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Rethinking how healthcare is conceptualised and delivered through speculative design in the UK and Malaysia: A Comparative study

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Abstract:

The paper aims, firstly, at presenting cross-cultural design-driven research responses that explore alternative ways of conceptualising the delivery of healthcare, through participatory speculative design. Secondly, it aims at offering a comparative study, which explores this approach in the theme of ageing in place, with different groups of senior citizens in the UK and Malaysia. In a series of co-design workshops, speculative design served as a safe and creative environment for participants in the UK and Malaysia to explore new ideas for health and wellbeing. Our findings reveal that aside from the high interest in healthcare demonstrated by participants, the feasibility of adopting speculative design as a tool to engage with vulnerable groups (in non-Western contexts) is supported. Moreover, evidence of how such an approach encourages involvement, gives voice and expands imagination, could be adopted by policy-makers and governments to enhance engagement with hard to reach groups such as senior citizens.

Keywords: Speculative Design, Healthcare, Ageing, Design Policy, Malaysia, UK

1. Introduction

Due to advancements in healthcare, life expectancy is increasing globally. The United Nations estimate that 1.4 billion people will be over 60 years old by 2030 (United Nations, 2016). In the UK there are currently 18 million people over 65 (18% of the total population) and by 2030, 24% will be

aged over 65 (Office of National Statistics, 2017). Developing nations, such as Malaysia are facing similar challenges too. The number of people aged 60 years and above in Malaysia is projected to almost double from 3.1 million currently, to 5.8 million (15.3% of the total population) in 2030, when Malaysia becomes an aged nation (Ministry of Health, 2011).

An ageing population presents both opportunities and challenges. The challenges, that an increasingly ageing population brings for healthcare are several and multifaceted; placing an additional demand on the funding and sustainability of public healthcare provision. Within the context of increasing life expectancy, comes the challenge of strategically placing research focus on preventative services, interventions and support mechanisms, which favour and place emphasis on living healthier into older age. In response to this, governments across the globe are developing policies on ageing. However engaging older citizens in the development of these policies on healthcare has proven to be challenging. In the UK there are a few examples and initiative aimed at senior citizen participation in policy making (Windle et al., 2009; Huxley et al., 2016), but this tend to be at a very local government level. In contrast, in Malaysia senior citizen participation in agenda policy setting or policy-making is rare.

Therefore, a radical rethink of how healthcare has always been conceptualised and delivered is needed (Dixon-Woods et al., 2011; Kessler and Glasgow 2011), with older citizens being involved more in informing this process (Robert et al., 2015). This paper provides a background to the context of this research and an overview of two related pilot projects: (1) ProtoPolicy, focusing on the UK, and (2) ImaginAging, focusing on Malaysia. The discussion is focused on the commonalities and differences between the two pilot projects. In light of the conference track theme, a critique is presented of the role of risk in speculative design within the context of design for healthcare. This is followed by a conclusion.

2. Related Work

2.1 Older Citizen Engagement in Policy Making & Public Health Services

Following today's focus on ageing, health policy becomes a priority for several governments across the world, with a total of US\$ 6.5 trillion annual global expenditure for health and 84% of the world's total financial resources devoted to health spent in OECD countries (WHO, 2012). Ageing also comes in other forms of costs; such as time and societal burden on existing social and welfare systems. Thus, the need to influence key determinants of health, through sectors beyond health has become evident, resulting in Health in All Policies becoming a priority in the UK (Toleikyte, 2016) as well as overseas (Ollila et al, 2006).

In response to this the UK Government has developed a number of policies on ageing [Older People (Gov.uk, 2016a), Health and Care Integration (Gov.uk, 2016b), Housing for older people (Gov.uk, 2016c)]. In Malaysia, the National Policy for Older Persons (Ministry of Health, 2011) along with the Eleventh Malaysia Plan (Prime Minister's Department, 2016) have identified key strategies and priorities for maintaining the health and wellbeing of older citizens, so that they remain active and productive for longer, with more support to continue living independently (ageing-in-place).

In light of this, governments are increasingly exploring and testing new ways to approach the future, their policy processes and engage the public in decision-making, to move towards inclusiveness, openness and transparency (Junginger, 2013; Taylor, 2014). Increased participation is an ethical and societal opportunity and is increasingly aspired to in regulatory and legal frameworks (Irvin & Stansbury, 2004). However, involvement of experts remains the most common method used for policy making and public services; despite the close relationship between policy making and public services (Junginger, 2016). Over recent years, there has been a move to include more collaborative methods of engaging with the public, alongside traditional consultative practices, to encourage comment and debate on government policy (Bradwell & Marr, 2008). Some of these collaborative methods are reminiscent of the community-based participatory research that has entered the risk landscape epitomized by postnormal science, which are useful for considering how public involvement could be transformative of the services that are directed at them, while reconstituting the meaning of extended expertise (Bidwell, 2009).

2.2 Speculative Design

Design is being used increasingly in the public sector not just to develop more user-friendly services, but also as a process to jointly develop policy with citizens (Bason, 2014; Whicher and Walters, 2017). There are a growing number of UK central and devolved government units using design methods for policy and public service development such as the Cabinet Office Policy Lab, who worked with the UK Government Office for Science on the first ever speculative design project in government. Focused on the Future of Ageing, the project aimed to explore the challenges and opportunities of an ageing society (Government Office for Science, 2015).

Speculative design has been proposed as a potential tool for including citizens in imagining the future implications of policy initiatives in creative ways (Government Office for Science, 2015). It was found that guided discussions allowed participants to move beyond polarising debates for 'good' or 'bad' to voice opinions about the images that were not so immediately obvious – for example, their positive aspects and the points of conflict within them (Voss et al., 2015). Furthermore, Pasman (2006) has introduced and discussed the possible potential and application of design fiction as a service design approach. He has argued that design fiction could be a new and innovative way for service designers to explore and define new services in a contextually rich and holistic way in the beginning of a design process.

Speculative design is an approach that enables thinking about the future prospectively and critically (Sterling, 2009, Dunne & Raby, 2013). The prime objective of speculative design is to force an aspect of the future into the present so that it demands a response (Tonkinwise, 2014). One of its principal assumptions is the negation of the status quo and the initiation of discussion of possible future scenarios through a confrontation with a tangible object or process, which provides an ideal vehicle for establishing an innovation's necessity, and its viability and benevolence within society (Kirby, 2010). It creates narratives for these possible futures in a variety of formats – such as provocations, prototypes, products, images and films– to express the urgency of change which is required and to focus debate around the actions that could be taken (Kirby, 2010). In these ways, speculative design can be employed to explore citizens' views, concerns and generate debate on policy issues advocated by governments and to genuinely reimagine the relationship between government, community groups and the public.

Design Fictions are therefore a type of speculative design (Dunne & Raby, 2013). These are explorations of particular design spaces made possible by combining current and emergent

technological advances with society's slow-changing social, legal and ethical practices. However, they do not claim to predict the future, but instead place potential futures within our imaginative reach for consideration as to their preferability, and in so doing they take advantage of the fictional paradigm to catalyse debate about potential futures (Linehan et al., 2014). To that end, various forms of speculative design, including co-designed design fiction (Darby et al., 2016; Tseklevs et al., 2017a), have been tested by the UK government to assess their potential to contribute to real-world policy development (Kimbell, 2015).

3. ProtoPolicy

ProtoPolicy¹ explored how speculative design methods could help politicians and civil servants to engage with citizens, imagine the future implications of policy initiatives and negotiate political questions in the UK.

3.1 Methodology

Both ProtoPolicy and ImaginAging employed a co-design research methodology (Sanders & Stappers, 2008; Steen et al., 2011) for the development of the speculative design concepts by involving groups of senior citizens (see Figure 1).

Table 1. ProtoPolicy workshop participant information across both pilot projects

Pilot Project	Location and duration	Participant Information
ProtoPolicy	UK, half-day	14 (4 male, 10 female); Living independently; 65-94
ProtoPolicy	UK, 2 days	7 (2 male, 5 female); Living in sheltered accommodation; 65-76

¹ <http://imagination.lancs.ac.uk/activities/ProtoPolicy>



Figure 1. Workshop participants developing speculative design concepts for ProtoPolicy

ProtoPolicy included two co-design sessions; a half-day workshop with 14 participants living independently and a 2-day workshop with 7 participants, living in sheltered accommodation (see Table 1). The workshop insights and co-designed speculations were translated into a series of Design Fictions. This was achieved by analysing and coding the captured data and then crafting the provocations, by thematically sorting the participants' insights and giving consideration to the areas of contention that might be exposed in debate on an imagined future (Darby et al, 2016).

3.2 Findings

The workshop sessions in the ProtoPolicy project led to the design and prototyping of two design fictions. Namely, a self-administered euthanasia wearable device, and the Smart Object Therapist, which combines occupational health with experience in pervasive and assisted home technology to ensure that future smart home appliances correspond to user needs (Tseklevs et al, 2017b). The former design fiction was designed as a response to the workshop co-designers expressed needs for self-control and living with dignity and was aimed at opening further the debate around the ethical and legal aspects of technology-enabled assisted dying (see Figure 2). The second design fiction was developed as a response to government policies on integrated care, ageing in place and assisted living in smart homes and was aimed at extending the debate around the ethical and social aspects of personal health and pervasive technology at home and social inclusion.

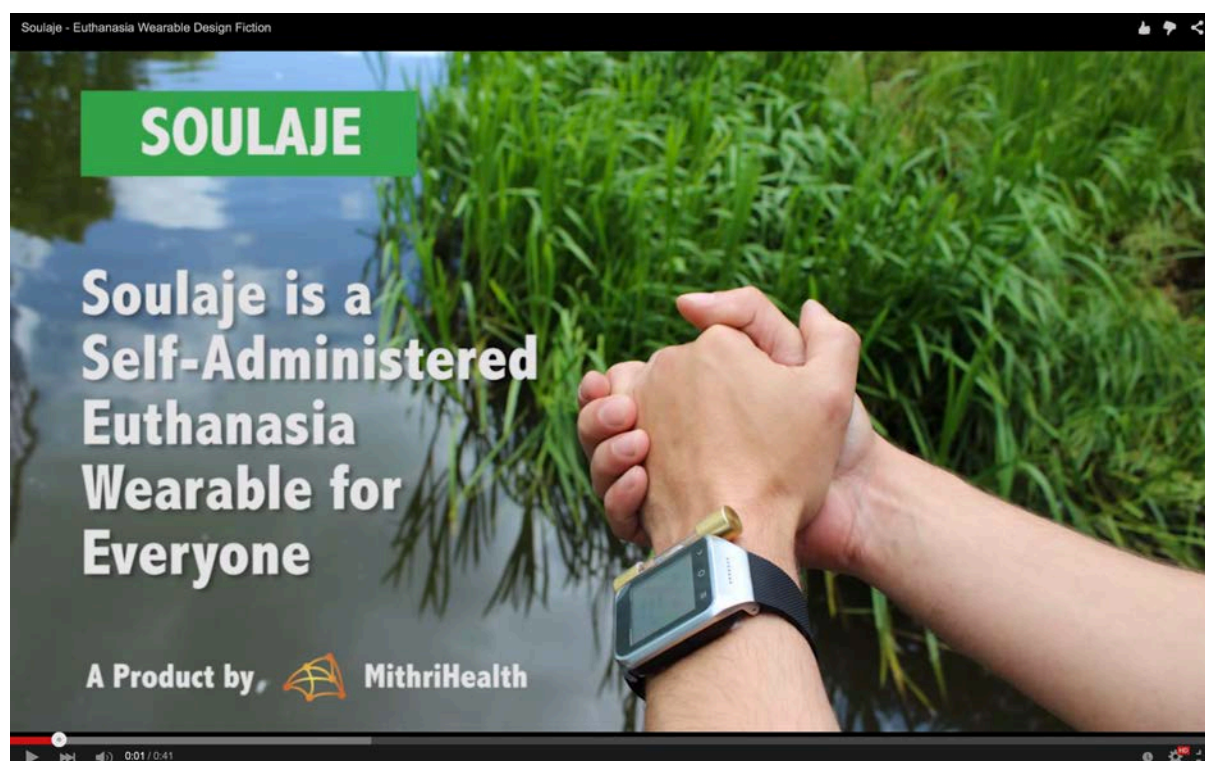


Figure 2. The self-administered euthanasia wearable design fiction developed by ProtoPolicy

The ProtoPolicy project findings revealed that design fictions were seen as innovative prompts that build empathy and provoke creative thinking among citizens much more than traditional government practices. Furthermore, it has shown that with additional research advocacy, design methods could be adopted as a tool for greater citizen engagement in decision-making processes (Tseklevs et al, 2017a).

4. ImaginAging

ImaginAging² explored how might speculative design enable citizens and governments in developing countries engage in policy agenda setting on ageing well in the city, especially for ageing in place in an urban city environment. Speculative design has not been previously pilot tested in any government-related policy in Malaysia, and as such was put forward as an alternative method following the success of ProtoPolicy.

Malaysia presents an interesting case for designers, regardless of the knowledge fields they are operating from, to go beyond their present problem; so as to be able to conjecture how external changes could prepare one for the possibility of unanticipated problems that could come out of that landscape, while designing solutions around these problems. The discussion by Reeves et. al (2016) on the typification that emerges from the categorization of existing knowledge stocks, whence expectations of the future are usually formed, has acknowledged that the future is open and unstable. Therefore, more data must be collected to improve one's ability to generate ideas/solutions.

² <http://imagination.lancs.ac.uk/activities/ImaginAging>

On the other hand, pragmatic projections are still important in the determination of the designable. Pragmatic conditions that are peculiar to the character and culture of the location where speculative design is deployed would still have to be attended to. Malaysia provides that unique context for exploring considerations, such as the culture of collaboration, for considering points of convergence and divergence from what is found in the context of ProtoPolicy.

4.1 Methodology

ImaginAging followed a co-design research methodology similar to ProtoPolicy. It included a one-day workshop with senior citizens (see Figure 3) living independently in the community and a half-day workshop with experts (see Table 2). Speculative designs were developed into design fictions by workshop participants. These were then refined by the research team into higher quality prototypes.

Table 2. ImaginAging workshop participant information across both pilot projects

Pilot Project	Location and duration	Participant Information
ImaginAging	Malaysia, 1 day	13 (8 male, 5 female); living independently; 62-86
ImaginAging	Malaysia, half-day	15 (3 male, 12 female); working in various sectors i.e. healthcare, residential home care, NGOs, government, higher education, private sector; 26-68



Figure 3. workshop participants developing on the 'Sugar-free Malaysia 2050' speculative design concept

4.2 Findings

The ImaginAging project introduced participatory design to senior citizens and other key stakeholders, who are invested in healthy ageing. It provided all of them with an avenue for concerted exploration of problem solving in a creative manner that leads to the envisioning of a long-term solution with far-reaching impact beyond their immediate community. During the ImaginAging workshops, health was highlighted as the primary area of interest/concern for senior citizens, followed by independent living. The characteristics of health was evident in two themes; food and nutrition, and personalised health management.

For the former, workshop participants chose to focus on reducing sugar consumption in all foods. The Ministry of Health in Malaysia (2015) reports an increasing trend for all non-communicable diseases (NCD), such as diabetes, high blood pressure and high cholesterol with at least 63% of the adult population having at least one NCD. The group developed a 'Sugar-free Malaysia 2050' speculative design concept, which comprised of two speculative design prototypes. A future newspaper (see Figure 4) with two different front headline covers set in 2050 (one presenting the benefits this policy initiative will bring to Malaysia in terms of health, economic and social development; and the other presenting what will happen if high sugar consumption continues in Malaysia). A 'sugar neutraliser' speculative design was also developed presenting a future product, and thus showing that a new market may emerge in this area, which removes any processed sugar content from drinks and food. These speculative design prototypes were aimed at generating public debate about the effects of sugar in food consumption in Malaysia and ways that this can be tackled at policy level.

In regard to personalised health management, the group proposed an electronic database for healthcare practitioners to record individuals medical data from birth to old age, with the aim of preventing possible misdiagnoses and errors. The group provided three possible scenarios, in which death have been avoidable, had there been complete medical records/data. To make the topic of death less gloomy, the group also suggested that the idea be presented in a comic form. This was developed into both a web-comic and a printed version, together with a letter to the Ministry of Health highlighting the benefits of such a database.



Figure 4. The 'Sugar-free Malaysia 2050' speculative design prototype

In working with policy makers from the Ministry of Women, Family, and Community Development, this project aimed to disrupt the usual top-down approach to policy-development that tends to be adopted to develop without sufficient consideration of the lived experiences of the intended beneficiaries and what they see as their priorities. Policy-makers were able to understand that the designing of a problem out of which they could prototype long-term policy-solutions was much more complex and requires a more systemic consideration beyond the identification of a policy gap. Senior citizens were given the chance to consider how they could bring their background knowledge and experiences to bear as situated experts, while playing the role of citizen designers to produce prototypal products/outcomes, which are then taken a step further. Since participants in the ImaginAging speculative design workshops were required to work in groups, which comprised of members with minimal or no overlapping backgrounds, the process means that not only do they have to learn how to think about problems and consider solutions in the form of design, they also have to learn how to communicate each other's perspectives and contributions into a coherent outcome.

The ImaginAging project findings reveal that despite participants' initial reluctance they were able to use design fiction to arrive at a successful outcome, creating a future that they would want to live in themselves as well as for the next generation. The activities allowed participants to realise their

wishes in a non-conventional manner and expressed their creativity within the present and the future. We believe that with additional participatory engagement, design fiction would have been a good tool to kick-start and influence the policy-making process.

5. Discussion

Several commonalities as well as differences were found between the two pilot projects, which are discussed in more detail below.

5.1 Commonalities between the two Pilot Projects

Although the UK and Malaysia have different cultural, political and geographical setups and challenges, as is the case for other countries globally, they both face a demographic shift in terms of ageing populations. This has motivated the Governments of both countries to take more action towards health and ageing policies (as highlighted earlier in this paper) and to seek more inclusiveness in the agenda setting of policies in this area.

From a methodological perspective both projects employed a co-design research approach to the development of speculative design concepts. They also engaged groups of senior citizens, experts and policy makers in the workshops and the dissemination of the speculative design prototypes developed.

Regarding the use of speculative design, commonalities were also found amongst both projects in terms of the two countries and the groups of individuals versus experts. Both Malaysian and UK senior citizen groups engaged had never been previously involved in developing speculative concepts. The two projects provide initial evidence of how not having prior knowledge of speculative design, did not prevent, the novel method from being easily absorbed by all groups in both countries, as evidenced by the development of several resulting prototypes. The prototypes were not simply creative products, but propositional objects that involved identifying problems and expanding thought processes. Preferable futures were encapsulated in the case of the ImaginAging project, whereas the focus was on unwanted futures with ProtoPolicy.

Furthermore, similarities were observed in the way groups of senior citizens engaged with speculative design as compared to experts. In particular, senior citizens were also more open to the use and exploration of speculative design, although explaining the concept to them required more effort and time. Nevertheless, they did produce some provocative speculative design concepts when compared to the groups of experts. On the other hand, experts such as policy makers and health/ageing professionals were initially more sceptical about adopting this new way of future thinking. However, once the methodology was embraced they were able to engage more deeply so as to produce informed speculative design concepts. Overall, the experience across the two projects suggests that engaging experts in speculative design took less time and resource compared to the senior citizen groups. Therefore a key lesson learnt here is that in the planning of speculative design workshops, designers should increase the amount of time required when working with non-expert groups. Moreover, the facilitation of such workshops, should include avenues, whereby the participants could bring in their lived experiences and background knowledge into the design process.

5.2 Differences between the two Pilot Projects

Several differences were noted between ProtoPolicy and ImaginAging, especially in terms of *development in ageing and health policies, engagements, socioeconomic status, urban versus rural, collectiveness versus individualism*.

More precisely, with regards to the *development in ageing and health policies* there is a difference in the level of maturity. Although in the UK such policies are well defined, Malaysia is only now starting to develop and review detailed policies and action plans for senior citizens. The Action Plan in Malaysia serves as both government policy and guideline to individuals and organisations on managing ageing-related issues. Therefore, on one hand, there is less trust on what governments can implement and realise but, on the other hand, there is a more open space for developing speculations and future public services. There has been concern that the participation of senior citizens may not be welcomed by officials in Malaysia, and thus developing such practices may not be useful to generate sufficient change in the policies. However, in the workshop run with experts and policy makers, government officials were keen to highlight the need for inclusion of citizens in reviewing their Action Plans. There are pockets of development that cater for the needs of an ageing society, but this is still very much in the infancy in Malaysia. Therefore, the Malaysian participants were far more observant and had stronger opinions as they have yet to experience a society that caters to their needs as an ageing group.

The Malaysian group was much more engaged in the workshop sessions and activities. In comparison to their UK counterparts, they were more vocal about the challenges they identified and the speculative design concepts they put forward. As discussed earlier in the paper, this could have been due to cultural reasons, as engaging senior citizens in co-design workshops is generally not a common practice in Malaysia. They were also highly motivated in having healthy ageing practices, as their primary focus is on their own health over other aspects in life, such as financial, family. For the Malaysian participants, over 75% are on long-term prescriptions for at least one NCD. One reason for the health focus is due to the fact that Malaysia practices a dual public and private healthcare system. Public healthcare in Malaysia is heavily subsidised by the government, but the public service has a very long waiting list for appointments and medicine/drugs. As a result, most Malaysians seek medical treatment from the private healthcare sector, which contributes to their financial burden. Some state governments have recently introduced heavily subsidized funding to support access to private healthcare for senior citizens as a means of reducing public healthcare waiting lists but this is not nationwide due to costs.

Moreover, we note that there was a discrepancy in socioeconomic status between the citizen groups engaged in the two pilot projects. The Malaysian group had completed some form of higher education and were employed as professionals, which suggests that they are at least of a middle to high-income socioeconomic status (SES). While their experiences cannot be generalised to the population, the proposals made by this group are also in tandem with interest in healthcare and leading independent and productive lives that were insisted on by similar SES groups globally. The educational level and socio-economic profile of the senior citizens in the UK was different with only about a third of the group having completed some form of higher-education, while also coming from a low to middle-income group.

Key differences emerged from the speculative design concepts and prototypes developed as a result of engaging the groups in the two countries, in terms of urban versus rural and collective versus individualism. In the UK urbanisation has mostly taken place and thus the participants interest and prototypes (i.e. the Smart Object Therapist design fiction) focused more on independent living and

quality of life within an already accepted mode of living. Whilst the views expressed by the Malaysian group reflect the emerging needs of those ageing in an urban city, as are currently developing in the South East Asian countries. This is happening far more rapidly when compared to European countries. Several of the workshop participants (senior citizens) in Malaysia had previously grown up and lived in rural environments up until adulthood. Therefore, their interests reflect the current health challenge of higher NCD cases observed in large cities, when compared to rural towns.

Malaysians proposed the 'Sugar-Free Malaysia 2050' as a benefit for the community at large, unlike the euthanasia design proposed by the UK group. Both the euthanasia and independent living (Smart Object Therapist design fiction) can be argued as representing collective decisions, although it would ultimately 'benefit' an individual. Other proposals from the Malaysian group such as a national healthcare database and food choices to regulate calories intake, also point towards a collective good. The following workshop participant quote exemplifies that their Sugar-Free proposal includes the national and multi-generational focus:

"So we've zeroed it down to a particular vision, that we want a sugar-free Malaysia by 2050. [general gasping] 2050 because, sugar is as- is in every part of our lives, our food and all that, and of course to get people to say, 'I don't want to use sugar' will take a long time, it involves changed management, mindset change, that would take a generation or more. So, even though it's 2050, we'll take it step by step. Maybe every five year or so, we'll have various strategies in place, action plans in place, to execute a sugar-free uh... economy, ya. The rationale being that even now, 40 percent of our school children are obese. I think their- BMI is 25 and above I'm not mistaken." [participant 12]

It should be noted that in the Malaysian workshops, there was participation from the three major ethnic groups in Malaysia. The heterogenous sample represents tolerance towards language, religious and cultural beliefs. Yet they were able to identify issues that transcend personal beliefs and choices.

Importantly, we would like to draw attention to how the methodological differences in the development of the design fictions may have affected and/or influenced both pilot projects. Although the speculative design concepts were developed by workshop participants in both projects; in the case of the ProtoPolicy pilot project, the design fiction prototypes were developed by the design research team, whereas in the case of ImaginAging this was also the responsibility of the workshop participants (further polished visually by the design team). This discrepancy could have impacted engagement, as in the case of ImaginAging participants had much more control and stake in the final outcome. Furthermore, engaging workshop participants in the making of the prototypes in Malaysia had an impact beyond the shaping of the design fictions and led to gaining a better understanding of what speculative design is, including its process, which could have resulted in embracing it further. While it might be interesting to explore these two developmental differences, this is not the intent of the paper. Since it would not provide further explication on the specifics of the design methodology, other than to say that the level engagement between the groups in each country is different, due to the different circumstances under which the workshops were ran.

On top of this, there were a couple more methodological differences, which may have impacted each pilot project, namely in terms of the actual process and the tools employed. In the case of ImaginAging, workshop participants were introduced, via a number of activities, to a typical design process of problem finding and problem solving, prior to the development of speculative design concepts. Furthermore, they were given easily accessible examples (in the form of visual cards) of emergent technologies as a means of inspiration for the development of speculative design

concepts. Templates of blank newspaper font page and IKEA style blank template catalogues were also supplied as a means of facilitating the development of design fictions. In ProtoPolicy, however, no such tools were provided to workshop participants. Besides, workshop participants were not formally introduced to the design process, but were instead provided with an introduction to speculative design, through an audio-visual presentation. They were also given current policy documents related to Ageing in Place to comment and debate. This resulted in more in-depth discussion and analysis of policies as well as their gaps and future areas of needed focus.

5.3 The role of risk in speculative design within the context of design for healthcare

Speculative design serves as a safe process for participants both in the UK and Malaysia to explore new ideas for health and wellbeing. However, policy-making is traditionally observed as a task meant for politicians or at best, local councillors. Public participation has been limited to surveys, town hall meetings and other forms of consultation, but without actual participation in producing an end product, a policy or legislation.

As mentioned previously, senior citizen participation in policy-making in Malaysia is rare and hence, the adoption of a policy stemming from engagement in the speculative design process together with senior citizens, might be difficult for the government officials and possibly even for other senior citizens. However, the outcome from our workshops suggest that engaging with speculative design for the greater good towards policy-making is far greater and will outweigh the risk of rejection from the officials or other senior citizens. Coupled with the broad interest in healthcare, having speculative design as a methodological tool that pushes boundaries, might serve as an opening for the government to engage further with senior citizens themselves.

The findings of the study, across the two projects and two populations, are limited due to the scale of participatory engagement. The projects also present very different aspects of 'health' (reducing sugar and assistive dying) and consequently emotional responses and level of engagement may be impacted. The design fictions developed from a participatory speculative design approach, such as this, would be provocative not only for the intended audience (the public and policy makers) but for the workshop participants themselves. These can go beyond engaging in the debate and critique of existing and potential healthcare service models to shaping future societies and norms as represented by the Sugar Free Malaysia and the euthanasia design fictions.

In addition to this, developing future scenarios in the form of speculative designs where senior citizens (age range between 55 - 94) engage with public health services (in the case of ImaginAging) and emergent technologies (in the case of ProtoPolicy) is very challenging, but beneficial too. The challenge lies in engaging citizens in unknown fields that are typically reserved for, and explored by, either experts or by younger individuals, with the lived experience and understanding of current and emerging technology. The key benefit sits in developing a more enhanced understanding of complex healthcare technologies and services, and the ability of design fictions to act as a tool for reflection as well as interrogation of future possibilities within these groups.

From the policy maker's perspective, the role of risk in speculative design in policy making relates to data collection and interpretation and their link with evidence. The speculative designs and the subsequent data collection exercise must be developed to ensure that users focus on the questions and issues under investigation. For example, there could be a risk that the euthanasia design fiction

would lead only to a debate on whether euthanasia should be legalised or not rather than the broader research question of ageing in place.

In dealing with something abstract, which design fictions often are, there is the possibility for a proportion of the data gathered to be unrelated to the question at hand. There is always a risk that the insight gathered from the design fictions is off the mark and particular attention should be paid by the researchers to ensure that the debates are kept on track. In addition to this, in using speculative design with workshops groups it is important to ensure balanced participation among workshop participants. There can be an unintentional bias for the views of the most dominant voices to be recorded, which may not always be representative. This goes hand in hand with managing the expectations of participants and ensuring people understand that they are provocations rather than predictions.

In bringing together the main beneficiaries as well as their communities as participant/citizen designers, it is possible to expand on the potential but also present assumptions about where speculative design could go, and what counts as speculative design. Moreover, the particularities of cultures outside of the usual default to western ways of knowing and living that informs the origins of speculative design, could contribute to enriching the methodology while contributing unanticipated perspectives to speculative design.

6. Conclusion

Despite the differences in geography, culture and beliefs, our workshops in both the UK (ProtoPolicy) and Malaysia (ImaginAging) provide clear evidence that participatory speculative design is a feasible approach to work with vulnerable and hard to reach populations, even though they may have never been involved in developing speculative concepts before. Although senior citizens may be the direct target of policy initiatives, their experiences and thoughts are rarely taken in to consideration. Their ease of acceptance of this methodology and for working collaboratively on something that had ambiguous aims (policy-making goals) was noticeable, which resulted in the creation of provocative prototypes.

Considering the interest in health policy from both pilot project groups, the risks of 'failing' in adopting participatory speculative design in policy making are limited as it allows for the laying of a foundation for collaborative exploration of future scenarios and for governments and citizens to work together towards the greater good in policy-making.

There is much merit involved in developing future scenarios for alternative healthcare services. We believe that with additional participatory engagement, design fiction could serve as a useful tool to kick-start and influence the policy-making process. With further research, this methodology could be developed into a potential approach for debating and priming future healthcare provision.

References

- Bason, C. (2014). *Design for Policy*. Gower Publishing.
- Bidwell, D. (2009). Is community-based participatory research postnormal science?. *Science, Technology, & Human Values*, 34(6), 741-761.

- Bradwell, P., & Marr, S. (2008). *making the most of collaboration an international survey of public service co-design* (No. 23) (p. 53). London: DEMOS.
- Darby, A., Whicher, A., Tseklevs, E., & Turner, N. (2016). *Protopolicy Design Report – Imaginationlancaster*. Lancaster University.
http://imagination.lancs.ac.uk/outcomes/ProtoPolicy_Design_Report
- Dixon-Woods, M., Amalberti, R., Goodman, S., Bergman, B., & Glasziou, P. (2011). Problems and promises of innovation: why healthcare needs to rethink its love/hate relationship with the new. *BMJ quality & safety*, 20(Suppl 1), i47-i51.
- Dunne, A., & Raby, F. (2013) *Speculative everything: design, fiction, and social dreaming*. MIT Press.
- Government Office for Science (2015) *Speculative design for an ageing population*
<https://futureofageing.blog.gov.uk/2015/07/06/speculative-design/>
- Gov. UK. (2016a). Policy Older people. <https://www.gov.uk/government/policies/older-people>.
- Gov. UK. (2016b). Policy Health and social care integration. <https://www.gov.uk/government/policies/health-and-social-care-integration>.
- Gov. UK. (2016c). Policy Housing for older and vulnerable people.
<https://www.gov.uk/government/policies/housing-for-older-and-vulnerable-people>.
- Huxley, K., Andrews, R., Downe, J., & Guarneros-Meza, V. (2016). Administrative traditions and citizen participation in public policy: a comparative study of France, Germany, the UK and Norway. *Policy & Politics*, 44(3), 383-402.
- Irvin, R. A., & Stansbury, J. (2004) Citizen participation in decision making: Is it worth the effort?. *Public administration review*, 64(1), 55-65.
- Junginger, S. (2013). Design and innovation in the public sector: Matters of design in policy-making and policy implementation. *Annual Review of Policy Design*, 1(1), 1-11.
- Junginger, S. (2016). *Transforming Public Services by Design: Re-Orienting Policies, Organizations and Services around People*. Routledge.
- Kessler, R., & Glasgow, R. E. (2011). A proposal to speed translation of healthcare research into practice: dramatic change is needed. *American journal of preventive medicine*, 40(6), 637-644.
- Kimbell, L. (2015). *Applying design approaches to policy making: discovering policy lab*. University of Brighton.
- Kirby, D. (2010). The future is now: Diegetic prototypes and the role of popular films in generating real-world technological development. *Social Studies of Science*, 40(1), 41-70.
- Linehan, C., Kirman, B. J., Reeves, S., Blythe, M. A., Tanenbaum, J. G., Desjardins, A., & Wakkary, R. (2014). Alternate endings: using fiction to explore design futures. In *CHI'14 Extended Abstracts on Human Factors in Computing Systems*. ACM Press. 45–48.
- Ministry of Health (2011) Malaysian National Health Policy for Older Persons
<https://www.kpwkm.gov.my/kpwkm/uploads/files/Dokumen/Dasar/Dasar%20Kesihatan%20Warga%20Emas%20Negara.pdf>
- Office for National Statistics (2017) Overview of the UK population: July 2017.
<https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/articles/overviewoftheukpopulation/july2017>
- Ollila, E., et al (2006). Health in All Policies in the European Union and its member states. *Ministry of Social Affairs and Health in Finland*.
- Pasman, G. (2016). Design Fiction As a Service Design Approach. In *Service Design Geographies. Proceedings of the ServDes. 2016 Conference*. Linköping University Electronic Press. No. 125, 511-515.

- Prime Minister's Department (2016) Eleventh Malaysia Plan 2016-2020
https://www.talentcorp.com.my/clients/TalentCorp_2016_7A6571AE-D9D0-4175-B35D-99EC514F2D24/contentms/img/publication/RMKe-11%20Book.pdf
- Reeves, S., Goulden, M., & Dingwall, R. (2016). The future as a design problem. *Design Issues*, 32(3), 6-17.
- Robert, G., Cornwell, J., Locock, L., Purushotham, A., Sturmey, G., & Gager, M. (2015). Patients and staff as codesigners of healthcare services. *Bmj*, 350, g7714.
- Sanders, E. B. N., & Stappers, P. J. (2008) Co-creation and the new landscapes of design. *Co-design*, 4(1), 5-18.
- Steen, M., Manschot, M., & De Koning, N. (2011). Benefits of co-design in service design projects. *International Journal of Design*, 5(2), 53-60.
- Sterling B. (2009) Design fiction. *Interactions*, 16(3), 20-4.
- Taylor, M. (2014) 'The Policy Presumption', *RSA Journal* 4, London, pp.10-15.
- Toleikyte, L (2016) Health in All Policies: overview. Public Health England.
<https://www.gov.uk/government/publications/>
- Tonkinwise, C. (2014). How We Intend to Future: Review of Anthony Dunne and Fiona Raby, *Speculative Everything: Design, Fiction, and Social Dreaming*. *Design Philosophy Papers*, 12(2), 169-187.
- Tseklevs, E., Darby, A., Whicher, A., & Swiatek, P. (2017a) Co-designing design fictions: a new approach for debating and priming future healthcare technologies and services. *Archives of Design Research*, 30(2), 5-21
- Tseklevs, E., Darby, A., Whicher, A., & Swiatek, P. (2017b). Using design fictions as a tool for engaging citizens in debating future pervasive health systems and services. *EAI Endorsed Transactions on Pervasive Health and Technology*, 3(10).
- United Nations (2016) World Population Ageing 2015
http://www.un.org/en/development/desa/population/publications/pdf/ageing/WPA2015_Highlights.pdf
- Voss, G., Revell, T., & Pickard, J. (2015). *Speculative Design and the Future of an Ageing Population Report 1: Outcomes*. Government Office for Science. Retrieved August, 2017,
<https://www.gov.uk/government/publications/future-of-ageing-speculative-design-workshops>
- Whicher, A. and A. Walters (2017) 'Mapping design for innovation policy in Wales and Scotland', *The Design Journal*, 20 (1), pp.109-129.
- WHO (2012) *Spending on health: A global overview*, April 2012.
<http://www.who.int/mediacentre/factsheets/fs319/en>
- Windle, K., Wagland, R., Forder, J., d'Amico, F., Janssen, D., & Wistow, G. (2009). National evaluation of partnerships for older people projects. <https://www.pssru.ac.uk/pub/dp2700.pdf>

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