

Caring Machines. Emerging Practices of Work and Coordination in the Use of Medical Emergency Communication Technology

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This book is a doctoral thesis which employs a sociologist's approach to describing and analysing the human-technology interface of the Norwegian Medical Emergency Communication System as it has existed since its restructuring in the mid-1980s. The author has adopted the view that the social and technical systems are analytically separable, while the borders between the systems are blurred (p. 26).

Using quite a verbose ethnographic style, the author provides the reader with the background to and the internal functioning of two categories of medical emergency communication centres that were established in Norway about 10 years ago. In summary, doctor-on-call centres (LV centre) were established in a nursing home of each municipality of less than 20,000 population. One nurse whose major duty it is to attend to the care of the aged infirm and the chronically ill people in the nursing home, is allocated during afternoon and night-time hours to also take telephone calls from people requiring the services of a doctor. The majority of these calls are of a non-urgent nature, yet (in contrast to the volume and quality of advice provided by nurses in acute medical communication (AMK) centres) most nurses apparently do little more than document the details of the call and redirect the caller to the doctor-on-call. The role disrupts the nurses' core work and seems to be more a job for a telephonist than a nurse.

Acute medical communication centres (AMK centres) were established as part of the accident and emergency departments of hospitals in larger population centres. AMK centres are staffed by teams of between two and four people comprising an ambulance coordinator plus one or more nurses who work as clinical nurses in the emergency department when they are not allocated to work in their AMK centres. AMK centres have one LV telephone for non-urgent medical cases and other telephones dedicated to receiving emergency 113 calls. The predominant role of the AMK team is to coordinate ambulance services.

Customarily, nurses had not been involved in these types of activities, so these developments introduced new roles and responsibilities for the affected nurses. These issues pervade the thesis, with the researcher exploring nurses' perceptions of both the impact of these changes on them personally, and how these changes had been received by both the community and other health care professionals (doctors in particular). Tjora develops a hypothesis around the theme of de-differentiation—the notion that nurses who are offering medical advice to callers are taking on the traditional diagnostic/evaluation role of doctors, thereby increasing the overlap of roles and reducing the distinctions between the two professions. However, he concluded that this was not the case because the literature revealed that nurses have always performed evaluation tasks, although this was a new context for them in which to perform such a role (p. 196).

From the researcher's perspective, the communication technologies are at the heart of the thesis. These technologies are predominantly the telephone and radio networks whereby people in the community summon help or seek advice from the nurses, who subsequently contact an on-call doctor or collaborate with other AMK staff to initiate an appropriate emergency-services response. Furthermore, within the AMK centres, there is a computer system that is used to manage the activity data recorded by staff. All staff can view and interact with all the data at any time.

The researcher has also devoted considerable attention to the verbal and non-verbal communication between the various staff, especially when staff activated the listen-all function in their system, at which time the entire AMK team could participate collaboratively in coordinating a response to a major incident or discuss an appropriate response to a situation for which there was no clear-cut way of handling it.

Although the changes in the communication technologies in the medical emergency system provided the catalyst for the research, I think that the resultant thesis is about the effects of organisational change. These organisational changes were prompted by a national top-down management decision to upgrade the performance potential of communication technology and to operationalise that decision by imposing new roles and responsibilities on nurses in various settings.

Tjora states that his focus is 'on the use of the technical artefact that is already designed' (p. 17) and the communication system had been established for about 10 years at the time of his study. It is for this reason that I see the study as one in which the technology provides the context in which the researcher explores interdisciplinary teamwork (particularly in the AMK centres) and human perceptions and behaviour, specifically in terms of responses to imposed organisational change. Overall, I think that the most lucid aspect of the thesis is the author's application of the coordinated climate concept to analyse the teamwork that he observed amongst the staff in the AMK centres.

The rationale for selection of the book's title, *Caring Machines*, was explained by the author in the closing pages. However, throughout the reading of the text I was puzzled by the title, and even after the explanation (pp. 199–200) I was left feeling that the longer secondary title, *Emerging Practices of Work and Coordination in the Use of Medical Emergency Communication Technology* conveyed the essence of the book to the reader much better.

The thesis has been translated to English from Norwegian, and it would be remiss of me not to remark that the readability of the text is compromised by too many poor selections of English-equivalent words (e.g. 'Ann significantly turned to Mary', p. 84) and weak sentence constructions—weaknesses that I am assuming are the results of the translation and not the standard of the original work.

I found the treatment of the theoretical basis of the work to be somewhat confusing (possibly because of its brevity), the structure of the book to be disjointed (particularly in the early chapters) and much of the descriptive content to be tiresomely repetitious.

In respect of the theoretical basis, I confess that I am not a sociologist, and so I am not in a position to comment on the appropriateness of the sociological perspectives applied by the author. I can only assume that the examiners of the thesis were satisfied with its theoretical rigour. However, I am in the position to critique his analysis from the perspective of a clinical nurse, a health services management academic with tertiary qualifications in information management technologies, and someone who is familiar with the organisation and coordination of ambulance services in both Australia and England.

Overall, I think that a smaller proportion of the thesis should have been devoted to description and a larger proportion to the synthesis of the observations with theory. Tjora fails to 'get into the meat' of many ideas or themes. Important theoretical concepts are summarily dealt with, frequently without adequate discussion to substantiate why he has drawn his conclusions. I often had to read material several times, 'reading between the lines' to try to grasp what might have been the author's logic which lead to a particular conclusion. These difficulties were often confounded by the disjointed presentation of the material. The sectioning of the early chapters in particular seemed to follow little logical pattern, and even within those sections, the flow of ideas from paragraph to paragraph was weak.

I am concerned with what presents as a superficial study of the literature with which I am familiar, and challenge numerous conclusions drawn by the author in this respect. For example, in his discussion on automation versus collaboration, Tjora (pp. 153–59) raises the issue of deskilling when he compares the more dominant human interface aspects of the Norwegian system (the collaborative system) with the highly automated London (England) Ambulance Service coordination and despatch communication system (LASCAD), yet nowhere does he identify that the personnel who work in the control rooms of ambulance services in England are communications technicians and not nurses. These types of organisational distinguishing characteristics should be acknowledged and discussed.

I also have some concern about the author's distinctions between the terms coordination and collaboration (for example, pp. 128–29). He sees coordination as 'the act or art of working together' (p. 129), a definition which is consistent with one of numerous dictionary definitions. However, its common English usage relates to prioritising and organising, and in this connection, I see the role of the nurses and ambulance controllers as that of coordinating activities which are external to their immediate work environment—i.e. coordinating the activities of on-call doctors and the emergency services staff and ambulances—and that the AMK centre staff collaborate to achieve this outcome.

On the same theme, the author presents the view that 'one of the most obvious parallels to the coordinated climate is the organic system of management' (p. 169). I disagree. Organic management is a system of organisational management characterised by systematic management of functionally integrated yet independent healthy parts which are necessary for organisational adaptation and survival.¹ I think that the application of this concept to how employees at one micro level within an organisation relate to one another or team during the performance of their work has some validity, but not to the extent proposed by Tjora in the context of his thesis.

Furthermore, the author gives relatively superficial treatment to concepts such as the coordinated climate and organic management, and in so doing, makes it difficult for the reader to appreciate his conclusions. However, this is ultimately of little consequence because many of these brief theoretical excursions seem to have stand-alone value only, and do not build towards any summative theoretical explanation of the researched phenomena. In this connection, most of the theoretical frameworks presented in Chapter 1 are not revisited in the analyses or conclusions.

Tjora described the research method as a comparative case approach, but no comparisons between the various study sites were actually made. In fact, specific reference is made to only one AMK centre despite the fact that three were visited (p. 39), and it was not possible to distinguish LV centres (of which there were eight).

An important part of reporting ethnographic research is to 'tell a story about a culture through reporting its patterns, roles and norms'² and in my view, the readability of the book would have been enhanced if the original doctoral thesis had been restructured into a less verbose and more logically structured narrative. 'The story', as it turns out is not an expansive one, a factor which might have contributed to the repetition of elements of the story in numerous places.

Potential readership of the book would be organisational behaviourists and sociologists who have particular interest in the relationship between technologies and people at work, the management of change, and/or interdisciplinary dynamics of various health professionals. As a health professional myself, I was interested to compare the emergency systems with which I am familiar with quite a different way of organising emergency health care services. And finally, because a communication system is fundamental to any modern medical emergency service, regardless of the category of employees involved in

its operation, I would have been interested to have read more on the political, cultural and organisational processes which resulted in nurses taking on such a significant role in the Norwegian medical emergency system. But I guess that's another story.

Notes and References

1. R. W. Dunford, *Organisational Behaviour. An Organisational Analysis Perspective*, Addison-Wesley, Sydney, Australia, 1992.
2. E. De Poy and L. N. Gitlin, *Introduction to Research. Multiple Strategies for Health and Human Services*, Mosby, St Louis, USA, 1994, p. 287.

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The *International Journal of Environment and Pollution* is a UK-based refereed journal. It is unclear whether it is published bi-monthly as stated on its inside cover, or quarterly as stated a couple of pages on. The journal's objective is to 'establish an effective channel of communication between policy makers, government agencies, academic and research institutions and those concerned with pollution and other environmental issues and problems'.

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The journal accepts advertising although the only evidence of this was a call for papers and a conference announcement. The journal also includes, apart from the refereed papers, letters to the Editor, news and briefs, company profiles, conference reports and book reviews. This particular issue, however, only included book reviews in addition to the papers. Very useful indexes to the current volume by title, author and keywords are also provided.

The journal tends to feature special issues with guest editors and this particular special issue on 'Integrated Regional Health and Environmental Risk Assessment and Safety Management' is jointly published with the Polyproject on Risk and Safety of Technical Systems, Swiss Federal Institute of Technology (ETH), Zürich.

This issue is longer than normal, over 400 pages and represents Nos. 4-6 in the volume for 1996. It consists of 25 papers grouped into five sections, following a short editorial by Adrian Gheorghe from the Swiss Federal Institute of Technology, which explains Polyproject's approach to risk assessment.