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Welfare Technologies in Care Work[1]

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Welfare technologies have within the last few years become a new mantra for reforming the Nordic public health and social care, and are increasingly making their impact on working life of care professionals.

Welfare technologies – a term exclusively used in a Nordic context – is a broad and loosely defined concept that covers a wide array of technologies such as tele-care solutions, automatic toilets, eating robots, GPS-trackers, and many others. They are envisioned as leading to a new and smarter form of retrenchment, promising better quality, empowerment of clients, and work that is smarter and more qualified (e.g., Danish government et al. 2013). Together with other reform initiatives like coproduction, rehabilitation, and user-involvement, welfare technologies aim at enabling a change in the role of the clients/patients, stressing their resourcefulness and potentials and encouraging to self-responsibilization and self-care (Rose 1998; Triantafillou 2017).

This implies a fundamental reorganization of care work, a transformation of what care and care work is about, and consequently of meaning and identity in work (see, e.g., Barnes & Cotterell 2012; Järvinen 2012; Kirkegaard & Andersen 2018; Meldgaard Hansen & Kamp 2018). More concretely, we may expect changes in work tasks, social relations and forms of cooperation between occupational groups, and new relations to clients/patients and their relatives. This may not only imply new challenges and strains in work but may also present new possibilities for employees to engage creatively in shaping work in ways that makes care work more meaningful and sustainable.

The imaginaries of welfare technologies are as illustrated above very optimistic, providing a win-win-win scenario. Very little research has been done on the implications for working life. This thematic issue aims at presenting new critical research about how welfare technologies affect working life in a Nordic context and hence contribute to stimulating important discussions.

The imaginaries of technology and the welfare political context play an important role for how technologies are interpreted and used. But, also local contexts and the ways

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technology is sought implemented should have our concern, as technologies are reformulated and reshaped, when brought into use by professionals and users (Orlikowski 2007; Timmermans & Epstein 2010). Insights in the Nordic contexts for developing and using welfare technologies are therefore important in order to understand the implications for working life.

We hence start by presenting a short overview over how welfare technologies are envisioned and how their implementation is governed. Here, we concentrate on the Scandinavian context. In the next section, we frame the thematic issue by offering a review of international research on welfare technology and care work, and the article ends up by summarizing the contributions that the four articles give. As we show in the next section, Denmark has been frontrunner in propagating and implementing welfare technologies. Hence, it turns out that all contributions to this thematic issue are Danish. So, we look forward for research on welfare technologies and working life from other Nordic contexts in the next years.

Welfare technologies in Scandinavian contexts

Denmark has been a frontrunner in the use of welfare technologies in daily practice (LGDK 2016; Mortensen 2015), compared to the other Scandinavian countries. During the last decade, implementation of welfare technologies and digitalization have been prioritized focus areas within Danish welfare state policy, and the use of welfare technologies in health and social care services is expected to increase in the coming years (Danish Government et al. 2016).

The term 'welfare technology' gained currency in policy debate 'welfare technologies' in 2008, sparked by a conference aimed at promoting innovation, developing expert markets for technologies, and quality of care (IDA 2008 and LGDK). Soon after, in 2009, this became a site for public investment and governance. With *The Foundation for Investment in Labor Saving Technology* [in Danish: Fonden for Arbejdskraftbesparende teknologi, our translation], 3 billion Danish crowns set aside to support innovation projects in municipalities. Welfare technology was then primarily perceived as a solution to increasing public expenses on labor intensive care in sectors that are burdened by the increasing numbers of elderly and chronically ill. While the name of the fund was soon changed, the focus remained on labor costs. The Danish Agency for Governmental Management 2010 described the foundation as being expected to have quite specific effects on the local level, such as 'documented labor saving potential', 'realization of labor potential in the individual organization', and 'anchoring of a mindset of efficiency improvement in public sector tasks' [our translation] (Thiim 2010). However, a more advanced understanding of cost savings, as obtained by enacting the active and self-reliant patient/client and restructuring care, later became prominent (Danish Government 2013).

In Norway, the concept of welfare technology fits into a series of concepts that refers to technological solutions that people can use to increase self-management, social participation, and quality of life (Norwegian Health Directorate 2012). The concept is presented as an important solution to the challenges that care services are facing in the coming decades due to the increasing number of elderly people, new user groups, and a shortage of health and care services personnel and volunteer care providers (NOU 2011:11).

The concept of welfare technology was primarily introduced into the public and political debates by the official Norwegian report 'Innovation in the care services' (NOU 2011: 11) and the white paper 'Future Care' (Ministry of Health and care services 2013). It mainly means technological assistance that can give people with physical and mental illness and impairment greater security and a better ability to take care of themselves in their daily life. The technology may also support their relatives and volunteers involved in the care.

All subsequent governmental strategies for the implementation and use of welfare technology in health and care services are based on these documents. They all express the same expectation, namely that with the expansion and practical application of welfare technology in the care services, the need for services will be prevented and the recourses can be used more flexibly.

In Sweden, these issues are primarily discussed as e-health and digitalization. The first national policy document of e-health (the use of information and communication technology) came in 2006 and was updated in 2010 to include the digitalization of social services. The future work is formulated as a vision of e-health and digitalization from the government and the Swedish municipalities and county councils (SKL) as a joint vision:

> 'In 2025 Sweden should be the best in the world using the possibilities of digitization and e-health in order to make it easier for people to achieve good and equal health and welfare, and to develop and strengthen their own resources for increased independence and participation in society' (Social department and SKL 2016).

The vision is framed with concepts like gender, equality, equity, accessibility, and good quality of social services and health care. However, welfare technology is also expected to increase effectiveness and innovation. As Sweden is a land of large geographical distances, the use of welfare technology has also been seen as a means for improving the possibilities to handle the challenges connected with elderly care in rural areas (Dir. 2015:72).

To sum up, there are great resemblances in the way welfare technologies are envisioned to solve problems in health and social public sector in Scandinavia. There are of course also divergences. For example, the conception of technologies as labor saving seems to be stronger in Denmark, while technologies ability to facilitate care for clients/patient across long distances play a more prominent role in Swedish policy.

However, there are important differences, when it comes to governance of the diffusion and implementation of welfare technologies.

In Denmark, we see a quite centrally driven means of governing the process of dissemination and implementation of welfare technologies across the local municipalities, supported by a wide range of governance tools that allows for learning, benchmarking and measuring economic out-put across the sector. The key to this complex form of governance is the Centre for Welfare Technologies (situated at Local Government Denmark), which was established with the aim of supporting the spread and use of 'mature' welfare technologies' in the 98 Danish municipalities.

The Center uses a number of different techniques in order to push this development (LGDK 2014): Pointing out relevant technologies regularly and measuring their spread and use. Facilitating knowledge sharing between municipalities by, for example,

establishing collection of examples of implementation, establishing municipal networks for welfare technology, making implementation guidelines concerning specific technologies. Moreover, the center has established business case models and models for documentation and benefits realization, and measures the diffusion of welfare technologies.

These techniques are diverse, and have both soft and hard aspects. On one side, they aim at enabling mutual learning and sharing of experiences. On the other side, they aim at establishing economic goals and at rationalization through focus on standardization, performance measurement, and benchmarking.

The government plays a role in this stimulating the innovation and implementation of welfare technology in Norway and Sweden, but do mainly use softer incentives. The greater autonomy of the municipalities in Sweden and Norway is also an important factor in understanding the differences.

In Norway, the government has introduced an ambitious three-stage program for the expansion and application of welfare technology with a budget in 2014 on 34 mill NOK. The program aims at making welfare technology an integral part of the health and care services by 2020. The main steps are to develop and test welfare technology solutions in municipalities, stimulate for innovation, create and spread knowledge about welfare technology, and provide good models for introducing and use of welfare technology. Some of the main anticipated challenges are to stimulate municipalities for innovation in care services, spreading the knowledge and knowhow for welfare technology solutions to end users, their relatives, and to health providers. The program therefore gives priority to training and competency measures, organizational development, and the establishment of cooperative arenas for innovative municipalities and professional circles (NOU 2011:11, p 15).

We may thus say that the current policy for the Norwegian welfare technology focuses on supporting people in managing their own everyday life despite illness and loss of function, as this could postpone the moving to an institution. As means of governing the field, a simultaneously focus on innovation in the services *and* technology development and implementation is applied.

In Sweden, economical funding in order to promote the development and application of welfare technology is also the core of central governance. During 2010–2014, the government allocated around 400 mio SEK to develop e-health and welfare services in the municipalities.

It was in part a response to a large national survey performed in the autumn 2011 initiated by the Swedish government (Modig 2012) on welfare technology within elderly care in all the 290 municipalities. The background of the survey was the demographic challenges with the increase of elderly in need of care and social services and the recruitment costs of staff to the sector. Welfare technology was expected to help to free up time for staff for tasks that really require human contacts as well as improve the possibilities for the elderly to lead an active life and to feel security and wellbeing. The survey showed that even with positive expectations of welfare technology in the municipalities, the lack of financial resources and competence was major obstacles of the implementation.

The Swedish approach to governance seems to be less comprehensive and focused than the Danish and Norwegian. There are big differences between municipalities and between different areas of social welfare services. Technologies are primarily applied within the elderly care, as the development has been faster compared with other areas of social welfare services. However, the main change of technology within elderly care is

the shift from analogy to digital safety alarms, that is, alarm mats, door alarms, motion alarms, etc. Most the municipalities use this type of equipment for people who live in their own homes (National board of health and welfare 2016). So probably, welfare technologies have not yet had a great impact on working life in Swedish elderly care.

To sum up, this section shows how welfare technologies play an important role in developing the care in the Scandinavian welfare states. The imaginaries of welfare technologies are quite similar in the countries, as are the goals that are pursued. These ambitions are in various degree sustained by specific governance techniques. While the Danish approach implies a rather centrally driven process, with double focus on standards and performance measurements on one hand and interorganizational learning the other hand, the Norwegian approach highlights innovation, learning, and development and competences. The Swedish approach is still not so well-defined. These differences may have implications for working life. At a general level, it could be argued that the narrower the scope is for use of welfare technologies and the more tightly this process is governed, the lower are the professional's possibilities to shape and use technologies in an innovative way.

Studies of welfare technology in care work

Empirical studies that focus on the implications of introduction of welfare technologies for working life have until now been scarce, but are coming up. An important starting point is, as pointed out by (Mol et al. 2010b; Pols 2010) that introducing technology does not imply a transformation from 'warm' to 'cold' care, but should rather be seen as establishing new forms of care. Welfare technologies may thus transform the character of care interactions between professionals and citizens/clients, and effect a reconfiguration of existing care networks and geographies of care. Hence, the use of these new care technologies raises a number of issues and interesting avenues of care work research.

Many new care technologies aim to facilitate *care at a distance* (e.g., through telecare systems). Dutch researchers stress how virtualization alters the character of the observations care workers are able to make and show how the validity of the patients' own measurements and observations become a new factor of uncertainty (Oudshoorn 2009; van Hout et al. 2015). Other studies show how virtual contact – in contrary to what usually is assumed - may intensify the social contact, but that the focus of the conversation also changes implying that the focus on illness is magnified (Mol et al. 2010b; Oudshoorn 2009; Pols 2010).

The change in relations between patients and professionals has been at focus for a range of studies. Studies of tele-care point at how patients acquire a new role, thus becoming 'diagnostic agents' (Oudshoorn 2008). However, to make patients enter this new position in the network of care does require 'inclusion work' from the professionals, in order to reassure and convince the patients (Mort et al. 2013; Oudshoorn 2008). Mort et al. (2013) further argue that this kind of work is in fact affective and relational and introduces the concept of emotional work in order to grasp the qualities and possible contradictions and strains in work.

But, also *new divisions of labour and responsibility* arise between patients/clients, professionals, and technologies, leading to reconfiguration and renegotiation of the roles and identities of both citizens/clients and professionals. As authors like Nicolini (2007)

point out, expanding work practices in space and time as, for example, implied by introducing telemedical arrangements, is not only about redistribution of tasks and responsibilities. Accountabilities are reframed and relations renegotiated. This may imply the emergence of new identities and reconfiguration of power relations in the field. In his study of telemedicine within the field of chronic heart disease, he illustrates these points. He shows how telemedicine implies a new division of work between nurses and physicians, where nurses in practice take over diagnostic tasks, and thus acquire greater autonomy in work. However, the responsibility of the physicians for the diagnostics is formally maintained. Also, Langstrup (2013) emphasizes the negotiated and emergent character of processes of redistribution of tasks and responsibilities between different human and nonhuman elements. In her research on home-based treatment of patients suffering from asthma and haemophilia, she points out how this sociomaterial network is constantly negotiated and requires work from the professionals, who subsequently play an important part in keeping the different elements in the infrastructure in place.

Another study that contributes to this discussion is by Halford, Obstfelder, and Lotheringen (2010). They investigate the introduction of a larger technological system, the Electronic Patient Record (EPR), in a large Norwegian hospital. They show how this technology not only leads to a new division of tasks and responsibilities, but it also disrupts professionals own conceptualization of work and profession, thereby challenging professional identities. The EPR also implied restructuring of the interprofessional collaboration and increased hierarchization. The study hence not only shows how technologies are constituting professional identities, but also how professionals are actively engaged in shaping technologies.

The implementation of new technologies and professionals' influence on their use are important issues in exploring their implications for working life. Interest in 'technologies in use' as an important site for transformation of technology has paved the way for this research. Authors like Stephan Timmermans and Marc Berg emphasize how technologies are translated when entering into practise and how professionals play an important role in the translation of technologies. But they also point out how professional identities are transformed, as technology becomes part of the knowledge base, practises, and professionalism (Timmermans & Berg 2003). The work of implementing or transforming technology is conceptualized in different ways. Mol, Moser, and Pols (2010b) offer the concept of 'tinkering' to account for the meticulous the job that the professionals do to adjust technologies and make them work in complex environment. 'Invisible work', introduced in the works of Suchman (1995) and Star and Strauss (1999), also play an important role in this research. Much research shows how the rather optimistic view on technology that seems to be inherent in contemporary society leaves much work required to meet important goals invisible. For example, Bertelsen (2007) shows how the medical secretaries undertake many different and complex tasks, some of them quite important to secure the interdisciplinary work and information flow. However, looking at the plans for implementing EPR, the visions of rationalization are based on a very simplistic conception of what the secretaries accomplish. Research on telecare, for example, shows the intensive ongoing and invisible effort that nurses do in order to include patients in telecare, and to make them competent participants in co-creating care (Oudshoorn 2007; Willem & Pols 2011). Newer studies (Dupret 2017; Dupret & Friborg 2018) introduce the term 'workarounds' in order to describe the professional, ethical, and innovative aspects of invisible work. They define workarounds as work

patterns that are created in order to accomplish crucial work goals within dysfunctional work systems. The authors here stress invisible work as a positive and constructive contribution, and show how professional judgment and ethical navigation comes into play. Work arounds is thus based as conceptions of work that come quite close to the sociotechnical understanding expressed in the concept of 'responsible autonomy', which stress a positive and innovative orientation toward work as inherently human, and also departs from an interest in the informal practises of working life (Klemsdal et al. 2017).

Professional ethics plays an important role in the development and navigation of these informal practises, and is a cornerstone of discussions on how the introduction of technologies in care may give rise to new ethical questions, paradoxes, or conflicts. Pols (2015) argue that abstract ethical principles are unable to grasp the complex and often conflicting notions of good care in practise, and advocate for an empirical approach to ethics. Studies that are inspired from this approach show how professional ethics is situationally negotiated, and point to the contradictory role of technologies. A specific technology may in some situations be enabling dignified care while in other lead to the opposite, thus causing tensions and conflict in professional work (see, e.g., Krøjer & Dupret 2015; Nickelsen 2013).

In sum, recent research in this field shows the broad spectrum of how welfare technologies may transform care work, but it also points at different concepts and ways of entering the studies of welfare technologies in care work.

However, very few studies consider the broader context of welfare state policies that welfare technologies form part of, where they are connected with possibly contradictory goals of person-centeredness, empowerment, dignity, increased quality and efficiency, and retrenchment. An exception is a UK-based study, taking departure in austerity as a broader societal framing, which points out how this framing narrows the scope of welfare technologies in particular ways (Mort et al. 2013). This remains to be explored in a Nordic context.

Presentation of the articles of this thematic issue

The four articles presented in this section are all studies of the use of welfare technology in Danish care contexts, and do in different ways deal with home care. This is no coincidence, as Denmark is the country in Scandinavia where welfare technologies are most widely used, often with a perspective of either keeping elderly or chronically ill clients/patients in their home or moving services form specialized care to the home. The articles contribute to enfolding different aspects of how working life is transformed, and offer rich insights in the complexity and contradictions of making technologies work, all primarily based on ethnographic field studies. They thus develop new insights both empirically and conceptually to the body of knowledge presented in the former section.

The first article from Kamp and Hansen thus contributes to discussions on how interprofessional relations and professional identity and knowledge are affected in cross-sectoral work facilitated by technology. The article by Ertners deals specifically with the so-called implementation process, and contributed with a complex understanding of the different kinds of affective work that it implies. The concept of invisible work plays an important role in all articles, but is specifically addressed and developed in her article. The two last articles introduce new concepts to the discussion. In the article by Hansen

and Grosens, they unfold the concept of body work. By focussing on the transformation of this often neglected part of care work, they critically relate to optimistic visions of care at a distance and offer discussions of dignity in care. Eventually, the article by Højlund and Lacour introduce concepts of temporality in order to understand how welfare technologies alter rhythms and qualities of time as important aspects of care. Below, we give a more comprehensive presentation of the four articles.

In their article with the title *Negotiating Professional Knowledge and Responsibility in Cross-sectorial Telemedicine*, Annette Kamp and Agnete Meldgaard Hansen present a study of cooperation between hospital nurses and community nurses in the specialized medical field of ulcer healing and treatment. The cooperation was facilitated by a standardized telemedical service.

In their analysis that they build on empirical data gathered in an explorative ethnographic field study and a theoretical perspective combining insights from STS and the sociology of professions and standardizations, they show that the nurses were not just 'implementers' of the pre-defined technology that shaped their actions and abilities as health care professionals. Rather, they were actively engaged in subjective processes of framing the tele-ulcers technology to their specific contexts and their interactions with each other and their patients. This framing processes involved varied and complicated activities that bridged the gaps in the distributed ulcer service and challenged practical knowledge, professional identities, and responsibilities. Both the hospital and the community nurses had to balance the abstract de-contextualized knowledge of ulcer with contextualized knowledge of individual patients. Yet, both groups of nurses experienced the tendency that local knowledge and professionalism had to give way for more abstract regimes of professional knowledge.

The study highlights the complexities and unexpected outcomes of technologically mediated cross-sectorial cooperation between professional groups in the health care system. It demonstrates that professional tasks, knowledge, and responsibilities cannot just be transferred from one level of the health care system to another through telemedical solutions. Cross-sectorial cooperation through telemedicine involves a number of unpredictable and pluri-directional processes of recontextualization and transformation of professional knowledge, tasks, and responsibilities, rather than a simple one-directional transfer of such. Thus, cooperation through these devices does not in itself create the desired effects presented in health care policy documents across the Scandinavian countries.

In her article with the title *Enchanting, Evoking, and affecting: The invisible work of Technology Implementation in Homecare*, Marie Ertner explores the invisible work of implementing technology in home care. The study builds on data from an ethnographic fieldwork in a Danish homecare unit. The analysis relates to STS research on technology implementation. Within this field of research technology, implementation is seen as a highly complex, heterogenous, and vulnerable process, where various actors have to come together in order for a new technology to work.

On this basis is Ertner critical to the Danish national policies on aging and elder care and 'the plug-n-play' approach to technology implementation that is present in the national strategies for implementation of the technologies. The policies on aging and elder care highlight welfare technology as a promising solution to secure the delivery of care for the increasing number of older people, while saving public expenditures on care provision. The 'plug-n-play' approach to technology implementation presents implementation as a straight forward procedure and the users of the technologies, as

individuals who want to be supported in their homes and that their quality of life will be enhanced by a quick placement of technology.

In the analysis, she put focus on the home care workers effort to implement technologies in the home of older people and the activities of project managers of training and preparing the home care workers to take on the tasks of implementation. By doing this, the implementation process emerged as an affective and symbolic process in which the home care workers were reconfigured as 'implementation agents' and the older people as 'digital older citizens'. To become good implementation agents, the home care workers needed to attain certain roles and beliefs and the users had to adapt their everyday practices and routines to the new technologies and the new relations of responsibility.

The analysis foregrounds the skillful work of project managers creating motivated and dedicated implementation agents and the delicate strategies of home care workers to enchant, persuade, and seek to entice older people to create emotional attachments and adapt to each other. If these practices remain unarticulated in the domains where they are practiced and in prevailing policy and innovation discourses, the skills and strategies necessary in order to facilitate implementation of new technologies in health care are obscured.

Agnete Melgaard Hansen and Sidsel Lond Grosen contribute in their article *Transforming Bodywork in Eldercare with Wash-and-dry Toilets* to the discussion of implication for care work when new technologies are put in use in care practice. The paper addresses one of the four strategically selected technologies – wash-and-dry toilets that were prioritised by the Danish government to be implemented in eldercare between the years 2014 and 2016. In national policies, the technologies were expected to become a win-win relation for the municipalities, professionals, and the citizens. The technologies have been legitimized as cost-effective and to increase quality of care and also to decrease the need for professional care, as the elderly are expected to become more self-sufficient and independent.

The authors' combine policy analysis of documents with an ethnographic study at three different work places that had installed the toilets in various degree for long-term use. The results from the policy analysis reveal great expectations of the wash-and-dry toilets, from improved working environments for the frontline workers to freedom and dignity for the citizens, while simultaneously rationalizing care services. Taken together, the analysis shows that the use of the toilets is however dependent on situational usage and the network of the actors involved, which contradicts the expectations in policy documents. Although the wash-and-dry toilets reconstitutes bodywork in eldercare practice toward more distanced body work, there is still intimate work to be done. To a large extent, care work deals with elderly's bodies, which require invisible work or articulation work in relation to toileting and intimate hygiene after-work, which calls for professional skills and reflections. Therefore, they argue for a more complex understanding of dignified care in relation to the use of technology in care work.

The article contributes not only to the research of welfare technology but also to the broader research within eldercare work. By focusing on the difficulties with managing the wash-and-dry toilets, the authors' also illustrate the complexity of the bodywork, and thus contribute to make it visible.

Anders la Cour and Holger Højlund focus in their article *Untimely Welfare Technologies* on the relation between time and care and how welfare technologies in nursing

homes contribute to an increased temporal complexity. In Danish nursing homes, several new welfare technologies are used like intelligent beds, sensitive floors, electronic diapers, GPSs, and automatic toilets. Among other positive ascribed functions of the technologies, they will free up time in care work for more interaction with residents as well as improving working environment for the care workers.

The authors characterize their study as short-term theoretically informed ethnography, which was conducted through interviews and field observations in five different nursing homes in five different Danish municipalities. With the use of Niklas Luhmanns' work on system theory, they focus on different conceptions of time as not only coexisting but also impacting on meaning of care within the nursing homes. Technologies rely on a specific causality that both legitimize the use and are effective in handling complexity, but are built around certain procedures, without regarding the residents' general condition or other events in the nursing home. In relation to other temporalities of care schedules and interaction, welfare technologies introduce a new temporal horizon as a form of unpredictability, which requires immediate response from the care workers. To synchronize the different temporalities in the nursing home becomes challenging to manage for the care staff and decides what kind of care that is.

The article contributes to the theoretical understanding of temporalities within care work by illustrating how the new technologies represent a new time perspective and interact with schedules and routines in the nursing home. The different time horizons reveal the complexity of care work and thus contribute to the broader critical discussions within the research of care work and its transformation.

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