

# Technological Development or Social Solutions? Technology Use and Its Implications for Elderly Care

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## Introduction

In the 1970s and 1980s, there was a strong focus on the connection between technology and work across different disciplines, not only in industrial sociology (see Zündorf 1979, cf. Pfeiffer 2010), but also in the field of technology, and even technology assessment (Bechmann, Varenkamp & Wingert 1979; Hausen & Rürup 1975; Valenduc & Vendramin 1992). The main research perspective was however the focus of industrial sociology on the connection between technology, organization, and work in industrial work: very often the rationalization of industrial work was strongly supported through technology. A very prominent example here is the concept of Scientific Management (Taylorism), which implied standardization processes through mechanization, allowing mass production strategies by the assembly line.

A broad range of topics were intensively discussed in these years dealing with the consequences of technologies on work processes, like the intensification of work; de- and re-qualification processes in industrial work; or losses of work places through mechanization. Since the 1980s, however, the research focus on technology and work became weaker and seems to be no longer in the center of scientific discourses in the field of work, nor in the field of technology. Nevertheless, especially with the rise and development of new technologies and their impact on working life, the relationship between technology and work is still there and important to analyze. However it remains 'under analysed', which has been already mentioned and criticised by some scholars (e.g. Pfeiffer 2005; Pfeiffer 2010; Wajcman 2006). In the field of industrial sociology, technology seems to be 'forgotten' as organizational perspectives on work are

the focus of the discipline now. According to Pfeiffer (2010) analyzing work without technology, however, is an 'illusion'. Rather, technology needs to be reintegrated into actual approaches to work, not least by using international debates as well as interdisciplinary approaches.

The aim of this article is thus to propose a re-actualization of the connection between technology and work. Looking into actual fields of the research on work, it can be observed that today technological developments demand a new kind of discourse and debate. This encompasses not only processes of informatization (e.g. Boes 2005) of work and the changes caused by information technologies in industrial work, but also recent changes in other fields of working life which were caused by the internet (Carstensen 2012). Also, starting from concrete technologies, the impact and effects of technology on work have to be reconsidered, e.g. the impact of autonomous technical systems (robots) in manufacturing, or technical vs. human control in air transportation (Weyer 2008).

Starting from 'concrete technologies', this article focuses on new technologies used in service work. Not only call centers—forming already the 'classical' example of a Taylorization of service work—illustrate technology-driven changes based on information and communication technologies. This article deals with technological innovation in elderly care, where new technologies are currently developed inducing changes and demands for care work. It analyses which new reliefs and burdens develop within technology-supported relations of care, and describes a social field, where changes due to technologies can be observed in a new quality.

### **Case example: technology use in elderly care and its implications for care work**

The future demands on elderly care in an 'aging society' are regarded as a central societal problem. Very often statistical data of demographic change is used to illustrate the societal challenge of an aging society. For example, in the next years and decades the population structure in Germany will change dramatically. Until the year 2050 the population will

develop in two directions that strengthen each other correlatively: on the one hand, a drastic decrease of the population is estimated; on the other hand, the share of old people will significantly increase. Furthermore, life expectancy will continue to rise about seven to eleven years within the next fifty years. Whereas in 2009, Germany had 82 million inhabitants including 17 million (21 percent) 65 years old or older, until 2030, inhabitants older than 65 years will increase to 22 million (29 percent) (Bundestag 2012).

Next to the future organization of the retirement funds or the health care system, the future organization of elderly care is regarded as a central challenge for an aging society. With a rising number of elderly persons, increasing cost pressure, and low numbers of available qualified personnel in social areas, the demands of elderly care are increasing. Due to these shortages the current situation can be characterized as a 'crisis in care'. As one solution for this crisis, the use of technologies within care is discussed intensively to support the lives of the elderly at home, as well as care in elderly homes. Technological developments in different fields aiming at the care of the elderly, e.g. Ambient Assisted Living (AAL), telecare, and robotics are regarded as potential solutions for the current shortages in elderly care.

This is, on the one hand, important for elderly people in home care, because certain technologies could allow for at-home independent living (e.g. AAL-technologies and telecare). On the other hand, elderly homes are also affected by technology use. Here, the potentials of technologies are seen, above all, to increase the efficiency of working procedures and work organization of the personnel, e.g. with software and service robots. Furthermore, the use of technologies as artificial companions, namely the use of semi-autonomous robot pets for human technical relations is discussed very controversially (Turkle 2012). There are (until now mainly in Japan) already practical experiments where technologies are applied for contact, relationships, and communication for the elderly (e.g. the seal PARO).

In the German political discourse, these technological innovations in elderly care are regarded as necessary to offer an adequate supply for the elderly in the long-term, but also to sustain an independent life and



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autonomy of people for as long as possible at home (Bundestag 2012). Following a 'technology push' strategy, very often the further use of technology within care is determined by existing technologies or paths of innovations. Hereby, very often, personal needs, fears, wishes and emotions, as well as concrete living arrangements of elderly people in need for care are not included in the development of technologies. Furthermore, it is very difficult to evaluate them, as they touch private areas with a high emotional component (Mol, Moser & Pols 2010; Mort, Roberts & Milligan 2011). To date, human needs have not been sufficiently integrated into the development of technologies of elderly care. And although there were two citizen participation dialogue rounds on demographic change and telemedicine, organized by the Federal Ministry of Education and Research in 2013, critical public discussions focusing on this topic are still missing on a broad level.

## **Types of technologies: ambient assisted living/telecare and service robotics**

The two technological fields (AAL/telecare and service robotics) were chosen, as they are until now in a development status of technological visions. Neither are yet introduced into elderly care on a daily basis. However, both have led to controversial discussions in recent years, as they are supposed to have a high impact in the field of care. In a positive technical vision they are regarded as strengthening the autonomy and independence of the elderly, and as supportive of care work.

AAL/Telecare are microsystems, as well as information and communication technologies, which are installed at home and allow elderly people to live longer independently. Technological functions encompass e.g. memory functions for the stove in the kitchen or the right medication; monitoring functions for movements and body data; and pendant alarms, etc. (Berndt & Wiechert 2010). AAL and telecare are jointly discussed here because telecare is understood as a certain implementation of AAL. In Germany, AAL technologies are not applied nationwide, although there were high investments in the last 10–20 years. However, in other

countries, like Great Britain and Spain, telecare systems are already in wide use.

The development of robots for use in elderly care aims at both: use in home care as well as in nursing homes. Partly, the robots overtake similar monitoring functions like AAL technologies, e.g. reminder for everyday activities or distant monitoring of the elderly through cameras (service robots). In nursing homes, service robots could overtake care functions in more direct ways for the elderly: they could check whether elderly people drink enough, support them in eating, or help the care personnel in physically demanding work like bathing or lifting. Furthermore, robots can overtake transport functions in nursing homes, e.g. of linens and medications (autonomous transport robots). Controversially discussed is the use of robots when they are in an emotional and social function, e.g. to provide communication and entertainment to the elderly (semi-autonomous emotional robots, e.g. PARO) (vgl. Turkle 2012).

## Changes and challenges in care work

Whereas rationalization strategies have been applied for long time in industrial work as well as in certain parts of service work—call center work is a prominent example—it is a new development that also emotionally-based service work is the focus of rationalization strategies. For sure, further technical innovations in both fields will change care work in the future. This can be already shown in the case of telecare, where care work is organised more and more along the ‘classical division of labour’: elements of work which can be efficiently organized and steered. This rationalization process in care work can be described in the following way (cf. Mort et al. 2011; also López et al. 2010):

1. Monitoring: reduction of care to a ‘purely technical’ procedure done by machines, which is backed up by monitoring center staff. Here highly skilled care professionals work on monitors to organize and coordinate (emergency) calls.
2. Physical care: basic labor done by low skilled (female) care professionals.

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3. Social and emotional care: performed by loving, but busy family members.

This division of work is changing the current character of care in a central way. 'Care—basically—is acting in relations,' as Görres and Freisacher (2005, 33) define care work in a concise manner. Especially the 'core' of care—interpersonal relations, mutual empathy, emotions, and recognition—is changed through the use of technologies. Therefore questions regarding occupational identity and quality standards within care are raised, which need a serious discussion if more and more technologies are introduced.

Thus, opportunities for the use of technologies in elderly care are, on the one hand, a higher efficiency of the care system by the support of care professionals. On the other, elderly people living at home can gain a higher autonomy and increased self-confidence and security.

However, there are of course risks, like the standardization and rationalization of the care system, e.g. a substitution of care personnel and a lower rate of human contact for the elderly in nursing homes. In home care, the use of technologies can lead to external surveillance, and therefore stronger external control, coupled with a loss of private spheres for the elderly. Furthermore, there are high ethical concerns regarding the use of technologies in social and emotional fields, because the loss of interpersonal contacts can further increase the social isolation of the elderly.

## **Outlook: technology and care in the perspective of care arrangements**

The use of technologies within care settings is not a completely new topic. Already for many years technologies have been used in elderly care, and are already inseparably intertwined with care, e.g. thermometers, wheeled walkers, digital data (cf. Mol et al. 2010). However, as Mol has pointed out, 'Technologies ... do not work or fail in and of themselves. Rather they depend on care work' (14). As such, technologies need to be



accompanied by human beings in order to contribute to the well-being of the elderly, e.g. the common use of the robot seal PARO, or virtual visits by family members.

However, in practice at the moment, the interconnection between technology and the human/social sphere seems to be missing. Whereas social factors are not sufficiently reflected in technical innovations, also in social innovations, the potential of technical support is not sufficiently taken into account. Therefore in the future, technical and social innovations should be jointly used to overcome threats and trade-offs in care, which are often economically motivated. This is possible, if personal needs of the elderly are more reflected within the development of technical innovations. But also social innovations in care should be shaped in such a way that they integrate technological solutions. In order to support the integration and further development process, normative guidelines should be developed and publicly accepted to accompany the use of technologies within care. Questions regarding human needs in care should be of foremost consideration.

In Germany, however, there is currently a strong focus on ‘advanced’ technology development, with a relatively low focus on practical implementation measures, and a low level of demand-driven technology development. As ethical questions have a high relevance in this field—especially with regard to the acceptance of the technology by elderly people—a broad public discussion and an exchange between citizens, policy makers, and technology developers is missing.

Especially on a societal level, the demographic change offers a lot of challenges, but also opportunities for aging societies. An open dialogue focusing on the opportunities of the technologies could help to support a positive vision of demographic change, and also the visions for an aging society. Citizen participation should play a crucial role here to address questions like, ‘Which is the society we want to live in in the future?’ on a broad societal level. So, it is important to strengthen the focus on social innovations for an aging society in a technology-driven discourse. This is of special relevance, as the German care system for elderly people and especially the ‘quality of care and life’ for people caring and people being cared for has deteriorated significantly over the last

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years due to cutbacks in budgets, long overtime hours, a serious shortage of qualified personnel, and illegal covering of private care by migrant workers according to 'global care chains' (Hochschild 2000).

The 'real' contribution of technologies to this 'crisis in care' should be developed very cautiously. It is not sufficient to think about the potentials and the practical implementations special technologies can have. The focus should be rather on the social and political possibilities to cope with the current shortcomings in elderly care, e.g. budget cuts due to current transitions of the welfare state, and decreased societal relevance of elderly people and the sector of elderly care.

It seems to be crucial to address the following aspects intensively in future research: First, a sound evaluation of working conditions in elderly care and how they change due to technology development. Second, a deep analysis of the social integration of technologies would be necessary to develop how the potentials of technologies could be embedded into social solutions. Especially side effects of technology use should be cautiously assessed and evaluated beforehand so as to prevent path-dependencies of technological solutions. Thus, technologies should be integrated while always reflecting human needs in care of people who care, people who are cared for, and relatives. Hereby, the overall question, 'Which aspects of care *can and cannot* be covered by technologies?' should be soundly addressed.

In an overall societal perspective it will be nevertheless central in the future to re-embed the demographic change in such a way that age will be regarded again as a central part of the life course. This would imply that present potentials of an aging society could be used: through public/private responsibilities for elderly people, and by strengthening societal contexts relevant for the elderly (between and within generations, neighborhoods, working time policies for relatives, and new concepts of joint-housing and living). This could form a first contribution to use the origin of demographic change—the prolongation of life—again as a central progress of modernity.



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