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Abstract: Alarm pendant use among older people is often framed as one of the rational responses needed to alleviate the escalating costs of an ageing population. This paper draws on qualitative data with older people and their carers to explore the effect that supplementing, and in some cases substituting, 'traditional' forms of care with this technology, has on the lives of its users. While advocates argue that alarm pendants can support independence and 'ageing in place', our analysis focuses on how social relations both mediates the functions of this device and in turn are mediated by them. In this we draw upon key theories in Science and Technology Studies (STS) and George Ritzer's McDonaldization of Society Thesis, specifically his conception of the 'irrationality of rationalization', to illustrate how rational systems often produce unanticipated and adverse outcomes. Our research reveals that in the case of alarm pendants, these can include low levels of efficacy, increased work for older people and their carers and feelings of dehumanization. We conclude by discussing the capacity of older people to resist processes of McDonaldization and irrationalization in later life.

Suggested Reviewers:

Dear reviewers,

Thank you for your comments. The following changes have been made to the manuscript:

1. Typos and grammatical errors have been removed
2. All references are complete
3. Reference to Nazis when discussing theme of dehumanization removed
4. Removed highlight 2
5. A paragraph has been added to the conclusion that integrates STS with dehumanizing issues.

Highlights

- Pendant alarms provision is an example of McDonaldization.
- These devices do not always work effectively or efficiency.
- Provision can lead to feelings of stigma, discrimination and dehumanization.
- Older people have a limited ability to resist the rationalization associated with telecare.

Alarm Pendants and the Technological Shaping of Older People's Care

Between (Intentional) Help and (Irrational) Nuisance

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Abstract

Alarm pendant use among older people is often framed as one of the rational responses needed to alleviate the escalating costs of an ageing population. This paper draws on qualitative data with older people and their carers to explore the effect that supplementing, and in some cases substituting, 'traditional' forms of care with this technology, has on the lives of its users. While advocates argue that alarm pendants can support independence and 'ageing in place', our analysis focuses on how social relations both mediates the functions of this device and in turn are mediated by them. In this we draw upon key theories in Science and Technology Studies (STS) and George Ritzer's McDonaldization of Society Thesis, specifically his conception of the 'irrationality of rationalization', to illustrate how rational systems often produce unanticipated and adverse outcomes. Our research reveals that in the case of alarm pendants, these can include low levels of efficacy, increased work for older people and their carers and feelings of dehumanization. We conclude by discussing the capacity of older people to resist processes of McDonaldization and irrationalization in later life.

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1. Introduction

Over the past 50 years life expectancy has increased significantly and birth rates have fallen [1], this has meant that alongside other nations, the population of the United Kingdom (UK) is ageing at an unprecedented rate. While this development might be celebrated as progress of the human condition and an indicator of improvements in healthcare, nutrition and working conditions [2], it is often framed pessimistically, with commentators arguing that it makes current health, social care and pensions unsustainable [3]. In the UK, some observers have gone so far as to evoke the prospect of intergenerational conflict as younger citizens begin to pay for older people's care without receiving the same benefits of cheap housing, secure jobs and a generous state pension [4].

In response to this structural demographic change, a succession of UK government policies have sought to minimize the associated harms of what has been characterized as an 'emerging time bomb' and 'silver tsunami' [5]. These have included various 'healthy ageing' initiatives and the phasing out of age-related tax benefits. In the arena of older people's care, the 'alarm pendant' - a device that can be attached around the neck or wrist and used to summon assistance - has been promoted as a convenient and cost-saving alternative to more traditional human-centered care. Depending on the specifications, activating the alarm either automatically contacts a carer or dials through to an emergency response centre. If the call goes to a response centre, the teleoperators can look at relevant medical information and talk directly, via a wall-mounted intercom, to the person who activated the alarm. After assessing the situation, the operator arranges the appropriate level of assistance either by telephoning nominated contacts (i.e. a friend or relative) or the emergency services. In the UK, the alarm pendant can be provided by local government councils after an assessment or purchased privately for an initial cost and monthly subscription.

The alarm pendant is the simplest example of telecare technology that incorporates a range of devices and services that provide remote care with the aim of allowing older individuals to live independently and securely in their own home. These include, but are not restricted to, various sensors fitted around the home that can detect fire, flood, CO2 levels, bed occupancy and moisture, light and door use and temperature. The UK government have been enthusiastic proponents of telecare and have made it central to their future strategy of caring for older people, arguing it will reduce the spiraling costs of preventative, responsive and supportive care, as well as allow this age group to live independently for longer [1]. Paul Burstow, the UK Care Service minister has also recently announced that over the next four years (up to 2017) telecare will be used by 3 million people [6].

Despite this form of technology being embedded in the UK social care framework, there is still disagreement over its utility, especially when compared to more orthodox, human-centred care. While some research has illustrated how telecare can allow people to stay in their own homes for longer and forgo the immediacy of institutional care [7,8] promote independence [9] and reduce financial costs [10,11], the empirical evidence is weak. Recent findings from the largest randomized control trial of telecare in the world, involving 2,600 participants in 3 areas of England over

a 12-month period found that it did not significantly alter rates of health and social care use or mortality [12].

While we understand that for many of its users, the alarm pendant and telecare are important tools for healthy ageing, an appreciation of the literature reveals their side effects and mediation of social relations are rarely investigated. We hope this contribution will in part, work towards relieving this deficit. In this, we build upon some of the findings of the EFORTT project [14,15], in that we highlight the social context pendant devices are deployed and also address ethical implications of technology-mediated care. In this endeavour, we do not aim to provide a balanced assessment but rather to identify some of the negative side effects that have so far been overlooked.

In investigating older people and carers' experiences of using the alarm pendant, we adopt a qualitative methodology and utilize contributions from STS and the theoretical perspective of McDonaldization [13], particularly the concept 'irrationality of rationality'. This is drawn upon to demonstrate how pendant alarms both mediate and are mediated by the social environment and social relations they are embedded in and how this can cause the device, designed to be rational and efficient to produce irrational and undesirable outcomes.

Our paper proceeds with an outline of our methodological approach and continue s by surveying relevant themes within STS and McDoanldization literature. Interpreting our qualitative data, our empirical sections explore how the social environment and the device are mutually constitutive and explain how pendant allocation can cause irrational and unintended consequences. Here we critically interrogate the effectiveness of the pendant alarm, explore how the type of care it facilitates has the potential to dehumanize and finally we assess users' abilities to resist the associated irrationalities in pendant alarm use we have identified. Our paper finishes with a discussion on whether the McDonaldization tendencies in current care practices are likely continue into the future.

2. Methodology

Our method combined focus groups (n=8), semi-structured interviews (n=11) and observational fieldwork in an extra care facility for older people. The study population was divided into two groups: 'older people' (n=47) and 'carers of older people' (n=9) (although we understand that there is considerable overlap between these groups). Research participants who we identified as 'older people' included 22 males and 25 females, their ages ranged from 55 to 90. 45 lived in the community and 2 lived in a care facility. Other than a manager of the care home, all carers were 'informal' and typically family members.

Participants were recruited from age-related non-profit organizations based in northern England. We obtained information about potential interviewees from their databases and sent out details of our study and asked interested individuals to return a consent form. All interview were conducted in participants' homes and focus groups took place in various accessible rooms at a University and offices of the organizations we recruited from. Interviews and focus groups were all audio-recorded and transcribed verbatim, typically lasting between 1 and 1½ hours. We

also spent 5 days conducting ethnographic fieldwork at an extra-care facility that 2 participants lived at and 1 worked as a carer. This institution is located in northeast England, it holds 42 self-contained apartments and each resident is provided with a pendant alarm. There were also alarm cords and buttons throughout the communal areas, like the TV room and restaurant. Observations in this location provided valuable first-hand insight into how alarm pendants are used in practice, with professional carers on hand to answer any questions and explain the procedures they were following as well as their general perspectives towards the device.

The two settings we analysed of older people living in their own home and residing in an extra care residential facility revealed two quite different care relationships. For those using the alarm pendant in the extra care facility, it works to sustain a network of care that was already in place (i.e. formal carers who work there) and for those living alone, it works to mobilize and install a new network where there was not an existing one. These case studies allowed a comparison of different care environments and relationships.

Interview and focus group transcripts and our fieldwork diary were analysed thematically and coded at sentence to paragraph level [16]. However, it should be stressed that during this project, we didn't completely separate the processes of data collection and analysis. We conceive the analysis to began when the researcher made judgments as to what to document in his fieldwork diary and the way verbal responses were followed up in interviews and focus groups [17]. Eventually, excerpts of coded data were then reassembled to illustrate the themes and provide a rich narrative to the presented data [16].

3. Alarm pendants, McDonaldization and the technological shaping of older people's care

3.1. Rationalization, McDonaldization and alarm pendants

Max Weber regarded the 'advances' and 'progress' of modernity at best, a mixed blessing. In this, the classical social theorist compared pre-modern human activity, which he regarded to be guided by tradition, cultural values and emotions with modern social activity, which he understood to be controlled rigidly by the tools of abstract mean-ends calculation and rationality. For Weber, this formal and quantifying nature of modern rationality worked against normative value considerations, destroyed established morals and fixed culture into a mechanical apparatus resembling that of a machine [18]. The McDonaldization of Society Thesis provides a revised appendage of this theory of rationalization [13]. While Weber regarded bureaucracy as an exemplar of modern rationality that is coming to dominate more and more areas of social, Ritzer proposed that the principles of fast food restaurants were a more timely and fitting metaphor. In this he separated the key dimensions of calculability, efficiency, predictability and control.

Utilizing this understanding, we comprehend the alarm pendant to be a technological artifact used explicitly to McDonaldize older people's care. From an institutional perspective, its provision is based on the expectation that it will reduced costs by making caring activities more controllable, calculable, predictable, and efficient. Its intended efficiency derives from the system's ability to monitor

and respond to older people on a much larger scale than an individual carer ever could. The component of calculability comes from its focus on quantifiable goals instead of personal benefits, demonstrated by it 'caring' for a large amount of people without offering subjective value. Finally, the feature of predictability can be observed in the standardization of alarm pendant equipment. This helps care providers achieve economies of scale and reduce human unpredictability in care.

3.2. Dehumanization and the technological mediation of social relations

Despite the advantages of McDonaldization outlined above (measured in terms of efficiency, predictability, calculability and control), Ritzer argued that the process also created negative and unintended social consequences, which he terms 'the irrationality of rationality'. In defining this, he articulates that McDonaldiized systems, "deny the basic humanity, the human reason, of the people who work within or are served by them" [13 p.154). At its darkest, rational systems have the potential to dehumanize, by denying people the ability to express human characteristics or qualities and it achieves this by eroding individuality, community, choice and creating psychological distance [17,18]. Other notable writers, like Foucault and Orwell have powerfully illustrated the potential for utilitarian social control that lies at the heart of modern rationalization [21].

Part of our argument is that alarm pendants can unintentionally dehumanize the person that it is monitoring. Agency and individualized caring arrangements are removed from older people because the system is inflexible and uniform. Furthermore, moral engagement is always reduced when a system like this mediates contact between people [22,23]. On top of this dehumanizing potential, Ritzer also argued that, the pursuit of efficiency could ironically lead to inefficiencies. "Rational systems" according to the author "inevitably spawn irrationalities that limit, eventually compromise, and perhaps even undermine their rationality" [13, p. 134], these can include the development of unwieldy bureaucracies and over quantification leading to low quality work. It is the aim of this paper to, instead of giving a balanced overview of the alarm pendant, utilize this perspective and unpick some of the negative side effects and inefficiencies that have been a neglected area of research in this field.

Although little has been published about dehumanization arising from modern care, it features prominently in writings on modern medical practices, which is said to dehumanize patients in a number of ways. These features include lack of personal care and emotional support; reliance on technology and an emphasis on instrumental efficiency and standardization and this, it is argued, results in the neglect of the patient's individuality and the patient's subjective experience [24]. Ultimately medical practice is argued to favour objective, technologically mediated information with an emphasis on interventions performed on a passive individual whose agency and autonomy are neglected [25,26].

For many of our research participants, the alarm was synonymous with other modern forms of technology and computerized systems, which are common themes in the dehumanization literature. Computers are sometimes understood to dehumanize by reducing social relatedness and increasing standardization, at the expense of individuality [27]. They also lack 'the essence of human nature'

understood as emotion, intuition, spontaneity, and soul or spirit [28] and these features have been shown to create great anxieties among users [29]. It is true that recent developments in computer studies illustrates that to some extent internet-based technology, through online tools like Facebook, change the ways we interact and even increase social interaction [30]. However the alarm pendant cannot provide these benefits and as our empirical sections will show, have the potential to dehumanize by reducing face-to-face interaction.

3.3. Technological determinism and the social shaping of technology

Although the 'irrationality of rationality' aspect of McDonaldization provides a useful starting point in understanding the social consequences of alarm pendant use, we draw upon STS and specifically literature on the social shaping of technology (SST) to facilitate a more nuanced examination of how the provision of a technological device shapes social relations and also has its function shaped by them.

Earlier understandings of the relationship between society and technology were dominated by technological determinism. This comprehends technological development to follow a predictable path largely immune from cultural or political influence. At the same time, technology is seen to be the central force of social change, advancing both society's social structure and its cultural values [31, p.1]. Modern theorists in the field of STS are more skeptical over technological determinist understandings and in this, have highlighted many clear instances where social forces, through the influence of culture, politics and economics influence technological innovation [31].

In this vein, the social construction of technology (SCOT) branch of STS emphasizes a more intricate understanding that resists the simple casual explanations offered by technological determinism [31]. SCOT argues that technological function and use cannot be comprehended without reference to how that technology is embedded in its social context. Central to this theory is the concept of 'interpretive flexibility' and the ways different groups of people involved in a technology develop dissimilar understandings of it, including its technical characteristics and function [32].

Similar to SCOT, the perspective offered by SST is notable in the attention it affords to the social context of technology. SST is not just concerned about how social relations influence artifacts but incorporates a 'soft technological determinism' that recognizes the theory's valid aspect of recognizing the influence technology can have on social relations. In this way, SST theorists perceive technology and society to be intertwined and their relationship one of mutual shaping [33].

4. 'Nothing but a damn nuisance'?: Examining the irrationality of alarm pendant use

4.1. Interrogating the utility of alarm pendants

Reflecting understandings within STS, our research indicated the importance of scrutinizing the social context a technology is embedded. Although the alarm pendant is explicitly designed to replace, or at least supplement human labour, the effectiveness of the device is nonetheless dependent on human competence and cognition. In the following focus group extract, our participants, who were all older people living alone, discuss how an emergency call cord – a device that complements the pendant and hangs from the ceiling – was installed incorrectly, rendering it useless.

Paul: The emergency call cord, yes.

Stevie: She said it's nothing but a damn nuisance. And I saw inside a knot in it and it's about that far from the ceiling [10cm], she can't reach it anyway.

Mary: If she falls, there's no way she can reach it.

Stevie: She can't reach it! You know…the cord is not being used properly.

More commonly amongst our research participants however, the technology did not work due to either misuse or nonuse. Richard 67, who lives alone in a semi-detached seaside home, described how fear of damaging his alarm prevents him from wearing it outside. This again illustrates how the function of a technology is determined upon the characteristics of the social environment and the individuals who inhibit it.

Richard: Yes, in the home. At home. I'm frightened it might get damaged if I bring it out.

As well as having an alarm pendant, a professional carer visited Richard daily. Later on in the focus group discussion, this participant admitted that as well as not leaving his house with his alarm; his deteriorating memory caused him to forget to wear it altogether. This caused his carer some level of distress:

Richard: I know, I know. When she [my carer] comes, she says to me, "Where's your [alarm pendant]?" And I say, "It's in the cupboard."

Interviewer: Why do you keep it in the cupboard? Why don't you wear it?

Richard: I've got teeth, glasses, I've got that much to remember, that's the last thing I think of.

According to Ritzer's theory of McDonaldization, systems often achieve efficiency by shifting labour onto others. This is achieved at fast food restaurants by getting the customer to perform tasks traditionally undertaken by waiters like clearing away their own rubbish [13]. In a similar fashion, the alarm pendant redistributes more tasks, responsibilities and dependencies to its users, who to some degree are

given the task of caring for themselves. For Richard, his fear of taking the device outside his home and his failing memory compromised his ability to use the system correctly and therefore undermined its effectiveness.

In an interview with Barbara, 78, who has lived in a care residential facility for the past 5 years, she relayed how her forgetting where she left her "buzzer" during a fire had the potential to cause serious consequences:

Barbara: The staff, yes, because once there was a fire downstairs. That's a long time ago, but never mind, and the fellow that had the flat downstairs was a drinker. He was always drunk. I don't know what happened, but he burnt the microwave out, so I was suffocating up here with smoke, because I had the window open. I needed the buzzer then, but I couldn't find it could I? I looked all over for this buzzer.

These quotes illustrate how the efficacy of the pendant alarm is dependent upon the 'relevant social group' who uses it [32] and here we can clearly see how the cognitive ability of the user can compromise function. These experiences relayed by our participants, remind us that no matter the utility of a technological device, if the social environment is inhospitable to it, most are susceptible to failure. The standardization, implicit in the process of McDonaldization, can fail the user because older people are a heterogeneous group who face a range of disabilities and medical conditions and the social worlds they inhibit can be just as diverse. This device does not account for this variation and when users develop serious cognitive impairments the alarm pendant cannot be used.

As well as the supposed benefits for older people, pendants are also designed to give absent carers reassurance by notifying them immediately if an alarm is raised [34]. In an interviewer with Norma, a fulltime carer for her husband Bob, she talked about how his deteriorating medical condition prompted them to make the decision to sleep in separate bedrooms. Although Norma was with Bob for most of the day, they used the alarm pendant at night when they were apart. Norma relayed a distressing experience when she slept through an alarm triggered by Bob who had fallen, injured himself and left on the floor overnight. This is a further illustration of how human error and the immediate social environment, can negate the alarm's function.

Norma: The next morning I got up and he was on the floor in the bedroom, and he hadn't…he had an alarm thing but he didn't use it. Anyway I got the doctor to come out and see him, and he referred him to this alarm thing.

Interviewer: Is it alarm pendant?

Norma: Yes, he's got one of them….

Interviewer: Well why didn't it work was it just out of reach?

Norma: I sleep dead when I go to bed so I didn't hear it.

Another informal carer we interviewed, Robert, used the alarm pendant to keep connected to his mother who lived some distance away. Along with this device, his mother's accommodation was fitted with a door sensor, which would activate if the front door opened during the night. As the following extract reveals, a faulty alarm call caused Robert emotional distress and also meant he had the inconveniences of driving a long way to check on his mother.

Robert: Now, the door sensor, we did have that, until we realised that I was getting called out at all hours of the morning. I thought, "Well, I can't travel all the way down there all hours of the morning, nearly every other day." So we got it taken back out again.

Interviewer: So was that sensor on the outside, so if she leaves her apartment.

Robert: Just on her front door, which would lead into the passageway of the sheltered accommodation…Well, like I say, if she gets up during the night, she might even just open the door and look out. Straightaway, it would set that off.

Then they would ring me up.

I said, "Hang on. What's this all about?" I said, "Don't you go round and investigate? Because I live in [a long way away]. By the time I get down there, she could have swum the English Channel!"

They said, "Oh, no. We only alert you."

So I said, "Oh, it'll have to come out. I don't think it's going to be much use." I said, "I haven't got any worries that my mum's going to wander out the main door."

This vignette describing Robert's wasted journeys illustrates how contrary to advocates of alarm pendants who trumpet greater efficiency and frugality, it can prove to be an inefficient form of care and create additional work for the carer if it is unsuited to the social environment and relationships embedded within it.

4.2. Technological dehumanization

Illustrating the mutually shaping relationship of society and technology implicit in understandings of SST [33], this section moves on from an analysis of how the social environment affects the function of a technology, to look at the impact alarm pendants have in the social sphere. Using the concept of 'dehumanization' employed by Ritzer [13], we unpick some of the negative social consequences of alarm pendant provision. "The main reason to think of McDonaldization as irrational, and ultimately unreasonable", according to Ritzer [13, p. 148], "is that they tend to be dehumanizing". Dehumanization involves degrading people in some

way by denying them human qualities like individuality, compassion or civility. In this section we explore how this technological device has the potential to dehumanize older people by causing stigma, shame, denying human reason and restricting genuine fraternization.

Stigma can occur in many forms and refers to a label that associates a person with a set of undesirable characteristics. It denotes the ways a person thinks of another but also how a person thinks about him or herself. While often marketed as a way of providing independence [1], during focus group discussions, participants who were not users of alarm pendants but knew others who were, feared that having one would lead to greater levels of dependence. This is because the device represents an increasing level of external control.

Interviewer: Would you like something like that?

Louise: No.

Tracey: No.

Interviewer: Why not? Why wouldn't you?

Louise: Oh that would be sort of taking your life over.

Tracey: Yes. That's what my immediate reaction to that was, I have no control over my life.

Barry: We are back to independence again!

While these non-users felt that owning an alarm would foster less and not more autonomy, other research participants who had experience of using one expressed a similar sentiment, articulating a frustration over their lack of control over the device and at the frequency that it was activated by mistake. For instance, Lizzy who lived alone described that the tendency of her alarm to trigger by mistake caused her a significant degree of embarrassment:

Lizzy: Well I am embarrassed when it goes off. I haven't got to the box to stop it or whatever. I feel awful and say "Yes I am sorry to have bothered you." They are fine with it; it is me that gets sort of embarrassed the fact that I have – seem to have set it off.

Many of our respondents felt that when others knew they had an alarm pendant, they were treated differently. One participant, Val, had developed various impairments including the loss of speech after suffering a stroke. In this interview quote, her fulltime carer and husband Steve, says it is the pendant alarm and not these impairments that make her feel disabled and stigmatised:

Interviewer: Why doesn't Val like it?

Steve: Why? Why don't you like it? It makes her feel disabled. I'll tell you what it is. You don't like being disabled, do you? You're not disabled, are you? She's not.

Although unable to speak, during the interview Steve would often look at Val for reassurance that he was representing her views accurately. He explained how Val worries that the use of her alarm colonizes perceptions of her and reinforces ageist and anti-disabled social prejudices. Similar feelings were expressed in a subsequent focus group. Tom explained how the design of the alarm was simply 'not sexy enough' and how he resented the way it made him feel like an 'old folk':

Tom: it was a bit of a funny experience, it wasn't good [getting an alarm pendant].

Interviewer: How do you mean?

Tom: Well it wasn't, I keep saying sexy enough. It just wasn't appealing; it was a big turn off going in there. It felt like an old folk's place, if you know what I mean. And I'm not an old folk!

A common response among participants who were alarm pendant users was that the device worked as a signaling device, highlighted their disability and age and thereby emphasising their limitations. Here Bobby and George, both over 80 and living alone, spoke about how the device has the potential to reinforce ageist social prejudices:

Bobby: The only thing I find like that is they think you're stupid if you've had a stroke.

George: Well, I think she feels that it, sort of, draws attention to her frailty which she doesn't really want to do because she's always been very strong and now she isn't as strong.

These feelings of stigma have the potential to cause significant psychological harm by spoiling identity [35]. The previous focus group extract illustrates that as well as thinking of someone as fundamentally 'different', the stigma of having an alarm pendant can lead to direct discrimination. This can be relatively harmless and good-natured. For instance, it was a common experience of those we spoke to that in public, strangers would often ask them if they required assistance when they saw them with a pendant alarm hanging around their necks. Although this at times caused a level of annoyance among those who saw it as patronizing, it generally was good-natured and taken well. These findings are consistent with Mort et al's study that shows how telecare systems, passive or responsive, make users aware and conscious of themselves in new ways [14]. These systems can shift perceptions of self, but also change how other people view them. This has the potential to fundamentally change the social dynamics and relationships found in a social system.

Alarm pendants also adapt social relationships in more explicit way by replacing face-to-face relationships found in traditional care settings. Although an activated alarm leads to an interaction with a person over a telephone line, this exchange is fleeting and scripted. In the following extract, Maggie articulates a common experience among users and describes how she often has to apologize to a telephone operator when her alarm is accidently activated:

Maggie: Mine's exactly like that. She says "It works very quickly and easily down in Worcestershire". And when it rings she says "Mrs Galliwell are you all right?" I said, "I'm inadvertently, I'm sorry."

Although affable, the telephone operator, through emotional labour is engaging in false friendliness [36]. An extensive ethnography of these types of alarm pendant call centres revealed that teleoperators work in highly controlled settings where people work within strict practice protocols and are time-managed through computerized performance monitoring and call recording [37]. Due to this anonymous environment, it is unrealistic to expect call centre workers to be as concerned and attentive as a tradition carer providing face-to-face interaction over an extended period of time. Although, as illustrated in the above quote, the teleoperator knows the user's name, this is the result of a computer prompt and only creates the illusion of intimacy and familiarity.

The interactions between the user and teleoperator are fleeting at best and the strict protocols do not allow meandering and spontaneous follow-up questions. The system also doesn't allow the responder to pick up upon the user's body language and other non-verbal expression. This is because McDonaldization works towards deskilling, breaking a process up into simple and focused tasks that are completed as quick as possible. This stifles the possibly of reflection, imagination and contemplation, removing true expression from users. A user cannot for instance say, "I might need a little help" they can only assert boldly and somewhat crudely, "I need help now!" Older people are thus only being allowed to use a small portion of their skills, experience and situated knowledge and are reduced to automatons with little ratification derived from the experience of being cared for. Here we see care relationships becoming more superficial and fleeting.

According to Ritzer [13: p 150], "Dehumanization occurs when prefabricated interactions take the place of authentic human relationships." In this way, the pendant alarm introduces subtle forms of dehumanization into the social environment of care, reducing empathy found in face-to-face contact and is detrimental as empathy has been shown to be good for clinical outcomes and that patient-centered care produces positive health outcomes [38].

Just as teleoperators are removed from the immediacies of those they 'care' for, so too are older people removed from their 'carers'. In the following quote, Charlene, 76 who lives alone recalls an accidental activation of her alarm that she describes as a 'nuisance':

Charlene: It is a nuisance at two o'clock in the morning when they ring you to see if you are alright.

Jim: That is a bit daft isn't it?

Charlene: Well for some reason this [alarm] has started to go off. But I got this box at home and they answer and say "Are you alright Mrs Anthony?" I say "Yes." They are very, very patient. So it doesn't matter if it went off every day. They say they would rather it went off –

Jim: You are the one that gets impatient. It is two o'clock in the morning.

Charlene: I get – yes, yes. But it is very, very good because it is a sort of a check on you to see if you are still mobile and still okay.

This extracts reveals something important about the relationship many older people have with their alarm pendants. It reveals a strange and uneasy dependency towards something they essentially do no like. Although being described as a 'nuisance' the respondent is still reassured by the presence of the alarm pendant. The disconnection between the carer and the cared for that alarm pendants facilitates also means that users are removed from having any real and accurate understanding of their care provision:

Jane: If they are reading a book sitting in a chair, the book falls on it and all hell's let loose. You've got people running from all ends of the globe.

Here our participant feels her experiences are so far removed from people remotely caring for her, they may as well be on the other side of the world. This highlights clearly a loss of intimacy when compared to more intimate, person-centred and face –to-face care.

4.3. Rage against the (assistive) machine: alarm pendants and acts of resistance

While Ritzer observed that despite the ubiquity of McDonaldization, it is possible for people to develop strategies of resistance, other authors have been more forthright, questioning the inevitability of a greater and greater restriction of human will in the form of an 'iron cage' of rationality envisioned by Weber [18, p. 172-74]. So in terms of the alarm pendant, to what extent, and how, are actors able to negotiate and creatively reshape its use when it become integrated in their daily lives? Our findings highlight that older people have significant capacity, at the individual level, to resist and even subvert the rationalities associated with alarm pendants. This is consistent with SST understandings that argue that while technologies will have an effect on the social environment, this impact is not determined but negotiated and shaped [33]. For instance, older people can choose to undermine the pervasiveness of these McDonaldized systems and (often against the will of family members and other carers) choose not to use the device or to use it

selectively and only for activities that they deem especially perilous. Matt, 64, for instance who is the fulltime carer of his wife, only uses it in the daytime:

Matt: We should take that upstairs to bed every night, but we don't.

Others who lived in a care facility often went against carers wishes and refused to wear a pendant alarm unless they ventured into public areas on their own:

Jennifer: Because if you're wearing this pendant round about, there's nearly always somebody about isn't there? I don't think it's that important to wear it inside.

Many others simply forgot to carry the pendant around with them and it was clear from our analysis that many of these instances were due to various cognitive impairments, like dementia. This raises an interesting issue of whether for an action to be considered a 'resistance', it has to be consciously and actively made. Interestingly, some of our participants showed a distinct level of subversion, using the device but on their own terms. The manager of a care facility relayed a story during our interview of when a resident activated her alarm because she didn't like what was on television and wanted a staff member to change the channel:

Becky: She was watching Punjabi news or something last night; she tried to buzz the carers. That was just with ordinary TV so...that was the emergency you see, she was watching the Punjabi news!

The following extract reveals that although coerced by her carer to wear her alarm pendant constantly, Jennifer and Barbara refuse to. Instead they choose to use it selectively like Becky who wanted her TV channel changed. These respondents kept the device tucked away in a draw and only activated it to alert a carer that a nuisance neighbour at their care facility is annoying them and they would like her to be taken back into her own self-contained flat:

Jennifer: I try to keep it on but I don't always, I have to say.

Barbara: I never have it on. The thing is I should, I get told off about it, but I just don't –

Jennifer: Well when we get stuck with one of – you know, like Sally etc., it's handy, you want a carer so you can just ring that and they'll come up and see to her.

Barbara: Oh I've had that often enough, but this is. Now the thing is that if you ring the buzzer for them, they're here to get her and put her back [in her own flat].

Our research also revealed that older people who are supplied a pendant alarm aren't the only ones who can subvert its intended function. During observational fieldwork, a care worker reveled that if a resident has a reputation for unnecessary alarm activation, they do not treat the alarm seriously and will delay responding to

it. Our data therefore illustrates that processes of rationalization have the potential to be more flexible and allow for instances of resistance among older people and their carers. It also highlights that functions and uses of technologies are always negotiated in the social environment they are deployed.

5. Discussion

As stated at the beginning, the aim of this paper is not to criticize alarm pendants or telecare as a whole but rather to unpick some of the negative and unanticipated consequences of use. However, in this it should be understood that there are indeed positive effects of these kinds of devices. In our research we witnessed its perceived usefulness for people who are vulnerable to falls and those who enjoy the reassurance of knowing a friendly voice is available at the touch of a button. The device can be especially helpful for people with long-term conditions, as it can give them and their relatives a peace of mind that they're safe in their own home. They can also facilitate people living more independently for longer, avoiding a hospital stay or delaying the move into a residential care facility. We should also be careful not to compare current practices, which integrate the use of pendant alarms with an unrealistic and overly romantic perception of traditional care.

Building on insights from SST, our paper has illustrated that just as a technology can mediate and shape a social environment and relationships, they in turn can shape the function and uses of a technology. The technology we have scrutinized is the alarm pendant, a device deployed to streamline and McDonaldize the care of older people. To what extent is further McDonaldization of care inevitable? According to Weber and Ritzer, the ultimate consequence will be an 'iron cage of rationality' or 'iron cage of McDonalization', which every aspect of society will be subjected to analysis, organization, professionalism and bureaucracy [13]. However, observations of modern industries disagree the prediction that McDonaldization is not an inevitable process. Indeed, many factories have abandoned Fordism, which was a precursor to McDonaldization, and moved from the traditional assembly to a system of post-Fordism. This system of economic production abandons getting individuals to perform specialized tasks repetitively and is instead characterized by small-batch production and a greater focus on the consumer [39]. We can also see that some commercial enterprises have purposefully resisted McDonaldization and consciously strive to adopt a non-rationalized business model. Ben & Jerry's ice cream for instance have an irrational business philosophy, reject bureaucratic procedures and give generous donations to charities [40]. Even if we take a closer look at the McDonald's restaurant franchise we can see that it's not as homogenous and inflexible as the theory it lends its name to implies. Indeed, it has shown itself to be incredibly flexible in adapting to local culinary environments. For instance, in Muslim countries the beef is halal, in India beef is not served at all and in France burgers are served with alcohol [41]. These examples validate the claim of SST that the social environment actively shapes artifacts embedded within it [33].

Alarm pendants are based on relatively unsophisticated technology and developments in this sector are expanding rapidly. It is likely that future assistive living technologies will move away from first generation devices, like the one we have described in this paper. The potential for the wider area of telecare to dehumanize and produce irrational social outcomes will depend therefore, in part,

on the development of the industry. For instance, if they adopt more digital participation services – designed to stimulate social interaction [42] – then potentially they can increase a sense of community and counteract processes of dehumanization. Other developments could allow users more agency and choice in the device they are provided with, by having for instance, more flexibility that permit the choice to activate multiple buttons to better communicate the urgency of help needed. Providing older people with simple reminders of their agency is highly important because it has been shown to significantly prolong life [43] while the removal of agency has been illustrated to lead others to treat them as uncivilized and irrational [35]. Future assistive technologies could also be ensure choice and be configured in a way to allow the user to choose who gets alerted when an alarm is activated.

A further negative social effect of alarm pendant use we identified in our research was its potential to cause deindividualization [17,44]. Presently, older people who have a pendant alarm are anonymous. There is a possibility of counteracting this by ensuring that teleoperators have more information about the person they are remotely caring for. As well as their name and other basic information, they could be provided with an outline of their personal history, including their previous occupations, hobbies and family life. The use of video would also be a positive move to counteract the deindividualization processes implicit in alarm pendant use.

Our argument here is that technological change in the field of gerontology is something which older people and other users of assistive technology need to actively shape, rather than respond to. These users should be consulted about the kind of relationship they want from their caregiver and broader society should also reflect on the type of relationship it want with its older citizens. Following Mort et al [14], we also argue that there is a need for on-going engagement with older people and the users in the design, development of technologies that are embedded within decisions of care.

Currently, very little empirical research exists on how the social environment affects alarm pendant use. A productive development in the study of gerontology and technology would assess the impact of telecare on different social environments of care and also how different social and cultural environments of care affect the use and function of technological devices.

6. Conclusion

Following much of STS research, our paper argues against the theory of technological determinism – that is, the belief that technology develops in isolation from society while having a strong impacts upon it. The very development and promotion of the alarm pendant as part of the solution to reduce care-related costs incurred by the government shows that innovation doesn't occur immune from the concerns of society. Despite the designed intention of this device, the evidence of its effectiveness is scare and the largest study conducted to date has shown no significant cost-reductions [12]. We argue that this is perhaps because adequate attention was not afforded to the broader social environment in which they are deployed. In short, it seems the advocates of alarm pendants subscribe to an

understanding of the discredited (in STS at least) model of technological determinism.

As the population continues to age, greater efforts will go into developing and utilizing technology that can facilitate the care of older people. While these future devices and services seem an economic necessity and will no doubt bring tangible benefits, STS and especially its branch of SST provides a literature and vocabulary to explore and analyse dehumanizing and irrational issues surrounding their use. Using the pendant alarm as an example, our own research shows how it can do this in two ways. First, it provides a way to look at how a technology can shape social relations and cause dehumanizing effects by reducing human contact, replacing fact-to-face with more distant care practices and working to stigmitise users. In the second instance, it allows an examination of how the environment a technology is embedded affects its function and use. In using this framework with the example of the pendant, we have shown how it has the potential to dehumanize and create irrational outcomes by relying on the cognitive ability of the user and, we also found evidence that older people can subvert the intended function of alarm pendants and resist these dehumanization effects by using the device selectively, or not at all.

This paper has also utilized Ritzer's version of rationalization – McDonaldization – to argue that the alarm pendant is deployed as a means to streamline older people's care through greater levels of efficiency, predictability, calculability and external control. Specifically, our analysis focuses on some of the unanticipated social consequences of this device and the ways the social environment affects its use and function. We understand that the negative effects of alarm pendants we have outlined are not the result of malevolent intention on the part of those who design or operate these systems but rather, they are a byproduct of the practices and functional requirements of the device, as it is currently conceived.

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Alarm Pendants and the Technological Shaping of Older People's Care

Between (Intentional) Help and (Irrational) Nuisance

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Abstract

Alarm pendant use among older people is often framed as one of the rational responses needed to ~~compensate~~ alleviate ~~for~~ the escalating costs ~~associated with~~ of an ageing population. This paper draws on qualitative data with older people and their carers~~,~~ to explore the effect that supplementing, and in some cases substituting, 'traditional' forms of care with this technology, has on the lives of its users. While advocates ~~hilst it is often~~ argue~~d~~ that alarm pendants can support independence and 'ageing in place', our analysis focuses on how social relations both mediates the functions of this device and in turn ~~is~~ are mediated by them. In this we draw upon key theories in Science and Technology Studies (STS) and George Ritzer's McDonaldization of Society Thesis, specifically his conception of the 'irrationality of rationalization', to illustrate how rational systems often produce unanticipated and adverse outcomes. Our research reveals that in the case of alarm pendants, these can include low levels of efficacy, increased work for older people and their carers and feelings of dehumanization. We conclude by discussing the capacity of older people to resist processes of McDonaldization and irrationalization in later life.

Keywords: Alarm pendant; Telecare; Assistive technology; Older people; McDonalization; Dehumanization; Social shaping of technology

1. Introduction

Over the past 50 years life expectancy has increased significantly and birth rates have fallen [1], this has meant that alongside other nations, the population of the United Kingdom (UK) is ageing at an unprecedented rate. While this development might be celebrated as progress of the human condition and an indicator of improvements in healthcare, nutrition and working conditions [2], it is often framed pessimistically, with commentators arguing that it makes current health, social care and pensions unsustainable [3]. In the UK, some observers have gone so far as to evoke the prospect of intergenerational conflict as younger citizens begin to pay for older people's care without receiving the same benefits of cheap housing, secure jobs and a generous state pension [4].

In response to this structural ~~change in~~ demographic~~-~~ change~~structure~~, a succession of UK government policies have sought to minimize the associated harms of what has been ~~depicted~~ characterized as an 'emerging time bomb' and 'silver tsunami' [5]. These have included various 'healthy ageing' initiatives and the phasing out of age-related tax benefits. In the arena of older people's care, the 'alarm pendant' - a device that can be attached around the neck or wrist and used to summon assistance - has been promoted as a convenient and cost-saving alternative to more ~~traditional human~~traditional human-centered care. Depending on the specifications, activating the alarm either automatically contacts a carer or dials through to an emergency response centre. If the call goes to a response centre, the teleoperators can look at relevant medical information and talk directly, via a wall-mounted intercom, to the person who activated the alarm. After assessing the situation, the operator arranges the appropriate level of ~~help~~ assistance either by ~~calling~~ telephoning nominated contacts (i.e. a friend or relative) or the emergency services. In the UK, the alarm pendant can be provided by local government councils after an assessment or purchased privately for an initial cost and monthly subscription.

The alarm pendant is the simplest example of telecare ~~technology which incorporates a range of devices~~technology that incorporates a range of devices and services ~~that~~ that provide remote care with the aim of allowing older individuals to live independently and securely in their own home ~~for longer~~. These include, but are not restricted to, ~~As well as the alarm pendant, they include an assortment of~~various sensors fitted around the home that can detect fire, flood, CO_2 levels, bed occupancy and moisture, light and door use and temperature. The UK government have been enthusiastic proponents of telecare and have made it central to their future strategy of caring for older people, arguing it will reduce the spiraling costs of preventative, responsive and supportive care ~~for older people~~, as well as allow ~~them~~ this age group to live independently for longer [1~~]. For this reason, telecare in the UK is being embedded in the social care framework. In 2005 the Department of Health published *Building Telecare in England* and announced a grant designed to encourage local councils to adopt telecare.~~]. Paul Burstow, the UK Care Service minister has also recently announced that over the next four years (up to 2017) telecare will be used by 3 million people [6].

Despite this form of technology being embedded in the UK social care framework, there is still disagreement ~~this eagerness from the UK government, there is still disagreement~~ over ~~the~~ its utility ~~of telecare~~, especially when compared to more

traditional orthodox, human-centred health and social care. While some research has illustrated how telecare can allow people to stay in their own homes for longer and forgo the immediacy of institutional care [7,8] promote independence [9] and reduce financial costs [10,11], the empirical evidence is weak. Recent findings from the largest randomized control trial of telecare in the world, involving 2,600 participants in 3 areas of England over a 12-month period found that it did not significantly alter rates of health and social care use or mortality over a 12-month period [12].

While we understand that for many of its users, the alarm pendant and telecare are important tools for healthy ageing, an appreciation of the literature reveals While for many older people, the pendant alarm and the broader category of telecare are important tools for healthy ageing in place, their side effects and how they mediation ofe social relations are rarely investigated. and Wwe hope this contribution will in part, work help towards relierelievingve this deficit. In this, our workwe builds upon some of the findings of the EFORTT project [14,15], in that we highlight the social context in which pendant devices are situated deployed and also address ethical implications of technology-mediated care. In this endeavour, we do not aim to provide a balanced assessment but rather to identify some of give our attention to ethical concerns when considering technological provision in care. It is not our aim to provide a balanced assessment of the pros and cons of the pendant alarm but rather highlight some of the negative side effects that have so far been neglectedoverlooked in the literature.

In investigating older people and carers' experiences of using the alarm pendant, we adopt a qualitative methodology and Through a qualitative analysis of older people's, and their carers', experiences of using the alarm pendent, our paper focuses explicitly on the unintentional negative consequences of use. Specifically, we look at how they routinely manage the expectations these devices place on them in their everyday lives. In this we utilize contributions from STS and the theoretical perspective of McDonaldization offered by George Ritzer [13], particularly his the concept 'irrationality of rationality'. This is drawn upon to demonstrate how pendant alarms both mediate and are mediated by the social environment and social relations they are embedded in and how this can cause the devices, designed to be rational and efficient to produce irrational and undesirable outcomes.

We Our paper proceeds begin our paper with an outline of our methodological approach and continue s by surveying relevant themes within STS and McDoanldization literature. Interpreting our qualitative data, our empirical sections explore how the social environment and the device are mutually constitutive and explain how alarm pendaent allocation can lead tocause irrational and unintended consequences. Here we critically interrogate the effectiveness of the pendant alarm, explore how the provision of this device and the type of care it it facilitates can has the potential to dehumanize the recipient and finally we assess users' abilities to resist the associated irrationalities implicit in pendant alarm use we have identified. Our paper finishes with a discussion onf whether the McDonaldization tendencies in current care practices will are likely continue into the future.

2. Methodology

Our method combined focus groups (n=8), semi-structured interviews (n=11) and observational fieldwork in an extra care facility for older people. The study population was divided into two groups: 'older people' (n=47) and 'carers of older people' (n=9) (although we understand that there is considerable overlap between these groups). Research participants who we identified as 'older people' included 22 males and 25 females, their ages ranged from 55 to 90. 45 lived in the community and 2 lived in ~~an extra~~ a care ~~residential facility~~facility. Other than a manager of ~~an extra~~the care ~~residential facility~~home, all carers were ~~unpaid and~~ 'informal' and~~,~~ typically ~~being a~~ family member~~s of the cared for~~.

~~Our~~ P~~p~~articipants were recruited ~~through various~~from age-related non-profit organizations based in northern England. We obtained information about potential interviewees ~~Through~~ from their databases ~~we~~ and sent out ~~information sheets, giving full~~ details of our study and asked interested individuals to return a consent form. All interview were conducted in participants' homes and focus groups took place in various accessible rooms at a University and ~~the~~ offices of the organizations we recruited from. Interviews and focus groups were all ~~were~~ audio-recorded and transcribed verbatim, typically lasting between 1 and 1½ hours. We also spent 5 days conducting ethnographic fieldwork at an extra-care facility that 2 participants lived at~~in~~ and 1 worked as a carer. This ~~facility~~ institution is located in northeast England~~,~~ ~~and~~ it ~~contains~~ holds 42 self-contained apartments~~,~~ and each ~~all~~ resident~~s had~~ is provided with a pendant alarm. There were also alarm cords and buttons throughout the communal areas, ~~such as~~like the TV room and restaurant. Observations in ~~the care facility~~this location ~~over time~~ provided valuable first-hand insight into how alarm pendants are used in practice, with professional carers on hand to answer any questions and explain the procedures they were following ~~and~~ as well as their general perspectives towards the device.

The two settings we ~~observed~~ analysed of older people living ~~alone~~ in their own home and residing in an extra care residential facility revealed two quite different care relationships. For those using the alarm pendant in the extra care facility, it works to sustain a network of care that was already in place (i.e. formal carers who work there)~~,~~ and for those ~~who~~ livinge alone, it works to mobilize and install a new network where there was not an existing one. ~~This allowed~~These case studies allowed a comparison of different care ~~ways~~ environments and ~~circumstance that alarm pendants are integrated into the care of older people.~~relationships.

Interview and focus group transcripts and ~~an observational~~ our fieldwork diary were analysed thematically and~~using qualitative research methodology and~~ coded at sentence to paragraph level [16]. However, it should be stressed that during this project, we didn't completely separate the processes of data collection and analysis. We conceive the analysis to began when the researcher made judgments as to what to document in his fieldwork diary and the way verbal responses were followed up in interviews and focus groups [17]. Eventually, excerpts of coded data were then reassembled to illustrate the themes and provide a rich narrative to the presented data [16].

3. Alarm pendants, McDonaldization and the technological shaping of older people's care

3.1. Rationalization, McDonaldization and ~~the~~ alarm pendants

~~Instead of celebrating~~Max Weber regarded the 'advances' and 'progress' of modernity~~, Weber regarded it~~ at best, ~~as~~ a mixed blessing. In this, the classical social theorist compared pre-modern human activity, which he regarded to be guided by tradition, cultural values and emotions with modern social activity, which he ~~Juxtaposing pre-modern human activity, which he saw as guided by traditions, cultural values and emotions, with modern activity, which he~~ understood to be controlled rigidly by the tools of abstract mean-ends calculation and ~~mean-ends~~ rationality. For Weber, this~~e~~ formal~~, abstract~~ and quantifying nature of ~~the~~ modern ~~type of~~ rationality ~~is totally alien to~~worked against normative value considerations, ~~it~~ destroyed~~s~~ ~~all genuine cultural~~established morals and fixed~~es~~ culture into a mechanical apparatus resembling that of a machine [18]. The McDonaldization of S~~s~~ociety T~~t~~hesis provides a revised appendage of ~~Max Weber's work~~this theory of rationalization [13]. While Weber regarded bureaucracy as an exemplar of modern rationality that is coming to dominate more and more areas of social, Ritzer proposed that the principles of fast food restaurants were a more timely and fitting metaphor.~~saw the embodiment of rationalization as bureaucracy, Ritzer sees the principles of the fast food restaurant as coming to dominate more and more areas of social life.~~ In this he separate~~d~~s the key dimensions of calculability, efficiency, predictability and control.

Utilizing this understanding, w~~W~~e ~~understand~~ comprehend the alarm pend~~a~~ent to be a technological artifact used explicitly to McDonaldize older people's care. From an institutional ~~It is provided, from an institutional~~ perspective, its provision is based on the ~~in~~ expectation that it will reduced costs by making caring activities more controllable, calculable, predictable, and efficient. It~~'~~s intended efficiency derives from the system's ability to monitor and respond to older people on a much larger scale than ~~designed to be efficient by being a responsive system that can monitor much more older people than~~ an individual carer ever could~~ ever could~~. The component of ~~Its~~ calculability comes from ~~derives from~~ its focus on quantifiable goals instead of personal benefits, demonstrated by ~~the system's ability to remotely~~it 'car~~ing'e~~ for a large amount of people with~~-~~out offering subjective ~~benefit~~value~~s in return~~. Finally, t~~T~~he ~~facet~~feature of predictability~~,~~ can be ~~seen~~ observed in the standardization of ~~the~~ alarm pendant equipment. This~~ that~~ helps care providers achieve economies of scale and reduce human unpredictability in care.

3.2. Dehumanization and the technological mediation of social relations

Despite the advantages of McDonaldization outlined above (measured in terms of efficiency, predictability, calculability and control), Ritzer argued that the process also created negative and unintended social consequences, which he terms 'the irrationality of rationality'. ~~Ritzer outlines in his thesis, that despite the benefits of McDonaldization indicated above (measured in terms of efficiency, predictability, calculability and control), the process can also create negative and unintended social consequences which he terms 'the irrationality of rationality'.~~ In defining this, ~~Ritzer~~ he articulates that McDonaldiized systems, ~~'~~"deny the basic humanity, the human reason, of the people who work within or are served by them" [13 p.154). At

its darkest, rational systems have the potential to dehumanize, by denying people the ability to express human characteristics or qualities and. iIt achieves this by eroding individuality, community, choice and creating psychological distance [17,18]. This was seen most strikingly in the Nazi programme of genocide where efficiency and the modern bureaucracy were used in pursuit of deeply immoral goals [21]. Other prominent notable writers, like Foucault and Orwell have powerfully illustrated the potential for utilitarian social control that lies at the heart of modern rationalization [212].

Part of our argument is that alarm pendants can, unintentionally dehumanize the person that it is monitoring. Agency and individualized caring arrangements are removed from older people because the system is inflexible and uniform. Furthermore, it is argued to reduce moral engagement is always reduced when a system like this by mediatinges contact between two people [223,234]. On top of this dehumanizing potential, Ritzer also argued that, On top of its potential to dehumanize, Ritzer also argues that ironically the pursuit of efficiency cancould actually ironically lead to inefficiencies. ‘“Rational systems’ systems” according to the author ‘“inevitably spawn irrationalities that limit, eventually compromise, and perhaps even undermine their rationality’ rationality” [13, p. 134], these can include the development of unwieldy bureaucracies and over quantification leading to low quality work. It is the aim of this paper to, instead of giving a balanced overview of the alarm pendant, utilize this perspective and unpick some of the negative side effects and which inefficiencies that haves been a neglected area of research in this field of study.

Although little has been published about dehumanization arising from modern care practices, it features prominently in writings on medicinemodern medical practices, which is said to dehumanize patients in a number of ways. These features, includeing its lack of personal care and emotional support; its reliance on technology; its lack of touch and human warmth and its an emphasis on instrumental efficiency and standardization and this, it is argued, results in the neglect of the patient’s individuality and the patient’s subjective experience [245]. In turn this results in the neglect of the patient’s individuality and the patient’s subjective experience. Ultimately medical practice is argued to favour objective, technologically mediated information with an emphasis on interventions performed on a passive individual whose agency and autonomy are neglected [23,25,264].

For many of our research participants, the alarm was synonymous with other modern forms of technology and computerized systems, which are common themes in the dehumanization literature. Computers are sometimes understood to dehumanize by reducing social relatedness and increasing standardization, at the expense of individuality [278]. They also lack ‘the essence of human nature’, understood as emotion, intuition, spontaneity, and soul or spirit [289] and these dehumanizing features have been shown to create great anxieties among users [2930]. It is true that recent developments in computer studies illustrates that to some extent internet-based technology, through online tools like Facebook, change the ways we interact and even increase social interaction [301]. However the alarm pendant cannot provide these benefits and as our empirical sections will show, have the potential to dehumanize by reducing face-to-face interaction.

3.3. Technological determinism and the social shaping of technology

Although the ‘~~“~~irrationality of rationality’~~”~~ aspect of McDonaldization provides a useful starting point in understanding the social consequences of alarm pendaent use, we draw upon STS and specifically literature on the social shaping of technology (SST) to facilitate a more nuanced examination of how the provision of a technological device shapes social relations and also has its function shaped by them.

~~Early~~ Earlier understandings of the relationship between society and technology were dominated by technological determinism. This ~~understands~~ comprehends technological development to follow a predictable path largely immune from cultural or political influence. At the same time, technology is seen to be the central force of social change, advancing both society’s social structure and its cultural values [312, p.1]. Modern theorists in the field of STS are more skeptical over technological determinist understandings and in this, have highlighted many clear instances where social forces, through the influence of culture, politics and economics influence technological innovation [312].

In this vein, the social construction of technology (SCOT) branch of STS emphasizes a more intricate understanding that resists the simple casual explanations offered by technological determinism [312]. SCOT argues that technological function and use cannot be comprehended without reference to how that technology is embedded in its social context. Central to this theory is the concept of ‘interpretive flexibility’ ~~of technology~~ and the ways different groups of people involved in a technology ~~can have~~develop ~~very different~~dissimilar understandings of it, including its technical characteristics and function [323].

Similar to SCOT, the perspective offered by SST is notable in the attention it affords to the social context of technology. SST is not just concerned about how social relations influence artifacts but incorporates a ‘soft technological determinism’ ~~which~~ that recognizes the theory’s valid aspect of recognizing the influence technology can have ~~upon~~ on social relations. In this way, SST theorists perceive technology and society to be intertwined and their relationship one of mutual shaping [334].

4. ‘Nothing but a damn nuisance’?: Examining the irrationality of alarm pendant use

4.1. Interrogating the utility of alarm pendants

Reflecting understandings within STS, our research indicated the importance of scrutinizing the social context a technology is embedded. Although the alarm pendaent is explicitly designed to replace, or at least supplement human labour, the effectiveness of the device is nonetheless dependent on human competence and cognition. In t~~T~~he following focus group extract, our participants, who were all older people living alone, discuss how an emergency call cord – a device that

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complements the pendant and hangs from the ceiling – was installed incorrectly, rendering it useless.

Paul: The emergency call cord, yes.

Stevie: She said it's nothing but a damn nuisance. And I saw inside a knot in it and it's about that far from the ceiling [10cm], she can't reach it anyway.

Mary: If she falls, there's no way she can reach it.

Stevie: She can't reach it! You know…the cord is not being used properly.

More commonly amongst our research participants however, the technology did not work due to either misuse or nonuse. Richard 67, who lives alone in a semi-detached seaside home, described how fear of damaging his alarm prevents him from ~~taking it out of his house~~wearing it outside. This again illustrates how the function of a technology is determined upon the characteristics of the social environment and the individuals who inhibit it.

Richard: Yes, in the home. At home. I'm frightened it might get damaged if I bring it out.

As well as having an alarm pendant, a professional carer visited Richard daily. Later on in the focus group discussion, ~~Richard~~ this participant admitted that as well as not leaving his house with his alarm; his deteriorating memory caused him to forget to wear it ~~while inside his house~~altogether. This caused his carer some level of distress:

Richard: I know, I know. When she [my carer] comes, she says to me, "Where's your [alarm pendaent]?" And I say, "It's in the cupboard."

Interviewer: Why do you keep it in the cupboard? Why don't you wear it?

Richard: I've got teeth, glasses, I've got that much to remember, that's the last thing I think of.

According to Ritzer's theory of McDonaldization, systems often achieve efficiency by shifting labour onto others. This is achieved at ~~McDonalds~~ fast food restaurants ~~for instance,~~ by getting the customer to perform tasks traditionally undertaken by waiters like clearing away their own rubbish [13]. In a similar fashion, the alarm pendant redistributes more tasks, responsibilities and dependencies to ~~an older person~~its users, who to some ~~degree,~~degree ~~is~~ are given the task of caring for themselves~~f~~. For Richard, his fear of taking the device outside ~~the~~ his home and his failing memory compromised his ability to use the system correctly and therefore undermined its effectiveness.

In an interview with Barbara, 78, who has lived in a~~n~~ care residential facility for the past 5 years, she relayed how her ~~not remembering~~forgetting where she left her "buzzer" during a fire had the potential to cause serious consequences:

Barbara: The staff, yes, because once there was a fire downstairs. That's a long time ago, but never mind, and the fellow that had the flat downstairs was a drinker. He was always drunk. I don't know what happened, but he burnt the microwave out, so I was suffocating up here with smoke, because I had the window open. I needed the buzzer then, but I couldn't find it could I? I looked all over for this buzzer.

These quotes illustrate how the efficacy of the pendant alarm is dependent upon the 'relevant social group' who uses ~~the device~~it [3~~2~~3] and here we can clearly see~~,~~ ~~here~~ how the cognitive ability of the user can compromise~~s~~ ~~its~~ function. These experiences~~,~~ relayed by our participants, remind us that no matter the utility of a technological device, if the social environment is inhospitable to it, most are susceptible to failure. The standardization, implicit in the process of McDonaldization, can fail the user because older people are a heterogeneous group who face a range of disabilities and medical conditions and the social worlds they inhibit can be just as diverse. This device does not account for this variation and when users develop serious cognitive impairments the alarm pendant cannot be used.

As well as the supposed benefits for older people, ~~alarm~~ pendants are also designed to give absent carers reassurance by notifying them immediately if an alarm is raised [3~~4~~5]. In an interviewer with Norma, a fulltime carer for her husband Bob, she talked about how his deteriorating medical condition prompted them to make the decision to sleep in separate bedrooms. Although Norma was with Bob for most of the day, they used the alarm pendant at night when they were apart. Norma relayed a distressing experience when she slept through an alarm triggered by Bob who had fallen, injured himself and ~~and~~ left on the floor overnight. This is a further illustration of how human error and the immediate social environment, can negate the alarm's function.

Norma: The next morning I got up and he was on the floor in the bedroom, and he hadn't…h~~- H~~e had an alarm thing but he didn't use it. Anyway I got the doctor to come out and see him, and he referred him to this alarm thing.

Interviewer: Is it ~~the…the [~~alarm~~]~~ pendant?

Norma: Yes, he's got one of them….

Interviewer: Well why didn't it work was it just out of reach?

Norma: I sleep dead when I go to bed so I didn't hear it.

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Another informal carer we interviewed, Robert, used the alarm pendant to keep connected to his mother who lived some distance away. Along with this device, his mother's accommodation was fitted with a door sensor, which would activate if the front door opened during the night. As the following extract reveals, a faulty alarm call caused Robert emotional distress and also meant he had the inconveniences of driving a long way to check on his mother. ~~to travel a great distance to see if his mother was okay.~~

Robert: Now, the door sensor, we did have that, until we realised that I was getting called out at all hours of the morning. I thought, "Well, I can't travel all the way down there all hours of the morning, nearly every other day." So we got it taken back out again.

Interviewer: So was that sensor on the outside, so if she leaves her apartment.

Robert: Just on her front door, which would lead into the passageway of the sheltered accommodation…Well, like I say, if she gets up during the night, she might even just open the door and look out. Straightaway, it would set that off.

Then they would ring me up.

I said, "Hang on. What's this all about?" I said, "Don't you go round and investigate? Because I live in [a long way away]. By the time I get down there, she could have swum the English Channel!~~.~~"

They said, "Oh, no. We only alert you."

So I said, "Oh, it'll have to come out. I don't think it's going to be much use." I said, "I haven't got any worries that my mum's going to wander out the main door."

This vignette ~~of~~ describing Robert's wasted ~~journey~~ journeys illustrates how contrary to advocates of alarm pendants who trumpet greater efficiency and frugality, it can prove to be an inefficient form of care and create additional work for the carer if it is unsuited to the social environment and relationships embedded within it. ~~It is can even create greater problems, seen here in a family member having to drive several miles in order to check on an older relative after accidental alarm activation.~~

4.2. Technological dehumanization

Illustrating the mutually shaping relationship of society and technology implicit in understandings of SST [334], this section moves on from an analysis of how the social environment affects the function of a technology ~~analyzed in the previous section~~, to look at the impact ~~the~~ alarm pendaents haves ~~s~~ in the social sphere. Using the concept of 'dehumanization~~ing~~' employed by Ritzer [13], we unpick some of

the negative social consequences of alarm pendaent provision. “The main reason to think of McDonaldization as irrational, and ultimately unreasonable”, according to Ritzer [13, p. 148], “is that they tend to be dehumanizing”. Dehumanization involves degrading people in some way by denying them human qualities like individuality, compassion or civility. In this section we explore how alarm pendantsthis technological device have has the potential to dehumanize older people by causing stigma, shame, denying human reason and restricting genuine fraternization.

Stigma can occur in many forms and refers to a label that associates a person with a set of undesirable characteristics. It refers todenotes the ways people a person thinks of a personanother but also how they a person thinks think ofabout themselveshim or herself. While often marketed as a way of providing independence [1], during focus group discussions, participants who were not users of alarm pendants but knew people others who were,were, feared feared the exact opposite and instead speculated that their usethat having one would lead to greater levels of dependence. This is because the alarm pendantdevice represents an increasing level of external control.

GaryInterviewer:	Would you like something like that?
Louise:	No.
Tracey:	No.
Interviewer:	Why not? Why wouldn’t you?
Louise:	Oh that would be sort of taking your life over.
Tracey:	Yes. That’s what my immediate reaction to that was, I have no control over my life.
Barry:	We are back to independence again!

While these non-users felt that owning an alarm pendant would foster less and not more autonomy, other research participants who had experience of using the alarm pendantone expressed a similar sentiment, articulating a frustration over their lack of control over the device and at the frequency that it was activated by mistake. For instance, Lizzy who lived alone described that this the tendency of her alarm to trigger by mistake caused her a significant degree of embarrassment:

Lizzy:	Well I am embarrassed when it goes off. I haven’t got to the box to stop it or whatever. I feel awful and say “Yes I am sorry to have bothered you.” They are fine with it; it is me that gets sort of embarrassed the fact that I have – seem to have set it off.

Many of our respondents felt that when others knew they had an alarm pendant, it led them to bethey were treated differently. One participant, Val, had developed various impairments, including the loss of speech , after suffering a stroke. In this

interview quote, her fulltime carer and husband Steve, says it is the pendaent alarm and not these impairments that make her feel disabled and stigmatised:

Interviewer: Why doesn't Val like it?

Steve: Why? Why don't you like it? It makes her feel disabled. I'll tell you what it is. You don't like being disabled, do you? You're not disabled, are you? She's not.

Although unable to speak, during the interview Steve would often look at Val for reassurance that he was representing her viewpoint views accurately. He explained how
Val worries that the use of her alarm pendant colonizes perceptions of her and reinforces ageist and anti-disabled social prejudices. Similar feelings were expressed in a subsequent focus group. Tom explained how the design and a of the pendentof the alarm aesthetics wasere simply 'not sexy enough' and how he resented the way it made him feel like an 'old folk':

Tom: it was a bit of a funny experience, it wasn't good [getting an alarm pendaent].

Interviewer: How do you mean?

Tom: Well it wasn't, I keep saying sexy enough. It just wasn't appealing; it was a big turn off going in there. It felt like an old folk's place, if you know what I mean. And I'm not an old folk!

A common response among participants who were alarm pendant users was that the device worked as a signaling device, highlighted their disability and age and thereby emphasising their limitations. Here Bobby and George, both over 80 and living alone, spoke about how pendent alarms havethe device has the potential to reinforce ageist social prejudices:

Bobby: The only thing I find like that is they think you're stupid if you've had a stroke.

George: Well, I think she feels that it, sort of, draws attention to her frailty which she doesn't really want to do because she's always been very strong and now she isn't as strong.

These feelings of stigma have the potential to cause significant psychological harm by spoiling identity [356]. The previous focus group extract illustrates that as well as thinking of someone as fundamentally 'different', the stigma of having an alarm pendant can lead to direct discrimination. This can be relatively harmless and good-natured. For instance, it was a common experience of those we spoke to that in public, strangers would often ask them if they required assistance when they saw them with a pendaentnt alarm hanging around their necks. Although this at times

caused a level of annoyance among those who saw it as patronizing, it generally was good-natured and taken well. These findings are consistent with Mort et al's study that shows how telecare systems, passive or responsive, make users aware and conscious of themselves in new ways [14]. These systems can shift ~~how a person feels about themself~~perceptions of self ~~and changes their identity from within, a sense of self~~, but also change how other people view them~~from others and how they are viewed~~. ~~-~~ This has the potential to fundamentally change~~s~~ the social dynamics and relationships found in a~~ny~~ social system.

Alarm pendants also adapt social relationships in more explicit way by replacing face-to-face relationships found in traditional care settings. Although an activated alarm leads to an interaction with a person over a telephone line, this exchange is fleeting and scripted. In the following extract, Maggie articulates a common experience among users and describes how she often has to apologize to a telephone operator when her alarm is accidently activated:

> Maggie: Mine's exactly like that. She says "It works very quickly and easily down in Worcestershire". And when it rings she says "Mrs Galliwell are you all right?" I said, "I'm inadvertently, I'm sorry."

Although affable, the telephone operator, through emotional labour is engaging in false friendliness [3~~6~~7]. An extensive ethnography of these types of alarm pendant call centres revealed that teleoperators work in highly controlled settings where people work within strict practice protocols and are time-managed through computerized performance monitoring and call recording [3~~7~~8]. Due to this anonymous environment, it is ~~unreasonable~~ unrealistic to expect ~~the~~ call centre workers to be as concerned and attentive as a tradition carer providing face-to-face interaction over an ~~long~~ extended period of time. Although, as illustrated in the above quote, the teleoperator knows the user's name, this is the result of a computer prompt and only creates the illusion of intimacy and familiarity.

The interactions between the user and teleoperator are fleeting at best and the strict protocols do not allow meandering and spontaneous follow-up questions. The system also doesn't allow the responder to pick up upon the user's body language and other ~~forms of~~ non-verbal expression. This is because McDonaldization works towards deskilling, breaking a process up into simple and focused tasks that ~~can b~~aree completed as quick~~ly~~ as possible. This stifles the possibly of reflection, imagination and contemplation, removing true expression ~~among~~ from users. A user cannot for instance say, "~~'~~I might need a little ~~help'~~ help" they can only assert boldly and somewhat crudely, ~~'~~"I need help now!"~~'~~ Older people are thus only being allowed to use a small portion of their skills, experience and situated knowledge and are reduced to automatons with little ratification derived from the experience of being cared for. Here we see care relationships becoming more superficial and fleeting.

According to Ritzer [13: p 150], "Dehumanization occurs when prefabricated interactions take the place of authentic human relationships." In this way, the pendant alarm introduces subtle forms of dehumanization into the social environment of care, reducing empathy found in face-to-face contact and is

detrimental as empathy has been shown to be good for clinical outcomes ~~[39]~~ and ~~it has been shown~~ that patient-centered care produces positive health outcomes [3~~8~~4].

Just as teleoperators are removed from the immediacies of those they 'care' for, so too are older people removed from their 'carers'. In the following quote, Charlene, 76 who lives alone recalls an accidental activation of her alarm that she describes as a 'nuisance':

Charlene:	It is a nuisance at two o'clock in the morning when they ring you to see if you are alright.
Jim:	That is a bit daft isn't it?
Charlene:	Well for some reason this [alarm] has started to go off. But I got this box at home and they answer and say "Are you alright Mrs Anthony?" I say "Yes." They are very, very patient. So it doesn't matter if it went off every day. They say they would rather it went off –
Jim:	You are the one that gets impatient. It is two o'clock in the morning.
Charlene:	I get – yes, yes. But it is very, very good because it is a sort of a check on you to see if you are still mobile and still okay.

This extracts reveals something important about the relationship many older people have with their alarm pendants. It reveals a strange and uneasy dependency towards something they essentially do no like. Although being described as a 'nuisance' the respondent is still reassured by the presence of the alarm pend~~a~~ent. The disconnection between the carer and the cared for that alarm pendants facilitates~~,~~ also means that users are removed from having any real and accurate understanding of their care provision:

Jane:	If they are reading a book sitting in a chair, the book falls on it and all hell's let loose. You've got people running from all ends of the globe.

Here our participant feels her experiences are so far removed from people remotely caring for her, they may as well be on the other side of the world. This highlights clearly a loss of intimacy when compared to more intimate, person-centred and face –to-face care.

4.3. Rage against the (assistive) machine: alarm pendants and acts of resistance

Whil~~e~~st Ritzer ~~observes~~ observed that ~~in spite of~~despite the ubiquity of McDonaldization, it is possible for people to develop strategies of resistance, other authors have been more forthright, questioning the inevitability of a greater and greater restriction of human will in the form of an 'iron cage' of rationality envisioned by Weber [18, p. 172-74]. So in terms of the alarm pendant, to what

extent, and how, ~~do~~ are actors able to negotiate and creatively reshape its use when it become integrated in their daily lives? Our findings highlight that older people have significant capacity, at the individual level, to resist and even subvert the rationalities associated with alarm pendants. This is consistent with SST understandings that argue that while technologies will have an effect on the social environment, this impact is not determined but ~~negociated~~negotiated and shaped ~~(Wiiliams and Edge).~~[33]. For instance, older people can choose to undermine the pervasiveness of these McDonaldized systems and (often against the will of family members and other carers) choose not to use the device or to use it selectively and only for activities that they deem especially perilous. Matt, 64, for instance who is the fulltime carer of his wife, only uses it in the daytime:

Matt: We should take that upstairs to bed every night, but we don't.

Others who lived in a care facility often went against carers wishes and refused to wear a pendaent alarm unless they ventured into public areas on their own:

Jennifer: Because if you're wearing this pendant round about, there's nearly always somebody about isn't there? I don't think it's that important to wear it inside.

Many others simply forgot to carry the pendaent around with them and it was clear from our analysis that many of these instances were due to various cognitive impairments, like dementia. This raises an interesting issue of whether for an action to be considered a 'resistance',~~;~~ it has to be consciously and actively made. Interestingly, ~~others~~ some of our participants showed a distinct level of subversion, using the device but on their own terms. The manager of a care facility relayed a story during our interview of when a resident activated her alarm because she didn't like what was on television and wanted a staff member to change the channel:

Becky: She was watching Punjabi news or something last night; she tried to buzz the carers. That was just with ordinary TV so~~…..…~~.that was the emergency you see, she was watching the Punjabi news!

The following extract reveals that although coerced by her carer to wear her alarm pendaent constantly, Jennifer and Barbara refuse to. Instead~~,~~ they choose to use it selectively like Becky who wanted her TV channel changed. These respondents kept the device tucked away in a draw and only activated it to alert a carer that a nuisance neighbour at their care facility is annoying them and they would like her to be taken back into her own self-contained flat:

Jennifer: I try to keep it on but I don't always, I have to say.

Barbara: I never have it on. The thing is I should, I get told off about it, but I just don't –

Jennifer: Well when we get stuck with one of – you know, like Sally etc., it's handy, you want a carer so you can just ring that and they'll come up and see to her.

Barbara: Oh I've had that often enough, but this is. Now the thing is that if you ring the buzzer for them, they're here to get her and put her back [in her own flat].

Our research also revealed that older people who are supplied a pendaent alarm aren't the only ones who can subvert its intended function. During observational fieldwork, a care worker reveled that if a resident has a reputation for unnecessary alarm activation, they do not treat the alarm seriously and will delay responding to it. Our data therefore illustrates that processes of rationalization have the potential to be more flexible and ~~do~~ allow for instances of resistance among older people and their carers. It also ~~illustrates~~ highlights that functions and uses of technologies are always negotiated in the social environment they are deployed.

5. Discussion

As stated at the ~~onset~~beginning, the aim of this paper is not to criticize alarm pendants or telecare as a whole but rather to unpick some of the negative and unanticipated consequences of use. However, in this it should be understood that there are indeed positive effects of these kinds of devices. ~~and is used by lots of people for many different reasons.~~ In our research we witnessed it~~'~~s perceived usefulness for people who are vulnerable to ~~falling~~ falls and those who enjoy the reassurance of knowing a friendly voice is available at the touch of a button. The device can be especially helpful for people with long-term conditions, as it can give them and their relatives a peace of mind that they're safe in their own home. They can also facilitate people living more independently ~~in their own home~~ for longer, avoiding a hospital stay or delaying the move into a residential care facility. We should also be careful not to compare current practices, which integrate the use of pendant alarms with an unrealistic and overly romantic perception of traditional care.

Building on insights from SST, our paper has illustrated that just as a technology can mediate and shape a social environment~~-~~ and relationships, they in turn can shape the function and uses of a technology. The technology we have scrutinized is the alarm pendaent, a device deployed to streamline and McDonaldize the care of older people. To what extent is further McDonaldization of care inevitable? According to Weber and Ritzer, the ultimate consequence will be an 'iron cage of rationality' or 'iron cage of McDonalization', which every aspect of society ~~will be~~ will be subjected to analysis, organization, professionalism and bureaucracy [13]. However, observations of modern industries disagree ~~with~~ the~~i~~s prediction that McDonaldization is not an inevitable process. Indeed, many factories have abandoned Fordism, which was a precursor to McDonaldization, and moved from the traditional assembly to a system of post-Fordism. This system of economic production abandons getting individuals to perform specialized tasks repetitively and is instead characterized by small-batch production and a greater focus on the consumer [3940~~0~~]. We can also see that some commercial enterprises have purposefully resisted McDonaldization and consciously strive to adopt a non-rationalized business model. Ben & Jerry's ice cream for instance have an irrational

business philosophy, reject bureaucratic procedures and give generous donations to charities [401]. Even if we take a closer look at the McDonald's restaurant franchise we can see that it's not as homogenous and inflexible as the theory it lends its name to implies. Indeed, it has shown itself to be incredibly flexible in adapting to local culinary environments. For instance, in Muslim countries the beef is halal, in India beef is not served at all and in France burgers are served with alcohol [412]. These examples validate the claim of SST that the social environment actively shapes artifacts embedded within it [334].

Alarm pendants are based on relatively unsophisticated technology and developments in this sector are expanding rapidly. It is likely and that future assistive living technologies are likely towill move away from first generation devices, like the one we have described in this paper. The potential for alarm pendantsthe wider area of telecare to dehumanize and produce irrational social outcomes will depend therefore, in part, on the development of the industry. For instance, if they adopt more digital participation services – designed to stimulate social interaction [423] – then potentially they can increase a sense of community and counteract processes of dehumanization. Other developments could allow users more agency and choice in the device they are provided with, by having for instance, more flexibility that permit the choice to activate multiple buttons to better communicate the urgency of help needed. Providing older people with simple reminders of their agency is highly important because it has been shown to significantly prolong life [434] while the removal of agency has been illustrated to lead others to treat them as uncivilized and irrational [356]. Future assistive technologies could also be more flexible and ensure choice and be configured in a way to allow the user to choose who gets alerted when an alarm is activated.

A further negative social effect of alarm pendaent use we identified in our research was its potential to cause deindividualization [17,445]. Presently, older people who have a pendaent alarm are anonymous. There is a possibility of counteracting this by ensuring that teleoperators have more information about the person they are remotely caring for. As well as their name and other basic information, they could be provided with an outline of their personal history, including their previous occupations, hobbies and family life. The use of video would also be a positive move to counteract the deindividualization processes implicit in alarm pendant use.

Our argument here is that technological change in the field of gerontology is something which older people and other users of assistive technology need to actively shape, rather than respond to. These users should be consulted about the kind of relationship they want from their caregiver and broader society should also reflect on the type of relationship it want with its older citizens. Following Mort et al [REF14], we also argue that there is a need for on-going engagement with older people and the users of such devices in the design, development of technologies that are embedded within decisions of care.

Currently, very little empirical research exists on how the social environment affects alarm pendant use. A productive development in the study of gerontology and technology would assess the impact of telecare on different social environments of care and also how different social and cultural environments of care affect the use and function of technological devices.

6. Conclusion

Following much of STS research, our paper argues against the theory of technological determinism – that is, the belief that technology develops in isolation from society ~~but in turn~~while having a strong impacts upon it. The very development and promotion of the alarm pendaent as part of the solution to reduce care-related costs incurred by the government shows that innovation doesn't occur immune from the concerns of society. Despite the designed intention of this device, the evidence of its effectiveness is scare and the largest study conducted to date has shown no significant cost-reductions [12].~~-~~ We argue that this is perhaps because adequate attention was not afforded to the broader social environment in which they are deployed. In short, it seems the advocates of alarm pendaents subscribe to an understanding of the discredited (in STS at least) model of technological determinism.

As the population continues to age, greater efforts will go into developing and utilizing technology that can facilitate the care of older people. While these future devices and services seem an economic necessity and will no doubt bring tangible benefits, STS and especially its branch of SST provides a literature and vocabulary to explore and analyse dehumanizing and irrational issues surrounding their use. Using the pendant alarm as an example, our own research shows how it can do this in two ways. First, it provides a way to look at how a technology can shape social relations and cause dehumanizing effects by reducing human contact, replacing fact-to-face with more distant care practices and working to stigmitise users. In the second instance, it allows an examination of how the environment a technology is embedded affects its function and use. In using this framework with the example of the pendant, we have shown how it has the potential to dehumanize and create irrational outcomes by relying on the cognitive ability of the user and, we also found evidence that older people can subvert the intended function of alarm pendants and resist these dehumanization effects by using the device selectively, or not at all.

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This paper has also utilized Ritzer's version of rationalization – McDonaldization – to argue that the alarm pendaent is deployed as a means to streamline older people's care through greater levels of efficiency, predictability, calculability and external control. Specifically, our analysis focuses on some of the unanticipated social consequences ~~of the deployment~~ of this device and the ways the social environment affects ~~the~~ its use and function. We understand that the negative effects of alarm pendants we have ~~set out in this paper~~outlined are not the result of malevolent intention on the part of those who design or operate these systems but rather, they are a byproduct of the practices and functional requirements of the device, as it is currently conceived. ~~Specifically, our research revealed that on occasion, they devices are not always effective or efficient; they can shift extra work onto older people and their carers; they can work to dehumanize an older person by causing stigma and changing the relationship of care. However, we also found evidence that older people can subvert the intended function of alarm pendants and resist these dehumanization effects by using the device selectively, or not at all.~~

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Biographies

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Katie Brittain is a social gerontologist and an experienced quantitative and qualitative researcher. Her educational background in applied sociology has enabled her to pursue her research interests in the application of these research methods in order to look at the social impact that illness can have on the lives of older people. During her time as a researcher she has researched and published widely around the impact of ill health on older people and carers, particularly with reference to continence management. More recently her work has focused around how aspects of the physical, social and technological environment pose challenges and opportunities for older people and their wider community.