Speculative Design and the Future of an Ageing Population
Report 1: Outcomes

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2 July 2015

This event report has been commissioned as part of the UK government's Foresight Future of an Ageing Population project. The views expressed do not represent policy of any government or organisation.

Executive summary

The Government Office for Science is undertaking work to bring together and generate new evidence about the likely impact of an ageing population on society. The project takes a life-course approach, focusing on the choices that people make throughout their lives, and the implications of an ageing population.

This work extended speculative and critical design (SCD) techniques, in which 'diagetic prototypes' – fictional objects that bridge the speculative and the everyday – are used as points-of-departure for audiences to begin exploring the implications of emerging technologies, systems, and societies, which are somehow different from their own. Initially developed in a context of academic design research, this project represents the first time that SCD techniques have been actively used in UK government policy processes.

Three workshops were run in which several bespoke visual artefacts were used to anchor discussion and debate. The workshops were centred around the themes of what work, services, and transport and mobility might be like in 2040. Several key themes emerged, including the need for community - and associated fear of isolation - and for the wider support and investment needed to address this. In discussions around what could be done to 'prepare', participants were clear on the difference between things which individuals could do (eg. Saving for retirement, keeping abreast of digital skills), and those challenges which required larger, systemic, interventions (eg. civic planning, large-scale skills training).

In general, participants expressed greater trust in state power than corporate control. Disagreements emerged around what forms of work might be desirable to older generations, balancing the need for income; the desire to do socially meaningful and recognised work; and work which would allow them to build on their existing expertise. Participants also questioned what constituted 'real' interpersonal interactions – whether online or in person – also arose, with respect to types of work, service provision, and mobility.

Across the workshops, participants were concerned that future systems were being designed without them. For future work, it would be useful to run longer workshops to encourage

participants to craft their own narratives, further developing the narratives depicted. Our confidence in the generalizability of these conclusions can be high as many of the same themes emerged, unprompted, across the different workshops hosted in different geographical locations.

1. Introduction: Speculative design and policy

The Government Office for Science is undertaking work to generate and synthesise new evidence about the likely impact of an ageing population on society. The project takes a life-course approach, focusing on the choices that people make throughout their lives, and the implications of an ageing population. This work was developed around speculative and critical design (SCD) techniques, in which 'diegetic prototypes' – fictional objects that bridge the speculative and the everyday – are used as points-of-departure for audiences to explore the implications of new trends, systems, and emerging technologies.

The role of visions, storytelling, and fictions around science, technology, and the publics has come under particular scrutiny in recent years. The role of expectations and foresight has been long-established in this space, as established through a rich literature on the sociology of expectations which describes how expectations, the 'wishful enactment of a desired future' (Borup et al. 2006: 286), are 'both the cause and consequence of material science and technological activity' (ibid). In this context, futures-oriented abstractions can be generative in establishing norms and use cases, mobilising and deploying investment, and even functioning as a form of informal technology assessment. As innovation is inherently futures-oriented, understandings of new science and technology – and thus policy around them – cannot operate in isolation from understandings of the future itself.

Examinations of the forms these expectations take has expanded from sociological research into the wider domain of fiction. Speculative Critical Design (SCD) is an approach pioneered by Anthony Dunne and Fiona Raby (2013). Pitched in explicit opposition to dominant 'design as service to industry' processes developed over the twentieth century, SCD creates fictional artefacts – objects, images, films, texts, and more – that bridge the speculative and the everyday, inviting publics to explore the implications of new developments across science, technology and politics, and unsettling tacit assumptions and social norms (cf. Bassett et al 2013). By coupling the speculation inherent in design with the creative licence of fiction and the pragmatic immanent reality of fact, design fictions enable forms of storytelling that allow us to imagine unrealised objects in use; while also providing alternative value systems for designers – and, potentially, policy-makers – to consider the political and social qualities of objects. The notion of 'diegesis' lies at the root of these methodologies, presenting objects and visions from another world and inviting the audience logically unpack what is not being seen.

To our knowledge, this project represents the first time that SCD techniques have been <u>actively</u> used within UK government policy processes. Foresight units have become an increasingly common part of governance; however, the use of SCD has yet to become part of this toolkit. In this project, we explore what this technique has to offer the policy-making process, its benefits and its limitations.

Beyond government, the influence of speculative design can be seen in a number of different spaces. Policy-facing bodies have taken an interest in what speculative design and fictions might have to offer them. As part of wider research around futures and foresight, NESTA commissioned a paired set of working papers in 2013 around the subject: 'Better Made Up: The Mutual Influence of Science Fiction and Innovation' by Caroline Bassett, Ed Steinmueller, and Georgina Voss; and

'Imagining Technologies' by Jon Turney. As their titles indicate, however, these papers focused more on the co-construction of speculative fictions and the process of technological innovation rather than the policymaking process.

SCD has also been systematised in commercial spaces. David Kirby (2009, 2010) describes how large technology companies sometimes hire science fiction consultants to construct ultra-realistic cinematic scenarios around technologies that would be costly and time-consuming to construct 'in the real'. Following Dunne and Raby's pioneering approach, SCD approaches have been embedded in the curriculum of several design schools, and utilised as a core approach in research projects. SCD has been used to open up public debates around emerging technologies, through work commissioned and hosted by arts and culture institutions.

2. Method: Artefact and workshop design

Over three workshops, custom-designed visual artefacts were used to facilitate discussion and invite debate. The workshops were intended to gather qualitative material that could be used to inform policy, soliciting and structuring responses around public perceptions of ageing,, and value judgements made about the trade-offs necessary to make the most of an ageing population. They were also intended to test and explore the efficacy of speculative design techniques through this format, and in a policy setting. The workshops were based around three specific themes:

- Workshop 1: Future of work (Swansea, February 19 2015)
- Workshop 2: Future of services (Leicester, February 26 2015)
- Workshop 3: Future of transport and mobility (Manchester, March 17 2015)

Through structured discussion and debate and the introduction of speculative artefacts, these workshops allowed participants to explore the implications of the theme of the workshop; facilitate current understandings around that theme; and enable them to explore aspects of multiple possible and potential futures.

Artefact design: For each workshop, we created one or more digitally-rendered speculative image, depicting potential and possible aspects of work, services, or transport provision in the year 2040, and tailored to the city in which the workshop was held.

Like science fiction, speculative design can make the world strange to us through 'cognitive estrangement'; defamiliarising and restructuring our experience of the present (cf. Jameson 2005); offering a new perspective on its operations; jolting us out of our empirical environment; and providing rich and open-ended fictions which we can populate with our own scripts. Following Bassett et al (2013), the images were deliberately design to ground unfamiliar 'future' elements (eg. Self-driving cars, assistive exo-skeletons, robot repair shops) in otherwise familiar contexts. For the artefacts, this realism was generated through a literature and surface-level foresight analysis about the subject of each workshop, looking for trends and drivers around the elements relevant for each workshop. This was combined with elements pertaining to the city that each workshop was hosted in, to offer further experiential 'hooks' for participants – for example, referencing Manchester's canals in the 'Transport and Mobility' workshop – but not so heavily that the workshops became focused around the city itself.

From this research, we drew together the ideas for a series of scenarios that addressed the theme of the workshop, containing a rich number of internally consistent elements. To explore the efficacy of using these type of images for policy, we developed a different number and type of artefacts for each workshop:

Workshop 1: Future of work

Image 1: Shop

Image 2: Home

Image 3: Call centre

Workshop 2: Future of services

Image 4: Street scene

Workshop 3: Future of transport and mobility

Image 5: Public governance

Image 6: Private governance

Workshop design

Introduction and scene setting: Each workshop began with an introduction from Lead Experts – in Swansea and Manchester, Professor Sarah Harper, and in Leicester, Professor Sir Mark Walport – outlining the purpose of the workshop. We then introduced the notion of speculative design, describing how the images were not predictions, but comprised a collection of things that might or might not happen, and which were intended to provoke debate and discussion. We emphasised that we did not expect participants to agree with each other or to think that what was depicted was wholly realistic. Instead, we were interested in their reactions to the scenarios, and what kind of world they imagined to be beyond what was explicitly depicted.

Colour cards: Semi-structured discussion was guided by the use of 'colour cards', influenced by the de Bono Group's 'Six Thinking Hats' approach:

Card	Questions
Yes (Green)	What do you like about the image? Are there things that resonate or are familiar?
No (Red)	What do you dislike about the image? Are there things that you disagree with or find unlikely?
Feelings (Blue)	Put yourself into this scenario: what are your gut feelings about it? Do you feel uncomfortable, sad, happy, relaxed, anxious?
Personal change (Yellow)	What changes would you make to your own life now if this scenario might be in your future, or part of it?
Outside change (Purple)	What changes would you want others (policymakers, local government, companies) to make if this scenario might be in your future, or part of it?

Structure: Each workshop comprised a different structure. The artefacts were on mounted boards in all workshops, and also made available as wall projections in Swansea and Leicester:

Workshop	Structure
Work (Swansea)	1. Introduce 'Shop' artefact. 2. Split participants into three groups. Each group: work through 3 of the colour cards. 3. Repeat step 2 with 'Home' and 'Call Centre' 4. All participants: collectively reflect on discussion of all three artefacts.
Services (Leicester)	1. Introduce 'Street scene' artefact. Discussion about content and meaning. 2. Split participants into two mixed-age groups. 3. Each group: work through all colour cards, presenting back to the whole group after each card. 4. All participants: collectively reflect on discussion. Discuss actions necessary to convert 'good' to 'bad', and vice versa
Transport (Manchester)	1. Introduce one artefact to Group 1, and the other to Group 2 2. Each group: discussion about content and meaning. 3. Small sub-groups: Use selection of colour cards to discuss artefact (yes/feelings/someone else should change) (no/feelings/I will change) 4. Each group: present and reflect on colour card discussion. 5. Repeat steps 2-4, swapping artefacts between groups. 6. All groups feeding back to whole, identifying aspects that could be designed.

3. Outcomes and discussion

Overall, the workshops were extremely successful, provoking a rich and active discussion around the future scenarios presented. We have examined the efficacy of the methods in Report 2: Techniques – here, we explore the outcomes of the individual workshops themselves, and of the greater themes which emerged.

Workshop 1: Future of work

Participants liked the family nature of the '**Shop**' scene. The notion of a multi-generational workplace also prompted an interesting discussion about the demarcation of skills and roles across different generations, and what this meant in terms of future training. Participants didn't like the idea of working on their feet all day, or having to balance several jobs to draw in enough income. Several questioned whether the high street would still be around in 2040; or if 'robot repair' would be a viable business model, prompting a wider discussion about disposable consumer electronics. **'Home'** was less warmly received, with the comforts of the domestic environment and the ability to pick and choose tasks not balanced by the precarious and poorly paid nature of the work on offer; participants felt that there would be little time to relax (noting the pair of shoes in the corner, one participant said that 'If I were her, I'd be constantly thinking about when I'd have to put them on again'). In comparison, '**Call Centre'** offered a somewhat more pleasant environment in which work was more ordered, there would be company, and older workers might be respected both by colleagues and customers. Participants expressed worries, however, around the balance for needing income versus doing social good, as the image depicted a workplace built around cold-calls. Related concerns about the pressures to take low-paying piecemeal work which didn't take into account participants' skills were frequently raised, as were concerns about which types of work would be physically possible. Participants identified the desire to keep abreast of digital skills (which they recognised that younger generations were more likely to have), but also wanted to see future governments providing support for those in precarious positions in the labour market, particular in terms of skills.

Workshop 2: Future of services

At first glance, participants felt the 'Street Scene' vision to be too dystopian, due to the darkened sky and lack of greenery. However, over the course of the workshop, they pulled out its more complex elements, leading to perhaps one of the more in-depth discussion across the workshops. Participants approved of the support elements such as free charging stations, convenient recycling, skills training; the interconnected world; and that the need to build more housing had been recognised. The 'smart fridge', where a company collected data on food consumption, was roundly disliked, and provoked a heated discussion about data security and surveillance – interestingly, all groups generally agreed that they would view it more favourably in service provision if it was tied to state-provided healthcare. Participants raised related concerns that services might only be available to the well-off, and that older people themselves might become ghettoised, away from younger people and families.

This workshop had the most diverse age range of participants, and the previous point spurred debate polarised across age lines, about whether online social interactions were isolating or part of a richer set of interactions. The age of participants also contributed to a rich discussion about the changes people would make now to prepare for this future, which included the need to start saving for retirement; potentially changing buying habits to support smaller independent retailers; and make themselves more aware around issues of data use and ownership. Participants

identified a range of elements for external bodies to tackle, including: councils developing more open green spaces; housing planning bodies focusing on building for family and community over investment; and more government control over service provision and data use.

Workshop 3: Future of transport and mobility

The contrast between the two images spurred extensive debate, with groups (who consisted primarily of older participants) identifying that, whilst they felt most comfortable in the 'State' world as it was closer to the one they'd grown up in, younger people might be more familiar with the 'Corporate' one which also, they felt, bore most resemblance to the present day.

In the 'State' scenario, participants like the regularity of transport and short waiting times; use of canals; and the cheap or free travel available. Exoskeletons were also seen as useful, and the world as a whole seemed clean and efficient. However, participants felt that it seemed impractical without signs, and heavily controlled in a top-down manner, designed more for systems than people – anyone choosing to walk rather than travel by self-driving car, for example, would struggle to navigate the environment. Conversely, the 'Private' scenario appeared to have more options for agency, but were tied up with concerns about who could afford to have such choices. Across both scenarios, participants raised issues around health, safety, and security as neither world felt particularly safe for them, with the absence of CCTV commented on. For this workshop, participants felt that there was little they could personally do to prepare to live in this world as most of the elements felt as if they under the control of larger bodies – instead, they strongly voiced the opinion that urban and infrastructure planners should take older people into account when designing these systems, engaging in meaningful and deliberative consultations.

Overall themes

Across the workshops, there was wide consensus over a perceived need for community and fear of isolation, identified across home, work, and civic spaces.. Participants constantly identified the need for wider support and investment to address this given that community groups can only do so much; and the spaces where communities could be built around (pubs, libraries, social groups, etc). Likewise, participants constantly expressed a strong desire for arts, culture, heritage, and green spaces, although this may have primarily been prompted by the 'built up' nature of several of the images. This same element meant that although participants felt that some of the images were bleak or isolating, the world in which they were contained was familiar (similar, some thought, to a modernised town centre or student halls of residence). Across the workshops, participants were in broad agreement that state support for services were expected to decrease in future, although this was not seen to be a good thing.

As participants were primarily older (50 and above), it was challenging to elucidate elements of personal change over the next 25 years in 'preparation' for ageing. However, in the discussions around change participants were clear on the difference between things that individuals could do (start saving, be mindful of their use of data, cultivate their friendship groups), and the things which required larger intervention (civic planning, etc).

Throughout the groups, participants expressed greater comfort around state power than corporate control, as framed in terms of trust and reliability; although they recognised that this might be a perception linked to their generational cohort. Likewise, trying to imagine generational differences was not always easy, leading to some lively discussions around how, for example, social media technologies might be used in the future. However, older participants

expressed a great deal of interest in what the ageing population would mean for the economic position of future generations.

Disagreements included: issue over what qualified as suitable forms of housing and service provision, and what qualified as 'real' interpersonal interactions. Participants also viewed future forms of work in different ways – some as something which would extend their existing career, and associated expertise; for others, as something to supplement pensions (or lack thereof). Across the groups, there were some unresolved frictions between concern over unauthorised surveillance, and the desire for safety in public spaces.

Across the workshops, there was strength of feeling from participants about systems being designed without them (and requiring adaption to), rather than in consultation with them; and at cuts to services, especially healthcare. For future work, it would be useful to run longer workshops to encourage participants to craft their own narratives around the scenarios, beyond simply critiquing what was presented.

There were too few younger participants present to be able to meaningfully evaluate their future aspiration. Older participants looked towards a stable retirement, and a better life for younger people (who, again, they saw as more disadvantaged than themselves). For those looking towards possible futures of work and employment, participants emphasised the interplay and trade-offs between dignity, wanting to be recognised for their skills and knowledge; and the often material aspects of ageing – including shifts in physical ability and energy levels.

What confidence can we have in these conclusions?

Our confidence in these conclusions can be reasonably high, particularly around older participants – many of the same themes consistently emerged, unprompted, and were expanded on in the workshop space. The workshop element itself had its own limits – active facilitation is important to ensure everyone in the room is able to contribute, and some participants may not be comfortable sharing their opinions.

What didn't we learn?

As younger participants were predominantly absent from these workshops (with the exception of Services), their perspectives were absent; and thus, critically elements of both personal change, and familiarity with certain forms of technologies and services were lacking.