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Artificial Intelligence and the challenge of social care in aging societies: Who or what will care for us in the future?

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Abstract

Increased life expectancy leading to an aging population who live well beyond traditional retirement age has created pressure on adult social care in many countries. The main concern has been rising costs, fiscal constraints, affordability and financing solutions intended to address a rapidly approaching future. With a few exceptions there has been relatively little consideration of the sociological transformations that new technologies might bring in and through social care. We seem set to increasingly depend on technology for our caring needs and in this essay I explore some of the potential roles that artificial intelligence (AI), robotics and such might play and the significant changes this might involve.

Introduction

In recent years, social care has become a high-profile media issue in many countries. The general mood of this reporting is negative: reference to crunch points, crisis etc. Whilst there is local variation, there is also a common theme: changes in demographic structures, employment profiles, and ways of living creating new needs and problems in and for societies (Robertson et al 2014). There is a growing segment of the population requiring care and support with their physical and emotional welfare. The main focus of this has been on what Christina Patterson terms ‘extra time’ (Patterson 2019). That is, increased life expectancy leading to an aging population who live well beyond traditional retirement age. However, *adult* social care is a broader category, which also includes support for working age persons who are differently abled or suffer with chronic mental and physical health conditions.[1] Whilst there has been some discussion of the potential for technologies to play a role in addressing the needs and solving the problems that are emerging, this has been a largely peripheral concern (however, see the centre-right think tank Policy Exchange report, Lightfoot et al 2019: 60-67; and also the charity Hft’s recent work).[2] The main concern has been rising costs, fiscal constraints, affordability and financing solutions intended to address a rapidly approaching future (for example, EAC 2019; Charlesworth & Johnson 2018; Amin-Smith et al 2018). Moreover, with a few exceptions there has been relatively little consideration of the sociological transformations that new technologies might bring in and through social care (however, see Prescott and Caleb-Solly 2017).[3] Accordingly, in this essay I explore some of the potential roles that artificial intelligence (AI), robotics and such might play in social care in the future and the impacts that this may have on who we are and how we relate to each other. The essay builds on social ontology themes set out in the previous two volumes (Al-Amoudi & Morgan 2018; Al-Amoudi & Lazega 2019; Morgan 2018b; 2019b). I begin from some general commentary, but my main focus is the UK case, since this provides some structural context to consider why we may find ourselves increasingly *dependent* on technology for social care.

Some introductory context for social care

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[1] Formally, social care itself is broader still, in the UK it encompasses the activity of social workers, provision of personal care, and protection and support for qualifying individuals (linked to illness, disability, age, poverty etc).

[2] Specifically, Hft is campaigning on the inclusion of disability supporting technology solutions for social care as part of the current UK government’s industrial strategy: https://www.hft.org.uk/get-involved/campaigns/learning-disability-sector-deal/

[3] To be clear, the point I am making is that social care as a policy issue for government and civil society has paid little attention to the role of robotics, AI etc and to the ethical and sociological issues that might arise. There is, of course, an extensive literature on ethics and AI (for a useful introduction and reading list see Winfield et al, 2019). For the ontology of technology see the work of Clive Lawson (2017).

There is no single global definition of social care. As a concept, it is imbricate with a country's policy framework (Robertson et al, 2014). Typically, however, the term refers to a social policy framework intended to promote the welfare of different categories of a state's population, usually with a focus on vulnerable groups' developmental, physical and psychological needs. This can be fully integrated with or run parallel to a primary healthcare system. However, it is worth first emphasising that many of the underlying issues for social care are general and not reducible to problems arising only from prior policy frameworks. Moreover, one should keep in mind that the current focus on social care in 'crisis' in the UK is overwhelmingly oriented to the old and to cost (and this is a political response by a Conservative government who draw overwhelmingly on the asset-heavy old for their voting base). The underlying issue is that there are demographic and social changes affecting the age and relational profile of populations that involve cumulative challenges (and opportunities since the situation need not be negative) for social care as traditionally conceived, but also for general welfare as societies change. Fundamentally, in the twenty-first century there are cumulatively:

- More people in need of *task-support* for aspects of living;
- More people who would benefit from *companionship* whilst living.

Both of these apply not just to the old, and the second of these is no less important than the first. Social care is not just reducible to mechanical function, since quality of life is not only mechanical. Mental health and human flourishing are more nuanced issues. They are cultivated through the sociality of who we are. We are creatures that flourish and we do so *together* – in and as communities. Individuality, autonomy, privacy and respect are meaningless concepts without social formations in which they can be pursued, and without groups who offer *recognition*, support, and interaction. It is through these that *meaning* is given. It is from these that our sense of dignity and positively valued identity flow, and it is because these are things that matter to us that we *feel* their presence and are harmed by their absence. The 'golden rule' (treat others as one would be treated), Kant's categorical imperative (treat everyone as everyone would be treated – as an end not a means), and the concept of cultivated virtue ethics rooted in Aristotle's 'golden mean', oriented on 'eudemonia', are all attempts to articulate the problem of living not just proximately but mutually – in 'togetherness'.[4] Ideological debate regarding the balance between positive and negative freedoms are likewise concerned with how best to achieve this goal of constituted togetherness. The humanist Marxist critique of capitalism and alienation is a longstanding focus on possible limits of that achievement for the entire range of ways of structuring our contemporary polities and economies (Morgan 2018a), and there are many non-Marxist accounts of current problems and opportunities (Donati & Archer 2015; Taylor 2007; Putnam 2000; Patomäki & Teivainen 2004; and even neo-conservative rugged individualism requires a society to offer respect, worth and status to the valorised individual).

All of which is to say that over the centuries cultural learning and social progress has led to the basic recognition that *needs* are not just basic or material, but also substantively psychological and conjointly social (Sayer 2011). The UN inscribes these as human rights because they attach to being human. Our concept of civilizational progress (and retardation) has involved both the *de jure* and continuous struggle for *de facto* extension (and resistance to withdrawal) of this recognition of common characteristic needs (across genders, races, and places), and the concept of capabilities is one important way in which a grounded and active dynamic has been articulated for the human as needy bearer of rights. Arguably, of course, it is personhood that is ultimately at issue and so entity recognition is potentially broader if we meet or make non-human persons (Archer 2008; Smith 2011; Morgan 2019d). The point, however, is that *social care* is imbricate with human welfare more generally and this holds across different countries with different political traditions because of the commonality of what it is to be human. And yet trends in demographics and ways of living are leading to new possibilities regarding who or what we may depend on in the future for these needs. Consider:

- Globally, infant mortality rates have continued to fall and life expectancy to rise;
- Birth rates have continued to fall and family sizes to shrink;
- More people with disabilities (the differently abled) are surviving into adulthood;
- The world's population continues to increase, albeit at a decreasing rate.

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[4] Strictly, Kant's imperative refers to universal law but it is the consequence for deontological moral predicates that is important.

There is, of course, a great deal of local variation. However, in recent years, only India and some of the African nations have experienced significant net growth in population based on birth rates, and policy focused on the Millennium Development Goals and the subsequent Sustainable Development Goals (SDGs) seem likely to continue the general demographic trend of slowing birth rates and thus population growth. Reference to the SDGs is also a reminder that current ecological problems (of which climate change based on carbon emissions is only one manifestation) may *require* us to choose pathways with even more radical and rapid results for demographics over the coming century. Both de-growth and steady state economics are predicated on – voluntary institutional population control, and emerging ecological campaigning organizations such as Extinction Rebellion have already begun to argue that in addition to low impact living the most effective contribution one can make is choosing not to reproduce (Gills and Morgan 2020). Without voluntary change, it may well be that climate disaster and disruption to food production and distribution systems will eventually lead to induced catastrophic population reductions. And, of course, more recently Covid-19 has added global pandemic to our list of concerns.

In any case, the underlying point is that, globally, demographic structure continues to morph from an upright to an inverted and increasingly distended pyramid. There are many reasons for this demographic morphing and few are specifically about demographics, most are simply consequences of the way we choose or are required to live. Matters of demographics intertwine with patterns of living. Globally the population has become more urban and more mobile (albeit increasingly in tension with rising nationalism and a politics that intrinsically supports increasing border control). Economic development (globalization) has drawn more and more people into modernity, again, though with local variation. China has undergone radical demographic and social change in a few decades based on social engineering of population growth and an idiosyncratic economic development strategy (converging on an asymmetrically male-weighted only child situation expressed in successive generations of 'little emperors'). More generically, modernity itself continues to change as 'advanced capitalist' societies develop. Amongst the 'advanced capitalist' countries Japan has travelled furthest in terms of demographic consequences. But all capitalist societies report both 'replacement rate' issues and issues of cultural transition and social fragmentation. Almost everywhere technological connections now transcend distances, but in many places we are increasingly likely to be geographically distanced from established familial networks and this is often based on work. Families are changing (started later, increasingly transient, blended etc.) and in social media saturated societies how (if) friendships are formed and relations maintained are also changing. Social isolation and loneliness are increasingly recognized issues for *all* ages in modern societies.

So, in the twenty-first century, we are not just living longer, we are living differently (Morgan 2016). On this basis, there are problems of task-support and companionship to solve now, in the near future, and over the rest of the century. Social care then, is an issue with context. The context provokes two fundamental questions. First, what physical and mental condition are we in as we live and as we live longer? We live in societies in which youth is valorised and age as a *physical state* is masked by representations of vibrancy and youth that are not representative of what it is like to actually be old. Science in general, and medical science in particular, of course, are constantly improving and so we *may* see fundamental transformations in physical robustness for the old in the future (see Al-Amoudi 2018; Tegmark 2017; Harari 2017; Kurzweil 2000). It may be that stem cell treatments, organ replacements, genetic manipulations, synthetic components and augmentations etc. maintain the body in something like its mature peak until such time as we die It may be that the body is enhanced. However, neither is yet the case. Currently, we are extending the period of life but doing so in a way that allows illness, frailty and degeneration to cumulatively impact on the person.

Science, then, struggles with our senescence and this extends to our cognitive capacities, but even if we eventually resolve these issues our psycho-social needs must still be satisfied. As things stand, an aging population is also one that by choice, bereavement or happenstance will involve more people living alone. In any case, based on *current* medical science, we are living into age brackets where chronic and degenerative disorders are more common (generalised pain disorders, arthritis and degenerative joint conditions, the long-term management of joint replacement, heart, lung and circulatory problems, type II diabetes, various neurological conditions such as Parkinson's, dementia of various kinds etc.) and where mobility, physical function, and cognitive capacity may be significantly reduced. At the same time, progressive social policy means that there is a general commitment that the differently abled should be empowered to live within the community rather than in institutions (though there has also been a cynical cost cutting basis to policy in some places, where responsibility is thrown back on the family *and* it is not just that more of the differently abled are surviving into adulthood; the pressures of modern living are making increasing numbers of us unwell).

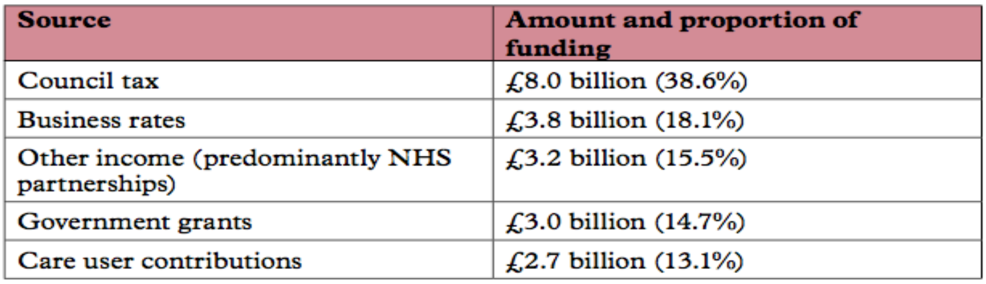
We now come to the second fundamental question. Who will be available (proximate, willing, competent) to offer care and on what basis are we prepared to facilitate this care (what are we willing to pay for)? Clearly, an aging and extending demographic profile implies the potential for a numbers mismatch between a relatively reducing working age population and both the increasing numbers *already* in need and those in the next decades likely to *become* in need of social care. This is irrespective of whether we are prepared to prioritise and fund social care. It seems entirely conceivable, therefore, that AI, robotics and new technologies will be the solutions on which we increasingly *depend*. The UK illustrates some of the issues.

The UK social care system

A primary healthcare system is delivered via hospitals, clinics and general medical practice surgeries, and these can be more or less integrated with social care based on division of responsibility/labour, referral, communication and liaison. Many countries employ an insurance system, which may be more or less comprehensive. The UK case is somewhat odd (Jarrett 2018; Quilter-Pinner & Hochlaf 2019; EAC 2019). Since the creation of the National Health Service (NHS) in 1948, healthcare has been free at the point of use.[5] However, the decision was made at that time to make individuals responsible for the cost of their social care unless and until their circumstances qualified them for social security under the National Assistance Act 1948. This division broadly distinguished between medical intervention for illness and social support for living.

The distinction in the UK case is, of course, blurred leading to sometimes arbitrary division for whether a person's circumstances are categorised as healthcare or social care. The key point, however, is that the distinction has resulted, as both healthcare and social care policy have subsequently developed, in different structural characteristics of the two. The notable structural weaknesses of social care exposed by Covid-19 and the general ineptness of government responses and blame-shifting suggest that the current system will change in the future. But the current state of the system in mid 2020 is still instructive (not least because it is indicative of the weaknesses that Covid-19 has exposed). In the UK, social care is devolved (for differences see Lightfoot et al 2019: 25). Focusing on England, *spending* is drawn from government local authority budgets and so the primary decision maker is the local authority (HSCHCLGC 2018; Local Government Association 2018). Social care is also primarily *funded* locally, but drawing on a range of sources, including care user contributions. For example, in 2016/17 local authorities spent £18.15 billion on adult social care (EAC 2019: 7).[6] In funding terms this breaks down into:[7]

Table 1: Estimated breakdown of gross adult social care funding in England, 2016/17



Source	Amount and proportion of funding
Council tax	£8.0 billion (38.6%)
Business rates	£3.8 billion (18.1%)
Other income (predominantly NHS partnerships)	£3.2 billion (15.5%)
Government grants	£3.0 billion (14.7%)
Care user contributions	£2.7 billion (13.1%)

Source: EAC 2019: 8

Eligibility for social care is then determined within a series of categories. First, potential recipients are divided into those receiving 'domiciliary care' (in their own or a family member's home) and 'residential

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[5] With the exception of dentistry and means tested prescriptions and specifically for British citizens and those granted unlimited leave to remain, others are now charged (except for medical emergency treatment).

[6] According to Charlesworth & Johnson (2018), social care spending in England subdivides into 32% on children and the remainder on adult social care. However, recipients between the ages of 18 and 64 constitute only 33% of adult recipients but 50% of adult spending due to the complex lifetime care costs associated with some disabilities.

[7] Note: since 2016/17 local authorities have been empowered to add a social care precept to council tax to a total of 8% additional over four years to 2019/20; also finance is available via transfers from the NHS to social care through the Better Care Fund, and in 2018 central government introduced the Adult Social Care Support Grant to provide one-off payments to local authorities in need.

care' (a care home or more intensive nursing home). Second, costs are categorised as 'personal care' (assistance with dressing, feeding, washing, etc and possibly emotional-psychological support)[8] and 'hotel costs' (everyday costs of living in residential care – accommodation, food, energy bills, etc.). Potential recipients undergo a Care Needs Assessment (CNA) by a 'social care professional'. The assessment is subject to the *Care Act 2014* but its form is at the discretion of the local authority.[9] Eligibility is then means tested.

Currently (late 2019), if a potential recipient has assets valued higher than £23,250 they receive no social care funding and must meet their own personal care and any hotel costs. If receiving residential care, the value of assets can include the potential recipient's home (minus mortgage debt, but the home is excluded if residential care is temporary or if a relevant relation still occupies it). If receiving domiciliary care, then the value of assets does not include the individual's dwelling place. If a person's assets are (or fall) below £14,250 then care costs are met by the local authority, including identified personal care needs. However, if the person has income (excluding some benefits) then this too can be directed to care costs (up to a threshold that leaves the individual with a minimum Personal Expense Allowance – currently £24.90 per week). For individuals with assets between £23,250 and £14,250 the local authority calculates a contribution from assets based on a formula (currently £1 for every £250 of capital) combined with a contribution from any income.

Those receiving no support with social care, especially those in residential care are referred to as 'self-funders', and in the literature, these are distinguished from those receiving support. As the IPPR notes, this now has a privatised, subcontracting/outsourcing and market based context; in '1979, 64% of residential and nursing home beds were still provided by local authorities or the NHS. By 2012 this had fallen to just 6%. In homecare, the change has been quicker still: in 1993, 95% of homecare was provided by local authorities, by 2012 this had fallen to just 11% (Quilter-Pinner & Hochlaf 2019: 17).[10] In any case, for many older people who own their own homes and who have saved for retirement, £23,250 is a low threshold. Many care services are complex and expensive and accommodation fees significant. According to LaingBuisson's recent UK market report, average residential care costs in England were £621 per week and nursing costs £876 in 2018, but with considerable variation by region and service, and for both of these a primary influence was ability to pay – whether one was self-funded (see also report from regulator: Care Quality Commission 2018: 18-21).[11]

The net effect of exposure to social care costs is a rapid drain on accumulated wealth and available income, producing 'catastrophic care cost' consequences. Moreover, in so far as the distinction between healthcare and social care is blurred, vulnerability to these costs is likewise arbitrary and, in this sense, discriminatory as well as unjust. For example, currently a person contracting cancer will be treated through the NHS and then likely categorised as needing 'continuous healthcare' (CHC) once discharged. As such, all their healthcare and social care costs will be met by the NHS. Dementia sufferers, meanwhile, or the merely frail typically fall under social care. The important point, however, for our purposes is that this structural perversity has developed in the UK in relation to the common set of changes we set out in brief in the last section. It is the background to the UK's version of the 'crisis of social care' that governments confront. Subsequent changes that may occur since this essay was written are responses to this.

According to the Office for National Statistics (ONS) latest statistical releases, June and August 2019, the total UK population in 2018 was 66.4 million. The ONS population overviews, released November

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[8] Specifically, personal care includes hygiene tasks, food preparation, mobility assistance, administering medications, and attention to general well being (including dressing), but does not currently include household tasks such as shopping and cleaning. It is distinguished from any care requiring a qualified nurse (pain control, wound and medication management etc), and this is provided through the NHS. Concomitantly, a person may have significant ongoing healthcare needs and be categorized as receiving out-of-hospital care as NHS 'continuing healthcare' (CHC). If so, then care is arranged and funded solely by the NHS (and this can include accommodation costs if in a care home), on the basis that it is impossible to distinguish health and social care needs (Quilter-Pinner & Hochlaf, 2019: 7 and 13). The scope for arbitrary and unjust differences between treatment of people with conditions that have fundamental effects on life is wide. For example, cancer patients may be CHC but dementia sufferers are currently not. See subsequent discussion.

[9] The Act was supposed to come into full force by 2016 but parts have been delayed into 2020.

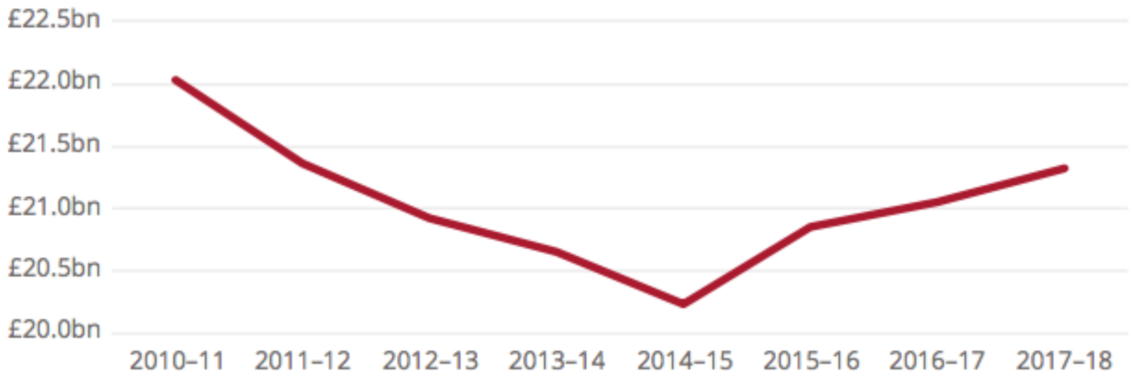
[10] In the UK, based on 2017 data, 410,000 residents lived in 11,300 care homes operated by 5,500 providers with 95% of beds provided by the independent sector (83% commercial/profit, 13% charity based and 4% operated by NHS); personal care in the community (typically domiciliary) is provided to more than 500,000 recipients from approximately 8,500 provider entities (Lightfoot et al, 2019: 28; Care Quality Commission, 2018: 5-6).

[11] 29th edition, 2018 data; reported online by *Which* magazine: 'Care Home Fees', April 5th, 2019. According to the Competition and Markets Authority (CMA) resident self-funders paid an annual average £44,000 (Lightfoot et al, 2019: 9).

2018 and July 2017, provide further context.[12] Population is expected to grow to 73 million by 2041. Despite a recent slowdown in improvements to life expectancy, as of 2016, 18% of the population were over 65, compared to 16% in 2007 and this is projected to grow to almost 21% by 2027 and 25% by 2040 (see also EAC 2019: 14). In 2016, 2.4% of the population were 85 and older. As of 2017, there were more than 150,000 men and 340,000 women over 90 (combining to more than 495,000 compared to 330,000 in 2002). According to the UK Department of Work and Pensions Family Resource Survey 2018, 13.9 million people or 22% of the population reported a disability, longstanding illness or impairment in 2016/17, and 45% of these were retirement age and 19% working age. Numbers have steadily increased over the twenty-first century, particularly for mobility and mental health issues and according to the Voluntary Organizations Disability Group, which represents a collection of charity care providers and campaigning organizations, numbers continue to rise (see EAC 2019: 15). Returning to the issue of age, by 2040 it is expected that 8% of the UK population will be at least 80 years old. Based on current local variation over 50% of local authorities are projected to have more than 25% of their resident population aged 65 and over by 2036 (heavily focused on Southern England but not the poorest areas of London). As such, there are significant existent and growing needs to be met, though Covid-19 fatalities will surely change some of this.

According to recent research on likely developments in care needs for the old in England between 2015 and 2035, the total number of people requiring support is set to significantly increase because of the increasing age profile of the population, though the numbers capable of independent living will also be increasing (Kingston et al 2018). The research anticipates a cycle of transition in required care support from no to low to high dependency, with the numbers notably influenced by those who succumb to dementia and a combination of other conditions (comorbidity). By 2035, women now in their 50s may expect to spend the last 12.5 years of an average life expectancy with successively greater degrees of dependency: 8.5 years of some task support, 1.3 years requiring more invasive personal care including help with dressing and meal preparation and a final 2.7 years of high dependency including bathroom support and help with eating and moving; for men the equivalent is 7 years dividing into 5.1, 0.8 and 1.1 respectively (Kingston et al 2018: e453). There is, however, as the previously stated social care spending figures indicate, already a significant social care needs situation in the UK. Moreover, need is already manifestly not being met. Spending on social care has significantly reduced since 2009 and was £700 million lower in 2017/18 than 2010/11, despite an increase in the total population, the older population and those registered as disabled:

Figure 1: Adult social care spending, 2010/11 to 2017/18 (adjusted for inflation)



Source: EAC 2019: 14

Moreover, since most funding is localised, there is no direct link between capacity to generate funding and spending need (and in the most deprived areas, funding has reduced by up to 17% per capita since 2010). The system has thus become more fragmented. In any case, according to the IPPR, the number of people receiving publicly funded social care has declined by about 600,000 since 2010 (Quilter-Pinner & Hochlaf 2019: 3). Despite this reduction more than 50% of local authorities reported an overspend on their adult

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[12] Since ONS releases are archived but each subsequently updates the statistics it seems nugatory to provide full referencing. Most of the statistics appear in one form or another in the many government reports listed in the references and a sense of the general tendencies can be gleaned by visiting the site and navigating: https://www.ons.gov.uk/peoplepopulationandcommunity

social care budgets in 2017/18.[13] According to campaigning organizations, a major consequence has been that local authorities have been forced to tacitly ration care and have tended to make the Care Needs Assessment (CNA) more onerous, denying care support to all but the most severe cases (EAC, 2019: 15-16). Between 2017 and March 2019, 626,701 elderly people were refused care funding by their council.[14] At the same time, local authorities have reduced the coverage of personal care services to those who are granted support *and* have reduced the sums paid to outsourced care service suppliers, both domiciliary and residential (Quilter-Pinner & Hochlaf 2019). According to Age UK, 14% of over 65s had unmet care needs in 2018 (about 1.4 million people) and in a 2018 survey the Care and Support Alliance found that over 25% of respondents were unable to maintain the basics of personal care with 30% unable to leave their home and 20% feeling unsafe in their home (Age UK 2018; EAC 2019: 15-16).

Funding and spending changes have had multiple further consequences. First, the quality and provision of services offered by outsourced providers has come under pressure. Providers have responded by focusing on higher paying self-funders which, in turn, leads to cross-subsidisation of self-funders and local authority supported care recipients in those places where *both* are covered, but also a longer-term tendency for profit-driven providers to return contracts to the local authority and instead select for self-funders, leading to a 'two track system' and a net withdrawal of services (Lightfoot et al 2019).[15]

Second, as the coverage of domiciliary care reduces then there is an accelerated loss of independence for those in need of support, both in the form of a lack of preventative and ameliorative low level care (whose provision slows the requirement for some kinds of higher dependency care) and a manifest higher risk of unplanned and ill-coordinated and unmanaged transfers to the NHS, primarily taking the form of hospitalised persons who cannot be returned to the place -- either their home or the residential care home -- they came from, since there is a lack of resources for staffing and support (Quilter-Pinner & Hochlaf 2019; Crawford et al 2018). This 'bed blocking' is particularly acute for the frail and for dementia sufferers. In 2018 there were 850,000 people in the UK diagnosed with dementia and this is estimated to increase to 1 million by 2025. According to the Alzheimer's Society, 62% of dementia sufferers have Alzheimer's, 1 in 6 people over the age of 80 have some form of dementia, and the equivalent of 36 hospitals were out of action in 2018 because of a lack of social care discharge opportunities for some of those sufferers (see also Cebr 2019).

Third, as of 2018 almost 1.5 million people worked in the social care sector and as most analysts note there is a strong likelihood that the sector will require more not fewer workers as the numbers in need of care increases. However, there was already a 6.6% vacancy rate in 2016/17 and in 2018 vacancies stood at about 90,000. Care work remains relatively poorly paid, difficult and lacking in status. Many are paid the minimum wage. However, increases in the minimum wage have merely exacerbated the cost pressures on providers without significantly improving terms for employees. For many dedicated staff it is a vocation but not a viable career and the biggest churn is transition into retail, which indicates something of the nature of this labour market. Staff turnover ranged from 31% to 42% for different categories in 2018 (for issues see Dromey & Hochlaf 2018). Moreover, about 18% of the workforce is immigrant and 8% of this of EU origin. According to the Nuffield Trust, Brexit may result in a rise in the vacancy rate by an additional 70,000, and according to the IPPR, total vacancies could rise to 350,000 by 2028 (EAC 2019: 26; Quilter-Pinner & Hochlaf 2019: 6).

Fourth, persistent reductions in real spending and service provision have created a knock-on effect, where family and friends take on the role of unpaid carers. The point is not whether they are prepared to do so, it is that they are *required* to and are not typically effectively supported by the state in doing so. In being required to take up care, they are denied other activities that may be of economic or social benefit, and they may, in any case, lack the relevant time, skills and competencies, particularly as needs increase.

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[13] On current trends social care spending requirements are growing at 3.7% per year whilst local authority projected spending growth is only 2.1% per year, based on budgeting constraints (see Bottery et al, 2018).

[14] So, in denying support to new recipients the sum total of recipients declines over time as current recipients die.

[15] According to the Competition and Markets Authority (CMA), self-funders paid on average 41% higher fees than the local authority rate in 2016, whilst in 2005 only 1 in 5 care homes charged self-funders more; the scale varies with the quality of home and nature of need, for example, in Hertfordshire the authority rate was £560 per week per resident, whilst one reported self-under focused home charged £2,500 per week (EAC, 2019: 20-21). According to the Association of Directors of Adult Social Services (ADASS) 60 local authorities had contracts returned to them in the 2018/19 accounting year. One might also note that the highly leveraged business model of some private equity firm providers of residential care has resulted in a high degree of vulnerability to insolvency – Four Seasons Health Care was one high profile case in April 2019 (operating 322 homes) but more broadly 148 Care home businesses were reported insolvent in 2017, and almost 2,500 residents evicted (for financial engineering issues see Morgan 2009, 2019e; for CMA analysis of profits and costs see Lightfoot et al, 2019: 29-31).

Moreover, if the system tacitly comes to rely on unpaid carers, it discriminates against those who have no one to rely on whilst also potentially unjustly treating those who take on the role of carer. According to the 2011 census, more than 5.4 million people provide unpaid care in England and more than 1.2 million of those provide more than 50 hours of care; 58% of the 5.4 million were women and 63% of those providing more than 50 hours were also women (EAC 2019: 17-18). According to a Carers UK (2019) survey, which provides more granular updated evidence based on 7500 respondents, 81% of unpaid carer respondents were women, 24% of the total themselves had a disability, 46% provided more than 90 hours care and 51% were over 55 (5% of which were over 75).

These points clearly highlight the structural vulnerabilities that the Covid-19 pandemic exposed, though they by no means explain the inept response by central government. In any case, the situation in England and the UK more generally, has been problematic and serious. It is a combination of quite specific features of the structural developments of social care in the UK and tendencies that generalise beyond the UK case. In March 2019, the President of the Royal College of Physicians, the Chair of the Academy of Medical Royal Colleges, and the Chair of the Royal College of General Practitioners wrote a joint letter to the UK Government warning that social care 'is on the brink of collapse'. The Government promised a comprehensive Green Paper in the summer of 2017, but this had still not been published in mid 2020, partly because of ongoing concerns regarding the need to integrate findings with a parallel review of the NHS, and partly because the issue of catastrophic care costs and taxation had proved politically toxic (though amongst Boris Johnson's first stated commitments as Prime Minister has been the pledge to 'fix social care' and this was a feature of the general election). Campaigning groups, analysts and lobbyists have articulated a range of possible solutions, but with a primary focus on costs and bridging the current funding gap (Bottery et al 2018; Bushnell et al 2019; Darzi 2018; HSCHCLGC 2018; Jarrett 2018; Local Government Association 2018). Policy has focused on restoring spending to pre-2010 levels, introducing a dedicated social care tax (hypothecated taxation) or increasing general taxation to improve affordability within general taxation –a cap on lifetime care costs and a higher current asset threshold for eligibility for free care and ideally universal free personal care. As the IPPR notes, free personal care in a more generous system would still only amount to 6.9% of total NHS spending and 1% of total government expenditure (Quilter-Pinner and Hochlaf, 2019: 12), but the general tendencies in economic policy have an opposing direction of travel (Morgan, 2019a).[16]

The primary focus here is financing rather than the nature of the needs of care recipients and the potentials for these to be met. This is to say nothing of companionship. According to the ONS, 4.1 million people under 65 and 3.9 million people over 65 were living alone in 2019, and this constituted 8 million of 27.7 million households. There is an equally important and subtly invisible loneliness problem emerging in the UK.

In any case, even if the state chooses more humane funding and spending options there is still the issue of how care is to be delivered and by who or what. Challenges based on demographics and patterns of living remain peripheral to the debate, and yet in 2016, for every 1,000 people of traditional working age there were 285 people aged 65 and over in the UK and by 2040 there may be a ratio of almost 1 person over 65 to every 2 (current) working age adults (see also EAC 2019: 15). Even if 'fourth industrial revolution' forecasts of significant job displacement prove to be the case (see Morgan 2019c) and there is a concomitant shift of employment to 'soft skills', it does not follow that there will be sufficient people prepared to work in social care. Moreover, there is a great deal more to be considered in terms of the potential for new technologies to contribute to social care. And yet the listed experts for the promised Green Paper (Jarrett 2019: 14) consists mainly of persons drawn from healthcare and social care NGOs and finance and insurance consultants, and contains no experts on technology (or migration and labour markets). We now turn to the prospects for technology.

A *when not if* situation for technology, AI, robotics and social care?

Two position points are relevant to what follows. First, there are likely to be fewer people we can expect to or who will be available to depend on for social care in the future, both paid and unpaid. Second, it is widely reported that our societies are in the early stages of experiencing a set of major technological developments whose significance is collective: machine learning (ML), Artificial Intelligence (AI), robotics,

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[16] It should also be noted that the core arguments for running down social security because it creates a burden on the working age population involves a number of basic fallacies – there is always context to demographic arguments and economic policy (for the key arguments see Baker and Weisbrot, 1999)

sensors, connectivity, cloud computing, nano-technology, 3-D printing and the Internet of Things (IoT). Whilst few subscribe to technological determinism, the confluence of these technologies is expected to significantly transform society. Social care is just one potential component in a broader set of changes. It is an area in which corporations and governments clearly have strong motives to invest, since there are readily observable problems and opportunities to address, and more negatively, to exploit. Reflecting on the last section ought already to suggest what some of the problems that might be addressed are and as we set out early on, there are (and are going to be) more people in need of task-support for aspects of living and more people who would benefit from companionship whilst living. From the point of view of policy, the immediate problems to resolve are practical. For example, in the UK, the bed blocking problem. However, each intervention also potentially alters the way we live, and so is of possible sociological significance. With this in mind, let us consider some examples, beginning from technologies that are already in embryonic form. The examples are intended to be indicative of potential rather than comprehensive in terms of scope. Comment on the sociological consequences is, of course, speculative to a degree that varies with the contingency of the potential of technologies and the timelines one might consider (see Prescott and Caleb-Solly 2017).

Task-support in the alert home

Isolation and security are quintessential problems for the old and generally vulnerable who live alone. The frail and the chronically ill are more likely to experience some incapacitating event undiscovered in a timely manner. Even if the person cohabits, the cohabitee may be unable to cope with the nature of an eminently foreseeable event (a fall, a diabetic coma, etc.) because they are similarly vulnerable. This is why the old consider moving to secure accommodation communities (with wardens and room alarms, etc.), why residential and then nursing home care eventually become advisable, and why, if such an event occurs, many are currently denied hospital discharge because there is, based on their living arrangements, no safe way to discharge them. Continuing to live at ‘home’ and ‘locally’ (familiar surroundings) is something many prefer (and is potentially economical since it involves least intervention and change).

The alert home is one possible solution, and various companies are already developing the relevant technologies. A sensor enabled dwelling connected to a hub management AI in a $5G^+$ digital infrastructure creates a sensitive living space able to track heat and motion and determine where a vulnerable person is in that dwelling and whether they require assistance. A sensor system can provide information on location, whether the person is horizontal or vertical, stationary or in motion, what their current temperature is and so forth. From these, an ML adaptive AI system can potentially infer whether a person is following their standard routines or is immobile, distressed, injured, or dead. Monitoring thus creates the potential for a dwelling to alert significant and designated others regarding a vulnerable person’s state of being and to request assistance if required following an adverse event (from family, friends, neighbours, a carer or relevant authority or emergency service). Since this system is information dependent, it seems likely to encourage the modification and adoption of technologies that are widespread in the leisure sector and are already starting to appear in the workplace. Wearables and self-trackable technologies (WSTT) provide real time information on biometrics and potentially on state of mind (algorithms applied to heart, lung and temperature data, tone of voice etc. infer an emotional state). WSTT could readily be modified for the particular circumstances of vulnerable groups. It is only a small step from the Fitbit to a more generalised health monitoring or disability or geriatric oriented Unfitbit or adoption of multiple ‘apps’ on a next generation smartphone (transforming it from a communication to a specialised monitoring device), and a small step from there to chip implants, much in the way we track pets.

Clearly, the direction of travel implied by information provision and access is potentially invasive and invokes issues of privacy and consent. When we focus on the purposes for which a system is ostensibly created – its service to us -- we tend to lose sight of the purposes to which it can be put. Those purposes or potentials tend to slip by us until events bring them to the fore (as recent publicity regarding Facebook, Cambridge Analytica etc. makes all too clear). One can readily conceive of how we could be drawn into a situation where data can be exploited, abused and in general monetised even if the core service from which the data is extracted is benign. An alert system has obvious benefits and it is entirely conceivable that we will opt to sign ourselves or our loved ones up to such a system (for peace of mind) without fully understanding the terms and conditions a corporation offers the service under. It is entirely conceivable that insurers will encourage us (as a condition of buying coverage) in the future to make use of such services (and that those insurers will be part of conglomerates and MNEs that supply those services). It is entirely conceivable that the state may require us to adopt an alert home system (and this may be something a future hypothecated tax is designated to pay for – a policy position that may exist even if the reality of government spending is not one where taxation *really* finances spending – or it may be that adoption of such a system is a condition of access to other welfare services from the state) *and* it may be that the service itself is then provided under contract by a corporation in a public-private initiative (by the Carillion of the day).

The scope for an alert home is, of course, not restricted to monitoring for adverse events. Once information flow is established and access provided there is scope for the alert home to monitor general health through smart IoT products linked to an AI hub management system. This, of course, is not just a possibility that applies for standard social care recipients. It is also particularly conducive to problems of managing chronic conditions that they may have (diabetes, high blood pressure and other afflictions of affluent or abundance-based societies). Again, relevant technologies are already under development, as a visit to any technology trade fair or conference confirms. For example, in addition to WSTT's, sensors and testing equipment built into waste disposal and mirrors in bathrooms attached to an AI hub management system, and a cloud located medical database are potentially able to monitor chronic conditions (diabetes, kidney and liver function etc.) identify anomalies, and more generally offer early detection for ill-health (eye pressure, body temperature, blood sugar, cholesterol, and diseases or pathologies that can be picked up on the basis of urine and faecal chemistry), whilst also offering advice for intervention and prevention. These latter possibilities start to change the relation between a person and their 'things'. An alert home may make an appointment with a healthcare professional but in a certain sense the house may become your (primary) doctor (from *Dr in the house* to *Dr is the house*). Again, there is great scope for privacy and consent issues here and for conflicts based on monetising the potential of data. An orientation on health and social care in the context of an AI management system seems likely to be a matter of one aspect of functionality in a broader household management system. A system that advises on diet may become one that simply manages your diet, and this can be one component in an ordering system for your goods and services, and so corporations will have great interest in owning intellectual property across and along supply chains in order to control a cradle to grave consumption system in which AI household management technology would be a nodal point. If this is realised then information will become even more valuable than it already is and this extends right through to your bodily functions.

The potentials of an alert home illustrate the blurred boundary between healthcare and social care, but there are many other technological potentials that might address issues of task-support both inside and outside the home. There is already a major industry that provides home modification devices, aids and products that facilitate everyday living (frames, pulleys, winches, bars, handles, grabbers, chairs, lifts, scooters etc.). Some new technologies are simply alternatives to or more effective versions of these in terms of functionality. For example, several companies are currently developing versions of responsive tensile clothing (materials that will grip and offer additional stabilising support with balance if sudden shear movement signals that a person is falling, as well as various other exo-augmentations for strength, stability and range of motion). However, robotics and robots offer a qualitative change in addition to mere functionality, since sensor-imbued managed technologies can change the scope and context of task-support. They offer services that extend the range of tasks that can be completed, but they also introduce servitors (an entity) to complete those tasks; in combination, this is sociologically significant in so far as patterns of living are not just maintained, the dependencies of the way we live are altered. That is, our relations potentially become different. This is not a new insight, robot ethicists and science fiction writers have been considering the issue for years, but changes brought on through social care *now* require all of us to be aware of the possibilities.

The social consequences of social care?

In a future Gattaca society, we may well be able to buy physical if not intellectual or emotional youth, but this is not currently the case. We live in societies where aging and degeneration are not just things that occur as observable changes to the materiality of the body. They are reflexively positioned processes of experience. The cultural construction of the seven ages of man in Shakespeare's *As you like it* illustrates how we attach significance to this process. Aging and degeneration are things we *expect* to occur. We anticipate them as 'facts of life' that we must individually and collectively manage for ourselves and significant others. We start to do this in our imaginations *before* it becomes necessary to act on consequences, and this qualitatively imbues the relations we have that already exist. The bonds of love and emotion we have now are partly constituted by what we must countenance doing later, what we commit to being prepared to do. That is, part of being who we are now are the duties and obligations we have and that we know we will or should fulfil in the future. This matters as a qualitatively imbued aspect of the process of our relational being, even if we are never required to do what we anticipate (and it matters for our sense of self and other's sense of us if we refuse bonds of duty and obligation). AI, robotics, etc., and especially (but not only) servitor capacities change the context for what is imagined/anticipated and thus how duty and obligation are formed. Changes to dependencies alter what is required of our reflexive processes *through* time and thus the constitution of our relations *in* time. The more functionally effective, pervasive and comprehensive AI and robotics become for task-support then the less we will be required to reflexively prepare for and then engage in the relevant activities, up to and including a situation in which we *never* have to think about or do these things. The point, then, is that this substituting is also an absenting that has potential consequences for ourselves and others.

One way to think about the issue is the opposing influences change might exert on relational goods. According to Donati & Archer (2015: 199-200, 207; Morgan 2018b), relational goods are goods created and enjoyed *through* relations. They involve some activity which is its own reward but that also creates collective social benefits. Relational goods are constituted as the quality of a relation that arises between people, such as trust, as well as the quality of experience of cooperation, coproduction or collaboration. Relational goods 'correspond to fundamental human needs' (2015: 215) and 'If these goods are ignored, dismissed or repressed, the entire social order is impoverished… with serious harm caused to people and the overall organization [of society]' (2015: p. 203). They are 'pro-social' in so far as they contribute to the integration of society.[17] Clearly, task-support technological solutions have the potential to affect relational goods in different ways.

On the one hand, task-support promotes independence and autonomy and may facilitate the construction and retention of dignity. It is potentially conducive to one's sense of self *not* to feel dependent on others. Concomitantly, preservation of privacy can also positively construct a sense of personal dignity. Not requiring human help with intimate bodily functions or menial tasks can be seen in this context, in so far as not all duties are welcomed by either side of the relation even if they are accepted.

On the other hand, task-support that promotes independence is not necessarily or only an affirmation of one's personal identity. It can also contribute to negatively connoted individualistic (non-other-regarding) and isolating attitudes and situations. These could be corrosive within society more generally, *if* we are no longer required to think forwards about our ties to others based on what we are prepared to do for them and *if* we are no longer required to then fulfil the duties and obligations we would otherwise have embraced. Consider, relinquishing independence is not always or in all ways a loss. It can involve the reinforcement or nurturing of personal relations. Nor is indignity necessarily or merely a loss. We are not simply creatures subject to embarrassment that can be avoided by functional service from artificial entities. We are emotional creatures who find fellow feeling and humour in the shared experience of our circumstances, including those which ostensibly involve adversity. Our sense of intimacy as currently conceived is not a consequence of sanitised situations. Filial bonds and friendship are nuanced and complexly constituted. New kinds of task-support, however, create the potential for a transition towards *fewer* human relations and perhaps *more* transactional and impersonal relations in society.

'Transactional' and 'impersonal' are not just descriptors of a given relation, they are potentially cumulative consequences for the sum of relational goods. Task-support that absents humans has a direct consequence for a relation in contrast to how it was previously constituted, but also an indirect effect on how that relation and thus the sum of relations is constituted. *Relational goods* are constituted through the quality of the relation and thus are profoundly affected by the conception that is built into relations as a process. To be clear, I am not suggesting that introducing AI, robotics etc. for task-support is necessarily bad. It may be liberating in some ways and problematic in others, I am suggesting it seems set to be sociologically different (for an account of economics-inspired rational AI see Parkes & Wellman 2015; for a

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[17] In general, Donati and Archer claim that relational goods require: 1) a personal and social identity of participants (they cannot be anonymous for each other) 2) non-instrumental motivation of each subject; the relation must involve more than achievement of some end 3) participants must acquire or be inspired by rule of reciprocity as a symbolic exchange 4) sharing: goods can only be produced and enjoyed together by those who participate 5) require elaboration over time; a single interaction is insufficient for the relations 6) reflexivity that operates relationally - sharing is also of the sense of what it is that is shared. They cannot simply be created by law or dictate. They cannot be captured or appropriated by any given party and cannot be commodified, bureaucratised or marketised without the relations themselves being subverted in ways that corrode the goods that are otherwise constituted., but they also do not fit readily into traditional categories of the public or private sphere, since the former is associated with administrative provision of goods by the state and the latter with the marketisation of goods by corporations, neither of which captures the sense of what relational goods are or provides unproblematic grounds for the constitution of relations from which they arise.

preliminary account of pro-social issues and AI see Bryson 2015). An argument that inadvertently venerates suffering and senescence ought to be avoided as both perverse and oddly anti-progressive. And yet part of who we are has always been to be accepting of help and support and ready to offer help and support both because many of us require support at all ages and also specifically because we age and must manage the consequences of aging.

Still, it would be overstating the case to suggest changes to task-support for social care alone was sufficient to transform the role that relational goods play in society. Social care is already a paid sector. It has an economy and is mainly constituted within a capitalist system (for an excellent introduction to the way economics treats care see Davis & McMaster, 2017). Commodified and transactional and impersonal relations are not in general new. Again, this is not the point. The point is what further consequences for society will AI and robotics have and how aware of and prepared for these consequences are we? According to a recent UK House of Lords report, we are mainly *unaware* and *ill-prepared* (see SCAI, 2018). In any case, possible sociological consequences do not in and of themselves change the basic fact that we may be required to depend on AI, robotics etc. because of demographics and pattern of living.

However, previously in this section I suggested that the future may be one in which social care involves *fewer* human relations and perhaps *more* transactional and impersonal relations in society. One reason why the latter is conditional (use of 'perhaps') is that there is a further issue of how we relate to AI and robotics based on the characteristics that they possess and the way we are socialised to respond to or treat technologies (as its, them and persons). Whether societies become more transactional and impersonal depends also on how *social* AI entities become as they are increasingly integrated into society as visible active *participants*. Here, we need to start thinking about what proportion of our communicative acts will not just be *via* technology but *with* technology. This brings us finally to the issue of social care and companionship.

Companionship and the friendly home

In so far as there are many who would benefit from companionship, social care is one way in which AI may start to integrate into society. That is, how we may be socialised to accept AI through use as needs are met. This pathway may intersect with, but is not the same as, more overt use for consumption services. Its scope and effects may be different. As we set out early on in this essay, companionship answers to a very basic human need for interaction and recognition. However, in a *social care* setting companionship is purposive rather than simply an organic state of affairs. It is primarily a response to recognized issues of social isolation and loneliness. But, in so far as extended life expectancy remains degenerative, the context in which that isolation is to be addressed involves some likelihood of eventually diminished cognitive capacity. Moreover, there are many other possible circumstances and possible recipients where social care companionship might orient on cognitive capacity and mental health. As such, in a social care situation, the need to be treated *as* human blends into the need to be treated *for* given conditions. The introduction of AI creates new possibilities but also issues of power and responsibility.

As in our previous examples, the relevant technologies already exist in embryonic form – most notably natural language proficient chatbot technology and IoT linked to a hub-based AI household management system. We have already explored how an alert home may provide a range of social care functions. It is a small step from providing consumption and health services to the provision of companionship. Generically, technologies that might say, manage an in-house entertainment system, can readily become the entertainment. Technologies that convey information also potentially provide conversation. An alert home is a combination of technologies whose services require communication and whose services may also *be* communication and that communication can both fulfil a need *to communicate* and facilitate other activity. It is, therefore, entirely conceivable that an alert home takes the form of a 'friendly' home and it is entirely conceivable that we will readily accept this and that it will ultimately alter our perception of AI. Much of this is likely to be mundane and pass uncommented on, but there are also extraordinary possibilities that may come to pass based on recognized need.

Consider the potential for a friendly alert home designed for someone with dementia. Typical symptoms of dementia begin with loss of short term memory, followed by slowed decision making, and this is then progressively followed by increasing confusion and distraction, loss of recognition, inability to complete complex and then everyday tasks, propensity to stray (amnesiac events) and eventual dissolution of coherent sense of self. In the early stages sufferers currently tend to rely on reminders (visual cues, aide-memoire, such as lists etc.). In an alert home, these could be integrated into living space, furniture, appliances and equipment through digital display and via audio: taps that state which way to turn them, baths which say how warm the water is (too hot too cold), ovens that remind users to turn them off, doors that declare their status (locked or unlocked). This IoT, however, could readily be slaved to or merely facets of a hub AI whose coordinating function extends from the IoT to the resident.

The question then arises about the scope of communication and how to communicate most effectively. Given the potential for confusion and anxiety, it seems likely that an appropriate AI would be coded to convey comfort and reassurance. In terms of natural language adaptive ML functionality, one can readily imagine that the AI would be given its own name, be coded for tone of voice (including gender through tone), and be sensitive to idiom and idiosyncrasy of language, as well as to the reduced language facility and emergent characteristic errors of the dementia sufferer. Cumulatively, an AI of this type would build up both a palette of functional subject-specific statements, inquiries and such, but also and simultaneously in the act of doing this, characteristic phrasings – communication could thus take on the form of familiar conversation: *remember yesterday we did x and you asked me about y… it is time to do z, you know you don't like doing z, you always say you hate doing z, but we both know you need to do it and once it is done you feel better…* Note how time reference or duration naturalistically embeds itself in the way communication is effected and how the use of pronouns for both the resident *and* AI form part of the process. This form of bonded narrative coding with use of I, me, you, we and both/us seems highly likely to feature in ML, if the purpose is reassurance, comfort and persuasion.[18] Given these purposes, coding is liable to orient on strategic conveyance and much like any other kind of design, consider affect as effect. As such, there are also reasons to code for a balance between friendly reassurance and a tone of professional authority. However, given that dementia sufferers experience progressive change of cognitive state, the context is one where purposes may change through time and so one might code for an eventual overtone of command. This issue of context and purpose opens up an array of issues. Whilst AI in a friendly house, might begin as a source of coordination, information and reminders, it may become a source (a location or node for) instructions, prohibitions and orders.

Imagine the further progression. It is a small step from a residence's front door that can be locked or unlocked through an AI to the transfer of decision making responsibility to that AI as to whether that door is open or closed for access (and a small step from here to transfer of decision making regarding where and when to be and what to do). This may seem abhorrent, but one can readily conceive of scenarios where it becomes the case. Imagine a situation of life-long partners where one has advanced Alzheimer's and the other does not. The non-sufferer needs to run some errand outside the home, but it is not feasible to be accompanied by their partner. Who would he or she want in charge whilst absent? Here, coding for short term or temporary eventualities creates a potential – the incremental ceding of capabilities to an AI, the gradual transition from subservience to or subordinate status to something more masterly (as part of multiple settings that an AI might have). One might think this is something we would necessarily resist, but we did not resist the introduction of algorithms for credit scorings or for 'abstract and objective' 'data-driven' behind-the-scenes decision making for many aspects of social life – partly because the focus was functionality and partly because the changes had occurred before debate concerning the issues ever got started (O'Neill, 2016).

There are equivalent possibilities here. Imagine a different scenario: The healthy one of the partners dies suddenly but prior to this both had agreed they wanted to stay at home and enjoy their last years in that *home* (where their children were raised). How to achieve this? A living will could transfer responsibility to the AI management system – and given an Alzheimer's sufferer might think the difference of quality of life between living at home and living in an institution might favour the familiarity of home, he or she might (prior to catastrophic symptoms) *voluntarily* opt for this. Is this an issue of a contract that could never be alienated (the classical position on slavery?) or is it a deliberative decision of a presently capable individual on behalf of their future incapable self -- a matter of competing issues of liberty? There is no simple answer here, and where this is the case, fudges, compromises and pragmatic ambiguities often result, creating gaps into which possibilities fall. If this was to occur then, thereafter, the AI might require powers. For example, since 2014, in the UK, dementia care has been monitored using Deprivation of Liberty Safeguards (Dols). These prevent a person walking out of hospital or a care home. If alert homes were to become of equivalent status to other places, then the AI managing that home would become a custodian and thus might be required to apply for or be granted some equivalent to Dols. It might also be the one

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[18] And, of course, treatment, amelioration etc. – the scope for AI is broad: therapy for general state of mind, specific programs that provide services or treatments within social care parameters for particular conditions, memory training etc.

deemed competent (since, by definition, the care recipient could not) to make any final decision regarding transfer to some other institution, once it was unable to appropriately care for its ward.[19]

The potentials intrinsic to the above create vexing issues of whether and how to transfer legal responsibility in order to empower an AI and problematic questions regarding to who or what is responsibility to be transferred? The AI as locus of decision making or the corporation who owns the IP?[20] Who would the ward be a ward 'of'? Put another way who would have ownership of responsibility – a 'duty of care' and who would guard this guard? Again, these are difficult questions raising important ethical and practical issues in a world where a few mega-corporations located in the USA and China control almost all the major ML and AI IP (the infrastructure and significant agents of this future world; Zuboff, 2019). The practicalities extend to multiple pathways that converge on situations where we might have to decide or default to positions that bear on these issues. A dementia sufferer may require a designated person to manage their financial affairs (who then has access to their bank accounts and assets, can pay bills on their behalf, transfer money etc.) and to manage their medical treatment (order repeat prescriptions, talk on their behalf to medical professionals etc.). If alert and friendly homes become a reality, then the AIs at their heart are candidates for these roles. Granting such a status to an AI may seem far-fetched – but return to the section on the contemporary state of social care in the UK and the types of problems exhibited and it should be clear that there are many ways that it might be found necessary or convenient by the state for this status to be granted – not least the way the law is imbricate with practice in any contemporary society.

Actions require empowerments, but in order for an entity to be empowered, it typically requires that entity to have a given status in law for legally recognizable empowerment to apply. As such, technological solutions to a major problem of social care may create grounds for AI to be granted electronic legal personhood. The EU and various jurisdictions have been working on the general issue of electronic legal personhood for several years now – for a variety of reasons none of which are primarily focused on electronic persons as fully exhibiting the characteristics of human persons (Morgan, 2018b). A corporation is not a human – it cannot be kicked or kick, but it is a legal person for purposes despite this (and despite the problems that have arisen – corporate manslaughter etc.).

Clearly, these considerations are highly contingent and speculative. But if we step back and consider context, what we are considering here is a set of circumstances by which we might start to assimilate AI into society and how we might start to become socialised to the way AI diffuses through our societies. Social care provides one situation in which we may find ourselves increasingly communicating with technology rather than via technology, a means by which familiarity may be produced that alters our perception of AI. The possibilities set out exist irrespective of whether in fact AI entities demonstrate or satisfy tests of consciousness and related characteristics (true AI that deserves rather than merely has by social convention the designation 'intelligent'; see Bostrom 2016). Dementia ultimately infantilises the sufferer, diminishing facets of fully realised personhood. An AI may step in to substitute for that loss and as a custodian we may start to think of them as surrogates for lost facets of personhood, but this does not require that an AI be (ontologically rather than legally) a person – no more than that a *personable* communicative natural language function constitutes an AI as a person. An AI may be sociologically consequential without being conscious. As such, the difference between simulation and duplication set out in a previous essay (Morgan, 2018b) may still apply to the fundamental characteristics of technology in terms of its entity status. This, of course, matters in some ways but in others may not be the main point. Still, the possibilities set out here do not preclude the kinds of concerns raised by Margaret Archer and others regarding the po-

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[19] Equally, an effective system with in-house servitors may never require this decision to be made if medically-informed support becomes possible at home. Home could also be a personalized hospice for end-of-life care without the need for hospitalization as a transition stage.

[20] Social care and dementia is just one possible application where corporations may intrude: *Alexa is my Dr* (councillor or therapist programmes); design may be influenced by psychologists and psychiatrists to ensure "good thoughts" prevail (positive attitudes and moods – much like interior design with more light and vibrant colours can be purposively positive)… AI hub management entities may have particular proclivities encoded into them as part of their general interactive parameters, intended to influence a person's state of mind for: "good" mental health; subliminal effects on consumption behaviour, social and political conformity; this *Alexa is my "friend"* facet of companionship invokes: How much of a friend is my "friend" and who does my digital servant *really* work for? Capitalism blurs the boundaries between companionship, client, customer, friend and patient. The possibilities and potential relations may well mean that we require new digital civil rights and advocates (to represent us in disputes with AI).

tential for AI friends (Archer, 2019). In fact, they may create transitional possibilities based on socialization of how humans treat digital entities – contributing to a congenial environment of acceptance for AI. Time will tell (and I take this matter up in the next volume).

Conclusion

Social care is considered to be in crisis in many places in the world, including in the UK. Common underlying threads that provoke concern are demographics and patterns of living. However, much of the focus is on how we are going to afford social care. As with so many other aspects of society, technology seems set to play some role and yet there is little focus on or awareness of what this might be. Since the qualities of technologies are changing then it seems important to be aware of how those changing qualities will affect the societies we may find ourselves living in. We do not live in technologically deterministic societies but we do live in societies where technology is increasingly consequential. In terms of social care, the consequences are likely to occur based on changes to task-support and companionship. Given the speculative nature of any rumination on future technologies it would be reckless to be overly prescriptive or assertive regarding what is going to be the case. However, it seems reasonable to suggest that in the near future there may well be a transition in the kinds of questions we ask in regard of care. We may stop asking only or merely, *who* will care for us? Instead, we might find ourselves increasingly asking, *what* will care for us? This being so, the semantics of care themselves might come under new scrutiny.

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