Breaking or Repairing Long-Term Care for Older People? AI Delegation and the Carefication of Later Life

Barbara Barbosa Neves

Sydney Centre for Healthy Societies, School of Social and Political Sciences, The University of Sydney, Australia/barbara.barbosaneves@sydney.edu.au

Geoffrey Mead

Sydney Centre for Healthy Societies, School of Social and Political Sciences, The University of Sydney, Australia

Alexandra Sanders

Sydney Centre for Healthy Societies, School of Social and Political Sciences, The University of Sydney, Australia

Naseem Ahmadpour

Design Lab, School of Architecture, Design and Planning, The University of Sydney

Alex Broom

Sydney Centre for Healthy Societies, The University of Sydney, Australia

Kalervo Gulson

Centre for AI, Trust and Governance, Sydney Centre for Healthy Societies, Sydney School of Education and Social Work, The University of Sydney, Australia

Abstract

From robots to chatbots, AI technologies in care (nursing) homes have gained policymakers' attention amid critical issues like staffing shortages. Concurrently, the long-term care sector has become a prime target for technologists due to its global market potential given the growing ageing population. Drawing conceptually on ideas of breakdown and repair, we explore sociotechnical discourses of AI-based care for later life. We combine Bruno Latour's concept of delegation and Madeleine Akrich's notion of user representations to frame how these discourses can support *breaking* or *repairing* long-term care. Through this theoretical lens, we analysed 33 AI companies targeting the sector. Visual, textual, and semiotic analysis of their websites identified overarching discourses on ageing carefication, public inefficiencies, AI solutionism, and care datafication. Older people were depicted as passive data sources and staff as inefficient, positioning AI as the solution to all caregiving challenges. We consider implications for caregiving futures and for reimagining AI-human care.

Keywords: AI in Long-Term Care, Datafication, Carefication, User Representation, AI Solutionism, Aging

Introduction

Like other spheres of social life, ageing and related policies are being influenced by technological changes and Artificial Intelligence (AI) advancements. These changes shape perceptions and practices within care institutions, welfare systems, and caregiving relations (Gallistl and Von Laufenberg, 2023; Lehtiniemi, 2023; Tarkkala et al., 2019). The use of AI in care (nursing) homes – from companion robots to generative AI-powered chatbots like ChatGPT – has captured policymakers' attention, especially as the COVID-19 pandemic illuminated systemic failures like staffing shortages (Chen, 2020; Neves et al., 2023; Neves and Omori, 2023). A recent Australian Royal Commission (Pagone and Briggs, 2021) into the sector urged technological investment to address long-term care deficits, from clinical neglect to increasing loneliness, affecting older people (aged 65+) in care homes (institutionalised ageing) and community settings (ageing in place).

In Australia and many Western countries, long-term care – which includes care/nursing homes and formal assistance given to older people living in their homes – is government funded and regulated as part of public service delivery (Australian Institute of Health and Welfare, 2024). This sector has become a prime target for technologists and the AgeTech industry due to its 'market potential' of profitable expansion across public and private care, and the portrayal of an ageing population as a biomedical problem requiring urgent government intervention (Gallistl et al., 2024; Gomez-Hernandez, 2024; Neven and Peine, 2017). Yet research shows novel technologies developed for later life often perpetuate visions of care as a cost and older people as passive and digitally unskilled (Jaakola, 2020; Neves and Vetere, 2019; Peine et al., 2021). This ageist perspective persists despite a body of knowledge on ageing and technology demonstrating older people are not only resourceful and adaptable to emerging technologies, but also actively shape technological use to address their own care needs (Neves et al., 2018; Peine et al., 2021). Moreover, older people play a vital role in care economies, providing care for others and themselves, even when living with frailty or health issues that necessitate formal or institutional forms of support (Dalmer et al., 2022; Neves et al., 2018). Nonetheless, stereotypical ideas of older people – particularly those requiring long-term care – continue to animate imaginaries and narratives of policymakers, technologists, and broader society (Chu et al., 2022; Gallistl et al., 2024; Neves et al., 2023; Stypińska, 2023).

In this article, we focus on the emerging AI industry for later life – namely on the *sociotechnical discourses* of relevant commercial actors: i.e., the overarching, interlinked elements used on AgeTech websites to represent how ageing, care, and technology are understood (Hall, 2018; Neven and Peine, 2017). While these discourses have not yet been explored in the literature, we contend they are critical to study, as they not only influence and justify technological development but also potentially shape policy decisions and assumptions about how care should be designed and delivered. In fact, the 'techno-solutionism' permeating contemporary societies results from a commercial and market-driven framing of social needs and challenges as problems demanding emerging technological solutions (Morozov, 2013). Drawing conceptually on ideas of breakdown and repair (Jackson, 2014; Star, 1999), we aim to explore how ageing and human care are problematised, and, in turn, how AI solutions are constructed and communicated. In this context, expectations that AI mend what is perceived as broken in public health and care often overlook how AI solutions can result in negative unintended consequences and call for their own repair. We treat techno-solutionism as one particular form of repair – a way of addressing perceived breakdowns that privileges technological fixes.

To grasp the shifts between human and technology, we combine Bruno Latour's (1999, 2005) notion of delegation with Madeleine Akrich's (1992, 1995) concept of user representations. This novel combination offers a wide-ranging approach to understanding how AI-focused discourses about later life care can reflect and support *breakdown* and *repair* in its various forms (from inefficient service delivery to care monitoring). To explore such discourses, we visually, textually, and semiotically analysed the websites of 33 companies offering AI technologies for

the long-term care sector. Marketed technologies included carebots, chatbots, sensor systems, and smart clinical apps for institutionalised and/or ageing-in-place settings. The websites offer these discourses in a distilled form, relaying what members of the AgeTech industry identify as breakdowns and potential solutions (repairs) in long-term care. From website data, we are thereby able to infer how anticipated users are represented and prefigured.

Our findings show ageing is approached as a state demanding little more than care. Additionally, the sector is depicted as plagued with inefficiencies and failures of public delivery that can only be solved by AI technologies. AI is presented as a revolutionary solution to alleviate (all) challenges, from diseases to workforce shortages, enabling unprecedented support to home and residential caregivers by optimising care management through automated monitoring and analytics. These ideas justify the need for AI delegation in later life care while advancing simplistic user representations of older people and care staff.

This paper contributes, therefore, to the growing scholarship on AI, ageing, and care by offering an empirically grounded analysis of underexplored commercial discourses. We advance a novel application of the concepts of breakdown and repair to the long-term care sector and combine the frameworks of delegation and user representation in innovative ways to map how solutionism takes shape within sensitive care contexts. In doing so, we show how commercial portrayals not only justify AI-driven interventions but also obscure the social and relational dimensions of care, with implications for how ageing, responsibility, and vulnerability are conceptualised in policy and practice.

AI and long-term care: Breaking and repairing

The long-term care sector offers a valuable context for examining age- and care-related ideas underpinning the design, marketisation, and commercialisation of AI for older people (Dalmer et al., 2022; Gallistl and Von Laufenberg, 2023). The few empirical studies in long-term care indicate that AI technologies reflect stereotypes of older people as disengaged (Neves et al., 2024; Gallistl and Von Laufenberg, 2023). Such perceptions extend beyond care recipients, echoing societal views and anxieties surrounding ageing (Neves et al., 2023). For instance, Ivan and Loos (2023) show technology marketing tends to depict both older women and older people living with cognitive impairments as technologically incompetent, disinterested, and passive subjects – not active users. This concords with popular portrayals, which often link technology to masculinity, youth, and whiteness (Loos et al., 2022). Researchers have highlighted concerns about power imbalances within the *datafication* of ageing and long-term care systems (Dalmer et al., 2022; Katz, 1996). This datafication entails measuring and quantifying care practices and older adults' behaviours (Dalmer et al., 2022). But instead of supporting recipients' capacity for self-directed care, datafication undermines their agency by placing them under the constant oversight of those monitoring them. Such a process exposes power dynamics in how older bodies are conceptualised, perceived, quantified, monitored, and controlled through technology and social perspectives (Dalmer et al., 2022; Katz and Marshall, 2018). Gallistl et al. (2024) observe that in the context of AI's political economy and market-oriented logic, ageing is frequently commodified – with older people becoming profit-making 'data suppliers' to extract from and feed into large language models (LLMs) and predictive systems.

This article explores whether and how industry-led narratives of AI might reinforce these views (e.g., age-related stereotypes, power dynamics, techno-solutionism) – thereby threatening and breaking public assurances of care and empowerment in old age, even as these discourses present AI as a solution to service delivery breakdown. We ground our investigation in the conceptual ideas of breakdown and repair (Jackson, 2014; Star, 1999). Star (1999: 380) notes breakdowns in infrastructure expose our dependence on this mostly invisible "system of substrates." Infrastructure and public service delivery are not the only fragile entities requiring repair, since the very means of repair (in this instance, AI) is itself liable to break down and require repair. This raises a crucial

question: what counts as a breakdown, and who gets to decide?

Breakdowns have a tangible political dimension. Fragile entities are not automatically, transparently, and unproblematically perceived to be broken down, but *asserted* to be so and therefore open to contestation. For Morozov (2013: 6), the deficiency of 'techno-solutionism' lies not only in a tendency toward easy technical solutions for a problem (or breakdown), but in the "very definition of the problem itself." Problems are framed to fit 'solutions,' with AI presented as the unproblematic answer (Bareis and Katzenbach, 2021; Siffels and Sharon, 2024). Thus, we do not argue there is any single inherent problem AI is addressing; rather, the property these breakdowns share is that AI is seen as their solution. By focusing on representations of AI users in long-term care, we can observe how the assertion of purportedly 'human' breakdowns acts to justify the introduction of a particular kind of repair. These breakdowns – in public service delivery (e.g., over-spending), human-delivered care (e.g., inefficiency), and the ageing body (e.g., frailty) – come to be defined as human only in opposition to their proposed solution: nonhuman technology. In the case of long-term care, we witness a reversal of the traditional breakdown-repair relationship; here, breakdowns attributed to 'human' functions are *asserted* so technological repair can be introduced (as opposed to humans tending to broken-down infrastructure). Though typically framed as a categorical 'innovation' or solution, this kind of repair requires durable maintenance – its own "subtle arts of repair" (Jackson, 2014: 222) – and efforts to resist potential algorithmic biases and datafication harms.

We therefore conceive of breakdown and repair as involving repeated alternation between what is breaking down and repairing. We begin with a set of perceived breaks: a degraded care system, consisting of humans ostensibly working inefficiently to assist frail older people (themselves in a 'breaking' state). The repair appears in the proposed roll-out of AI technologies targeted at several points (e.g., bodily surveillance, datafication, and broad-based care 'solutions'). But, following the insights of infrastructure literature (Graham and Thrift, 2007; Jackson, 2014), such modes of repair also break down and consequently call for their own repairs and maintenance. This marks an important shift, with the reallocation or 'delegation' of tasks to and from human beings. In long-term care, as we will see, delegation is a pivotal mediator in relationships between humans and nonhumans in care delivery and uptake. It is to the concept of delegation that we now turn our attention.

Conceptualising delegation and user representations

To understand the alternating relationship between breakdown and repair in long-term care, we draw on concepts developed by Bruno Latour (1992, 2005) and Madeleine Akrich (1992, 1995) within the framework of actor-network theory. This theory mobilises a vision of society as something that "has to be built, repaired, fixed and, above all, *taken care* of" (Latour, 2005: 204, emphasis in original). Key to this 'caring' process is a delegation of tasks to technological objects, which enables social relations to be maintained (Graham and Thrift, 2007; Latour, 1992).

Latour borrows delegation from the semiotician A. J. Greimas (Greimas and Courtés, 1982: 72), for whom it refers to a "transfer of competence which…confers on the subject concerned a margin of autonomy for the performance" (see also Greimas, 1990). Latour (1992) transposes this notion from linguistics to the social sciences to help make sense of how the capacity for or 'competence' in performing acts gets distributed between humans and technical objects. In this article, we use delegation in two ways: firstly, to identify which competences are redistributed to which actants, how this occurs, and to what extent. That is, are humans depicted as merely *supplemented* by technical objects, or are they thoroughly *displaced*? Secondly, we seek to identify what effect this delegation is predicted to have on the performance of the described actions. Crucially, the 'margin of autonomy' that delegation permits means the delegate will perform the action in a different way than the initial actor performs it. A technical delegate, for example, will impose upon the performance modifications

arising from its own structure and the unique relations it maintains with its surroundings.

In this approach, delegation means designers 'inscribe' their envisioned functions in the technical object itself. Knowingly or not, they mobilise a particular image of it in relation to other objects and end users (Savolainen and Hyysalo, 2021). Such a view of the object – as inscribed with meaning – is what Madeleine Akrich (1991: 85) describes as the 'semiotic hypothesis':

> it is possible to describe a technical object as a scenario, a script, defining a space, roles, and rules of interaction between the different (human and non-human) actors who will come to embody those roles: from this perspective, every decision taken in the process of conception undertakes a distribution of competences and attributions between the object, its user, and a collection of technical and social apparatuses that constitute their environment.

In the scripts Akrich describes, a certain 'user representation' is implied, with particular competences attributed to imagined users. But Akrich (1992) is adamant the uses depicted in these scripts do not translate simply into actual uses. Designers may formulate inaccurate user representations, users may reject designers' aims, or the object design may assume a set of relations that does not exist. This becomes clear in the example of the Zimbabwe bush pump, a device for drawing water from a well (de Laet and Mol, 2000). As de Laet and Mol (2000: 249) explain, the pump functions effectively not because its designer anticipates end users perfectly, but because he "seems to dissolve his own actorship," relinquishing ownership and allowing the technology to evolve through collective use and local adaptation. The designer himself emphasises the pump is not the product of a single creator, but the result of collaborative effort, high-quality materials, and gradual evolution within the public domain (de Laet and Mol, 2000).

Akrich's (1992) semiotic hypothesis is therefore useful to grasp not how technology is necessarily *used*, but how developers imagine and *intend* it to be used. In this article, we take Akrich's approach but expand our focus to encompass actors outside the designers themselves. Beyond being inscribed with developers' intentional and unintentional programs of action, various other 'scripts' exist that represent and mediate objects, informing their use. In these scripts – from instruction manuals to promotional materials – intended end users are prefigured, with their bodily competences, intellectual aptitudes, moral beliefs, and social relations cast before them. These forms of representation fill the function of what Akrich (1992: 211) calls 'mediators': "[i]f we are to describe technical objects, we need mediators to create the links between technical content and user." The links connecting these elements are also boundaries that distinguish them, apportioning certain tasks to the user and delegating others to the technology. By investigating the representations embedded in the media portraying objects, it is possible to ascertain this apportionment and trace the boundaries between human and nonhuman, permitting us to delineate what Akrich (1992: 206) calls the "geography of delegation."

This 'geography' does not consist of straightforward border lines. At times, the beings invoked as delegates to repair breakdowns are in need of repair themselves (Henke, 1999). Such an interchange provides part of our justification for linking delegation to the concepts of breakdown and repair present in studies of infrastructure. In this scholarship, the processual approach is cast as "an unfolding *when*," echoing pre-modern views of infrastructure as ongoing 'public works' (Alff, 2021: 626, emphasis in original). Likewise, a processual approach is crucial to grasp delegation, seeing it not as accomplished upon 'appointment,' but something that must be durably maintained. When humans delegate tasks to technical objects, it is important to recognise the work that is required to ensure the delegates' own ability to carry out their roles (Fox et al., 2023; Gray and Suri, 2019). As discussions of breakdown and repair suggest (Denis and Pontille, 2023), this maintenance process is an ongoing one, often requiring – as in the case of long-term care – the continuing reparative efforts of the very humans whose roles were delegated to nonhuman technologies. In representations of users, this back-and-forth mutual repair is frequently ignored, with certain designs even prohibiting user alteration (Akrich, 1992; Graham and Thrift, 2007). It remains unclear

whether AI companies' socio-technical discourses around later life care exhibit these same dynamics. Analysing both delegation and user representations thus helps identify how AgeTech companies conceptualise breakdown and repair. In particular, the notion of delegation permits us to trace how tasks deemed to be affected by breakdown will be undertaken differently as a consequence of their delegation.

Methods

This article analyses textual and visual data from the websites of 33 companies commercialising AI technologies for later life care. The websites were found through a Google search using the most common terms identified in an exploratory literature review on AI and later life care: "AI" and "product[s]"/"service[s]" and "aged care" or "home care" or "elder[ly] care" or "long-term care" or "AgeTech" or "senior[s] care" or "senior[s] living" or "nursing home[s]." We collected data from all companies listed in the top 100 'most relevant results' (as of 1 May 2024), prioritising links most likely to be encountered by audiences (see Vermeer et al. 2022 for a similar strategy). We excluded sites not marketing their own products, including news, academic, and blog articles. The 33 companies operated globally or in these countries/regions: Oceania (Australia, New Zealand), North America (Canada, US), Asia (Hong Kong, Malaysia, Singapore), and Europe (Finland, Germany, Greece, UK) (see appendix). They offered AI technology/services focused on client monitoring and safety (14 companies); healthcare management related to areas including nutrition, pain, and therapeutic care (7); staff and operational support (5); robotic companions (4); and analytical and decision-making support (3). Technologies marketed included carebots, chatbots, sensor systems, and smart clinical apps, though their specific AI capabilities were frequently unclear.

We analysed the websites via a multi-tiered approach integrating qualitative and quantitative techniques. Each tier was informed by our general theoretical approach, emphasising delegation, technical objects, and user representations (Akrich, 1991; Greimas, 1990; Latour, 1992). Building on this, in the first stage, we conducted content analysis using theory-driven categories that enabled us to code and organise data into 'technology type,' 'care type,' 'user needs,' and frequently used words, which provided a sense of the most common priorities and language used on the websites. In the second stage, we thematically analysed textual and visual elements to identify recurring themes on user representations and AI roles within and across websites (Clarke et al., 2014). This relied on both deductive (based on our pre-existing theoretical framework) and inductive (based on new insights observed in the data) coding. To grasp the broader, synthetic structure of meaning – and overarching discourses in which these visual and textual elements are located – we required a further stage. In this third stage, we adopted a semiotic framework informed by Vermeer et al. (2022: 405), developing "narrative summaries…to determine the dominant discourse." Vermeer et al. (2022) analysed semiotic signs in advertisements targeting people living with dementia. In Saussure's linguistic model, a sign combines a signifier (a mental representation of speech – for instance, 'grey hair') with a signified (the conceptual meaning it conveys within a linguistic system – for instance, in contrast to 'black hair') (Chandler, 2022). Importantly, these signs also carry connotations (for example, grey hair is to older as black hair is to younger). This method has been used to examine visual depictions of older people on public organisation websites (Loos et al., 2022) and in the marketing of technology for later life (Ivan and Loos, 2023). This three-stage approach allowed us to identify categories, themes, and user representations. Finally, we synthesised these results (Figure 1) to shed light on the companies' narratives, revealing their main discourses about AI's roles in long-term care. Analyses were conducted by the first and third authors, reviewed by the second for discrepancies, and validated by the remaining authors.

Due to ethical obligations – aligned with institutional and national guidelines on anonymity, confidentiality, and copyright – we are unable to use full quotations from the websites. Instead, we have incorporated short, non-identifiable excerpts and provided contextual narrations based on our thematic and semiotic analysis. The same restrictions apply to website images. To address this,

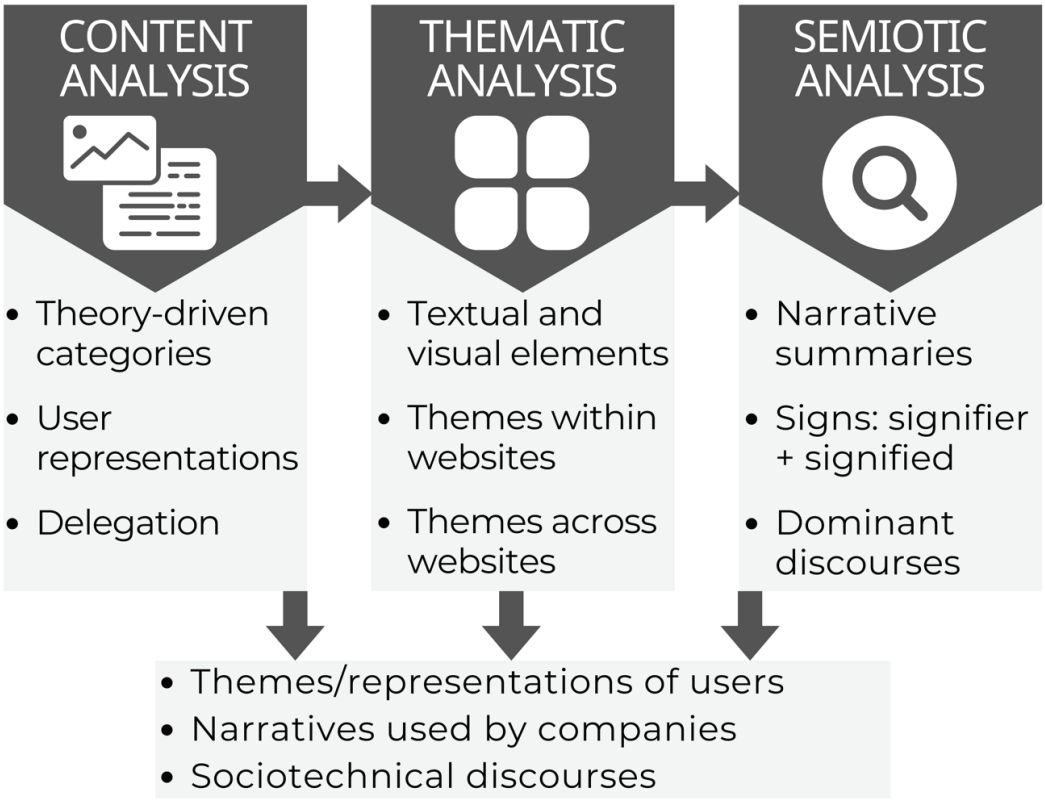

Figure 1. Data analysis approach.

we used Midjourney, an AI text-to-image tool, to generate mock-ups characteristic of those on the websites that visually represent main findings. We used a paid license, ensuring compliance with Midjourney's terms of use. This approach, which enables us to produce conceptual approximations rather than direct reproductions of copyrighted material, was previously employed by Ellison et al. (2022) and offers readers a representation of key visual themes by assembling the most illustrative elements from our dataset.

Findings

Our analysis identified narratives of breakdown and repair centred on datafication as a solution to perceived deficits in the sector, such as rising costs, unmanageable workloads, and substandard care. Website accounts positioned AI technologies as revolutionary solutions to systemic failures, while simultaneously reinforcing simplistic representations of older people and care work. Through exploring how care tasks are increasingly delegated from humans to AI technologies, we found commercial discourses utilised recurrent elements stipulating how AI should function in long-term care settings and how users – older people and care workers – should interact with these technologies. These sociotechnical discourses revealed how assumptions about ageing, later life, care work, and technological capability apportion care competences between human and nonhuman actors.

The AgeTech companies justified the need for AI delegation in later life care by employing four main discourses: i) *carefication* of ageing, ii) public inefficiencies of care, iii) AI solutionism, and iv) datafication of care. While analytically distinct, they closely interact. Together, they illustrate how technological framings both reflect and reinforce particular understandings of care relationships, while raising questions about what aspects of care become emphasised or diminished when delegated to AI systems.

Carefication of ageing

'Carefication' of ageing – in which ageing was framed as a state of old age requiring efficient care and surveillance – was found across all web-

sites. Textual, visual, and semiotic representations positioned older people as inherently vulnerable and in need of technology-based interventions. For instance, websites repeatedly emphasised age-related "risks" and "problems" that could lead to "harm or hospitalization," promising "improved resident safety" and a capacity to identify issues before they escalate. These portrayals informed a discourse in which ageing is a fundamentally problematic and deteriorative later life process and stage requiring constant monitoring and management via AI systems.

Companies claimed their technologies could address these 'breakdowns' by providing "round-the-clock" care and surveillance of older people, who were textually and visually characterised as "vulnerable patients." This vulnerability was frequently quantified: websites stressed mortality rates from falls, high prevalence of malnutrition, and increased dementia risks associated with loneliness and social isolation. Statistics were used to justify interventions that could "automatically identify" when residents needed help and alert care staff to provide urgent assistance, suggesting AI was more reliable than older people or human workers in recognising care needs.

This framing naturalised the need for technological intervention while reinforcing stereotypes of old age as primarily defined by decline and dependency. Such a discourse positioned AI-based surveillance and care as inevitable, necessary responses to the "issues" and "challenges" of ageing and later life care, creating a self-reinforcing storyline in which the carefication of ageing justified increased technological delegation of care tasks.

Visual representations reinforced this carefication, with older people depicted as passive recipients of care rather than active participants in their own lives. Images typically showed them being assisted or monitored, while younger people were portrayed as active caregivers or technology operators. When older people were featured independently, they were frequently represented in

Figure 2. Mock-up image generated with Midjourney, characteristic of images on the analysed websites, illustrating the carefication of ageing.

contexts emphasising passivity, frailty, or risk – such as sitting, struggling to get up, using mobility aids, or being monitored by relevant technology. This visual scripting positioned older people as at-risk data sources to be monitored rather than autonomous individuals. Figure 2 reproduces an example of characteristic imagery from the analysed websites.

Public inefficiencies of care

By framing an ageing population and later life as defined by rising costs, accumulating risks, and constant care needs, websites justified claims that the long-term care sector cannot adequately manage such complex circumstances. The sector was consequently portrayed as substandard, characterised by systemic inefficiencies in the provision of quality service delivery.

Long-term care was depicted as facing significant challenges in the areas of staff engagement, communication, resident autonomy, and regulatory compliance, with these issues narrated as intrinsic to traditional care models. Human care labour – including constant "spot checks," "manual scanning," and extensive administrative requirements – took time away from "personalised care," "reduce[d] the quality of care," and led to "carer burnout" and "errors." Human care was therefore represented as inherently flawed and unreliable, requiring technological intervention to ensure quality care provision.

Within this discourse, care staff were painted as sources of inefficiency and risk. Companies highlighted how staff were overwhelmed by excessive workloads, suggesting this compromised their ability to provide quality care (see Figure 3). Staff were consequently portrayed as needing surveillance and control, with AI technologies offering to track regulatory and protocol compliance, thereby reducing errors. This depiction of care workers as potentially undependable was reaffirmed through promises AI could "predict and prevent unwanted occurrences" and offer more accurate, higher

Figure 3. Public inefficiencies of care workers (generated with Midjourney).

quality, and more efficient care than possible through human monitoring.

The solution was increased technological oversight, with systems that could "track," "monitor," and "alert" staff when action was needed – effectively positioning care workers as responders to AI-identified issues rather than skilled professionals exercising independent judgement. Picturing care workers as inefficient and unreliable validated the narrative that they required constant supervision. The technologies offered 'solutions' to these 'problems' in the form of comprehensive staff monitoring capabilities, including capacity to track care workers' movements, log their attendance, automatically report their delays to managers, and generate compliance reports.

These representations of public sector inefficiencies and staff inadequacies created a sense of urgency and crisis demanding urgent technological intervention. Traditional care practices were characterised as fundamentally flawed, with companies promising their AI could "empower staff" while concurrently ensuring they were "monitored" and "compliant."

AI solutionism

Having established long-term care as plagued by problems and human care provision as comparably inefficient, AI technologies were presented as "revolutionary" solutions capable of "transforming" the sector. Companies consistently presented their AI as a wide-ranging answer to the field's difficulties, promising to "revolutionize senior care" and resolve the industry's most critical issues. In light of the AI solution on offer, ineffective human care was reframed as a problem rooted not in underfunding or structural workforce challenges, but in *technical* inefficiencies. Thus, this AI solutionism operated not only by offering fixes, but by shaping the very nature of the problems to be fixed. This was reiterated through claims about technologies' "unprecedented" capabilities, from promises of "world-leading" and "game-changing" innovations to assertions that their products represented a "breakthrough" and "extraordinary" advancement in later life care provision.

This techno-solutionism rested on promises about AI's ability to address multiple care challenges simultaneously. Companies asserted their technologies could enhance staff efficiency, improve resident wellbeing, and boost operational performance – often via a single product. Complex organisational challenges, from workers' stress to regulatory liabilities, were reduced to coordination inefficiencies, only solvable through automated data flows and centralised AI platforms. These assertions were typically supported by metrics, with companies citing specific percentage improvements in worker efficiency, administrative tasks, and resident safety outcomes. Such quantification contributed a sense of scientific certainty to otherwise general claims about AI's transformative potential.

Central to this solutionist discourse was the casting of AI as inherently superior to 'fallible' human care provision. Technologies were described as offering more "accurate" and "efficient" care than possible through human monitoring, with companies emphasising how their systems could automatically identify when older adults required assistance and provide "actionable insights" that human caregivers might miss or be too 'unskilled' to identify. The problem of care was reimagined as a matter of gaps in data and detection – issues that AI, with its predictive analytics and surveillance capabilities, was uniquely suited to fix. The marketing consistently framed algorithmic monitoring as more reliable than human judgement, with companies stressing AI's precision in data collection and capacity for automated intervention.

The promised solutions extended beyond immediate care provision to encompass broader organisational challenges. Companies stated their products could elevate care standards, operational efficiency, and staff satisfaction by eliminating "mundane repetitive tasks." This all-encompassing problem-solving capability was frequently highlighted through declarations that AI could be used to replicate human judgement and analytical skills while concomitantly resolving human limitations. One company promised its AI would improve staff efficiency and resident safety as well as provide comprehensive reporting, ensure compliance, and foster better stakeholder collaboration, all

Figure 4. Representation of typical monitoring and analytics (generated with Midjourney).

through a single technological solution targeting critical organisational functions including clinical care, workforce management, quality assurance, and financial oversight.

Visual representations reinforced these solutionist accounts, with websites featuring sophisticated interfaces displaying real-time monitoring, predictive analytics, and automated alert systems (see Figure 4). Images typically showed AI systems actively monitoring and managing care situations, whereas human caregivers were depicted as responding to AI-generated alerts or following AI-directed protocols.

Notably, this solutionist framing positioned AI not merely as a tool to assist care provision, but as a holistic solution to systemic problems. Companies declared their technologies would "unlock" the "power" in data to deliver enhanced resident, staff, and business outcomes and foster continuous improvement. The underlying message was that AI could not only repair current care breakdowns but transform the entire care sector, addressing accommodation shortages, increasing profit margins, empowering staff, and improving service quality across care contexts. Through such expansive assertions, AI was again advanced as essential rather than optional, reconfiguring expectations about how later life care should be delivered and managed. Contextual, emotional, and relational aspects of care were often portrayed as burdens to be eliminated, legitimising the central role of the technology and the secondary role of human labour.

Datafication of care

To support and further improve that AI solutionism, care was depicted as needing to be 'datafied' to ensure effective monitoring, analysis, and regulation of older bodies and care practices. Websites channelled a discourse wherein data collection – often facilitated via AI-based surveillance – was naturalised as fundamental to quality care. Representations accentuated products' capacities to "continuously monitor" and "analyse" older peo-

ple's activities, behaviours, and biological indicators to guarantee their safety and wellbeing, suggesting comprehensive data collection was synonymous with attentive care.

Visual representations underscored this datafication: images recurrently featured interfaces displaying metrics, charts, and real-time monitoring data. However, older people were often relegated to peripheral positions or represented via body parts or data points related to their actions, behaviours, biophysical pathologies, or bodily functions, symbolically reducing their presence to quantifiable parameters of fragility and vulnerability (see Figure 5). Textually, companies stressed their abilities to convert intimate daily activities into trackable metrics, from monitoring showering or sleep to detecting anomalies in eating patterns or vital signs.

These surveillance capabilities were presented as beneficial for both care recipients and providers, yet narratives generally prioritised institutional productivity over older people's autonomy, privacy, or dignity. The emphasis on data collection and analysis was accompanied by a lack of humanisation of older people, who were rarely represented as active managers of their own care; instead, older users were primarily depicted as data sources to be mined, monitored, and managed. "Efficiency" language dominated, with older people's experiences subordinated to service providers' data collection imperatives. Even claims of "personalized care" were articulated through data-based measures like "activity score[s]," "risk assessments," or "behavioural trends," with automated alerts for any "anomalies" requiring human intervention.

The underlying semiotic message conveyed that care could be reduced to measurable data points, with quality of care equated to both frequency and granularity of data collection. Textual and visual rhetoric also underlined technological mediation over human interaction, implying that understanding older people via their data was more efficient – and effective – than

Figure 5. Datafication (generated with Midjourney).

understanding them through human interpersonal engagement.

The 'datafication of care' discourse extended beyond individual monitoring to encompass entire care environments. Websites marketed "smart" platforms and systems that could analyse patterns, predict risks, and engender insights across residential facilities or home-based care organisations. This broad-scale, data-oriented surveillance was portrayed through signifiers suggesting technological omnipresence: interfaces showing multiple rooms simultaneously, bird's-eye views of facilities, and detailed activity logs. Such systems promised superiority in both oversight and risk management, thus feeding into efficiency logics and cost-minimisation desires that are particularly attractive to private – and, increasingly, public – providers.

Within this, care workers were similarly subject to datafication, with their tasks and locations monitored – and managers alerted if deviations, like lateness or a failure to attend to notifications, were recorded. This created a notion of care workers as points of risk requiring AI supervision for accountability. Websites, however, advertised such tracking of care delivery as a means of monitoring compliance and analysing staff productivity to improve service provision.

Companies' focus on optimising processes through data collection and analysis often overlooked the human dimensions of care work and its complex socioemotional and relational contexts. By prioritising the extractive logics of data accumulation and analysis, the datafication of older people, care workers, and care systems reduced the minutiae of human-to-human care to a set of computational metrics. This data-centric gaze depicted AI surveillance – and the subsequent conversion of all intimate daily activities into trackable datapoints – as inevitable and necessary for modern care provision, even if it diminished considerations of staff and older people's personhood.

Discussion

The four main sociotechnical discourses identified in our analysis help illuminate how assumptions of later life and care can shape both technological imaginaries and practices. These discourses show how AgeTech narratives of breakdown pervade representations of ageing and long-term care, echoing patterns observed in earlier technologies and prior research on technological interventions for older people (Gallistl and Von Laufenberg, 2023; Peine et al., 2021). In doing so, they create opportunities for the introduction of AI technology, framed as a 'solution.' These range from acute biophysical intervention to all-purpose structural remedy, with each introduction involving varying degrees of delegation from human action to non-human technology.

The dominant form in which websites represented older people was as sites of biophysical risk and deficit whose bodily fragility – stereotypically associated with ageing (Dalmer et al., 2022) – was evoked in images, quantified rates, and statistics. This purported breakdown of bodily and cognitive function rendered the older person passive: someone whose very existence expresses a need for tech-based, not touch-based, care and surveillance. This carefication of ageing – underpinned by organisational risk reduction and efficiency culture – implies a deficit approach to older people that is visible in existing research into how they are configured and portrayed in relation to other sociotechnical systems, like digital technologies (Ivan and Loos, 2023; Jaakola, 2020; Loos et al., 2022, 2023). Though such a breakdown could be conceivably 'repaired' in several ways (for example, increased employment of carers, greater medical supervision, etc.), the websites offered 'techno-solutions' as the automatic and most appropriate, effective, and efficient response. Likewise, the websites analysed purported to identify a breakdown in the service *infrastructure* that undergirds long-term care (Jackson, 2014). This breakdown was also linked to inefficiencies deriving from human functions: in this case, the character of care delivery, with the sector portrayed as facing critical challenges. Despite the distinct origins of this breakdown, websites again presented 'repair' as attainable solely through their technological solutions. Breakdown thereby becomes a strategic entry point – a market opportunity for advancing technological creep into the care economy – rather than an opportunity to either consider what led to the breakdown

or reflect on the normative logics that underpin neglect in long-term care settings (Pagone and Briggs, 2021).

In the commercial AI narratives responding to these breakdowns, we observed a redrawing of the 'geography of delegation' (Akrich, 1992), with competences redistributed from humans to nonhumans (Latour, 1999). This delegation moves toward AI technology from two points of origin. First, it moves from older people themselves, whose competences for self-monitoring, expression, and even requesting help are delegated to objects in the form of AI systems. Second, carers' competences are delegated to these technical objects. As the delegation notion suggests, 'objects' enact competences in a distinct manner according to their own technical properties. Analysing the diverse ways competences are delegated permits us to pinpoint the importance of studying commercial entities: it is not a mere replacement of 'like for like,' but a transformation in how roles are enacted. In this case, this distinct manner is manifested, above all, in an increase in the *efficiency* of enactment. People's ability to identify their own ill health, for instance, becomes almost irrelevant as AI tools 'datafy' care, promising to reliably detect illnesses and diseases using objective markers. Thus, as older people's competences are delegated in the name of efficiency, they are positioned not as autonomous individuals but sites of risk whose health and conduct are best addressed in the form of datafied care (Dalmer et al., 2022; Gallistl and Von Laufenberg, 2023). At this point, the carefication of ageing and datafication of care intersect. Equally, the delegation of care workers' competences does not amount to a simple substitution of a nonhuman for a human (Latour, 1999). Again, the delegate accomplishes the task in a unique fashion: the AI does not merely grant users the ability to delegate care tasks to it, but also to exploit its affordances – e.g., its GPS tracker, calculating power, access to data – to supervise care workers. This provides a ready justification for its introduction: such workers are not dependable, but the technology is, and it can demonstrate the difference between the workers' and its dependability in a persuasive, quantitative manner.

Akrich (1995: 167) observes that novel technologies must make themselves functional to "dissimilar users possessing widely differing skills and aspirations." Despite the varying aims of different users, AI technologies were championed as beneficial to various individuals and groups: offering to lessen the burden for care workers, but also to render the latter more productive for their supervisors. By framing the breakdown as a case of inefficiency (especially of care workers) – and the solution as one of increased efficiency through data – the websites legitimised an interventionist approach while undermining confidence in human-centred care practices. This discourse created fertile ground for AI to be heralded as a new standard of care – and as the only solution to systemic problems in the long-term care sector. In addition to promissory accounts about AI technologies (Neves et al., 2023), this enthusiasm is guided by the idea that existing practices are insufficient to meet the demands of an ageing population and later-life care, specifically when ageing is framed as a biomedical burden (Berridge and Grigorovich, 2022; Gomez-Hernandez, 2024).

Although it is essential to critically evaluate the structural challenges in later-life care – including failures in the provision of adequate care and systemic inequities (Sturmberg et al., 2024) – we must also examine how AI solutionism shapes technological responses and efforts to prioritise efficiency over dignity, autonomy, and the complex needs of older people. Stereotypical beliefs were also used to frequently depict care staff in contradictory ways: as both highly caring and inefficient. As highlighted by Byrne and colleagues (2024), AI-generated images of nurses in long-term care often present them as calm, motherly, non-demanding figures. This depiction sharply contrasts with the realities of their demanding, fast-paced work environments, where nurses juggle multiple functions daily, including as managers, supervisors, counsellors, and liaisons (Byrne et al., 2024).

In addition to the specific tasks and roles delegated to nonhumans, the companies naturalised the AI technologies' wide-ranging, systematic roles – with relatively unlimited bounds. We can make sense of the ability for companies to imply comprehensive delegation and limitless

roles for their products by returning to a central plank of techno-solutionism: the identification and depiction of problems in a manner that makes them amenable to technical responses (Morozov, 2013; Siffels and Sharon, 2024). This attention to the problem is especially pertinent when the technology's efficacy is not yet demonstrated. The promises present in the findings – in which AI remedies deficiencies in care delivery and increases profit, all while both empowering and controlling staff – are made more credible because of the dynamic and, at times, hypothetical form of the technology being marketed. Such fluidity permits AI to appear as a solution to problems that exist beyond its immediate application. In this way, this iteration of products finds its place in a history of AI mythmaking, which sees limits merely as temporary obstacles to be overcome in an undefined future (Brevini, 2021; Natale and Ballatore, 2020). The tendency to emphasise boundlessness, grounded in a capacity to re-cast complex breakdowns as technical problems with ready-made answers, enables AI products to be offered as general and systematic solutions, applicable almost irrespective of local context. As breakdown and repair researchers note, however, such systemic technologies must be adapted to these local contexts through maintenance practices like 'patchwork': the "labor that occurs in the space between what AI purports to do and what it actually accomplishes" (Fox et al., 2023: 2). Moreover, the abstract and general representation of AI should not distract from its concrete and local dependencies: "[a]rtificial intelligence is…a set of technological approaches that depend on industrial infrastructures, supply chains, and human labor that stretch around the globe but are kept opaque" (Crawford, 2021: 48).

AI solutionism requires forms of extraction and labour that are rarely accounted for, including increased data availability and computational power. It is therefore unsurprising that discourses highlighted a *datafication of care*, turning caregiving and receiving into data points (Dalmer et al., 2022; Gallistl et al., 2024). For instance, older people were rarely centralised or humanised, instead being depicted as data sources rather than active participants in their own lives or care. The emphasis was on collecting and analysing their information to generate actionable insights, with little or no focus on their subjective needs and preferences, even when personalisation was a core aspect of the narrative. While older people were positioned on the periphery – as vulnerable and risky due to frail health and a myriad of issues, from falls and malnutrition to incontinence and loneliness – they were also represented as central suppliers of data (Dalmer et al., 2022; Gallistl et al., 2024). Whilst even in this sense older people directly contribute to their care and the wider care economy (Neves et al., 2018; Peine et al., 2021), their role is overshadowed by the power dynamics inherent in the datafication of older bodies (Katz and Marshall, 2018) and the delegation of care competences to AI systems. Following Akrich (1992: 209), the dominant discourse permits us to see that older people are represented not as users, but elements in the broader care world into which the technology is inserted (see also Neven and Peine, 2017). As passive objects, they function in the discourse as a pre-existing problem to be solved – as well as a resource to be mined and exploited. Though such algorithmic harms are usually revealed as unanticipated, they are central to how such technologies are projected to be profitable and, by extension, built into their design (Broom et al., 2023).

Similarly, both care staff and the long-term care sector become additional labourers and data providers (Katz, 1996) in website representations – a role intensified within the AI ecosystem through heightened surveillance and datafication of care practices. Yet, these discourses often obscure the significant labour already required of staff to implement and maintain these technologies (Gallistl and Von Laufenberg, 2023). This challenge is further compounded by the lack of interoperability (systems' inability to effectively communicate or integrate with one another) among many proposed AI technologies, which adds to the encumbrance on already overworked staff tasked with adapting to and managing these tools (Neves et al., 2024). Limited digital literacy among staff can further exacerbate these challenges, amplifying the 'technostress' associated with introducing new systems – like the so-called 'welfare technology' used in public care services, as demonstrated by research on long-term care

workers in Scandinavian contexts (Thunberg et al., 2024).

Our examination of company websites shows how inefficiencies in the care sector are framed as a breakdown whose reparative solution is found in AI systems. The promise of these systems is a delegation of competence from imperfect human care to efficient technical solutions. But as literature on repair has consistently shown, such a solution is itself liable to breakdown and the need for continuous repair (Denis and Pontille, 2015; Strebel, 2011). The delegation of competence implies a transformation in the delivery of care in two main ways: care is represented as driven by goals of efficiency and measurability according to objective indicators, and the new tools assume a redistribution of agency away from humans and toward nonhuman technical objects. This most immediately impacts care workers, who are represented in a diminished role alongside AI systems. It is most comprehensive for older people, who are represented as passive and not as users, but data sources and deficiencies to be managed. Such prevailing ideas of a later-life care economy reinforce the societal devaluation of recipients, perpetuating a deficit-based paradigm rather than one centred on proficiencies and capabilities.

Conclusion

This article explored the sociotechnical discourses underpinning the marketisation and commercialisation of AI for long-term care through an analysis of 33 websites of companies targeting the sector. Focusing on how AI companies market their technologies is crucial, as their narratives not only reflect broader conceptualisations of ageing, later life, and care, but can also shape societal ideas about – and systemic solutions to – these matters. By presenting older people as problems to be solved and care staff as labour to be optimised, marketing strategies reinforce stereotypical views that perpetuate inequalities in care practices. Understanding dominant discourses helps uncover the values and assumptions embedded in both technological design and discourse and their potential influence on policy and public perception.

Empirically, findings show that AI technologies are proposed as the only solutions to purported breakdowns in later-life care, from staff shortages to older people's loneliness. Older recipients were represented as uninterested, non-autonomous users and passive data sources. Staff were depicted as caring but ineffective, requiring surveillance and control. Such portrayals overlook diverse experiences of ageing and varying care needs, while promoting perceptions of an inefficient public sector unable to deliver care. These depictions often fail to recognise the sector's chronic under-resourcing or centre the dignity and autonomy of older people and workers. These companies' overarching message is that AI delegation will repair the long-term care sector by addressing inefficiencies in the public system and enhancing the capabilities of the private sector. They claim that by surveilling staff, automating routine tasks, and optimising workflows in a cost-efficient manner, AI will ensure optimal care and improve overall service delivery. The reliance on AI solutionism diverts attention from addressing systemic inequalities, instead prioritising efficiency via technological fixes.

Theoretically, these findings contribute several additions to the conceptual discussion of breakdown and repair. First, the notion of delegation allows us to track shifts between humans and nonhumans in a process of mutual breakdown and repair. Marketing materials identify a human breakdown to be repaired by nonhuman AI, which in turn requires human care in the form of maintenance and continuous repair. Second, focusing on how users are represented in marketing materials, we identified how this delegation is distributed, tracing who is considered a user, what competences they are allocated, and who is deprived of competence and rendered part of the environment. Finally, by supplementing breakdown and repair literature with a critical view of AI solutionism, we asked about the interests underlying the assertion of breakdowns. Our contribution here lies in repositioning techno-solutionism within the broader framework of repair – conceptualising it as one particular approach to addressing breakdowns rather than the comprehensive answer it claims to be. This repositioning allowed us to analyse the marketed technological

fixes, without neglecting the ongoing maintenance and infrastructural labour that sustains these systems – forms of work that remain largely invisible when breakdowns are framed solely through a solutionist lens. As the websites leap from claims about bodily frailty, worker inefficiency, and sector underfunding to positing AI as a necessary solution, it is apparent that the assertion of breakdowns can be contentious and contested. Our contributions thereby enable us to both understand AI discourses in long-term care and use this empirical material to extract novel insights from the concepts of breakdown and repair.

At the same time, our application and expansion of the concepts of delegation and user representations are limited by our focus on promotional materials and the exclusive use of English-language sources. A component study, examining the development process and delegations inscribed in the technologies, would permit fuller use of these concepts. Yet such a study – employing a material-semiotic approach in contrast to our semiotic one (Law, 2008) – would require analysing the technologies themselves, many of which remain promissory, with the nature of their AI functions still unclear at this stage.

The introduction of AI into sensitive settings brings challenges, including heightened labour demands on care workers to implement and maintain technologies, increased surveillance, and the burden of managing often fragmented and non-interoperable systems. By framing care challenges as technical problems with ready-made solutions, the AI discourse risks undermining human-centred care practices and reinforcing a cycle of dependency on opaque systems of labour and infrastructure. It is therefore essential to continue critically evaluating the promises of AI in long-term care and advocating for practices that centre the dignity, agency, and wellbeing of both older people and care workers.

Furthermore, if AI will be providing the care, who will care for the AI? Repair and maintenance of technological infrastructure is itself a form of care (Jackson, 2014), yet the burden of sustaining these systems remains largely invisible in AI-driven solutions. Given the rapid advancement of AI and its expanding applications across the care spectrum, one could argue it has reached a stage requiring 'repair' much sooner than previous generations of technologies, such as mobile devices (Yampolskiy, 2019). Future research should explore these overlooked dependencies, examining how the upkeep of AI systems reshapes care-giving and receiving labour, governance, and socioethical responsibilities within long-term care settings.

Acknowledgements

The authors would like to thank the anonymous reviewers and the editors of both the Special Issue and *Science & Technology Studies* for their invaluable feedback and guidance. This work was supported by a Horizon Fellowship awarded to the first author.

References

Australian Institute of Health and Welfare (2024) Older Australians and Aged Care. Available at: https://www.aihw.gov.au/reports/older-people/older-australians/contents/aged-care (accessed July 2024).

Akrich M (1991) De la sociologie des techniques à une sociologie des usages: L'impossible intégration du magnétoscope dans les réseaux câblés de première génération [From the sociology of techniques to a sociology of uses: The impossible integration of the video recorder in first-generation cable networks]. *Techniques & Culture* 16: 83–110. DOI: 10.4000/tc.725

Akrich M (1992) The de-scription of technical objects. In: Bijker WE and Law J (eds) *Shaping Technology/Building Society: Studies in Sociotechnical Change*. Cambridge, MA: MIT Press, pp. 205–224.

Akrich M (1995) User representations: Practices, methods, and sociology. In: Rip A, Misa TJ and Schot J (eds) *Managing Technology in Society*. Michigan: Pinter Publishers, pp. 167–184.

Alff D (2021) Make way for infrastructure. *Critical Inquiry* 47: 625–643. DOI: 10.1086/714533

Bareis J and Katzenbach C (2021) Talking AI into being: The narratives and imaginaries of national AI strategies and their performative politics. *Science, Technology, & Human Values* 47(5): 855-881. DOI: 10.1177/01622439211030007

Berridge C and Grigorovich A (2022) Algorithmic harms and digital ageism in the use of surveillance technologies in nursing homes. *Frontiers in Sociology* 7: 957246. DOI: 10.3389/fsoc.2022.957246

Brevini B (2021) Creating the technological saviour: Discourses on AI in Europe and the legitimation of super capitalism. In: Verdegem P (ed) *AI for Everyone? Critical Perspectives*. London: University of Westminster Press, pp. 145–159. DOI: 10.16997/book55.i

Broom A, Peterie M, Kenny K, et al. (2023) The administration of harm: From unintended consequences to harm by design. *Critical Social Policy* 43(1): 51–75. DOI: 10.1177/02610183221087333

Byrne AL, Mulvogue J, Adhikari S, et al. (2024) Discriminative and exploitive stereotypes: Artificial intelligence generated images of aged care nurses and the impacts on recruitment and retention. *Nursing Inquiry* 31(3): e12651. DOI: 10.1111/nin.12651

Chandler D (2022) *Semiotics: The Basics*. Oxfordshire: Routledge. DOI: 10.4324/9781003155744

Chen L-K (2020) Gerontechnology and artificial intelligence: Better care for older people. *Archives of Gerontology and Geriatrics* 91: 104252. DOI: 10.1016/j.archger.2020.104252

Chu CH, Nyrup R, Leslie K, et al. (2022) Digital ageism: Challenges and opportunities in Artificial Intelligence for older adults. *The Gerontologist* gnab167. DOI: 10.1093/geront/gnab167

Clarke LH, Bennett EV and Liu C (2014) Aging and masculinity: Portrayals in men's magazines. *Journal of Aging Studies* 31: 26–33. DOI: 10.1016/j.jaging.2014.08.002

Crawford K (2021) *Atlas of AI: Power, Politics, and the Planetary Costs of Artificial Intelligence*. New Haven, CT: Yale University Press. DOI: 10.12987/9780300252392

Dalmer N, Ellison K, Katz S, et al. (2022) Ageing, embodiment and datafication: Dynamics of power in digital health and care technologies. *International Journal of Ageing and Later Life* 15(2): 77–101. DOI: 10.3384/ijal.1652-8670.3499

de Laet M and Mol A (2000) The Zimbabwe bush pump: Mechanics of a fluid technology. *Social Studies of Science* 30(2): 225–263. DOI: 10.1177/030631200030002002

Denis J and Pontille D (2015) Material ordering and the care of things. *Science, Technology, & Human Values* 40(3): 338–367. DOI: 10.1177/0162243914553129

Denis J and Pontille D (2023) Before breakdown, after repair: The art of maintenance. In: Mica A, Pawlak M, Horolets A and Kubicki P (eds) *Routledge International Handbook of Failure*. Oxfordshire: Routledge, pp. 209–222. DOI: 10.4324/9780429355950-19

Ellison KL, Martin W, Pedersen I and Marshall BL (2022) Visualizing the datasphere: Representations of old bodies and their data in promotional images of smart sensor technologies for aging at home. *Frontiers in Sociology* 7: 1008510. DOI: 10.3389/fsoc.2022.1008510

Fox SE, Shorey S, Kang EY et al. (2023) Patchwork: The hidden, human labor of AI integration within essential work. *Proceedings of the ACM on Human-Computer Interaction* 7(CSCW1): 1–20. DOI: 10.1145/3579514

Gallistl V and Von Laufenberg R (2023) Caring for data in later life – the datafication of ageing as a matter of care. *Information, Communication & Society* 27(4): 774–789. DOI: 10.1080/1369118X.2023.2279554

Gallistl V, Banday MUL, Berridge C et al. (2024) Addressing the black box of AI–A model and research agenda on the co-constitution of aging and Artificial Intelligence. *The Gerontologist* 64(6): gnae039. DOI: 10.1093/geront/gnae039

Gomez-Hernandez M (2024) Industry visions of technology for older adults: A futures anthropology perspective. *Journal of Aging Studies* 70: 101248. DOI: 10.1016/j.jaging.2024.101248

Graham S and Thrift N (2007) Out of order: Understanding repair and maintenance. *Theory, Culture & Society* 24(3): 1–25. DOI: 10.1177/0263276407075954

Gray ML and Suri S (2019) *Ghost Work: How to Stop Silicon Valley from Building a New Global Underclass*. New York, NY: HarperCollins.

Greimas AJ (1990) *The Social Sciences: A Semiotic View*. Minneapolis, MN: University of Minnesota Press.

Greimas AJ and Courtés J (1982) *Semiotics and Language: An Analytical Dictionary*. Bloomington, IN: Indiana University Press.

Hall S (2018) The west and the rest: Discourse and power. In: Morley D (ed) *Essential Essays, Volume 2: Identity and Diaspora*. Durham, NC: Duke University Press, pp.141–184.

Henke CR (1999) The mechanics of workplace order: Toward a sociology of repair. *Berkeley Journal of Sociology* 44: 55–81.

Ivan L and Loos E (2023) The marketing of technology products for older people: Evidence of visual ageism. In: Rosales A, Svensson J and Fernández-Ardèvol M (eds) *Digital Ageism: How it Operates and Approaches to Tackling it*. Oxfordshire: Routledge, pp. 88–115. DOI: 10.4324/9781003323686-6

Jackson J (2014) Rethinking repair. In: Gillespie T, Boczkowski PJ and Foot KA (eds) *Media Technologies: Essays on Communication, Materiality, and Society*. Cambridge, MA: MIT Press, pp. 221–240. DOI: 10.7551/mitpress/9780262525374.003.0011

Jaakola J (2020) Ethics by other means? Care robot trials as ethics-in-practice. *Tecnoscienza: Italian Journal of Science & Technology Studies* 11(2): 53–71. DOI: 10.6092/issn.2038-3460/17477

Katz S (1996) *Disciplining Old Age: The Formation of Gerontological Knowledge*. Charlottesville, VA: University of Virginia Press.

Katz S and Marshall BL (2018) Tracked and fit: FitBits, brain games, and the quantified aging body. *Journal of Aging Studies* 45: 63–68. DOI: 10.1016/j.jaging.2018.01.009

Latour B (1992) Where are the missing masses? The sociology of a few mundane artifacts. In: Bijker WE and Law J (eds) *Shaping Technology/Building Society: Studies in Sociotechnical Change*. Cambridge, MA: MIT Press, pp. 225–258.

Latour B (1999) *Pandora's Hope: Essays on the Reality of Science Studies*. Cambridge, MA: Harvard University Press.

Latour B (2005) *Reassembling the Social: An Introduction to Actor-Network-Theory*. Oxford: Oxford University Press. DOI: 10.1093/oso/9780199256044.001.0001

Law J (2008) Actor Network Theory and material semiotics. In: Turner BS (ed) *The New Blackwell Companion to Social Theory*, West Sussex, UK: Wiley Blackwell, pp. 141–158. DOI: 10.1002/9781444304992.ch7

Lehtiniemi T (2023) Contextual social valences for artificial intelligence: Anticipation that matters in social work. *Information, Communication & Society* 27(6): 1110–1125. DOI: 10.1080/1369118X.2023.2234987

Loos E, Ivan L, Sourbati M, et al. (2022) Visual ageism on public organisations' websites. In: Ylänne V (ed) *Ageing and the Media: International Perspectives*. Bristol: Policy Press, pp. 113–132. DOI: 10.51952/9781447362067.ch008

Morozov E (2013) *To Save Everything, Click Here: The Folly of Technological Solutionism*. New York, NY: PublicAffairs.

Natale S and Ballatore A (2020) Imagining the thinking machine: Technological myths and the rise of artificial intelligence. *Convergence* 26(1): 3–18. DOI: 10.1177/1354856517715164

Neven L and Peine A (2017) From triple win to triple sin: How a problematic future discourse is shaping the way people age with technology. *Societies* 7(3): 26. DOI: 10.3390/soc7030026

Neves BB and Omori M (2023) Artificial intelligence for long-term care in later life. In: Cockerham WC (ed) *Handbook on the Sociology of Health and Medicine*. Cheltenham: Edward Elgar, pp. 488–503.

Neves BB, Omori M, Petersen A, Vered M and Carter A (2024) Navigating artificial intelligence in care homes: Competing stakeholder views of trust and logics of care. *Social Science & Medicine* 358: 117187. DOI: 10.1016/j.socscimed.2024.117187

Neves BB, Petersen A, Vered M, Carter A and Omori M (2023) Artificial intelligence in long-term care: Technological promise, aging anxieties, and sociotechnical ageism. *Journal of Applied Gerontology* 42(6): 1274–1282. DOI: 10.1177/07334648231157370

Neves BB and Vetere F (2019) Ageing and emerging digital technologies. In: Neves BB and Vetere F (eds) *Ageing and Digital Technology: Designing and Evaluating Emerging Technologies for Older Adults*. Singapore: Springer, pp. 1–14.

Neves BB, Waycott J and Malta S (2018) Old and afraid of new communication technologies? Reconceptualising and contesting the 'age-based digital divide'. *Journal of Sociology* 54(2): 236–248.

Pagone T and Briggs L (2021) *Royal Commission into Aged Care Quality and Safety. Final report: Care, Dignity and Respect. Volume 1: Summary and Recommendations*. Commonwealth of Australia. Available at: https://www.royalcommission.gov.au/system/files/2024-03/aged-care-rc-final-report-volume-1.pdf (accessed 24 March 2024).

Peine A, Marshall BL, Martin W et al. (2021) *Socio-gerontechnology: Interdisciplinary Critical Studies of Ageing and Technology*. Oxfordshire: Routledge. DOI: 10.4324/9780429278266

Savolainen K and Hyysalo S (2021) User representations as a design resource: Achieving accountable design without access to users. *Science & Technology Studies* 34(2): 25–45. DOI: 10.23987/sts.84598

Siffels LE and Sharon T (2024) Where Technology Leads, the Problems Follow: Technosolutionism and the Dutch Contact Tracing App. *Philosophy & Technology* 37(4). DOI: 10.1007/s13347-024-00807-y

Star S (1999) The ethnography of infrastructure. *American Behavioral Scientist* 43(3): 377–391. DOI: 10.1177/00027649921955326

Strebel I (2011) The living building: towards a geography of maintenance work. *Social & Cultural Geography* 12(3): 243–262. DOI: 10.1080/14649365.2011.564732

Sturmberg JP, Gainsford L, Goodwin N et al. (2024) Systemic failures in nursing home care—A scoping study. *Journal of Evaluation in Clinical Practice* 30(3): 484–496. DOI: 10.1111/jep.13961

Stypinska J (2023) AI ageism: A critical roadmap for studying age discrimination and exclusion in digitalized societies. *AI & Society* 38(2): 665–677. DOI: 10.1007/s00146-022-01553-5

Tarkkala H, Helén I and Snell K (2019) From health to wealth: The future of personalized medicine in the making. *Futures* 109: 142–152. DOI: 10.1016/j.futures.2018.06.004

Thunberg S, Johnson E and Ziemke T (2024) Investigating healthcare workers' technostress when welfare technology is introduced in long-term care facilities. *Behaviour & Information Technology* 43(13): 3288–3300. DOI: 10.1080/0144929x.2023.2276802

Vermeer Y, Higgs P and Charlesworth G (2022) Selling surveillance technology: Semiotic themes in advertisements for ageing in place with dementia. *Social Semiotics* 32(3): 400–421. DOI: 10.1080/10350330.2020.1767399

Yampolskiy RV (2019) Predicting future AI failures from historic examples. *Foresight* 21(1): 138–152. DOI: 10.1108/fs-04-2018-0034

Appendix

Table 1. Description of companies.

#	Location	Technology Type	Technology Description	Market
1	Aus, Greece	Analysis and Decision Support	Improve operational efficiency/care quality through automated monitoring/reporting.	Residential Care
2	Aus	Analysis and Decision Support	Generate personalized health care plans and monitor regulatory compliance.	Residential Care
3	Global	Analysis and Decision Support	Provide resources and recommendations for dementia care and caregiver support.	Home Care
4	Aus	Client Monitoring and Safety	Monitor health risks and manage staff.	Residential & Home Care
5	Aus, Singapore, Malaysia	Client Monitoring and Safety	Track resident safety and activities, providing real-time alerts and analysis.	Residential Care
6	Aus	Client Monitoring and Safety	Monitor home environments through audio detection and virtual assistance.	Home Care
7	Aus, NZ	Client Monitoring and Safety	Monitor safety incidents and regulatory compliance through video surveillance.	Residential Care
8	Aus	Client Monitoring and Safety	Collect and analyse sensor data for health monitoring and emergency response.	Residential Care
9	Aus	Client Monitoring and Safety	Detect and prevent falls through radar-based monitoring.	Residential & Home Care
10	Aus, US, Global	Client Monitoring and Safety	Provide audio analytics and remote care support.	Residential & Home Care
11	Global	Client Monitoring and Safety	Track activities and provide automated health alerts.	Home Care
12	Aus	Healthcare	Track nutrition and eating patterns.	Residential Care
13	Aus, NZ, UK, Singapore, EU	Healthcare	Assess and monitor pain levels through facial recognition.	Residential & Home Care
14	Aus	Robotic Companions	Provide companionship and health monitoring.	Residential & Home Care
15	Aus, USA	Robotic Companions	Provide emotional support and entertainment.	Not specified
16	Global	Robotic Companions	Enable social connection and daily monitoring through TV interface.	Residential & Home Care
17	Global	Staff and Operational Support	Optimise operations and staff efficiency.	Residential Care
18	HK	Healthcare	Track health conditions and provide medication reminders.	Home Care
19	US	Client Monitoring and Safety	Support independent living through voice-activated monitoring.	Home Care
20	US, UK	Healthcare	Guide health monitoring for community care workers.	Residential & Home Care
21	UK	Staff and Operational Support	Schedule and manage care services.	Home Care
22	US	Healthcare	Enhance care delivery and monitoring.	Residential & Home Care
23	Canada	Healthcare	Provide therapeutic music for health outcomes.	Not specified
24	UK	Robotic Companions	Promote active aging through robotic companionship.	Home Care
25	US	Staff and Operational Support	Schedule and manage home care services.	Home Care
26	US	Client Monitoring and Safety	Detect early health risks through wearable monitoring.	Home Care
27	US	Client Monitoring and Safety	Detect and prevent falls.	Residential Care
28	Germany	Client Monitoring and Safety	Analyse fall risk and provide mobility recommendations.	Residential & Home Care
29	Finland	Staff and Operational Support	Organise and track home care visits.	Home Care
30	US	Client Monitoring and Safety	Monitor activities and provide automated assistance.	Home Care
31	US	Staff and Operational Support	Manage non-clinical operations.	Residential Care
32	US	Client Monitoring and Safety	Connect stakeholders and offer monitoring services.	Home Care
33	US	Healthcare	Monitor and manage incontinence.	Residential & Home Care