development logic ▪ industry formation ▪ nursing labour process ▪ occupation

The object of the article is to examine the role of occupation in the mediation of work practices within a new technological and organizational field, that of call centres. This is accomplished by studying an occupational group that possesses a strong awareness of their work practice and is therefore able

to use that occupational identity to evaluate and indeed shape the nature of their call centre work. We suggest that by studying the mediating role of occupation in a call centre setting we will be able to challenge one of the major problems in current research, namely, the inability to establish comparisons when discussing call centre work. That is because customer service representatives (CSRs) are not the same individuals who previously worked in banks and retailing, but a new generation of industrialized 'clerical' workers without an 'occupational consciousness' with which to filter their work comparatively and historically. The second related aim of the article is to maintain a focus on one occupational group but explore the formation of call centre work cross-nationally through two-country case studies. This is partly to correct the absence of cross-national research in the call centre literature, but more importantly it allows for an interrogation of the role of the state, business and occupational associations in different national contexts in shaping the nature of work design and work organization in call centre settings.

Studies such as Frenkel et al. (1999) have recognized that different occupational bases explained different work organizations in the service sector. In call centre literature, Korczynski (2001) hypothesized that the logics of knowledge intensiveness and professionalism of highly qualified workers would determine highly qualified quasi-professional work. However, to date, the phenomenon of professionals and technical staff in call centres has been neglected by both British and American academics. Indeed, academic literature on call centre work has remained focused on routine white-collar workers mostly associated with low-skilled labour and in the same industries, for example, finance, telecommunications and retail (Bain et al., 2002; Batt, 2000; Callaghan & Thompson, 2001; Frenkel et al., 1998, 1999; Holman, 2004; Kinnie et al., 2000; Taylor & Bain, 1999; Taylor et al., 2002). Therefore, we do not know to what extent a strong occupation could revise work methods and influence the design or use of call centre technology.

Furthermore, all studies (with the exception of Frenkel et al., 1999) have concentrated their research within one national setting, despite the fact that call centre work has an increasingly global presence. The international focus of Frenkel et al. (1999) on American, Australian and Japanese call centres was not overtly comparative, likewise, the edited book by Holtgrewe et al. (2002) drew mainly on German and British contributors, but the analysis was non-comparative. Thus, the social embedding of call centre work is treated as insignificant, by which we mean the origination and growth of the industry at national level, and the way societal rules on training, occupational status and hierarchy are arranged to reproduce national specificity (Smith & Meiksins, 1995; Smith & Thompson, 1998).

Empirically, the article reports fieldwork from two telenurse sites in England and two in Quebec, Canada. Nurses were an ideal subject for examining the role of occupation on the social shaping of work in a call centre. Nursing is constituted as an occupational community with a clear identity and a strong consciousness of distinctive work practice. Nurses have public recognition, are credential-based experts and possess varying levels of autonomy within the medical hierarchy of occupations. Telenursing is not displacing conventional, face-to-face nursing in the same way that service jobs in other industries are lost to the creation of a new army of industrialized white-collar call centre workers. Telenursing compliments, rather than eliminates face-to-face nursing. The occupation of nursing provides a powerful and robust actor network through which the received labour process pressures of call centre work are interpreted and resisted. However, it remains to be seen to what extent autonomous workers, such as nurses, are the only active agents in shaping their 'phone-side' work.

The article begins with a critique of the narrowness of contemporary call centre literature by linking the debate to an occupational and cross-country comparative agenda. Then, the research design and methods are described, followed by an account of the labour process of nurse call centres in Quebec and England, which examines technology formation, work content and nurses' use of technology. The article concludes by discussing the basis for variations in the work organization of nurses in the two countries and developing a middle range analytical framework on the centrality of key external environmental and temporal forces, which we argue, explain the variations found in health industry call centre work in the two country cases.

The narrow and inward nature of call centre studies

A call centre is where a group of customers can phone for a common service with the calls distributed automatically like 'a virtual conveyer belt' to employees working in a dedicated building, sitting next to one another, 'anchored' to their workstation, wearing headphones and manipulating data into a computer. The Automatic Call Distributor (ACD) system is a primary technological organizational element that differentiates a call centre from any other workplace setting dealing with inbound telephone inquiries. A second characteristic of the call centre environment is that employees work with a computerized infrastructure to support their telephone interactions with customers.

In the UK, early studies in the field focused essentially on the capacities

of the call centre technology to monitor employees, and different theories of control have emerged to explain the constrained nature of work in call centres. Fernie and Metcalf (1998) asserted that 'invisible' control through unseen direct observation and accumulation of information, which functioned like a Benthamite 'panopticon', had influenced the design of call centre work and management control system. Taylor and Bain (1999) objected to the view that control had been 'rendered perfect and total' by the operation of this 'electronic panopticon' (see also Bain & Taylor, 2000). Rather, they suggested that the call centre technology had enabled the application of Taylorism to white-collar workers; the work system in call centres was routinized and repetitive, regulated, intense and closely monitored and measured (see also Bain et al., 2002). Callaghan and Thompson (2001) advocated a model that explained control without recourse to the metaphor of panopticon surveillance, or Taylorism. Instead they advanced a framework that combined technical control (Edwards, 1979) and bureaucratic elements from management's control repertoire, and included normative rules to ensure that employees provided the 'right' attitude. The model made more explicit the role of management in using technology as a controlling medium. Yet the diversity of these workplaces was not fully appreciated.

Research subsequently shifted to a greater recognition and conceptualization of the diversity of work arrangements in call centres. For Batt (2000), the customer interface was a significant factor in determining competing models of work. Where customers required a homogenous service, for example, in the mass and residential markets of US telecommunications firms, the work organization was comparable to a mass-production model. The focus was on high volume; the transactions were simple, repetitive and the speed of delivery was less than one minute. Operators were heavily monitored electronically to ensure standardization of work and reduce variability in service delivery. By contrast, where telephone enquiries were complex and required a greater understanding of the customer's requirements and expectations, for example, large businesses and elite clients, employees benefited from high-involvement management practices generally associated with professional service models. Customer service representatives were university-educated and were less likely to use prompted texts. Whilst interaction with customers was less amenable to rationalization and provided opportunities for discretion, electronic monitoring was more difficult. Furthermore, employees servicing higher value-added customers were '. . . at least twice as likely to have control over their daily tasks, work methods, pace of work, schedules and use of technology' (Batt, 2000: 552).

Batt's study also has problems. Indeed, there is a problem of case study representativeness. Almost 50 percent of employees' interactions servicing

value-added clients were face-to-face on customer premises. This was in contradiction with the majority of call centre employees who had no opportunity for face-to-face interactions, and therefore Batt's research combines call centres proper with more conventional service work and limits the claims for a professional call centre strategy per se. However, more research on call centres in the UK has generated conclusions similar to those of Batt (2000). Taylor et al. (2002) argued that the diversity in call centre work was best understood in terms of the dichotomy between 'quantity' and 'quality'. At the 'quantity' extreme the work system was volume-driven, repetitive and routinized, with standardized procedures and tight monitoring. By contrast, the work design at the 'quality' end offered task discretion and more relaxed targets. Deery et al. (2004: 208) also showed that call centres emphasizing the quality of customer interaction operated a work system in which employees enjoyed fewer standardized procedures than those privileging a 'mass production approach to service delivery'.

The differentiation of call centre work has remained narrow with a simple concern for how distant/close call centres are from a Taylorism/mass-production model. The main factors explaining this diversity are restricted to the value of the service the customer is demanding and managerial dilemma between quantity/quality production. Other studies have shown that the ACD system (Callaghan & Thompson, 2001; Fernie & Metcalf, 1998; Taylor & Bain, 1999), collective and individual resistance (Bain & Taylor, 2000; Callaghan & Thompson, 2001; Taylor & Bain, 2001; van den Broek, 2004), and the needs for employees' job satisfaction (Houlihan, 2004; Kinnie et al., 2000) influenced call centre work.

Current literature on call centres does not tell us whether, for example, wider contextual factors such as national institutions, the role of technology suppliers and varying historical conditions have shaped call centre work? This is due to the absence of a comparative vehicle in call centre literature, despite the fact that cross-border comparative studies have demonstrated the significant influence of nations and institutions upon work arrangements (Lane, 1989; Maurice et al., 1986; Truss et al., 1995). What is more, we do not know if an occupational group, which possesses a strong consciousness of work practice is therefore able to use that consciousness to evaluate and indeed shape the nature of their call centre work. Whereas researchers studying call centres have acknowledged the possibility of work with greater worker discretion (Batt, 2000; Deery et al., 2004; Frenkel et al., 1998; Korczynski, 2001; Taylor et al., 2002), the extent to which employees were able to design their work methods and computerized infrastructure was not explored. Alternatively, it was reported that employees servicing higher value-added customers had 'very little control [over] . . . setting work

objectives, revising work methods and influencing the design or use of technology' (Batt, 2000: 553). The theoretically limited debate on call centres has painted an image in which call centre employees are subordinated to design strategies and the use of technology. The next section discusses theoretical issues of technology design.

Technology design

The technology in the environment of the healthcare call centres was the ACD system and the expert software that structured the interaction between nurses and callers. The ACD system, as noted earlier, is a defining generic feature of the call centre sector as a distinct organizational field, and was simply applied in the health area, rather than innovated in this area. However, the expert system of protocols for guiding the telephone consultation was subject to the design intervention of nurses as key actors and innovated within the health field. Therefore, nurses as agents within this sector and the central actors within health call centres, had the potential for the 'social shaping' (Noble, 1979, see McLoughlin, 1999 for a review) of this new technology according to their occupational interests and priorities. However, imprinting their interests is only possible if these are coherent and they have power in this field, and this depends upon the wider social construction of the occupation and the relationship between actors in this field and technology development and design. Following a number of comparative studies on the embedding of technology within societal arrangements (Cole, 1992; Hartmann et al., 1995; Sorge & Maurice, 1993) we prefer to see the involvement of nurses in medical software through the perspective of national institutional capacities and practices. Nurses in England have been outside agents in the formation of medical software and were more 'reactive' to the technological formation of their work in call centres. Nevertheless, through their own knowledge and conceptualization of nursing work, in practice these nurses 'resist' the technology. This is what is argued in the later discussion section. Those who are subordinate to the design authority of other actors, nevertheless have some space for innovation and restructuring when they adapt to the technology (Smith, 1987; Wilkinson, 1983). By contrast, nurses designed the support system for telenursing in Quebec, which evolved out of existing practice, hence rather than being 'reactive', our Quebec case shows nurses steering design choices through maintaining their dominance in technical design. They were able to socially shape the technology due to the position of nursing in Quebec society, the timing of the development of the technology, and the more organic pattern

of development of telenursing. We elaborate on the reasons for these differences and their implication for work organization in our analysis section of the article.

Research design and methods

Nurse call centres have developed in several countries, including, Canada (Ministère de la Santé et des Services Sociaux [MSSS], 1994), Sweden (Wahlberg et al., 2003), the UK (Department of Health [DoH], 1997), and the USA (Quilter Wheeler & Windt, 1993). The workforce in telehealth centres is dissimilar from most white-collar workers in commercial call centres. Nurses, unlike typical CSRs, possess public recognition and identity, specialized knowledge and skills, a consciousness of work practices shared among the occupation though self-registration, and the perceived collective responsibility for maintaining high-quality standards of the profession as a whole.

For the purpose of comparison, England and Canada were used as both have developed similar public healthcare systems based on similar founding principles (Hart, 1994; Rathwell, 1994). Although the UK National Health Service (NHS) was seen as a follower of the USA in promoting the use of '24/7' tele-health centres (Shekelle & Roland, 1999), the American healthcare industry is mostly private, and consequently conducting research in the US was ruled out. Quebec, rather than Canada as a whole, was used because not all Canadian provinces have initiated round-the-clock nurse-led telephone services. New Brunswick had also developed a '24/7' telephone triage and health information service, but its day-to-day management was contracted to a private firm. By contrast, the British tele-health service and the nurse call centres in Quebec were not-for-profit organizations publicly managed and integrated into their existing public healthcare system. A last argument strengthening the strategic selection of England and Quebec was that the authors' degree of knowledge and experience with both societies allowed a more robust comparison. One of the authors is from Quebec and the other from England. This knowledge and experience proved very useful in explaining some of the overall dynamics of the Quebecois and English societies.

In Quebec, the state-sponsored nurse-led telephone consultation service operates throughout the province and has done so since 1995. It is known as Health-Info CLSC (Info-Santé CLSC; MSSS, 1999). NHS Direct has been available to all British citizens since the end of 2000 (National Audit Office, 2002). Nurses working in healthcare call centres provide practical

advice to callers about physical or psychological concerns over the telephone, and are assisted by computers. Health-Info CLSC and NHS Direct were implemented to respond to the problems created by a public healthcare system in a capitalist country. They aimed to improve access to care whenever required and to facilitate accessibility to and understanding of a wide range of services. They were not introduced with the aim of reducing costs, but by re-directing large numbers of patients to more appropriate forms of care would indirectly generate cost savings.

The comparative study contrasted case studies at a sub-national level by contrasting four different workplaces, two pairs within the same national territory. It was then possible to separate the impact of external sources from any influence of the workplace level. The comparability of work settings was a primary concern, and several criteria were used to select the research sites. These were: (i) the call centre environment and ACD system, (ii) size in relation to volume of calls, and (iii) a similar clinical decision support system.

Four case studies were undertaken, with access to each site granted for a period of three weeks. During this fieldwork, observation of the work situation, and interviews with Nurse Advisors and managers were conducted. At Health-Info CLSC A and B, 24 percent of Nurse Advisors were interviewed. With regards to NHS Direct C and D, 41 and 20 percent of the total number of telenurses were interviewed, respectively. Although the two sites had a fairly similar volume of calls, the workforce at NHS Direct D was essentially part-time and the number of nurses exceeded 80. Semi-structured interviews with Nurse Advisors lasted approximately 30 minutes and the questions covered various elements of work organization: experience of work, role of Nurse Advisors, and autonomy in conducting a telephone consultation; the use of a clinical decision support software or nursing protocols; relations with patients; co-workers and management relations; knowledge and skills; initial and on-going training; monitoring and surveillance practices and assessment procedures. In addition to these semi-structured interviews, a number of informal work-related discussions took place with Nurse Advisors while sharing their breaks in the staff room and joining them for lunch or dinner in the canteen.

Semi-structured interviews with managers were also conducted and each site had different organizational hierarchies, so those questions had to be addressed to various people within the management structure. At Health-Info CLSC A, the lead nurse and two senior nurse supervisors (of three) were interviewed. At Health-Info CLSC B, interviews with management included the lead nurse, the nurse manager and two nurse supervisors (of four). At NHS Direct C, the general manager, the lead nurse, the senior nurse supervisor and two team leaders (of three) took part in an interview. The policy

of NHS Direct D was to be transparent to the public, and interviewing management was made relatively easy. The opportunity was there to interview the lead nurses (three of three), the nurse managers (four of fifteen) and the nurse training co-ordinator, in addition to the medical director and the call centre manager. Topics of discussion covered the history of the workplace, demographics of employees, hierarchical structure, initial and ongoing training, work rules and policies, clinical decision support software or nursing protocols, electronic monitoring and assessment.

In conjunction with non-participant observation and semi-structured interviews, documentation was used to corroborate evidence and provide more data at workplace level.

Inductive research was considered the most appropriate for two reasons. First, it would have proved theoretically inadequate to begin the research using an explanatory system, as the study did not forecast the convergent and divergent elements to be found. Second, the double comparison of national contexts and workplace settings was relatively novel (Child, 2000), and 'theory-building' was deemed more appropriate than 'theory-testing'. A first-hand analysis of the results pointed to a number of recurring patterns in terms of cross-national convergence, cross-national divergences and intra-national differences, and these were taken as the factors to follow up and investigate.

Empirical evidence

The labour process of Nurse Advisors: Health-info CLSC, Quebec

Technology formation

In Quebec, the practice of telenursing evolved out of the existing nursing process methodology central to the education of Quebecois nurses (Trottier, 1982), and already set in motion in several nurse settings (Hénault & Malo, 1999). This demonstrates the influence of nurses in shaping their 'phone-side' environment. Concretely, the nursing process was a systematic and analytical methodology of four steps: assessment, planning, implementation and evaluation. This approach was problem-solving focused and patient-centred, and sought to replace an intuitive approach to the delivery of nursing care. Within nurse call centres, the work methods of a telephone consultation reflected the four steps of this methodology and translated into assessment, planning/intervention and evaluation. As such, telenursing did not *replace* conventional nursing, but rather, served to add another way of delivering nursing care.

The primary screen of the computerized infrastructure was a 'call record card' (*fiche d'appel*), which was lined to facilitate documentation of a call following the assessment, planning/intervention and evaluation steps. This formalization augmented the quality of the service and protected nurses against potential complaints and legal liabilities. The card first developed on a paper format and was later integrated into a computerized knowledge infrastructure that respected the 'form-filling' metaphor and the four-step methodology. Rather than the computer software creating new office procedures, the computerized infrastructure responded to specific needs and an extant labour process that had been socially shaped by nurses.

Also integrated into this computerized infrastructure was a database with over 400 scientific nursing protocols. Each protocol contained guidelines about health information/education, self-care advice, monitoring elements and referral. The nursing protocols were designed by nurses and catalogued using a nursing conceptual framework; the 14 fundamental needs of the Virginia Henderson Model.[1] The contents of these written guidelines were constantly reviewed and updated by a group of four nurses, who consulted the best available scientific evidence (less than two years old) from North American literature, professional associations such as the Association of Paediatricians of Quebec, or centres of research affiliated to university hospitals. All intended modifications had to be validated by the Scientific Nursing Forum (Forum Scientifique et professionel pour l'intervention téléphonique). This panel was composed of experts in nursing care from diverse milieu, and excluded doctors and government representatives, demonstrating the authority that nurses had as a major agent in the development of the telephone-based practices.

Work methods and use of technology

The first step of the telephone consultation was to assess the individual's health problem. An accurate assessment was based on the nurse's skills in asking appropriate questions and encouraging the person to talk about him- or herself. Nurses had complete flexibility and autonomy to direct the conversation. The pattern of questioning was not standardized, either in the form of prompt or explicit questions. It was, therefore, the responsibility of the nurse to conduct interviews and take the opportunity to gain valuable information on the person's problems, reaction to his/her illness and other factors that could influence the intervention step, such as a caller's social and cultural background. The assessment step was based on highly contingent knowledge and Nurse Advisors organized and documented the data collected on the computerized 'call record card'. From such information, the Nurse

Advisor relied upon her nursing expertise to analyse, interpret and make a clinical judgement to identify the clinical needs of clients. Telenurses conducted the assessment process as if they were in a 'face-to-face' consultation.

The intervention was the second step of the nursing process methodology. Although informing/educating/giving self-care advice to people on their health situation was compulsory, referral to other healthcare resources was elective. Callers could also be informed of monitoring elements in order to give them more autonomy and responsibility in assessing the evolution of their health condition with an indication of the health resource to use if the situation worsened, failed to improve or changed markedly. On other occasions, the seriousness of the health situation required more than self-care advice and monitoring elements, and as such, the individual needed to be directly referred to the appropriate healthcare resource. Referral could take two forms: urgent consultation (less than two hours) or non-urgent consultation (to be determined between the nurse and the client).

The use of scientific nursing protocols for the intervention step supported nurses, yet there was also room for them to exercise their clinical judgement due to the principle of judging the caller in their *individual* context. A sound clinical judgement was required to find a 'match' between, on the one hand, the particular needs of his/her health situation and the proximity to health resources and, on the other hand, the written advice and reference rules included in the nursing protocols. In other words, protocols were never used in a mechanical way and Nurse Advisors were allowed and expected to make use of their expertise and address the solution holistically. As long as their clinical judgement was within the grounds of safety and formalized into the computerized call record card, Nurse Advisors had authority to offer advice other than suggested in the nursing protocols. More importantly, this process was not monitored and challenged by management or general practitioners (GPs).

Referring to interviews conducted with nurse managers of the two sites, Nurse Advisors were expected to make a judicious use of the nursing protocols in the context of the individual and their clinical expertise.

> The clinical judgement is what enables Nurse Advisors to use the nursing protocols. Some elements of the assessment won't be consistent with the nursing protocols and nurses have to use their clinical judgement . . . Nurses are dependent on their expertise and the judicious use of the nursing protocols.
>
> (Lead Nurse, Health-Info CLSC A)

> The protocols come to support nurses in their nursing intervention. People perceive the work of Nurse Advisors wrongly, saying that the nurse is forced to make rigid use of the protocols to provide a telephone response. This is incorrect. Nurses need to rely on their clinical judgement to use the protocols in the context of the individual.
>
> (Lead Nurse, Health-Info CLSC B)

Experience and clinical judgement were central and the software had a secondary role, acting as an electronic extension of nurses' knowledge. Commenting on their level of autonomy, Nurse Advisors from both sites stated,

> We have a lot of autonomy. I don't depend on the doctor. I am independent and depend on my clinical judgement to enable the individual to deal with the problem . . . we have to go with our expertise in combination with the protocols and we are not blamed if we do not use a protocol as long as we have a clinical judgement well documented to prove us right.
>
> (Nurse Advisor, Health-Info CLSC A)

> I am autonomous. We have the protocols, but we have to customise our intervention to provide relevant information, education and advice relevant to the context. We can't read everything . . . sometimes the protocols do not assist us to empower the client. We have to use our expertise and clinical judgement.
>
> (Nurse Advisor, Health-Info CLSC B)

> We take a call from A to Z. We don't have to report to someone else. It is professional and autonomous work. It's you and your telephone.
>
> (Nurse Advisor, Health-Info CLSC A)

The final phase was to evaluate the client's understanding and satisfaction with the course of action that had been proposed. As with the previous steps, this part of the nursing methodology over the phone had to be documented into the computerized call record card.

The labour process of Nurse Advisors: NHS Direct, England

Technology formation

In England, the nursing occupation has generally been dissociated with the practice of telenursing, and the process of implementing NHS Direct has been

top-down. Within the NHS Executive, a NHS Direct Central Project Team (composed of government agents, GPs and nurses) was responsible for implementing the service nationally. The government favoured a 'sporadic' or 'muddling through' process in which pilot experiments were conducted for choosing the appropriate course of action for the development of NHS Direct nationally. At the time of piloting NHS Direct in 1997, three clinical decision support software systems were selected: two US algorithms-based software, and a British guideline-based software TAS (Munro et al., 2000; Sanders, 1999). The final choice for national procurement, however, was none of the clinical decision support systems that were in use during the first three waves of implementation. It was software originally designed by an American physician and owned by the insurance company Axa Assistance (Donnelly, 2000). This computerized infrastructure was chosen for its perceived 'safety', 'consistency', 'directiveness' and 'rapidity'. The NHS negotiated total control over its future development and the software was renamed NHS Clinical Assessment System, or CAS for short (DoH, 2000).

CAS was a yes–no decision tree based on rigid algorithms. Central to this physician-designed expert system was the medical model of care, which is fragmented and adopts a symptom-based approach instead of a holistic approach to care. Following the medical approach, ultimately the patient is an individual, but the symptoms such as 'abdominal cramps', 'chest pain', 'fever', 'nosebleeds' are fairly standard. This facilitated the use of a mass model whereby callers could be treated according to a standardized menu. It was an automated assessment tool to accurately assess the clinical needs of people to detect an emergency situation and rank the health concerns in terms of priority of the intervention required (Accident & Emergency [A&E], GP or home care). In other words, this system 'triaged' people according to the degree of emergency of a presenting symptom, and Nurse Advisors were an extension of this expert assessment system. Contrary to the practice of telephone consultation in Quebec, at the centre of which was the expertise of nurses who assessed the health needs of clients, in England the practice of 'phone-side' nursing was built on a standardized clinical assessment software which was supposed to accurately identify the clinical needs of patients. In another article (Collin-Jacques, 2004) it was suggested the characteristics of the CAS system were akin to classic Taylorism.

Work methods and use of technology

Before launching the CAS system, Nurse Advisors had some space for independent judgement. When taking a call, Nurse Advisors listened to the health concern of the individual, and three primary questions had to be asked: (i)

medical problems, (ii) current medications, and (iii) allergies. The nurse had to click 'yes' or 'no' and specify when the answer was positive. These questions, although standardized, allowed Nurse Advisors to take a view of the caller as an individual. Although individuals explained and interpreted their symptoms, Nurse Advisors made their own interpretation of what patients were saying, and then categorized and chose an algorithm. The algorithm selected is a matter of choice and interpretation based on nursing knowledge and experience.

> The callers can lead you to the wrong path. They often exaggerate. You need experience to know that.
>
> (Nurse Advisor, NHS Direct C)

> Your experience tells you how to deal with the caller.
>
> (Nurse Advisor, NHS Direct D)

Once in the algorithm, the decision tree is engaged and Nurse Advisors were technically bound to it. They had to follow it through to the end, even in situations when it became obvious to Nurse Advisors that the line of inquiry was going down an inappropriate medical track. CAS drove the consultation down a predetermined route and posed a series of automated questions in logical sequence. The questions took two forms: either leading questions requiring a simple 'Yes', 'No' or 'Uncertain', or a list of symptoms to which the patient must respond. Nurse Advisors had little discretion to lead the assessment process. It left little flexibility to allow the inherent process of clinical judgement based on nursing knowledge and experience to drive the conversation. Most importantly, telenurses could not bypass the questions. In this fashion, the software was overriding and not supporting the nurses' clinical knowledge, and they were locked within its constraints, sometimes against their own better judgement.

The rigidity of the software interfered with the inherent clinical reasoning of questioning of telenurses. This became clear during the fieldwork at NHS Direct D, where the CAS software had just overlaid the old system (TAS). TAS was a British guideline-based software built on a cognitive model that allowed more flexibility and did not impose a pre-determined pathway and did not arrive at a final decision (Sanders, 1999). Most telenurses in the two sites believed that the CAS software directed the assessment process and left little flexibility:

> They [algorithms] are very new. I didn't like them at first. They are so different. With the new algorithms, *you can't see the whole picture*. I

> don't like this. And with the previous system, you could flick back and forward quite easily . . . equally with the old system you could override at any moment. With CAS, you have clear-cut questions and you go through . . . It's more difficult to see a picture . . . You go down through a pathway.
>
> (Nurse Advisor, NHS Direct D)

> TAS [previous software] allowed you a lot of autonomy to practise. CAS narrows down the process. It tells you what to ask . . . it takes away this autonomy. It does not allow thinking anymore. It's assessing one symptom only. I can't work like that.
>
> (Nurse Advisor, NHS Direct D)

> I don't feel autonomous when I use the algorithms. We've got a certain freedom, but it's a matter of how much clinical judgement we're allowed to use.
>
> (Nurse Advisor, NHS Direct C)

For telenurses it became more difficult to exercise expert autonomy in controlling the health assessment. Algorithms and mathematical rules led them in a straight line of questioning and had the effect of 'narrowing down' their clinical reasoning. As the study was done just as the CAS system was being introduced, this could explain why nurses felt so strongly about its constraining effects, having entered a more scripted format that they had not yet had time to adjust to. Other research exploring the interaction between the nursing staff and CAS (Hanlon et al., 2003) has also reported that nurses perceived it as too inflexible.

CAS was not a complete 'machine take-over'. The software moved from the most serious questions and quickly identified the most appropriate care (A&E, GP, or home care), and when Nurse Advisors felt that the final 'automated' outcome was inappropriate for the particular individual, they had some scope to exercise their autonomous clinical judgement. They knew that the questions were 'en masse' and 'insensitive to patients' needs', whereas the nursing philosophy favours a holistic view of patients. Overriding involved up-grading the outcome, which may suggest see a GP, when the nurse might believe a more urgent intervention is necessary, such as go to A&E. Underriding, meant downgrading a outcome from go to A&E to see a GP in the next few days. All Nurse Advisors interviewed expressed that they were using their knowledge, skills and clinical judgement when they were downgrading or upgrading the referral instruction.

> You need a nursing background to upgrade or downgrade.
>
> (Nurse advisor, NHS Direct D)

> You need your clinical judgement when it says home-care and you think it's more serious.
>
> (Nurse advisor, NHS Direct C)

> Every situation is particular to the caller. Your experience tells you how to deal with the caller. You need your own experience and clinical background.
>
> (Nurse Advisor, NHS Direct D)

Unlike the situation in Quebec, the process of upgrading or downgrading the referral instructions in NHS Direct was tightly monitored. The technical fabric of CAS monitored any deviations from the automatically populated disposition making visible the work of Nurse Advisors to management and the medical doctor of the site. It allowed a tighter job control over what Nurse Advisors were doing and how nurses used the technology.

Discussion

We found important opposing experiences in terms of the authority Nurse Advisors had over the design of their computerized infrastructure. Quebecois nurses were 'active' in designing the tools needed to operate as telenurses. They were central in controlling and even initiating technological developments. The methodology of a call was based on the scientific nursing process and nurses designed their own tools, such as the 'call record card' and the nursing protocols, and there were no doctors or government representatives in the process of validating new protocols and altering existing ones. By contrast, English nurses were more 'reactive' in the process of technology design. The state championed the development of NHS Direct in a top-down exercise of phased national coverage, and the computerized infrastructure was a sophisticated physician-designed and algorithm-based expert system. Nurses were reactive to state initiatives, and software development involved other clinicians and government representatives and not only Nurse Advisors (see Baker et al., 2002 for more detailed discussion).

What the evidence suggested was that where nurses were able to shape their computerized infrastructure, automation over the work process did not really exist. Software solutions built on existing nursing skills, autonomy, work control practice and philosophy, substantially enhanced control by

nurses over the work process of a call. Nurses were given considerable autonomy and discretion over their own tasks of assessment and intervention over the phone. By contrast, where nurses were not 'active' agents in shaping their computerized infrastructure, the level of automation was more predominant and imposed standardized and universal questions on the ability of a nurse to assess a symptom and propose an intervention. Via its prioritization of CAS, management and doctors imposed their knowledge and rules on nurses. NHS Direct Nurse Advisors streamed patients according to a standardized menu of symptoms (medical model of care) and logical succession of questions where clinical judgement and the specific context of an individual were sacrificed to management imperatives such as low risk referral, consistency, rationality and universality. The technical fabric of the system monitored how often Nurse Advisors deviated from managerial and medical knowledge. However, as Wilkinson (1983) has argued the outcome of the introduction of technology is an 'emergent' process, and labour process writing suggests that workers will resist and reinterpret technology in ways other than those proscribed by the sellers or managers of the technology (Edwards, 1979; Smith, 1987; Zimbalist, 1979). In our case study, nurses resisted the technology and sought to use their own knowledge. Patients interpret their bodies and symptoms, nurses interpret this interpretation by referring to their own expertise and then engage with the software by selecting an algorithm that will determine the individual's health needs and necessary intervention. Moreover, in light of a patient-centred approach, Nurse Advisors will sometimes override or underride the solution. This is quite consistent with the growing desire of the nursing occupation to make greater use of its expertise and clinical judgement in the context of the patient (Beardshaw & Robinson, 1990; Witz, 1994).

Returning to one of the research aims of the article, our empirical evidence suggested that an occupational group could significantly influence the labour process within call centres. However, what is apparent from the comparative data is that even well-defined occupations like nursing reveal diversity in social constitution. Therefore, Quebecois nurses were 'actively' promoting and developing their technological infrastructure, whilst their English counterparts were largely 'reacting' to technological change. What factors explain, what could be called 'worker-centred or initiated' and 'worker subordinated' design strategies?

To move towards a first theoretical consideration of the extent to which nurses in the two country contexts were 'active' agents designing their computerized infrastructure, the explanatory system is the *societal effects* approach (Maurice et al., 1986; Maurice & Sorge, 2000). The *societal effects* theory developed out of a cross-national study between French and German

organizations and posited that the socialization of actors through different institutions (e.g. education, training and industrial relations systems) was unique to a society, and had effects on the ways work was organized. The approach rejected the argument that universal efficiency imperatives, whether from the market, technology or state, had homogenizing effects on work organization or common contingencies of size, product environment or sector will lead to uniformity of work organization. Instead, authors using this approach, argued (using paired cross-national case studies) that despite shared contingencies, when examined cross-nationally, organizations revealed persistent patterns of diversity, which they attributed to social institutions and social action bounded within societal contexts, hence the idea of 'societal effects' overriding imperatives of technology or organization size. The approach suggests not one best way, or diversity based on external contingencies (such as product, size of technology), but rather 'functionally equivalent' ways for work organizations to be efficient and effective. The approach points towards the 'societal' or 'national' institutions for explanations of persistent work organization diversity between societies sharing common forces of production, industries and technological forms. Using this framework, we can say that the social construction of doctors, nurses, and the state in Quebec and England neatly explained the differences in the legitimate authority of the nursing occupation in designing their technological infrastructure.

Healthcare division of labour: Quebec

The influence of Quebecois nurses in shaping the service must be understood in the socially constructed occupational role of nurses. The Nursing Act of 1973 (*Loi sur les infirmières et infirmiers*) legalizes the nursing practice as:

> In every act, the object of which is to identify the health needs of persons, contribute to methods of diagnosis, provide and control the nursing care required for the promotion of health, prevention of illness, treatment and rehabilitation, and to provide care according to a medical prescription constitute the profession of nursing.
>
> (1973, c.48, art. 36–7)

The independent sphere of competence of nurses within the health division of labour revolves around the notions of identifying the health needs of people, promoting positive health, education, informing and encouraging people to take charge of their health. Following the legal recognition of a specific territory of competencies in the daily accomplishment of nursing

work, where nurses could act independently from doctors, the occupation has institutionalized the content of the autonomous nursing work activities. The fact that nursing training ceased to take place in traditional hospital schools in 1970 and relocated in colleges and universities, fostered a transition from a medical corpus to a nursing one. Increasingly, nurses became educationally socialized with 'person-centred' models and concepts of nursing, scientific methods, preventive measures, self-care elements and the holistic approach to care (Trottier, 1982).

Healthcare call centres were a 'new' milieu in which nurses could practise their autonomous role. Moreover, since 1973 the Code of Professions (see, for example, Chagnon, 1992) legally recognizes the nursing occupation as a professional organization and it is the legal duty of the professional association of nursing to evaluate and supervise the quality and practices of nursing in the healthcare establishments. This meant that no other professional healthcare group, such as GPs, could supervise and assess nurses' work over the phone. The societal construction of the nursing occupation gave the latter a legitimate ability and recognized official backing to develop a nurse-led telephone consultation service. Also, in Quebec family doctors do not have 24-hour responsibility for the care of their patients, which explains the exclusion of doctors in the design and hierarchical authority of the service. Doctors could not express discomfort about handing over their clinical responsibility to nurses during out-of-hours, as there was no such formal organization of GP out-of-hours primary care services. What is more, the Quebecois Ministry of Health and Social Services (Ministère de la Santé et des Services Sociaux) has historically sought to decentralize the decision making to lower levels (MSSS, 1966; Pineault et al., 1993), leaving health professionals to operationalize their work. If the role of the MSSS were not decentralized, Quebecois nurses would have probably been less influential in designing their work in a 'phone-side' environment.

Healthcare division of labour: England

In England, by contrast, the nursing profession has no legal recognition of an *autonomous* sphere of competence. There have been considerable strides over occupational autonomy in terms of self-regulation, self-organization and more recently educational control. However, greater autonomy over the day-to-day work and the establishment of an autonomous sphere of competence, independent from the medical profession has not been realized (Ashburner & Birch, 1999; Williams, 2000). Although nursing training was removed from hospital-based schools and the apprenticeship model in favour of university education and scientific basis, it was only at the beginning of

the 1990s that this shift occurred. The UK was one of the last industrialized countries to have higher education-based systems for the nursing profession (Beardshaw & Robinson, 1990). Moreover, nursing interests have traditionally been subordinated to health civil servants and reactive to governmental concerns (Witz, 1994).

The British civil service has historically epitomized a centralized role where the top remained in charge and responsible (Clarke & Newman, 1997; Handy, 1993). The knock-on effect of the social role of the government was the implementation of NHS Direct in a top-down exercise via a Central Project Team within the Department of Health. The selection process of software for national procurement was authorized at the highest level of the NHS, involving not only nurses, but also civil servants and GPs. Doctors had a major national role in shaping NHS Direct and this mirrored the social settlement of the UK healthcare division of labour. UK GPs have historically had a taken-for-granted central role in the primary healthcare sector (Ashburner & Birch, 1999; Williams, 2000), controlling their 24-hour gatekeeper responsibility towards their patients. The recent implementation of Primary Care Groups (PCGs) to assess the needs of local people, developing and implementing primary care services have remained GP-dominated and extended the authority of doctors to all services not just those attached to general practice (Ashburner & Birch, 1999). The effect of the social role of GPs within the primary care sector ensured that doctors were nationally represented in shaping NHS Direct, bringing facts and strong knowledge of what was happening in the primary care sector.

Industry formation – 'early' and 'late' movers

The societal effect theory proved ineffective in explaining why a US software system had transferred to England and not to Quebec. Whilst Quebecois nurses shaped their telenursing practices without evident influence of other dominant practices from their American neighbours, English nurses used a US-developed software to base their telephone consultation despite major differences in their healthcare systems. In other words, choice of the clinical support system did not follow path dependency in both cases – and therefore something other than national institutional practice was involved in this process. Furthermore, in the case of England, one of three initial software providers in pilot sites was a product developed and commercialized in Britain. Why did Quebecois nurses shape their work methods of the 'phone-side' practice without influence from dominant practices developed in other countries? Why was there this diffusion and preference for an American clinical decision support software over a tried and tested local one in the

English case? The national–historical development of tele-health centres or industry formation is deemed crucial when examining the cross-national transfer of a dominant industrial practice.

Quebec – 'early mover'

The first experience of a '24/7' telephone-based healthcare service in the province of Quebec developed in 1984[2] in the administrative region of Quebec, and the service was named Health-Info (*Info-Santé*). Contrary to expectations, the service became permanent and spread to other regions. As the service expanded, nurses organized and formalized their nursing practice over the phone. Initially developed in 1984, Quebec was an 'early mover' in the provision of nurse-led telephone consultation services. At this time, no other Canadian province had introduced 24-hour tele-health centres and the northwest of the USA witnessed the development of a first 24-hour nurse service the same year (Quilter Wheeler & Windt, 1993). As an 'early mover' into the industry of telenursing, there were, as yet, no external models that had been tested or established. This left Quebecois nurses with more room for experimentation and organic growth. Nurses developed their 'phone-side' practice based on their knowledge and path-dependent modelling *within* existing national nursing practices.

England – 'late mover'

England was a relatively 'late mover' in the industry of telenursing. By the end of the 1980s and early 1990s, the USA had developed a mature industry of telephone nursing and algorithmic systems were the most structured approach and dominant practice (Sabin, 1998). The market was competitive and several algorithm-based software providers existed. The NHS Direct Central Project Team was therefore exposed to established or dominant industry models. With the first wave of development of NHS Direct, two of three software programs were American designed and the other was British (Munro et al., 2000). The first few users of the US software trained in Colorado and Chicago (Shamash, 1998). The Central Project Team and some general managers of the pilot sites went to the USA to get a flavour of the telenursing industry (Smith, 1999). Prescriptive formula put technical knowledge and 'expertise' in the hands of management and civil servants, who otherwise had little experience in the development of telephone nursing practices.

The context in which telenursing developed was very different in the UK compared with Quebec. In the UK, by the late 1990s there already

existed a powerful call centre industry offering trained management expertise and a dominant model of practice that NHS Direct planners could draw from. The software system that was chosen for NHS Direct (Axa) had a number of characteristics that overlaid the British system TAS. It was perceived as 'safe', 'consistent', and 'directive' enabling rapid speed at which calls were processed. If NHS Direct had developed earlier, the national modes of regulation might have been more influenced by nurses. However, the place of British nurses in the primary care centre and their more constrained occupational autonomy would have set important obstacles to this possibility.

Conclusions

The differentiation of call centre work has remained preoccupied in current call centre literature with a primary concern for the proximity of call centres to a Taylorism/mass-production model. This could be explained by the fact that research on call centre work has remained focused on routine white-collar workers mostly associated with low-skilled labour and in the same industries, for example, finance, telecommunications and retail. Also, this theoretically restricted debate on call centres has reinforced an impression in which call centre employees are subordinated to Taylorian design strategies and managerial control of technology. The aim of this article was to investigate the extent to which a strong occupation such as nursing was able to influence the specific design of technology and shape work methods and technology use. We suggest those three elements, occupation, national context, and industry formation shape the extent of active social shaping of technology and call centre work for nurses.

First, we noted that workers with a stronger sense of occupational identity, who are formed through a professionalization process, would be likely to experience call centre work differently, and may have more opportunities for influencing the outcomes of their work organization, in ways that those without such a professional identity could not. Nurses seemed an ideal subject for exploring call centre work, as nursing is practised in a variety of work settings, and nurses are a recognized and visible occupational group. The question was to what extent Nurse Advisors were able to act to shape their 'phone-side' work? Relatedly, would the traditional autonomy of nurses as 'constrained' decision advisors be maintained or changed by the call centre discourse, technology and processes – methods developed through the private or commercial centre sector and widely regarded as subordinating and alienating for new clerical labour. While the debate on call centres regarded call centre employees as subordinated to technology formation and work methods, our empirical evidence demonstrated that a credential-based

occupational group with distinctive qualifications and a strong consciousness of work practices was able to infuse its knowledge into the labour process in ways that altered job design and work autonomy.

Second, we noted that occupational formation varies cross-nationally, and therefore we needed to consider the dimension of national context to interrogate the effect this has on the social construction of a new way of delivering nursing practice. We recognized that nursing, although possessing many generic qualities, is formed in different ways within different national contexts. Therefore, occupation is not a *constant* but rather a variable enabler of work organization practice. In our case, the social construction of main actors such as doctors, nurses and the state determined the extent to which nurses were 'active' and 'reactive' agents in technology formation. If the role of the Ministry of Health and Social Services had not been decentralized, Quebecois nurses might have been less influential in determining the operational issues of the service and other coordination mechanisms. Likewise, if the Department of Health had constructed a decentralized role, health professionals might have been more able to shape the 'phone-side' clinical setting. However, the place of British nurses in the primary care centre and their more constrained occupational autonomy would have set important obstacles to this possibility, and doctors would have been likely to have a central role in operating the service.

Third, the timing of the development of telenursing, and whether a society is an 'early' or 'late' mover into new technology, influences the choices that designers of technology make. 'Late' developers used established or dominant industry recipes, drawn from dominant or established significant players. Whereas 'early' starters had more room for experimentation and growth within the rules set specifically by national-level players. We noted that telenursing in Quebec, an 'early' mover, when combined with a more professionalized nursing practice, facilitated nurses themselves being dominant in initiating a worker-centred expert system as a direct extension of face-to-face nursing practice. Without a powerful call centre industry in the Canadian environment when the telephone-based healthcare service emerged, models of practice alien to nursing were not available for borrowing or reference. This is in contrast to the situation in England, where a more weakly professionalized nursing practice, saw the development of telenursing imposed by a powerful state and the medical practice as a central resource. Moreover, this was within a wider environment of well-developed US healthcare call centres that provided a ready model, reference and the managerial expertise at the start-up period of NHS Direct.

One could question why England, as a 'late arrival' did not opt for the established Quebec model rather than the recognized US system. There was

no evidence during interviews with nurses and managers that they considered the Quebec model. However, we do know that British civil servants and health professionals were interested in the American system, and did visit the USA to see what was available. Why these planners did not 'shop around' is not clear, but we would offer these suggestions as to why the US model was visited and adopted. The US could have been an 'obvious choice' given the political affinities between the UK and US, the economic dominance of the US, and common English language. Also, Americans tend to be strong marketers of 'best practices', dominant technologies and exemplars. Although one could argue that this is something of a generalization, American software systems were indeed available off the shelf. The NHS Direct Central Project Team was exposed to these dominant ways of working in the tele-health industry, and the National Team made clear its taste for borrowing 'best practices' (BBC, 13 April 1999; NHS Executive, 1999). What is more, the low risk referral of those software systems was a selling point for a British welfare state that perceived itself responsible for providing solutions to the risk of disease and death faced by citizens. The Quebec model was a more local solution shaped by its social context and planners in England would have had difficulties to apply such a system even if it had been marketed as 'best practice'.

One theoretical conclusion of the research for call centres and the development of new technology more generally, is that it is not simply a question of whether or not a strong occupation is able to shape new technologies. That is the distinction between poorly organized, less skilled workers and well-organized, highly skilled employees is insufficient to understand and explain the work organization of call centres and the extent to which an occupation is able to retain control over the design of work. Furthermore, the research has empirically demonstrated that it is not simply technology, client base, management and worker resistance that is shaping the call centre experience, but forces outside the labour process and the different ways in which these are constituted. Occupation, society and industry formation and their mutual interactions have been shown to be important shapers in the labour process experience of call centres and this finding should inform further cross-national research of call centre work.

Notes

1 This model hypothesized that individuals have the ability to function independently as long as the 14 fundamental needs are fulfilled.

2 1984 marked the 450th anniversary of Jacques Cartier's arrival in Quebec. For the occasion, many festivities were organized throughout the summer, and the region

expected many tourists. Against expectations, it was the residents of Quebec – not tourists – who were the main users of the service.

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