Socio-gerontechnology

Social change in the twenty-first century is shaped by both demographic changes associated with ageing societies and significant technological change and development. Outlining the basic principles of a new academic field, Socio-gerontechnology, this book explores common *conceptual, theoretical and methodological ideas* that become visible in the critical scholarship on ageing and technology at the intersection of Age Studies and Science and Technology Studies (STS).

Comprised of 15 original chapters, three commentaries and an afterword, the book explores how ageing and technology are already interconnected and constantly being intertwined in Western societies. Topics addressed cover a broad variety of socio-material domains, including care robots, the use of social media, ageing-in-place technologies, the performativity of user involvement and public consultations, dementia care and many others. Together, they provide a unique understanding of ageing and technology from a social sciences and humanities perspective and contribute to the development of new ontologies, methodologies and theories that might serve as both critique of and inspiration for policy and design.

International in scope, including contributions from the United Kingdom, Canada, the United States, Australia, Germany, Norway, Denmark, Austria, the Netherlands, Spain and Sweden, *Socio-gerontechnology* is an agenda-setting text that will provide an introduction for students and early career researchers as well as for more established scholars who are interested in ageing and technology.

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Interdisciplinary Critical Studies of Ageing and Technology

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and Louis Neven

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Chapter 1

Socio-gerontechnology: key themes, future agendas

Alexander Peine, Barbara L. Marshall, Wendy Martin and Louis Neven

Two key drivers that underlie societal change in the twenty-first century are demographic changes associated with ageing societies and significant changes in technology. There has been a proliferation of technologies within our daily lives, including a vast growth in digital devices and information systems of communication. Technologies have moreover become increasingly immersed into the daily lives of people as they grow older and have become significant to identities, lifestyles and social networks of people in mid-to-later life. At the same time, these two drivers of change have mostly been explored in different disciplines: Age Studies and Science and Technology Studies (STS). The premise and focus of this edited collection is to explore the possibilities and limitations of bringing STS and Age Studies together as a means to improve the quality of life and everyday lives of people as they grow older.

In particular, we seek to establish the relevance of and the basic principles for a new academic field: Socio-gerontechnology. The book highlights work from academics and researchers from Age Studies and STS to advance a cross-pollination of ideas, theorising, research and methodologies and to highlight areas for future theoretical and empirical development. Our aim is to understand and overcome any divides between social and cultural analyses of ageing, on the one hand, and engineering- and design-based approaches, on the other. We endeavour therefore to develop more empirically grounded theoretical understandings of the constitution of ageing as intertwined with the use and design of technology, including digital technologies.

The contributions in this book present major themes from an ongoing conversation that the editors and the contributors have had, together with many others, over the last five to ten years. Our focus and overall topic of conversation – ageing and technology – is in many ways quite well established and popularised among policymakers, the public and academics. Yet, in the shadow of this broad mainstream attention, there is also growing concern from scholars in the social sciences, the humanities and design studies, that dominant approaches to ageing and technology have been under-theorised and over-reliant on troubling stereotypes of older people and underlying assumptions about the ways in which technology can 'solve' the 'problems' of old age and ageing populations. This book provides

a forum for critical explorations of these assumptions and stereotypes and at the same time generates important theoretical and empirical insights as reference points for future research, policymaking and design.

A critical approach to ageing and technology

The first motivation behind this book is the simple but crucial observation that age and ageing are increasingly intertwined with the development, deployment and use of technology. Of course, ageing and technology have long been connected: one need only think of eyeglasses, hearing aids, walking canes and large-button television remotes, for example. However, the proliferation of digital technologies, with their potential to monitor and link individuals and their data, opens up a number of important lines of enquiry around ageing and technology today and into the future. On the one hand, a vast array of non-age-specific digital technologies like smartphones, fitness trackers, voice assistants, electrical bicycles and so forth have become part of the daily lives of older people. At the same time, we witness a wide variety of both well-endowed public innovation and technology development programmes and private consumer technology initiatives specifically aimed at older people, including, for instance, the development of care robots, alarm pendants, remote monitoring systems or health data tracking apps. While the former – the use of everyday digital technologies by older people – is still not fully appreciated and understood by academics and policymakers (Hebblethwaite 2016; Gallistl and Nimrod 2020), the latter – the design of *gerontechnologies*, that is, technologies specifically designed for older people – seems to follow a largely uncritical *interventionist* agenda (Peine and Neven 2019): There is still a widespread belief among the public, academy and industry that ageing and technology are separate and somewhat alien domains, so that age and ageing can figure neatly as an untapped potential in the techno-solutionist dreams and fears of technology development and innovation policy (Neven and Peine 2017).

Gerontechnology enthusiasts are right to argue that futures of ageing are bound up with technology. However, this scenario comes with risks, not the least of which is expressed in the tension between visions of late-life independence versus the surveillance of older people. Given the problematic assumptions of the interventionist agenda, one might reasonably assume that the social sciences and humanities would have a loud and clear voice on some of these questions. And indeed, the last decade or so has seen an upsurge of studies from the social sciences, humanities and design studies that share a *critical view* of the established thinking and theorising about ageing and technology in academic and policy debates. This sizeable and growing body of scholarship addresses the multiple and complex intertwinements of ageing and technology that already exists,[1] and has begun to replace naive bio- and techno-deterministic understandings of ageing and technology with the emergence of empirical studies in the design and use of technology by and for older people (Peine and Neven 2019).

It is this notion of critique that runs through the contributions in this book, and that is central to the formation of Socio-gerontechnology. It is thus important that we are specific about what we mean by *critical*. We write this introduction during a global pandemic, and while all contributions to this book were planned and written before the onset of COVID-19, the pandemic has sharply brought into focus a number of issues that demonstrate the value of a critical perspective. It has placed digital technologies in the spotlight as a means to mitigate the isolation of quarantined elders, permitting remote delivery of healthcare, as well as allowing families and friends to express care for, and sometimes say goodbye to, their dying loved ones. We are likely now all familiar with widely circulated images of sad-looking old women gazing wistfully out of windows that accompanied much of the press that aired these issues. At the same time, it is likely that older people also used technologies while quarantined for more routine domestic tasks, as well as recreational and creative pursuits – for example, ordering groceries, searching for recipes, participating in and producing content for social media, or engaging in online activism.

There are a number of far-reaching issues that we can unpack in these simple examples. These issues become visible when we appreciate them not as unfettered windows into the lives of older people but as also carrying and producing specific forms of ageing-technology relations. On the surface, images of sad-looking and apparently lonely older people seem to be well intended. They draw our attention to a problem that older people face. Because older people are considered to be a high-risk group for COVID-19, physical contacts with family, friends and care givers are considered to be especially risky, and even irresponsible for them, and in the case of care homes, often completely banished. The prevailing discourse is that many older people are in a very problematic and risky situation that needs our immediate concern. In this bleak vision of the lives of older people, where human-to-human contacts are ruled out as a possible solution, digital technologies already lurk in the background as shiny and obvious saviours.

A critical perspective makes clear that the sad-looking woman is not only a vignette of the impact that the global pandemic may have on older people. When broadening the perspective to include the political and cultural forces that are entangled within that image, she appears instead as yet another manifestation of a long standing narrative that tends to overemphasise the potential for technologies to 'solve' problems of declining health and increasing 'frailty' and social isolation among older people (Neven and Peine 2017). The global pandemic has worked as a pressure cooker that has produced new configurations of old ageist and gendered stereotypes of age and ageing as problems, in which technology is seen as a solution. Such configurations may justify more funding for existing research, but evade the more complicated questions of deeply engrained sources of social exclusion, isolation and inequalities or that may simply provide a new playing field for existing innovations, such as care robots or telemonitoring systems.

But on the flipside, related and even more interesting questions can now also be asked about the actions and policies that are left out in the images of sad-looking

older people. What kind of "problems" and "solutions" come to mind if we take the creative use of social media and digital apps by older people during the global pandemic as our starting point? What if we focused on the many creative and resourceful technical and non-technical solutions (Giaccardi et al. 2016) that older people themselves have come up with, not only to cope with lockdowns and quarantines but in their everyday lives? This would imply focusing on a very different configuration of ageing and technology relations, with different sets of questions to be asked. One could ask, for instance, about the conditions under which the resourceful use of technology can flourish, or about the community conditions under which these can be shared and embedded into existing social and material arrangements of care (López Gómez 2015). By doing so, alternative worlds and ageing futures become conceivable, in which different types of innovation policies create different opportunities for improving the quality of life of older people; or where different creative solutions by older people to problems of care bring into focus different ideas of what legitimate care technology is to begin with (Bergschöld et al. 2020).

The contributions in this book are critical in the sense that they focus on the relations between ageing and technology as being constitutive of each other (Peine and Neven 2020). In terms of theoretical reflexivity, they voice critique towards the instrumental view of technology that is so deeply engrained in current debates around ageing and technology and that produces and indeed understands ageing – however fine-grained it is described – as a target for technological interventions. All contributions raise questions about fundamental assumptions in dominant academic and political debates – not only about any form of ageing or technology in particular but about the nature of their relations. Critique is directed, in a broad variety of forms, at the assumption that ageing and technology are separate or unproblematically separable. Instead, the contributions in this book show, theoretically and empirically, how such separations are made in practice and which versions of ageing and of technology are produced as a result. As feminist philosopher Karen Barad would say (Barad 2007), separation of ageing and technology is part of the same "agential cut" that also enacts older people and the technologies they incorporate, use or otherwise relate to. This perspective offers new opportunities for theorising about ageing and technology.

Along with theoretical reflexivity, the normative stance of Age Studies also demands practical criticism in studies of ageing and technology. In this form of critique, it is essential that we move beyond considerations of ageing and technology that presuppose age as a marker of diminished access to, interest in or ability to use technology, and that deploy ageing as synonymous with physical decline and decrepitude (and by extension, as a drain on public resources). While these may indeed be issues that deserve empirical exploration, we argue that there are larger questions at stake, many of which demand a fuller, more socio-political account of how older bodies become problematised, let alone how technologies are marketed as solutions, and how particular kinds of knowledge or expertise about ageing are valorised. Critical studies of ageing and technology lay bare the

underlying social, infrastructural, political, economic, cultural and material processes that produce and hold in place such considerations.

A further notion of critique pertains to the various non-positivist approaches that have informed the contributions in this book. Critical studies in ageing and technology reject determinist notions of ageing as solely the matter of biology and corporeality as much as they reject determinist notions of technology as solely the matter of nuts and bolts and engineering practice. Instead, a critical agenda of ageing and technology underscores the need for empirical analyses that unpack exactly how ageing and technology are related to each other, how the technical, the biological, the social, the political and so forth are seamlessly entangled (Hughes 1986) in these relations, and it feeds results thus gained back into normative discussions and generalisations that can inform practical questions. Such analyses are not limited to stereotypical places like homes, neighbourhoods, care facilities and ocean cruise liners but can be studied in places less familiar in more traditional scholarship on age and ageing, like laboratories, design studios, boardrooms of technological corporations, innovation policy discourses, and media representations of new devices and their users, to give some examples (Peine and Neven 2020).

Interdisciplinary studies of ageing and technology

Yet, while criticism has emerged in various fields, it has also remained scattered and fragmented. This brings us to the second motivation behind the formation of Socio-gerontechnology and indeed to the crux of this book: to tap into the potential of the interdisciplinary boundary zone in which critical studies of ageing and technology lie. In taking the intersections of Age Studies and STS as our starting point, we seek to nurture what we believe is the potential for a particularly fruitful dialogue. While we cannot claim to be comprehensive or deny the diversity that necessarily exists, it is our intent to show that this dialogue is indeed significant and mature enough to warrant the proclamation of a new academic field – that is, that there is a common ground both broad enough to carry a new research field and also specific enough to show how this field is different and new.

Two developments have been important for shaping our perspective. The first is a turn in Age Studies towards technology. We use the term Age Studies to collectively identify a range of critical scholarship that has challenged and offered alternatives to the biomedical hegemony in understanding age and ageing (Katz 2014; Twigg and Martin 2015b) to focus instead on how age and ageing themselves are socially and culturally produced. In Age Studies, technology has increasingly been recognised as part of the production of age and ageing (Katz 2018). For instance, recent work has turned increasingly towards a view of age as measured and experienced in ways which reject a reduction to chronology, and attends to the technical tools of measurement and standardisation as these call forth particular ways of *managing* age and ageing populations (Marshall and Katz 2016). Increasing quantification and digitisation of ageing bodies raise important questions

about the circulation and aggregation of data as it contributes to the surveillance of, and algorithmic decision-making about, older people and ageing populations.

The second development is a turn in Science and Technology Studies (STS) towards age and ageing. STS has long disenchanted interventionist dreams of new technologies as somehow clean and neutral cuts into society's ailments. Instead, it has shown how science and technology are inseparably entangled and thus constitutive for the practices, problems, institutions, values and meanings of the various worlds we live in – that is, how they are constitutive for society itself (Felt et al. 2017). From this perspective, a sizeable recent body of STS scholarship has addressed how science and technology produce ageing, while at the same time establishing how interactions of older people with devices like alarm pendants or electrical bikes shape technology (Joyce et al. 2017; Moreira 2017). For instance, the increasing funding of large-scale technological innovation projects raises important questions about the reconfiguration of ageing as a problem and of a particular positioning of "high tech", like robots or artificial intelligence, as a legitimate solution, which this funding also produces (Neven and Peine 2017; Bischof 2020).

Hence, critiques of and alternatives to interventionist and determinist accounts of ageing and technology have surfaced in both Age Studies and STS, and they have not done so in isolation from each other. So, when we talk about turns in Age Studies and STS, this also implies a simultaneous turn of these fields towards each other, and there is now a growing and exciting body of innovative critical scholarship that engages with concepts and ideas from both fields (Joyce and Loe 2010; Peine and Neven 2019). This is the terrain on which Socio-gerontechnology is located. On the one hand, age as a social category and ascribed property of individuals is constructed through complex socio-technical assemblages. This is not to deny that there is a corporeal dimension to age (Gilleard and Higgs 2018) but – just as with other social categories like gender and race and ethnicity – it needs to be made meaningful; and it is produced through a myriad of social relations, technologies, infrastructures and discourses. But at the same time, technology, too, as a set of functions and an ascribed property of physical, inanimate matter, is constructed through complex socio-technical assemblages. Technology obviously has a physical, obdurate dimension, but it too has to be made meaningful and is produced through a myriad of social relations, representations of age and ageing, infrastructures and discourses.

The dialogue between Age Studies and STS

Summarising the value of a dialogue that involves such vast and diverse fields as Age Studies and STS is daunting, if not outright impossible. Yet as editors we feel that it is necessary to establish at least a few reference points, so that we are clear about where we see important commonalities and challenges that have characterised this dialogue since its beginning, without suggesting that these are the only possible readings of it. To establish these reference points, we have chosen a

humble path: we recount our personal trajectories from, to and between Age Studies and STS – that is, our own trajectories into the interdisciplinary endeavour that is at the heart of this book.

Alexander, when starting his PhD training as a sociologist in an interdisciplinary gerontechnology project that designed everyday technologies for older people in the early 2000s, was puzzled by the way engineers and designers would constantly imagine older people and their lives alongside the conception of new prototypes, use cases or software code. Often, such attempts would come under the disguise of simply understanding "the user" and his or her "needs". Being trained in STS – or more precisely, in its German variant *Techniksoziologie* – Alexander became interested in the underlying processes through which this imaginary of "old technology users" came into being.

STS theories had a lot to offer in this regard, and for Alexander the early work of Bruno Latour, Steve Woolgar and Madeleine Akrich that coined notions such as "configuring the user", "scripts" or "user representations" (Woolgar 1991; Akrich 1992; Latour 1992) became particularly influential. These early studies had established that technology design does not simply address particular "needs" of a "user", a still widespread perspective in technology and innovation projects for older people, but that it produces needs and users alongside technology. This perspective proved to be a powerful one because it opened up the analysis of technology design to the versions of age and ageing that it also creates.

Louis' journey into ageing and technology also started with his PhD thesis. Originally his thesis was intended to be on an obscure topic in STS user studies. However, for a case study he found himself in a corporate laboratory environment observing older people interacting with a robot (Neven 2010). This interaction, or rather the severe problems that hindered a meaningful interaction, and the subsequent lacklustre reaction of the designers and engineers to the input of the older test participants convinced Louis that the design of technologies for older people should be the focus of his thesis.

However, changing the topic of a PhD thesis, particularly in the Dutch context, is not easy. Luckily, his funding allowed for this and, more importantly, Louis' supervisor, Nelly Oudshoorn had a background in the study of gender and technology. The clear similarities between ageing and gender made it apparent to Nelly that this could work as a thesis topic. The study of gender and technology became very influential for the way Louis thought about ageing and technology. A particularly interesting line of work was on gender scripts (Oudshoorn 1996). Studies of how gender and technology are co-produced in the design and production of shavers (van Oost 2003) or microwaves (Cockburn and Omrod 1993) and consequently transferred to the everyday lives of women where these designs would enable, but mostly constrain women, were very influential for Louis's thinking about ageing. This work, like Alexander's research, was influenced by the work of Latour (1992), Akrich (1992) and Woolgar (1991) on actor-network theory, scripts, user representations and configuring the user respectively.

When Louis and Alexander first met in the late 2000s and discussed the value of an STS contribution to understand age and ageing, Age Studies became an almost natural ally. For Alexander, the work of environmental gerontologist M. Powell Lawton was an early influence (Peine 2007). Lawton's idea that the gerontechnology project at large primarily throve on an "environmental docility" hypothesis, while a lot was to be gained by an "environmental proactivity" perspective, too (Lawton 1998), resonated with the work of medical sociologists Kelly Joyce, Laura Mamo and Meika Loe on ageism and technology that was influential for Louis' early work (Neven 2010).

Coming from a theoretical angle that seemed more commensurate with the STS focus on social constructionism than Lawton's positivist epistemology, these critical feminist scholars had begun to highlight how technology was already "central to the lived experiences . . . of ageing people" – as Kelly Joyce and Meika Loe (2010, p. 171) put it in the opening sentence to a special issue that was an early attempt to bring Age Studies and STS together. Indeed, Louis wrote his first article as contribution to this special issue in the journal *Sociology of Health and Illness*. Kelly and Meika were very helpful and patient with this young inexperienced scholar – Louis ended up writing 13 versions of that first article – but they also pointed him to some key readings in Age Studies. This provided the theoretical tools from two worlds, the combination of which allowed Louis to conceptualise the design and use of technologies for older people much better. For Alexander and Louis, these early explorations into STS – Age Studies encounters became the basis for research that mapped sources of ageism in design – for which they coined the terms 'age scripts' and 'design paternalism' (Neven 2010; Peine and Moors 2015) – and that also engaged with policy and design to unmask the uneasiness that design paternalism can create in the lives of older people (Peine and Neven 2011).

Feminist critique has also always been central to *Barbara's* interest in both Age Studies and STS. Her interest in ageing was initially rooted in political economy, writing a master's thesis in the early 1980s on economic precarity in older women (who at that time were among the poorest demographic groups in Canada). Her doctoral work took her in a more theoretical direction, at a time when debates in the social sciences were bringing questions about grand narratives, knowledge, science and truth to the fore. Particularly compelling for her was Foucault's assertion that "'Truth' is centred on the form of scientific discourse and the institutions which produce it" (Foucault 1980, p. 131). Participation in a workshop on 'Modernity and Technology' at the University of Twente in 1999 provided an opportunity to reflect on some of the theoretical connections between feminism and STS. As recounted in her contribution to the book that resulted from this event, a key appeal of both was that they had important things to say, not just about 'women' or 'science and technology' but about the 'social' more generally (Marshall 2003).

Of course, the relationship between feminism and STS has been a fraught and complicated one. As Judy Wajcman has suggested, "despite the emphasis on the

way innovations are socially shaped" it remains "incumbent on feminists to demonstrate that this 'social' is also a matter of gender relations" (Wajcman 2000, p. 451). However, for Barbara, the most interesting contributions to dialogue between feminist studies and STS were those that came to research on science and technology from practical interests in things like the labour process, the organisation of domestic life, health and illness, and so on – for example, Clarke's (1998) work on the reproductive sciences or Cockburn and Omrod's (1993) work on domestic appliances. It was this spirit that informed her return to empirical work on ageing, gender and science/technology in the late 1990s. As the success of Viagra drove a wave of attempts to rehabilitate gendered and sexualised ageing bodies, Barbara's work probed the not-so-secret history of the 'discourses and institutions' that produced varying truths about these bodies. Fascinating hallway conversations with her colleague Stephen Katz, a pioneer of critical Age Studies, inspired further reflections on technologies, ageing and embodiment (Katz and Marshall 2004) and led to a long-standing research collaboration exploring a range of questions about ageing in digital culture. This collaboration also inspired her to get more involved with the growing network of scholars interested in cultural and critical approaches to ageing.

Following a career in nursing, Wendy's interest in Age Studies began in the late twentieth/early twenty-first century. There had been some key changes and developments in theory, methodology and policy at that time that informed her master's and doctoral research. The sociology of the body and embodiment had emerged that not only challenged biological determinism but also questioned Cartesian dualisms around the body and mind, encapsulated within the seminal text *The Lived Body* (Williams and Bendelow 2002). Within Age Studies, the ageing body had not initially been addressed, in part as a way to avoid overly biomedical accounts of old age (Martin and Twigg 2018). As the dominance of biomedicine and biological determinism became increasingly questioned, the possibility of cultural and social perspectives of the ageing body was opened up to allow for fuller and richer explorations of lived experiences of growing older. It was in this context that Wendy's doctoral thesis focused on ageing, the body and everyday life in the context of active ageing in which data was elicited through the use of in-depth interviews and photo-elicitation (Martin 2007). Meanings and perspectives associated with ageing bodies were shown to be central to everyday experiences in mid-to-later life. Alternative images of ageing were moreover intertwined within the accounts of participants as they fluctuated between a sense of ageing as a time of possibilities and a heightened awareness of their embodied vulnerabilities.

The curiosity around ageing bodies and embodiment was shared with Professor Julia Twigg, University of Kent, and since 2007 they have been co-convenors of the *Ageing, Body and Society* study group within the British Sociological Association (BSA). As part of this study group, a one-day conference in 2010 at the British Library in London[2] brought together scholars and researchers from STS and Age Studies. This involved contributions by Louis, Barbara and Stephen Katz and included a plenary panel on the *Technogenarians* monograph that Louis

contributed to and edited by Kelly Joyce and Meika Loe (2010). Julia and Wendy have since written on the emergence of cultural gerontology (Twigg and Martin 2015a, 2015b) in which the theoretical, methodological and substantive scope within Age Studies has widened. Within cultural gerontology, the advancement of technological developments, in particular digital technologies, is seen to have contributed to the reconfiguring of time and space, our social networks and the omnipresence of the visual. The use of visual methods to elicit data about the lived experiences of growing older has also been central to Wendy's research. An emergent theme from an Economic Social Research Council (ESRC) research project *Photographing Everyday Life: Ageing, Lived Experiences, Time and Space* highlighted the increasing importance of digital technologies to social connectivity within everyday life (Martin and Pilcher 2017).

Discussions between Barbara and Wendy were further facilitated by the Social Sciences and Humanities Research Council of Canada's international and multidisciplinary partnership *Ageing, Communication, Technologies (ACT): experiencing a digital world in later life*, led by Kimberly Sawchuk.[3] Collaborations within these networks further brought into focus the shared problematics of feminist studies and Age Studies, as they have respectively grappled with issues of embodiment – how, for example, can we acknowledge the realities of corporeal ageing/sex without reducing age/gender to physicality? How can we develop more adequate intersectional approaches, learning from critical race studies (Rajan-Rankin 2018), queer studies (Sandberg 2008) and disability studies (Aubrecht et al. 2020)? It is the focus on ageing embodiment that continues to serve as the lynchpin bringing together Barbara's and Wendy's interests in feminism, Age Studies and STS. It informs Barbara's ongoing project with Stephen Katz (on which Wendy is a collaborator) on the remaking of 'age' and 'elderliness' as biomedical and technological innovations that are increasingly enrolled in programmes for 'successful ageing' (Marshall and Katz 2016; Katz and Marshall 2018).

While we have entered the dialogue between Age Studies and STS from different angles, we all share the experience that we could not rely on established traditions in Age Studies, STS or elsewhere, when we started to work on critical approaches to ageing and technology in the 2000s. But we were certainly also not alone in this journey. When Alexander and Louis began in 2010 to convene thematic tracks on STS and ageing at the big annual European and North American STS meetings, they found opportunities to connect and exchange with like-minded scholars, including some of the contributors in this book, who were interested in ageing as a genuine topic for STS (Peine et al. 2015). For Barbara and Wendy, similar opportunities were gained through the BSA's study group and the ACT partnership, which brought together researchers in critical Age Studies to address how ageing itself is being transformed with the advent of digital and communication technologies. These networks and presentations at different conferences and symposia have afforded opportunities to make intellectual and personal connections with others in Age Studies who were working on topics related to digitisation and digital ageism.

These parallel developments in Age Studies and STS, while already drawing on concepts from each other, also led to joint conference sessions in 2016 at meetings of the International Sociological Association (ISA) and of the European Association for the Study of Science and Technology (EASST), which explored a cross-pollination of Age Studies and STS. From the sizeable network of scholars who met and started a dialogue during these and similar sessions, the idea emerged to start a series of annual meetings fully dedicated to interdisciplinary critical studies of ageing and technology. During the inaugural meeting of what would eventually become the *Socio-gerontechnology Network*, held in Vienna in the spring of 2017,[4] the current editorial team and idea for the book came together, with a mandate to build on the already fruitful dialogue that was developing. Thus, our critical explorations into ageing and technology are based on many years of a fruitful and sometimes challenging exchange between scholars working across and between a range of disciplines. However, this conversation is ongoing and it is thus important to emphasise that we see this book not as a report on, or conclusion to, a conversation but as an invitation to further dialogue.

Overview of the book

The book is organised as follows. Taking forward this introductory part is a review of theoretical developments , and in fact the two turns we mentioned above, by Anna Wanka and Vera Gallistl. Wanka and Gallistl provide a comprehensive orienting overview of the similarities and differences in the conceptual/theoretical trajectories of both Age Studies and STS, identifying five points of intersection useful in exploring their approaches to the ageing and technology nexus: relationality, materiality, agency, power and critique. Their review sets out some key questions for advancing joint research and theorising in Age Studies and STS, and usefully prepares the ground for the remaining chapters in the book. These are divided into three thematic groupings that continue the dialogue set out here: Bridges, Encounters and Design.

Part I: Bridges

The first group of chapters probes the critical frameworks, assumptions, trends and challenges that Age Studies and STS share. Drawing here on some of the specific theoretical and methodological developments in both fields – such as the ontological turn in STS, new materialisms, the socio-materiality of space, new configurations of agency and citizenship – these chapters use empirical examples to draw out what STS and Age Studies already have in common and suggest what challenges in their rapprochement remain.

Marie Ertner and *Aske Juul Lassen*, in the first chapter, explore the value of the ontological turn in STS for studying ageing and technology. A focus on ontology, which poses that things (humans and non-humans) emerge in practice, provides new opportunities for reflexivity and critique in Socio-gerontechnology that move beyond mere attempts of showing how actual ageing and technology relations

are different from those in old-age technology policy discourses. Using ethnographic research in a Danish innovation project, they focus on the 'shadowland of alterities' that is rendered visible by an ontological approach, where other 'not-quite-yet' worlds of technology and ageing become possible. Such 'not-quite-yet' worlds of gerontechnology, ageing and older people, they argue, should be the basis for critical reflections in Age Studies and STS to make more careful decisions about the realities to re-present and to intervene in.

The second chapter by *Monika Urban* brings new materialist theory and constructivist understandings of ageing and agency together to analyse technologies for 'ageing-in-place'. As she suggests, in many countries 'ageing-in-place' has become both an ideal and a public health strategy, in no small part driven by austerity policies. She uses research on older peoples' use of home-based eHealth and monitoring technologies to explore the ways that the spaces and places of ageing are shaped and reshaped, and critically scrutinises the heterogeneous assemblages underpinning these reconfigured 'topologies' of ageing. She argues that technologies for ageing-in-place are not just assistive or compensating but open up a complex terrain of opportunities, risks and inequalities, and that conceptual tools from both Age Studies and STS can assist in grasping how shifting ways of 'doing age' are simultaneously social, spatial and material.

In the third chapter, *Michela Cozza* revisits the work of feminist theorist Karen Barad to bring a posthuman approach to study the phenomenon of elderliness as multiple and relational. Where traditional approaches in Age Studies and the engineering/design principles study elderliness as either a merely socio-cultural product or as the outcome of a bio-medical process of decline, a posthuman account explores the middle ground where elderliness emerges as relationally entangled in social and material practices. She uses her long-lasting experience in design projects to illustrate how assistive technologies, rather than addressing a pre-existing set of 'user needs', are part of specific agential cuts that constitute rather than target the phenomenon of elderliness. For her, this is not just an academic exercise, and she concludes with the ontological, epistemological and ethical implications for design.

Daniel López Gómez and *Tomás S. Criado*, in the fourth chapter, bring STS theories about the 'performativity of methods' to gerontechnology design. What if, they ask, scholars in Age Studies and STS, when engaging with the design and implementation of gerontechnologies, would step back and critically think through the civilising effects of their engagements? Using empirical material from a European project about ethics and telecare, they show how participatory methods can take both colonial and civic forms. Where the former is closely aligned with a mission to civilise participants into the neoliberal and interventionist logics that underlie many gerontechnology projects, the latter involves participants in joint explorations of different materialisations of ageing. To conclude, the authors invite us to try alternative modes of engaging and politicising.

Cultural gerontologists *Chris Gilleard* and *Paul Higgs*, in the fifth chapter, bring a critical perspective to the question of what STS has to offer Age Studies,

identifying some key tensions. Surveying the landscape of adaptive technologies and the formation of new 'humachine-age-assemblages', they argue that a duality between utopian and dystopian futures corresponds to a distinction between an agentic 'third age' and an un-agentic 'fourth age', reflecting a distinction between consumer technologies aimed at making later life more pleasurable and assistive technologies, with their assumptions of dependency, impairment and loss of agency. Thus, they argue that the imagined futures of much gerontechnology are based largely on the fear of the spectre of the fourth age and risk further "darkening its shadow".

Tiago Moreira's commentary encourages us to imagine ways of moving beyond the dualism of utopian/dystopian visions of technologically shaped ageing criticised by Gilleard and Higgs. Moreira asks, as do the other authors in this part that strive to overcome such dichotomous thinking, how we might open possibilities for recognising both more diverse life courses and more complex understandings of technologies. Noting a shared desire in this part to "unsettle established ways of thinking the relationship between ageing and technology", he encourages the ongoing creation of more diverse and "inventive" concepts and methods that might nurture this unsettling.

Part II: Encounters

The second group of chapters engages concepts from Age Studies and STS into a dialogue through empirical research. Drawing on multiple perspectives, these empirical encounters shed light on the everyday lives of older people with social media, on the co-construction and implementation of ageing policies and on the repurposing of mundane devices as care technologies. As such, these encounters are empirical examples that demonstrate the value of the theoretical bridges between Age Studies and STS.

Roser Beneito-Montagut and *Arantza Begueria*, in the first chapter, explore how social media like WhatsApp are used by older people and their families to stay in touch, share experiences and organise their lives. Making use of gerontological literature on care, the chapter focuses on mediated ways to 'care about', which refers to emotional support as opposed to practical assistance. Based on an ethnographic study, they focus on how affective relational practices among family members are mediated by care about infrastructure. The chapter concludes by making three suggestions for 'techno-care': mediated social connectedness as a form of care, the study of emotions and affects to balance technology innovation discourses and the incorporation of relational theoretical frameworks in technological design.

The second chapter by *Susan van Hees, Anna Wanka* and *Klasien Horstman* provides an innovative combination of insights from environmental gerontology and STS to study ageing-in-place. Ageing-in-place is often seen as an ideal way of ageing providing both the promise of reduced cost to society and honouring the wishes of older people to live independently. Making use of their innovative

theoretical combination, the authors shift attention from the interventionist logics of ageing-in-place to the dynamics of the ways in which ageing *and* place are co-constructed. The chapter concludes by showing how constructions of place attachment are entangled with the perspectives of older people on the different performances of their neighbourhoods as meaningful places. In turn, van Hees, Wanka and Horstman argue that this necessitates reconsideration of the ideal of ageing-in-place.

Like the chapter by van Hees, Wanka and Horstman, the third chapter by *Constance Lafontaine* and *Kim Sawchuck* explores a key concept in ageing policies: the age-friendly city. In particular, they focus on the consultation on age-friendly cities that the city of Montreal undertook in 2018. Making use of a classical STS concept, Madeleine Akrich's script concept, Lafontaine and Sawchuck show how communication strategies and processes did not facilitate the inclusion of some older adults. A strong reliance on online forms of communication resulted in the exclusion of a particular group of older Montrealers living in situations of socio-economic precarity. This undermined the goal of the consultation and with that the goal of creating an age-friendly city. In addition to the analysis of this consultation process as a 'conjunctural moment', the chapter also describes the tactics developed by activists to challenge the consultation process and its shortcomings.

Jenny M. Bergschöld, in the fourth chapter, also makes use of the script concept and modifies it to analyse the scenarios for use of various types of materialities intended for people with dementia. Challenging the assumption that gerontechnologies have to be high-tech devices, she shows that many of these dementia scripts are produced by caregivers by making use of mundane means. Bergschöld goes on to show that dementia scripts are a material outcome of the concern and responsibility of caregivers, which are in turn shaped by the presumption that people with dementia pose a threat to themselves. Subsequently, Bergschöld shows the far-reaching implications of these scripts for people with dementia. She concludes that the production *and* producers of dementia scripts should be explored further as well as the ethics of dementia scripts and the way the experience of ageing with dementia is configured by these scripts.

Nete Schwennesen's chapter shares with Bergschöld a focus on mundane technologies and dementia. Schwennesen highlights the agency of care workers and the work they do to integrate technologies into the social and spatial arrangements of care. This is juxtaposed to the view of care workers as invisible, technologically unskilled or ignorant of new technologies. Making use of the figures of 'repair' and 'bricolage', Schwennesen aims to understand the way dementia care workers use technology in their work. While repair work is primarily focused on caring for dementia technologies, keeping them working and integrating them in care practices, bricolage work is oriented towards the conditions of care in situated and emergent practices and thus focuses directly and creatively on the person with dementia. Repair and bricolage care work are thus positioned as two important but different types of work, differing both in their object and temporality of care.

In her commentary, Kelly Joyce asks what STS and Age Studies can offer each other. Reflecting on the five chapters in the Encounters part, Joyce identifies two productive moves made by these chapters: on the one hand, drawing on STS, is the attention to the mundane, and critical discussion of the hierarchies that are in place favouring high-tech over low-tech; on the other hand, inspired by Age Studies, is a focus on the heterogeneity of older people and critical discussion of who gets to speak for older people. Joyce concludes by relating this reflection to salient points for future research, such as a focus on ageing as a problem, intersectionality, the marginalisation of social innovation and the importance of social infrastructure.

Part III: Design

A key area in which STS and Age Studies can interconnect concerns how technologies are designed to enhance the everyday lives of older people. The chapters and commentary within this part bring to the forefront some key opportunities and challenges that include the significance of participatory approaches through the design process; how images, imageries and assumptions of older people and ageing bodies are invoked, generated and modified; and the ways technologies focus on the problems that lead to solutions, which may or may not be effective in improving the lives of older people.

The first chapter by *Andreas Bischof* and *Juliane Jarke* explores how later life has become a significant focus in the design and development of digital technologies, which has resulted in the creation of a large number of prototypes and products. However, most of the design processes have not engaged with the perspectives of older people in meaningful ways, with little empirical grounding for their imaginaries of being old, which often utilise stereotypical and predominately negative images and assumptions of later life. The chapter reviews how age and ageing can be configured across different examples within the development and deployment of digital technologies. In this context, design processes are seen as configuration practices that co-construct older users and later life. By using the concept of re-configuration, Bischof and Jarke critically reflect on conceptual, ethical and pragmatic challenges when involving older people in design processes.

The second chapter in this part by *Helen Manchester* highlights how in the context of the growth of digital infrastructures care is increasingly comprised of complex human and non-human relations across both public and private spheres. In this context, technologies are more and more entangled in relations between people, places and objects in everyday practices of care. The chapter draws on and critically analyses co-design methods used within the *Tangible Memories* project that involved designing technologies to enhance democratic community building in care homes. In particular, the methodology of co-design highlights how researchers from a wide range of disciplines, technologists and designers and older people may coalesce around the 'matter of concern' of how to provide better care and support for older people in contexts of care.

The final chapter by *Britt Östlund* and *Susanne Frennert* explores how user representations have been sustained and recreated in the design of technologies from 1960 to 2018. In particular, the authors highlight how assumptions and imageries of older people underlie the user representations in the design of artefacts. It may be assumed that the assumptions and stereotypes of user representations of older people in the design process have changed over time. Through a critical exploration of a range of artefacts and technologies designed and implemented in home-care and home-help services in Sweden over the 60-year period, the authors show how the user representations have been sustained and recreated in complex ways.

In her commentary, Barbara Barbosa Neves highlights how the chapters in the Design part capture "the problem of problematizing ageing as problematic", described by Neves as the 3Ps of ageing. Neves draws together the key themes within the Design part as (1) an underlying critique of a dualist understanding of ageing, between positive/negative images of ageing; (2) the opportunities and challenges of participatory research in which older people are central throughout the design process; and (3) criticising the focus on techno-solutionism in which design is led by a problem-solving approach. In this context, she reveals the possibilities and complexities of the interconnections of Age Studies and STS in the design and implementation of technologies.

In his afterword to the book, Stephen Katz describes the journey as one of 'mutual discovery' between Age Studies and STS towards the emerging field of Socio-gerontechnology. Mid-to-later life is being transformed by technologies of surveillance, assistance, datafication and networking infrastructures. Katz highlights four primary pillars – or problems – of enquiry that are central to the book and to Socio-gerontechnology: (1) technological inclusive/exclusive design, (2) technological dissociation of materialities, (3) technological care labour and (4) technological third/fourth-age boundaries. The afterword also identifies gaps and possibilities for future research directions within Socio-gerontechnology as: (1) the role of power and capital, (2) expanding the meaning of technology and (3) reflecting on the balance between Age Studies and STS. This denotes and recognises that the book is the start of a dialogue that has the potential for innovative and imaginative future directions and possibilities.

Key themes and future agendas

Together, the contributions in this book paint a picture that not only draws out possible ageing futures in times where age and ageing, through various forces, become more closely enmeshed with technology but also highlights key principles that are – as we would like to argue – neglected in many current debates about ageing and technology. In concluding the introduction, we draw out three key themes as reference points for future research and practice in Socio-gerontechnology. We believe that, while these principles have emerged from our ongoing involvement in the dialogue between Age Studies and STS, they are also encompassing enough for other fields – such as digital sociology, health studies, gender studies,

policy studies, design studies and many others – to join the exciting endeavour that Socio-gerontechnology has become.

Socio-gerontechnology and care

There is no question that much work on ageing and technology has, to date, had a strong emphasis on care technologies. This presents something of a dilemma: care technologies cannot be disregarded, given that they have been the focus of commercial and government interest in gerontechnologies, but such an emphasis risks reinforcing a reduction of ageing to *needing* care, with the associated stigma of infirmity and dependence. At the same time, theoretically, the critical and interdisciplinary potential of Socio-gerontechnology is illustrated in these very discussions of care and may suggest ways for confronting this dilemma.

On the one hand, it is useful to move beyond notions of care in our study of ageing and technology (which is the route more commonly suggested by Age Studies), to bring to light a much broader range of social and socio-material relations that characterise and constitute the everyday realities of older people (seen, e.g., in the chapters by Beneito Montagut and Begueira and Gilleard and Higgs). These are by no way limited to technologies explicitly declared as care technologies, like alarm pendants, monitoring devices or social robots, but include a vast range of everyday technologies like social media, electrical bikes, smartphones, fitness trackers, computer games and many others. Age Studies reminds us that it is important that studies of ageing and technology are not reduced to the study of technologies explicitly dedicated to care or even to age or ageing. The use and design of everyday technologies is an important area where more work in Socio-gerontechnology needs to be done.

On the other hand, STS reminds us that we need to be careful with assuming that the distinction between care and everyday technologies is unproblematic and inherent to technology. As, for example, the chapters by Schwennesen or Bergschöld demonstrate, it is often a very practical matter what qualifies as care technology, and private smartphones of caregivers can be more suited for this purpose than dedicated care robots like Paro. Such work reminds us that it is theoretically and practically useful to pay greater attention to the infrastructures of care – as Manchester does in her chapter – as a way of grasping not only the technologies which maintain, repair and care for bodies but also the ways that users must maintain, repair and care for technologies. It is in these infrastructures that specific lines between caregivers and care receivers are drawn and that enact specific devices as care technologies (and others as being in need of care). A continued focus on care is likely in Socio-gerontechnology, but it is crucial to draw out the practical and infrastructural arrangements that constitute care.

Socio-gerontechnology and the everyday

In recent years, there has been an increasing focus on the lived experiences of people in mid-to-later life. Cultural gerontology has in particular focused on

meanings and subjectivity in order to provide fuller accounts of old age that reflect the rich, embodied and diverse lived experiences of later life (Twigg and Martin 2015a, 2015b). This has resulted in a move away from more objectivist, external and often denigrating representations of later life. Diversity in later life is reflected in social identities of and inequalities associated with, for example, chronological age, race and ethnicity, gender, sexuality and social class. The diverse and complex nature of old age can interconnect and conjoin to produce very different potentialities and experiences of ageing and technology. For example, assistive technologies to help people 'age in place' have tended to embody an understanding of domesticity and activity that is 'Western, middle-class and gendered' (Moreira 2017, p. 158). It is crucial to draw out and make visible the gendered, classed, racialised and ableist assumptions, arrangements and inequalities that underpin socio-technical "imaginaries" of ageing. In this sense, the worlds of designers and their forms of involving "users" are part of the everyday too and can be interrogated for the versions of age and ageing that they produce as a practical matter, as in the chapters by Ertner and Lassen, Cozza and others.

Old age is often portrayed in the context of alternate images, either as a time of possibilities and opportunities, independence and being active, or alternatively as a time associated with decline, dependence and being passive (Martin 2012). The predominance of alternate positive/negative images of old age is reflected in the dualist tendency associated with dichotomies of active/passive, independent/dependent and imaginaries of the third and fourth age. The chapters by Östlund and Frennert, van Hees et al. and many others in this book consider ways to challenge these predominant stereotypes and assumptions of old age. The role of ageism in which older people experience systematic discrimination based on their chronological age, and the underlying negative assumptions about their abilities and functions, needs therefore to be continually challenged (de Medeiros 2017). This is an especially fruitful area in which academics from Age Studies and STS can collaborate through the questioning of dichotomies and negative images of ageing within the design, implementation and everyday use of technologies. For example, in what ways are technologies designed for the third or fourth age, and to what extent are there assumptions around enhancing independence and/or increasing surveillance of older people? The way in which in/dependence and surveillance are configured and related to each other within the design of technologies and ageing therefore remains significant.

The move to richer and more diverse accounts of old age has moreover opened up the methodological possibilities for researching ageing and technology. This brings to the forefront the involvement of older people in research, and participatory and co-design approaches to research are of increasing prominence, as highlighted within the chapters by Bischof and Jarke, López Gómez and Criado and others. Innovative and creative methods that include the use of visual, sensory, material and digital methods can provide important insights into how people in later life mediate the digital and technological landscape. The materiality of the

digital further highlights the complex interconnections between technologies and ageing bodies and how technologies provide meaning and enhance and change our everyday social and physical environments. The way people negotiate their social relationships within the digital world also signifies the importance of social connectivity and embodied co-presence – being in the same place at the same time – in our everyday lives (Martin and Pilcher 2017).

Socio-gerontechnology and active engagement

Finally, Socio-gerontechnology not only has the potential to be an important academic field but also provides critical engagement with policy development and technology design. To do so demands that we attend to relations of power and expertise. Such an orientation calls on us to "continually ask how power operates through the unquestioned deployment of certain concepts and categories" (Chazan 2018, p. 7) as these invoke particular understandings of age and technology and their interrelationship.

Although STS partly emerged from nuclear physicists and other scientists and scholars who were advocating against nuclear power in the mid-to-late twentieth century, this activist perspective has become less and less dominant over the years. We argue that while there will always be a place for theoretically-oriented reflective STS work, its relevance will be enhanced with a reinvigoration of its activist engagement. With its more explicitly critical anti-ageist stance and commitment to advocacy for older people, Age Studies can be an inspiration on this front (see Sawchuk and Lafontaine's chapter in this book for an example).

In an era where so much is at stake in the world of older people and the technology that is being developed in their name, the engagement of Socio-gerontechnology with policy and design can both draw on and help develop this critical heritage. Age Studies, for example, provides critical analyses of the often ageist and austerity-driven assumptions which underpin the enthusiasm for policies promoting the development of technologies to support 'active ageing' and 'ageing-in-place' (see, e.g. Urban's chapter) and highlights the injustices and mismatches that can be designed into technologies for older people. STS, on the other hand, attempts to actively engage with designers and engineers in the rethinking of technologies for older people (see the Design part of this book).

Drawing on both of these traditions, Socio-gerontechnology can make a strong case for superseding the often simplistic and interventionist language of technology and innovation projects and policies, including notions like "intervention", "impact", "acceptance" or "solution" in favour of a "richer vocabulary that highlights and theorizes the relational co-constitution of aging and technology" (Peine and Neven 2019, p. 19). In doing so, we may open a whole new set of research questions and methodological avenues beyond conservative approaches to evidence-based medicine, policy, design and so forth. But there are also compelling practical reasons for shifting the vocabulary in that these terms are harmful in the ways they position older people as passive, needy and required to accept,

comply and behave "appropriately". It's thus an ageist vocabulary, with ageist consequences in the installation and appropriation of technology.

As a whole, this book explores what we can gain, in grasping and shaping ageing futures, when we let go of interventionist assumptions about ageing and technology, assumptions that have limited the already established enterprise of gerontechnology as an academic and a practical field. Such assumptions often lead to a particular distribution of labour, whereby social scientists (or humanities scholars) deliver "valid" or "evidence-based" knowledge about age and ageing that can then be addressed in the work of design or policymaking. *Socio-gerontechnology*, in broad strokes, sets out an alternative route. We propose to focus squarely on how ageing and technology are already intertwined and constantly being intertwined. In its theoretical mandate, then, this book explores common (and not-so-common) *conceptual, theoretical and methodological ideas* that become visible in the critical scholarship on ageing and technology that questions interventionist assumptions. Socio-gerontechnology aims to emancipate critical social science, humanities and design studies from their instrumental function in gerontechnology design, and to contribute to the development of new ontologies, methodologies and theories that enhance our understanding of age and ageing and might serve as both critique of and inspiration for policy and design.

Notes

1 In fact, we can now look back at an abundance of studies that have addressed such issues that is simply too extensive to be adequately reviewed here. Good starting points into this literature are the collections by Joyce and Loe (2010), Peine et al. (2015), Neves and Vetere (2019) and Katz (2018).
2 www.britsoc.co.uk/groups/study-groups/ageing-body-and-society-study-group/events/
3 https://actproject.ca/
4 www.socio-gerontechnology.net/events/

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References

1 It goes without saying that the questions listed here are neither new to AS nor to STS – they have, in one way or the other, been on the agenda of both research fields for a long time. However, approaching them in a joint endeavour, we propose, might lead to fruitful new insights.

1 The project was called *Lev Vel* in Danish, *Live Well* in English, and aimed to develop digital and social solutions to enhance the quality of life for older people. It was organised as a collaborative partnership with partners from industries and research and public institutions.

2 See also Winthereik and Verran's (2012) study on generative ethnographic stories.

1 On the misuse of the technologies and of false coping strategies, see Urban 2017b.

2 On disciplining effects, see Petersson 2016.

1 The futuristic San Francisco described in Philip K. Dick's novel "Do androids dream of electric sheep?" (1968) foreshadows the posthuman turn that, however, is not limited to the US-American context but can be found also in other cultures.

2 For the value of intersectionality to understand old-age subject positions, see Joyce (2021, Chapter 14 in this volume).

3 The project *No Country for Old Men*, initiated by the Italian-Singaporean designers Lanzavecchia + Wai, offers examples of objects designed as a reaction to the "invasion" of "alien medical products from the hospital context". Through this project, the designers intend to reconcile 'the material' and 'the social', functionality with desirability, physical support with psychological acceptance of an advanced stage of life. About the project, see www.lanzavecchia-wai.com/work/elderly-furniture/

4 In this regard, see Danica Kragic Jensfelt's performance lecture "Om robotar" (transl. "About Robots"; video in Swedish with subtitles in English), available at: www.youtube.com/watch?v=E6L7Yh_ySHo

5 SUITCASE-Sustainable Integrated & Territorial Care Services (2014–2016, funded by TRENTO RISE); SInS: Att utveckla förmågan att driva social innovation genom teknik i samverkan (2016–2018, funded by Vinnova); HV3D-Hjälpmedel och välfärdsteknik I tre dimensioner: Ekonomi, organization och individuella värden (2016–2020, funded by Samhällskontraktet and Regionförbundet Sörmland).

1 This is indeed very much aligned with Manchester's (2021, Chapter 16 in this volume) idea of creating spaces for the co-habitation of social and cultural gerontologists, designers of gerontechnologies and publics in co-design processes.

2 Against the background of other concepts from the social sciences foregrounding the active role of human beings against a passive or inert world, such as *performance* or *construction*, "the term *enacting* leaves open *who* or *what* the actor is" (Mol, 2002, p. 141).

3 *Ethical Frameworks for Telecare Technologies* (EFORTT), a FP7-funded multi-national project. URL: www.lancaster.ac.uk/efortt/

4 Even though the idea of the telecare market is not directly scrutinised in this chapter, our account of participatory methods might well contribute to a broader enquiry into the performativity of markets dealing with social issues (Frankel et al. 2019).

1 Although this chapter focuses on later life, we assume that care is essential in all life stages, and social connectedness and its lack affect everybody. Moreover, this research assumes that older people should not be categorized as a monolithic and homogenous group either, hence to treat their care needs as different from the needs of others is somehow critical.

2 For a detailed literature review about social connectedness and ICTs, see Beneito-Montagut et al. (2018).

3 The project has been funded by Recercaixa/ACUP (Spain) under Grant No. 2012ACUP-00325.

1 Photovoice is a method used in social sciences research and is based on the idea that photographs can add new information about our society by inducing alternative modes of thought. Using visual information as data is considered an opportunity to understand individuals' perspectives more fully. In our study, we asked older adults and professionals in the field of housing, healthcare, and welfare to photograph places in their neighbourhood they considered important or meaningful in relation to ageing and describe what and why they photographed these in a logbook accompanying the photographs. After the photographs were collected, dialogue meetings were organised to enable a dialogue between older adults and professionals. For further details, we refer the reader to Van Hees et al. (2018).

1 ACT stands for ageing + communication + technologies. It is a multi-methodological and international research project funded by the Social Sciences and Humanities Research Council of Canada. More information: https://actproject.ca/

1 Retrieved from www.hjelpemiddeldatabasen.no/r4x.asp?linktype=iso&linkinfo=222715 (Accessed March 12, 2019)

1 This drew on the format of a popular UK Radio Show 'Desert Island Discs' where celebrities are interviewed about their life stories through the choice of eight tracks they would take to a desert island,

2 The Parlours of Wonder project (www.tangible-memories.com) worked with Alive and designers Stand + Stare to run a series of intergenerational sessions and care staff coaching in these rooms. A 'how to blueprint and a training toolkit was created (https://alive-activities.org/resources/create-your-parlour-of-wonder/)

1 www.youtube.com/watch?v=Wqg41EW5ug4

2 www.pararobots.com/

3 www.justocat.com/sv/

4 www.camanio.com/us/products/giraff/

1 I am using the terms 'co-design' and 'participatory design' as relating to similar processes of user and stakeholder involvement in design, as per the general literature and practice on the topic. However, one can argue that there are some differences regarding power structures and sociopolitical aims between the two concepts. Sanders and Stappers (2008) emphasise that much of what is known as co-design today – and its broader use since becoming a trendy concept – equals to what was already being done within participatory design practices in Europe.

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