The Shaping of Technology and Place in Municipal Healthcare in Norway – an Explorative Study

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Abstract. Technologies shape how places are defined and experienced (and create and connect new places), and places shape how technologies are defined and experienced (and used and developed). In this paper, inspired by literature discussing technology, place and health, I will present an explorative study of how technology and place shape each other in a competence program for healthcare workers in Fosen in Norway.

1   Introduction

The introduction of various kinds of telecare technologies is often highlighted as a solution to challenges regarding 'lack of hands' in future healthcare. Telecare technologies are promised, by policy makers, designers and others, to make modern healthcare more efficient and more accessible – and often also to deliver higher quality care at reduced costs [1-4]. The same promises are often presented when introducing various types of information and communication technology (ICT) for competence development of health personnel. Common across these promises is the emphatic rhetoric that these technologies can erase the importance of distance and place. However, is this true? Place still matters, Oudshoorn [1] argues, and, drawing on insights from human geography and science and technology studies (STS), goes on to show how technology and place co-constitute each other within healthcare. Technologies shape how places are defined and experienced (and create and connect new places), and places shape how technologies are defined and experienced (and used and developed). Technology is here understood within a sociotechnical approach, meaning that the 'social' and the 'technical' are seen as tightly interwoven [5,6], and where the dialectic relationship between technology and its users is highlighted [7].

   In this paper, inspired by the literature discussing technology, place and health, I will present an explorative study of *how technology and place shape each other in a competence programme for healthcare workers in Fosen in Norway.* It is important to know more about how health personnel experience technology and place, since

technologies promising to transcend distance and place are being introduced into healthcare at a rapid rate. This study brings forward some initial reflections on this subject and outlines some suggestions for further research.

2   Theoretical Point of Departure

Place has traditionally been treated as a 'black box' within technology studies, health studies and social science studies, and even within the field of medical geography [8], even though geographers have always been interested in places and regions. The renewed interest in health and place within some of these fields in recent years implies an awareness that place does matter, and an understanding of place as a socially constructed and complex phenomenon [8]. This means that place is no longer treated as a passive 'container'. Places shape people's activities and people's activities shape people's places. Furthermore, place is not treated as merely a geographically defined site, but is also connected to people's experiences and emotions. This is implied in the concept 'sense of place', indicating the consciousness people have of places of particular significance to them [9]. For example, people can have an experience of 'home' in relation to the house they grew up in, the country they come from, the neighbourhood they live in now, etc. – and it is the experiences of this place more than the catalogued characteristics that are of interest to explore. Entrikin [10] argues that the understanding of place must include both the subjective experience and the knowledge of place as object, much in line with how the material/technology and the social/context/users is understood as interwoven in science and technology studies.

The importance of place for health has also gained renewed interest. Kearns [9] argues that "what occurs in a place (in terms of the relations between people and elements of their environment) has profound importance to health" (p.141). He further describes that the elements which constitute a place influence the health of the people in this place, and, vice versa, the way healthcare is provided also influences the character of a place. This is a dual relationship. The experience of medicine/health cannot be detached from the place in which it occurs [9,11]. Cummins et al. [12] argue that there is a mutually reinforcing and reciprocal relationship between people and places, which is important to include in health research, as place both creates and contains social relations. Halford and Leonard [13] explore how hospital spaces/places influence the daily work practice of nurses, and show how different spaces/places hold different meanings to different actors. They highlight how space/place can act as tools through which different actors construct and perform professional identities, and argue that attention to space/place contributes to original knowledge of nurses' working conditions and inter-professional relations.

Oudshoorn [1] brings insights into place to the field of technology studies, as she shows how places in which technologies are used influence how technologies enable or constrain people's activities and identities. She investigates the use of several telecare applications and shows how patients' homes and public places shape how these technologies are adapted and used (or resisted), and how the technologies shape pa-

tients' homes and public places. For example, the home is reconfigured and transformed into an electronic outpost clinic (which is not embraced by all patients). This is also shown by Langstrup [14], who investigates the interpretations and negotiations taking place regarding the home in chronic disease management. Oudshoorn argues that the meaning and use of technology depends upon place, implying that researchers, designers and others should be more place-sensitive when introducing or investigating new technology. Both Oudshoorn and Langstrup question the claim that modern healthcare is increasingly independent of place, and Langstrup argues that healthcare "more than ever rests on social, material and spatial arrangements and the work that holds these in place" (p.1020). Poland et al. [15] propose making place the lens through which to view practice. They investigate place, power and technology in health and social care by bringing together diverse theoretical perspectives, and show how place impacts health and social care, and how technology and power are interwoven and emplaced.

3   Case and Methods

Fosen is a region in Norway with small municipalities and large geographical distances. The region has a long tradition of cooperation between the different municipalities, and has now also introduced common initiatives for competence development within health and care services. Due to the large geographical distances, various alternatives to extensive travelling to attend courses have been introduced, among them lectures transmitted through video conferences and internet-based discussion fora. The empirical material for this paper is based on a research project evaluating one course using these technologies, namely the course 'Ageing on the Internet'.

'Ageing on the Internet' is a course for healthcare workers (mainly working in home care services or in nursing homes) in Fosen aiming to strengthen their competence on caring for elderly people and also learning to use ICT-tools for communication, cooperation and learning. The course included an internet-based discussion forum, lectures transmitted through video conferences and physical seminars. The participants worked in groups throughout the course and were supposed to write and hand in group assignments for different modules in the course. The participants were supposed to use the internet-based forum and video conferences to discuss and work with the group assignments.

The research project evaluating this course was conducted in 2010-2011, aiming to explore face-to-face interaction and technology-mediated interaction in competence development. The empirical material consists of interviews and observations. This qualitative approach is well suited for investigating participants' own experiences of a phenomenon [16]. 23 people were admitted to the course, 19 completed it, and interviews were conducted with 14 of those who completed it (individual interviews and group interviews). The interviews were recorded and transcribed. In addition, observations were carried out of one of the lectures transmitted through video conference and two of the physical seminars. The project was approved by The Ombudsman for Privacy in Research (Norwegian Social Science Data Services).

The notion of place was not part of the focus initially, but the material has been re-read to include this dimension. Guided by own observations of the importance of place when doing field work in Fosen, and by the literature on technology and place, the analysis in this paper has been carried out by re-reading the interviews and observations to search for themes concerning places and technologies, and how these potentially shape each other. The paper is an explorative study, indicating some preliminary findings regarding how place shapes the use of technology, and how technology shapes the experience of place, in this setting. The analysis is still premature and additional data is needed to further explore the subject.

4   Shaping of Technology and Place in Fosen

The places identified in this setting are the classroom (used for transmitting video conferences), the physicians' offices/meeting rooms (used for attending video conferences), the workplace (municipal health care and nursing homes), the home, and the region of Fosen. The main technologies in use are computers, video conferences and an internet-based discussion forum. The analysis should be read as early suggestions on how place and technology shape each other in this setting.

4.1   How Technologies Change Places

The technologies in this study change places, either by adding new dimensions to them, transforming their use or transforming what places mean to people. The first example is the classroom. The classroom is an ordinary classroom in a school in one of the local communities in Fosen. The lectures transmitted through video conference are being transmitted from this room, with a teacher and with course participants present in the room during the entire lecture. The other participants are placed in different locations throughout the region, meeting up in groups in their local community to 'watch and listen to' the lecture, with the possibility of asking questions at certain times during and after the lecture. As the lecture is being transmitted from the classroom, the participants here have been told to be silent, so that the lecture is not disturbed and the other participants in the other locations can hear the teacher. Normally, the classroom would be a place for activity and dialogue, where participants could comment and ask questions, and where the teacher could adapt his/her teaching to the activity in the group. However, because of the video conference, the classroom is changed, and becomes a place for being silent and passive.

The other locations are mostly physicians' offices or meeting rooms. They have video conference equipment because of clinical contact with the regional hospital in video conferences at certain times. These rooms are originally designed for other purposes, for clinical work with patients, and so now also have to be organised for video conference lectures for small groups.

Furthermore, technologies also change the workplace. The workplace becomes a place for learning. The course participants are allowed to work with the course for two hours during work hours. Sometimes they do this together: they sit down in

front of the computer in the workplace to discuss and work on their group assignment. This makes their participation in the course *visible* to their co-workers, and the course participants express how their co-workers become curious and ask them questions about what they learn in the course, leading to discussions on work practice and routines in the workplace.

The course participants also work (a lot) with their group assignments from the home. The two hours during work hours are not enough, and they study by themselves after work in the home and take part in discussions in the internet-based discussion forum. Thus, the home is redefined/reconfigured [1,14], becoming more than a sanctuary. The home also becomes a place for learning and a place where one is expected to carry out course assignments.

The technologies also change participants' experiences of the region they live in; their 'sense of place'. They get access to competence development and networks across geographical distances, and express how this changes their experience of how 'remotely' they live. They articulate that they now have more opportunities.

4.2   How Places Change Technologies

Places change technologies in several ways in this study: they have implications for how the technologies are being perceived, experienced and used. The first example concerns the use of video conferences. Video conference technologies are often presented as advanced technologies, used in specially designed and equipped rooms in many large organisations. These organisations invest a significant amount of resources in the technology itself and in training employees. When video conferences are used in Fosen (and often elsewhere in healthcare settings), with simple equipment and unstable connections, and where the (inexperienced) participants are crammed together in a small physicians' office, video conferencing is a very different technology. Video conferencing can be seen as one type of technology that can be easily implemented in different settings, but when place is included in the analysis, this view is nuanced. It points to how the 'same' technology holds different meanings in different places [1] and, in fact, *becomes* a different technology in a different place.

The internet-based discussion forum was intended to function as an informal, 'oral' setting where participants were supposed to discuss topics and assignments, almost as if in a face-to-face situation. However, the forum was mostly used at home, a setting that implied that use of the forum competed with many other activities (taking care of kids, doing house work, etc.). For the participants in the course, this meant that it was difficult to maintain a coherent discussion. They express that they could post something one day and then they would have to wait days for a response, or that they would 'come back' after Christmas holidays (when they would not prioritise using the forum, instead focusing on family activities) and have many postings from others to which to respond. Thus, the place (the home setting) changes the discussion forum to something more like an email inbox, where the participants can check and respond when they are able to, and where you cannot expect an immediate response.

5   Conclusion

Following Oudshoorn [1] and Langstrup [14] and others, I argue that the notion of place should be included when discussing technology and health, thus welcoming more place-sensitive analyses. There is an increasing range of places where healthcare is provided, often combined with the introduction of new technologies (such as telecare technologies), which underlines the need to investigate the importance of place [11]. Andrews [11] argues that healthcare becomes spatially dispersed and diverse, and that user experiences become similarly diverse and potentially space-specific. This means that we need to know more of how patients and health personnel experience technology and place. Further research should explore the complex interplay between technology, place and health to develop insights into how technology and place both constrain and enable human activity.

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