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Towards An Age-Friendly Design Lens

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Abstract

This paper discusses the growing importance of design to influencing healthy ageing outcomes in the future, while acknowledging past shortcoming and limitations in the design process through a critical review of practice and research. It explores a range of different design approaches which have been aimed at supporting people as they age, and looks at variations in sectoral expertise within the design discipline that affect our lives, from architecture to fashion. The paper makes the case for developing an age-friendly design lens to reorient the work of designers around the changing needs of older people, based on the values of inclusive design. The lens taking inspiration from disability models encourages designers to adopt a social model of ageing and develop a participatory, empathic and mainstream approach – learning from diverse lived experiences, seeing the positives in older people and building on strengths rather than deficits. The paper concludes by casting the age-friendly design lens over the field of designing digital technologies.

Keywords Participatory design · Lived experience · Technology · Empathy · Healthy ageing

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Introduction

Design for global ageing has reached a crossroads. Its central importance to creating a healthier and more fulfilling ageing experience in the future is not in dispute, but past limitations and shortcomings in the designing process for ageing populations need to be recognised and rectified, if older people are to avoid being disabled by and excluded from the material and social world around them. The way that we design our homes, workplaces, products, services, communications and public spaces will be a key factor in determining the extent to which upcoming generations of older people can benefit from healthy ageing. The question therefore becomes *how* we will design and what perspectives we will bring to the act of designing. This paper explores different design approaches and sectoral design expertise, and makes the case for an 'age-friendly design lens' to be applied to the creation of those artefacts and environments that do most to influence healthy ageing.

First it should be considered that the experiences of upcoming generations of older people will be unlike those of recent decades. Ageing demographics demand intervention and new approaches to health and ageing (Myerson, 2017), with current notions around the ageing experience based on disease, decline and dependency being unsustainable and hence demanding new approaches to later life autonomy, health, wellbeing, connectedness and technology support (Rogers & Mitzner, 2018). More than with any preceding generation, ageing is understood to be a defining issue of our time, and future generations of older people could benefit from the attention being devoted to the topic, through strategies such as the 'ageing society' component of the UK's Industrial Strategy (Government, 2017). By 2030, there will be 1.4 billion people aged over 60 worldwide, twice the number today (United Nations, 2015). This brings with it implications for how we design our world in the future.

It is important that those who do most to influence designed outcomes should have the clearest understanding of healthy ageing and the greatest empathy towards it. There is an urgent need to ensure that we counter manifestations of ageism and shift ageist assumptions regarding frailty and decline. Outdated attitudes towards 'non-typical' people (a problematic notion at its core) remain within the design process, which has a tendency to consider these groups as subsets of populations. This position should be challenged and design processes should be adapted to allow the genuine participation of people across the spectrum of age and ability (Clarkson & Coleman, 2015). In a similar way to that of disability dialogues (Oliver, 1996) it is important to refocus attention away from medical models in which 'impairments' or 'differences' are perceived as medical issues or disabling qualities that need to be 'fixed'; towards social models that acknowledge the role of barriers created by society. Adopting social models of ageing (Marshall, 1995) as opposed to medical models can go some way towards engineering this shift—towards a new age-friendly lens.

Why develop an age-friendly design lens?

For decades, the design community perpetuated a common image of older people as a distinct and homogenous 'special needs' group requiring special needs design outside

the mainstream of society and the economy. This group was considered a problematic population, hindered by age-related limitations which were themselves reinforced by an over-focus on negative later-life health-related issues and end-of-life care. In order to achieve healthy ageing outcomes by design, we believe that it is imperative that we help designers to embrace an 'age-friendly lens', to better appreciate the potential of their designs to both positively (and if executed poorly, negatively) affect fuller life-span experiences.

New ageing experiences have clear implications for the evolution of our designed world, but to date the way that design has met these has been limited (Myerson, 2017). A combination of misrepresentation and lack of engagement with older cohorts has led to inaccurate presumptions about the ageing experience, and critically a misalignment of design needs with design concepts and solutions (McGinley, 2012). How people realistically live after middle age is not simply a downward spiral of increasing frugality and frailty, but more often just as varied as younger cohorts (Dionigi, 2015). In many instances experiencing arguably more freedom in a number of key areas, such as familial responsibilities and flexibility of time; however, this variety of experience extends to increasing challenges relating to health, housing, work and community; with recent UK studies showing health and financial security in later life is becoming increasingly unlikely (Centre for Ageing Better, 2022).

Many older people are disabled by the poorly conceived design of the environment around them, rather than any inherent lack of capacity. In addition to keeping abreast of technological advances and emerging design trends, designers have a responsibility to ensure that they understand diverse people, the issues they encounter and their daily experiences – and to grasp this well enough that they can intervene with equitable, practical, usable and beautiful design interventions that enhance later life. Designing needs to be driven by a shared understanding of experiences across the age spectrum, and acknowledgment of the differences and indeed the commonalities in an ageing journey we are all on. This is why ensuring that designers operate through age-friendly design lenses is so important. The idea of using an 'age-friendly lens' embodying a set of agreed characteristics or values, is not unique and has been applied in other contexts, from urban planning (Davern & Brasher, 2017) to sociology (Gardiner & Webb, 2022) – it is an emerging notion that aligns with principles adopted in inclusive design projects at the Helen Hamlyn Centre for Design (HHCD), and is a potentially useful concept in relation to broad fields of design.

We will all inevitably be customers of design aimed at older cohorts, and our needs will change over time as an inevitable component of the ageing process. However, this is not a homogenous experience, and hence a variety of experiences need to be examined and understood to identify commonalities and opportunities for innovation. Currently, the experience of ageing among changing generations is critically under-explored and design potential remains under-exploited. When considering older age in terms of multiple minor impairments, there is a lack of age-related understanding. These characteristics are often encompassed within the natural ageing process, and they may be permanent (e.g. arthritis) or temporary (e.g. relating to medication or injury). Design has benefitted from the momentum around addressing disability in terms of raising awareness of and responding to issues such as access; however, much of the access criteria is reductive and diminishes the experiential side of design

for those with disabilities, let alone the nuances in age-related changes in ability. The emphasis of design for older cohorts predominantly remains on solutions as utilitarian design outputs, bereft of finesse, concentrating on deficit models of ability (Clarkson et al., 2003), rather than focusing upon the remaining abilities, assets and strengths of older people, and indeed their preferences and desires.

This over-emphasis on age-related limitations/reduction (e.g. vision loss, cognitive decline, mobility reduction, loss of dexterity etc.) often leads designers to focus upon functionality, frequently to the detriment of other aspects of the design, which can be equally important. Neglecting these 'softer' aspects of design can create design offerings that are stigmatising and highlight the difference or limitation being experienced. This reduces the voluntary uptake of said designs, and there is a sense that design is being imposed upon people for their own failings rather than taken up with enthusiasm – as should be the case.

An age-friendly design lens is necessary to shift focus from limiting concepts of 'normal' or 'average' to more representative spectrums of age and diversity, acknowledging the range of difference and the value in considering this range. By addressing the challenge to actively create a future world not previously envisaged for people of all ages, including older people, designers are responding not only to biological needs, but also hopes and aspirations. It is not possible to predict the future, but the ageing process does have many predictable characteristics, which if examined creatively and rigorously can reveal possibilities towards designing with genuine positive impact on healthy ageing.

To consider older people's requirements as supplementary challenges, or in some way contradicting mainstream needs, is to miss the opportunity that is being presented. To bridge the present gulf between mainstream design and design for older cohorts requires that typologies such as 'assistive products' and channels of delivery be reframed, so that new products might be delivered through mainstream channels rather than specialist routes. This will shift offerings from the margins to the mainstream: from a minority of older, and by assumption, disabled people, to future mass markets, with life-stage enhancing and enabling products and services. The future of design requires a positive lens on ageing, towards creating systems that highlight the strengths of ageing, shifting from entrenched ageism, to address inequalities and produce mainstream outcomes. An age-friendly lens will change the designing mindset from medical to aspirational, switching industry focus away from low-demand healthcare products that focus on deficiency, and towards lifestyle artefacts and experiences for a healthier future.

Design approaches to healthy ageing

To develop an age-friendly design lens, it is important to review the different approaches within the design discipline that have been influencing the healthy ageing field. While design generally holds a long tradition of solving problems and proposing futures, there are several alternative and overlapping philosophies now at play within the discipline. As design becomes increasingly involved in addressing more complex societal challenges that span across multiple disciplines and involves multi-

ple actors (Buchanan, 1992; Rittel & Webber, 1973; Sanders & Stappers, 2008), these differences in methodological approach address health ageing from different angles.

Universal design/ inclusive design

Two foundational approaches that have shaped design for healthy ageing are universal design (the term used most widely in the US and Japan) and inclusive design (more common in the UK and Europe). Both approaches fundamentally concentrate on addressing the broadest possible needs of people of all ages and abilities when designing (Clarkson & Coleman, 2015). There are, however, some subtle differences. Universal design has historically focused on access to the built environment and relied on the 'stick' of legislation (such as the ADA—Americans with Disabilities Act) to enforce access. Inclusive design has placed greater focus on products and services (as well as environments) for diverse markets, using the 'carrot' of commercial market growth to encourage design inclusion. It could be argued that the 'carrot' has been more effective with designers than the 'stick' given a generally positive response in the design profession to the market opportunity of inclusive design, evidenced by the large number of award schemes set up by industry bodies to reward excellence in this field, including by RSA, D&AD and the Design Council. In contrast, many architects have, in the past, treated the legislative framework of the ADA as a tick-box exercise.

Universal design emerged within the design discipline during the 1980s with pioneering work done by wheelchair user and architect Ronald Mace in disability studies leading up to this (Mace et al., 2015). One of the main aims was to give people with disabilities the same options as people without disabilities, and viewing design through the entire lifespan where temporary disabilities might occur at some points (including those that might come with age). This approach took a stance away from creating environments that would meet the bare minimum standards of accessibility, and instead, encouraged designers to recognise the difference between "physical disability" and "environmental handicap", which is much aligned with the work of environmental gerontologists (Lawton & Nahemow, 1973). If design from the very outset considers changes that will occur through a person's lifespan, this will reduce the risk of having to introduce clinical-looking and expensive adaptations at a later stage (Mace et al., 2015).

Inclusive design dates back to the early 1990s, with the term first being introduced by designer and researcher Roger Coleman in 1994 (Coleman, 1994). It originated from the work of multiple scholars including that of Laslett and the Royal College of Art's Design Age Programme (Coleman, 1993), and introduced a new approach to looking at design for an ageing population. This approach moved beyond physical and bodily needs to incorporate hopes and aspirations (Clarkson & Coleman, 2015). A key component was to include young designers (students and new graduates) on this journey, acknowledging that taking a lifespan approach to design for ageing requires designers to "design for our future selves" in a more speculative way.

In essence, both universal and inclusive design are approaches that aim for design that supports and is usable by all people to the greatest extent possible, regardless of age or ability. Hence, when ageing is viewed from a life span approach, it does not become a target of special needs but rather as part of the mainstream where older

people are considered as people and not a collection of age-related limitations to be 'treated'.

Participatory design and co-design

Participatory design-led approaches are crucial for designing inclusively, and ideally start from the beginning of a design process. Many examples of design-led approaches where older people have been involved in the early stages of a design process can be found around the world (Lee & Moore, 2015).

One notable participatory approach, which we include due to its timely relevance caused by the global pandemic, is that of 'cultural probes'. This methodological approach allows data to be collected remotely through creative design-led activities. It dates back to the 1990s when Gaver et al., (1999) introduced and experimented with the use of 'cultural probes' with groups of older people in different contexts across Europe. The aim was to explore interaction techniques and the presence of older people in their local communities. Design-led creative exercises using maps, photo albums, postcards and disposable cameras encouraged the participants to share experiences and aspirations from their everyday lives. After a while, these were then returned by mail to the design researchers. They carefully designed the probes to collect "inspirational data" to stimulate the designers' imagination rather than aiming to define and diagnose problems and prescribe solutions. Instead, the approach offered insights into "a life-time of experiences and knowledge" from the older community members. By engaging with community members in this form, the designers empathised in a creative way and prompted responses that focused on people and opportunities rather than on 'users' and problems.

Problem-reframing rather than problem-solving is notable in participatory design. Several design researchers have made significant contributions to this debate. Brandt et al., (2010) identified that many older people do not identify with being 'elderly' or 'seniors', and introduced the term 'situated elderliness' to describe ageing in a more fluid manner, where one might feel old in some aspects while not in others. This then further positions ageing as an 'everyday practice' that happens as 'communities of everyday practice' (Brandt et al., 2010) with reference to work about 'situated learning' (Lave and Wenger, 1991). The field of co-design takes the next steps from engaging 'users' in a design process to viewing them as creative partners of equal standing (Sanders & Stappers, 2008). This approach brings together designers that hold 'professional expertise' and people that are 'experts of experience' to collaborate throughout a design process. From this perspective, design becomes a shared matter where creativity is not limited to one professional group but instead is viewed as a discipline that can foster collective creativity and create social innovation (Sanders, 2013). Examples of co-design studies with older people are found in studies focusing on creating health, welfare and technology solutions or systems to support better ageing (Botero & Hyysalo, 2013; Brandt et al., 2010; Brandt & Nørgaard, 2012; Lindsay et al., 2012; Malmborg et al., 2016; Riche & Mackay, 2010).

Imagined and speculative design futures

A function of design is to imagine how things could be different. While it is accepted that the present is caused by the past, it is also possible to think of it being shaped by the future, by people's hopes and dreams for imagined futures (Dunne & Raby, 2013). There is much creative design work based around devising future 'fictions' or 'speculations' which explore new scenarios for living. Designers Sam Hecht and Kim Colin, for example, built and presented a modular future eldercare apartment run by an imaginary tech company for the 'New Old' exhibition at the Design Museum in London; this explored the implications of living in a fully robot-serviced space which performs every household function, such as automatically restocking the fridge with food, and never requires the person to leave the building (Myerson, 2017). However, more generally, the perspectives represented in imagined and speculative futures are frequently missing cohorts such as older and disabled groups.

An awareness of the different time frames in which design is taking place can be useful when exploring what cannot be predicted. Sanders & Stappers (2014) refer to three different ways of articulating time frames: 'the world as it is', 'the near future', and 'the speculative future'. By articulating and approaching the two types of futures, it allows the design processes and design activities to challenge what 'future' means, and rearticulate that it can in fact have more than one meaning. In co-design work with older community groups, researchers met resistance from participants not seeing the immediate benefits from participating as they articulated that they 'might not be here tomorrow' (Carroll, 2020; Carroll & Nørtoft, 2022). This stressed the importance of articulating types of futures, including short-term futures and foreseeable steps, and how today's design process might also benefit ageing populations on a longer time frame.

A focus on inclusive design

Among the different design approaches that have emerged, it is our view that inclusive design offers the most potential to challenge the 'stereotypes of ageing' (Dionigi, 2015) and integrate the lived experiences of diverse ageing people into the design process. Inclusive design moves beyond designing for age-related capability decline and seeing ageing as a 'problem' that needs to be solved. Scholars from related fields such as Human-Computer Interaction (HCI) allude to similar issues where the focus is on ageing as a problem that can be solved by technology. They too point to the fact that in order to open up new design spaces and opportunities for technology, the notion of what an 'older user' is must be critically re-defined (Vines et al., 2015).

Over the past 25 years, the HHCD at the Royal College of Art, which emerged in the 1990s from the Design Age programme, has experimented to varying degrees with the design approaches and sector disciplines described above. Our experiences in working with business, industry and academia on design for ageing have led us to pursue a programme that can broadly be summarised as maintaining the widest span of sector disciplines while coalescing around inclusive design as our core approach.

Capability data supports a focus on inclusive design. While some older people have varying ability resulting directly or indirectly from age (low or moderate capability (Clarkson, Dong and, Keates, 2003)), the majority are fully physically and mentally able (average capability (Clarkson et al., 2003)). For the UK it is 58% of those at or above state pension age (ONS 2013, 2014). For Canada (Statistics Canada, 2018), the proportion is similarly estimated to be 62%. So, we can expect the majority of older people in future societies to have average capability, with a significant proportion having moderate capability. Therefore, the role of design within future societies should focus on including average and moderate capability when ageing in the development of the mainstream products, services and environments, rather than just a limited focus on special purpose design for low capability when ageing.

Under the banner of inclusive design, the HHCD has piloted various iterations of an age-friendly design lens with different groups of designers. Our longest-running experiment was with Royal College of Art students in an award and bursary scheme, which focused the lens on encouraging a more participatory and empathic approach to older people's needs. We also deliberately repositioned ageing away from a medical model in the Helen Hamlyn Research Associates programme, which continues to team new RCA graduates with industry partners to develop new concepts for the ageing market.

Our most intense age-friendly lens pilot, however, was with professional design teams belonging to member firms of the Design Business Association (Myerson, 2021). The DBA Inclusive Design Challenge ran for ten years (2001-11) and entailed taking designers with no prior experience of engaging with older and disabled people through a creative programme lasting several months that climaxed with the presentation of new designs to improve lives. What we learnt from these pilots is distilled in the next section on constructing an age-friendly design lens.

Existing design expertise

Within the context of age-friendly design, much needs to be done to match design 'supply' (what design and businesses make available to older cohorts), to design 'demand' (what is actually required by older cohorts in their daily life). Analysis of this mismatch between design 'demand' and design 'supply' formed the basis for the successful application in 2019 to Research England to establish the Design Age Institute (DAI, 2020) a new research unit dedicated to developing innovations for older people. Addressing this supply/demand mismatch is a route towards creating a thriving economy for aspirational products and services that support healthy ageing, and can help clarify the misunderstood older-age market (Coughlin, 2017).

It is also important to note that the critical role of design within future age-inclusive societies will not only be shaped by a broad design approach or outlook – it will also be significantly informed by existing design expertise. Applied design discipline's impact upon ageing societies are manyfold if one considers even the most obvious disciplines, such as architecture and interiors, fashion and textiles, graphic, product, research and service. Here we find huge variations in inclusive design provision. Existing disciplinary design expertise for ageing depends on the size of the sector within the design economy, and the cultural awareness of the needs of

older people. For example, the DAI has studied the UK design economy to create a design directory (DAI, 2020) specifically to address the needs of an ageing society, it estimates that architecture is the discipline with the greatest availability of design expertise for ageing. Architecture is estimated to be nearly 16% of the UK design economy (Design Council, 2018), and has a history of age-inclusive design dating back to the 1980s (Clarkson & Coleman, 2015). The DAI has been able to identify dozens of architecture firms across the UK with design for ageing or inclusive design experience.

In contrast, fashion design is estimated to be less than 1% of the UK design economy (Design Council, 2018), and has a shorter history of age-inclusive design. The DAI have thus far only been able to identify less than a handful of fashion designers with 'design for ageing' or 'inclusive design' expertise, even globally. However, there appears to be untapped design for ageing expertise within the broader fashion sector. The DAI has identified, through expert interviews, specific skills in fashion

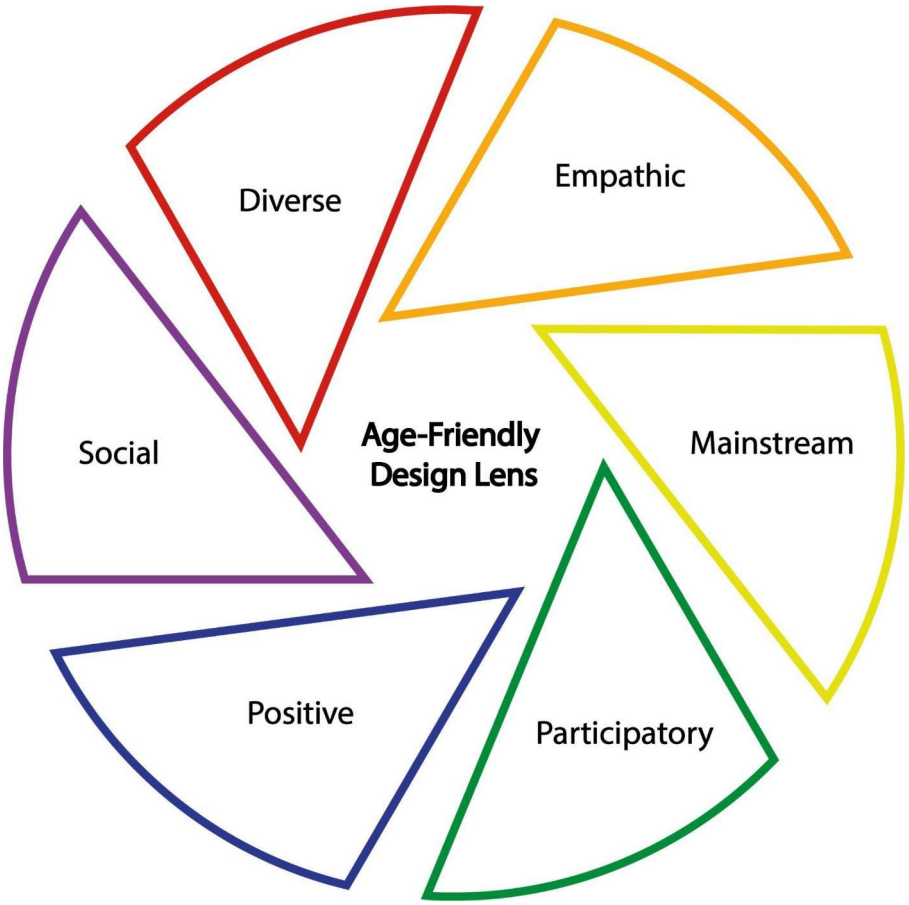

Fig. 1 The Age-Friendly Design Lens

design relevant for healthy ageing, including alternative textiles prevalent in sportswear design.

Constructing an age-friendly design lens

Based on our research and practical experiences in the design field, we retrospectively propose an age-friendly design lens with six essential characteristics or 'values' drawn from our work (see Fig. 1).

Social—not medical

Similar to the medical model of disability, a medical model of ageing focusing on decline, dependency, decrepitude and ultimately death, has been prevalent in design on account of providing simple entry points for design interventions to make it functionally easier to carry out basic tasks. People have been reduced to 'patients' that need fixing or 'users' with problems (Norman, 2006; Clarkson & Coleman, 2015). It is now imperative to move beyond the medical model to embrace a social model of ageing, thus shifting the emphasis away from the individual to the disabling aspect of the designed environment or product as the main problem that needs to be addressed. A social model of ageing embraces new social connections and aspirations are part of a rich and diverse later life. This means more focus on the working lives, health ambitions and lifelong learning of older people, for example, and is an important first step in building up a more nuanced picture of complex, multi-faceted lives in older age.

Participatory—not expert

Designers as the experts in their field have long made decisions about how things look and work on behalf of large numbers of anonymous people about whom they know relatively little, except for what is written in a marketing brief or similar (McGinley & Dong, 2011). Given constraints in time and budget, the professional expertise, experience and understanding of 'customers' designers have brought to projects has been regarded as a sufficient substitute to actual engagement and representation of those people who will ultimately use and benefit from the design. This power balance must change. Designers should adopt a participatory mindset, not an expert one, and recognise that the lived experience of older people is of equal weight in terms of design expertise. Designers should aim to design *with* people, not design *for* them, and work in greater depth with small participatory groups on co-design, co-creation and experience prototyping activities rather than making assumptions based on generic market data.

Positive—not negative

Society has shaped and continues to reinforce negative attitudes towards ageing (Centre for Ageing Better, 2022), and designers too have been influenced by a lifetime of representation through a negative lens that distorts understanding of older

people – focusing on what is broken and trying to fix it. The emphasis tends to be on minimising deficits and reducing the frictions of everyday life, often making the best of a bad lot. But what if designers viewed older people through a positive lens, and tried to capitalise on the physical and psychological assets that ageing communities and individuals possess? We have studied the asset-mapping movement in community planning (Alexiou et al., 2016) and observed how building on existing assets, strengths and capabilities—rather than always focusing on what is wrong – can have a transformative effect.

Diverse—not normative

One of the mindsets that designers can fall into is to treat older people as one homogenous group – and to measure that group against accepted norms as 'non typical'. Grouping everyone over 60 into one box called the 'grey market' is unhelpful when people in their early 60s are very different in outlook and capability from people in their early 90s, and there can also be marked differences in behaviour and health within very narrow age bands of older people. Ageing cohorts are as diverse and complex a population sector as young people – and often have life transitions (retirement from paid work, sudden dependency, loss of a partner, moving house etc.) every bit as disruptive as the transitions of early adulthood (McGinley, Gheerawo and Salnot, 2018). There is no slow 'fade to grey'. Defining needs and behaviours right across the diverse spectrum of an ageing society is a key challenge for the design community.

Empathic—not abstract

One of design's most powerful attributes is to make ideas visible, and it does this by a process abstraction which reduces elements to their simplest form. This can be helpful to communicate function and purpose, an important aspect of usability. But abstraction within the design process also has a drawback: it creates a distance from those who might benefit from the designed outcome. It can reduce user definition, blinding designers to the realities of life, and restrict the scope for contradiction, complexity and iteration. Direct engagement generates empathy, the ability to understand or feel what another person is experiencing. It breaks the illusion of scientific neutrality, allowing designers to respond at the most empathic and human level. Walking in someone else's shoes is vital to understanding healthy ageing.

Mainstream—not specialist

Once the inevitable consequences of placing older and disabled people on the non-typical margins of society is that the design and delivery of products and services run through specialist channels. This has seen the growth of special needs 'design ghetto' of adaptive aids and appliances which stigmatise the user while trying to address their requirements—just think of specialist mobility centres or 'innovation catalogues' aimed at the older consumer. Our age-friendly design lens takes design for ageing from the margins to the mainstream, and shifts the emphasis from low-

demand specialised and medicalised design to lifestyle-oriented offerings that enable people to future-proof their own lives.

Applying the lens to digital technology

We can consider the potential of an age-friendly design lens for creating preferable futures by looking at the example of designing digital technologies, which will be increasingly intertwined in all aspects of life. This notion was successfully explored at the HHCD over a seven-year period in collaboration with industry partner Research In Motion/Blackberry (Gheerawo et al., 2014) through seven inclusive design projects gathering insights around people-centred approaches and new technology concepts. This now is a pertinent area in which to consider the role of an age-friendly design lens, considering the current 'age tech' approach in which niche, specialist digital technologies are to be adapted primarily from medical technology for the apparent needs of older people. It is expected to be a significant proportion of the Longevity Economy, which was expected to generate nearly £11 trillion worth of economic activity in 2020 (Coughlin, 2017). Using our age-friendly design lens, it is possible to conceive of a shift to more aspirational, age-friendly design.

The 'social' value of the lens will mean ensuring emerging technologies are aligned with the social model of ageing, supporting connectedness as part of popular social media, as well as ensuring digital learning platforms support modes of lifelong learning. We can look at earbuds that offer aspirational directional hearing for conversation enhancement, rather than traditional hearing aids based on medical technology, as an example of adopting a social model of ageing – as audio maker Bose did with its Hearphones and Bose Hear app (Patskanick et al., 2019).

The 'participatory' value will mean understanding and being guided by the lived experiences of older people, rather than the assumptions of design and technology subject matter experts. For example, if Smart Robots (Westerlund, 2020) are to have significant appeal and benefits for healthy ageing, older people should be included in a participatory design process at the start of development, rather than after the fact as a secondary user group to retrofit ideas once the technology is established.

The 'positive' characteristic of the lens will mean building on the widely available physical abilities of older people, rather than excluding due to inherent and standard physiological changes, such as hearing range which reduces with age, or electrodermal conductivity (necessary for capacitive touchscreens) which can decrease with age (Briscoe, 2016). For example, Speech Recognition (Yu & Deng, 2016) and Natural-Language Processing (NLP) have the potential to give a person with reduced physical ability more independence in the home through voice control and home automation.

The 'empathic' value will mean embracing the views of older users in the evaluation of emerging technologies, rather than excluding them based on ageing stereotypes, negative or positive (Minichiello, 2000). For example, the security timeouts on websites and apps should empathise with those who may require more time, as they happen not to be 'digital natives'.

The ‘diverse’ value will mean understanding the variation in digital literacy levels for technologies prevalent with different cohorts, as well as the diversity of needs in applications. The emergence of Mobility-as-a-Service (MaaS) (Jittrapirom et al., 2017), which would integrate various forms of transport into a single, on-demand point of access, creating an ecosystem of interoperable mobility services, is an example of addressing a more diverse range of needs. It should allow planning and tailor connected mobility to the diverse preferences of older people, rather than presuming they all wish to only travel at off peak hours on public transport (e.g. Transport For London’s Freedom Pass).

Finally, the ‘mainstream’ value will mean ensuring that mainstream platforms support inclusive applications (Rothwell, 2017), to achieve economies of scale while minimising the risks of stigmatisation. Specifically, age inclusivity through an enhancement model for the development of mainstream digital technologies (Parra, 2014). So, offering enhancement for all ages with diverse functional capacity, which will also inherently provide support for those with differing ability resulting from age or disability. For example, there has been a general shift away from expensive, specialist computer equipment for people with disabilities to mainstream laptops and tablets incorporating appropriate functions. We can also look again at the Bose example, which makes use of existing headphone technology platforms rather than creating and maintaining distinct technology platforms just for hearing aids (Patskanick, 2019).

Conclusion

Our retrospective proposal of six characteristics within an age-friendly design lens are deliberately overlapping and interlocking. Key values ‘bleed’ from one to the other to present an overall picture in which older people occupy a more central role in designing for healthy ageing, addressing past shortcoming in the design process. Some notable characteristics of the design process such as visualisation, mapping, making and prototyping are implied within the proposed model rather than explicitly discussed – we would argue that such activities would fall under the participatory and empathic values of the lens, thus explaining, sharing and testing ideas with people in a democratic and innovative way.

Furthermore, the concept of an age-friendly design lens considers the dynamic aspect of growing older as a journey rather than a destination. Rather than responding to static images of ageing populations, the lens encourages designers to critically look beyond what the current lens captures. This recognises that ageing populations will not be the same now and in five, ten or fifty years, and that the design discipline must continuously engage with future ageing populations. The design lens becomes an approach for doing so, ensuring sustainable development of new artefacts and environments as well as ensuring that the design discipline as a whole responds to future ageing populations.

Good design that embodies an acute understanding of experience can elevate already well engineered and highly functional propositions, into desirable design offerings that people are actually happy to use. Design and innovation needs to

be driven by better understanding of the experiences across the age spectrum, and indeed the nuances of the ageing journey we are all on. The proposition within this paper is one potential route towards better understanding ageing and challenging age-related bias. We must acknowledge that addressing older markets in design today is not simply about market correction, but actual market creation. Equally in as much as designers need to be inspired towards more informed solutions, older consumers need to be inspired by the options available to them and ideally engaged in the process.

The proposition of an 'age-friendly design lens' hopes to add to the conversation around better representation of ageing, and acts as a means for challenging ingrained and damaging notions around later-life experiences. Communication has a significant role to play in the understanding of genuine narratives around ageing, and models such as that proposed can assist in achieving more representative depictions towards changing ingrained negative perceptions of ageing.

The precise formulation of an age-friendly design lens will always be open to debate and challenge, and we regard this paper as starting a conversation on how it might be developed rather than providing a definitive answer. However, with the ever-growing requirement to 'design for our future selves' and a wealth of research suggesting that designers need to adopt new perspectives, the task of making the age-friendly design lens is one we must pursue.

Declarations

Conflict of interest None.

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