The Value of Co-Design across cultures: engaging students to solve the 'wicked problems' of the 21st century

To be an effective designer in today's job market, students must be equipped with more than just technical skills. Today's design leaders know how to engage with other cultures and understand how to approach the wicked problems of the 21st century. By 2020 Australia and many other countries in the Asia Pacific region will have a large imbalance of citizens over the age of 65. The impact of this population imbalance in both Australia and abroad will be profound. More robust health services will need to be implemented and considerations for housing, community interaction and dealing with new technologies will need to be adapted to suit the needs of this growing population. To teach students how to approach and address this issue we believe that a multi-disciplinary and cross-cultural approach is necessary. In June 2017, 27 students from the disciplines Graphic, Web and Industrial Design, as well as Nursing, from four Australian states (VIC ACT, NSW and QLD) travelled to Singapore to work with 47 Singaporean and Hong Kong students from the areas of Public Health, Nursing, Built Environment, Visual Communications and Product Design. Students explored the concept of "design for healthy ageing in multicultural societies" through an extensive research report and in site visits, lectures and intensive workshops and then designed strategies and prototypes for new technologies and approaches around key issues such as social isolation, dealing with new technologies, dementia care, mobility issues, residential care, and community engagement. This paper outlines our process and the benefits of this approach.

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Introduction: The Complex issues of Ageing in Australia, Singapore, China and Hong Kong.

"Ageing is a deeply cultural issue. It impacts our social fabric and the systems and structures that make up our cities, our governments and our world (Design for Ageing Gracefully, 2015, p7)."

The world's population is aging. Countries all around the world are beginning to feel the effects of this, with most governments now designing innovative policies and public services specifically targeted towards best catering for the health improvement and growth of older persons within their population (United Nations, 2015). With people ageing at such a rapid pace, more robust health services and policies need to be better implemented.

The populations of Australia and many other countries in the Asia Pacific region are ageing accordingly. In the next few decades we will see more than a quarter to half of the people in many countries represented by citizens over 65. The impact of this imbalance will be profound and it represents a potential global shift in design for society. This will challenge designers, planners and health care professionals to develop solutions to better meet the needs and harness the capacity of our growing and diversifying groups of older citizens, including aspects such as housing, community interaction and co-operation, health and well-being, and the integration new technologies. Different disciplinary and cultural perspectives can be a means to create new ideas and approaches that provide a deeper understanding of the needs of the global ageing demographics.

Australia's growing longevity is a decisive indicator of national progress and high living standards. However, longer life spans pose major challenges.. As stated in the Sydney Morning Herald (2016), " In 1968, when Australia's population was half what it is today, just over 1 million people were aged over 65 – about 8 per cent of the total. But the number of over 65s has now swelled to 3.57 million, or 15 per cent of the population. Meanwhile, the proportion of the population aged 14 years and under has fallen from 29 per cent to 19 per cent in that period. By mid-century one in four Australians will be aged over 65 and about one in 14 people will be aged over 85, up from one in 50 now." This has consequences such as the increase of work retirement age, and an increased burden on the health system, among others.

Like other countries and regions, Singapore's rapidly ageing population can be

directly linked to an extended life expectancy and lower fertility rates ("Ageing", 2015). This is causing substantial shifts in the population age structure, with the number of children shrinking and the number of older people increasing. Although Singapore's ageing population is living longer, research has shown they are spending a number of their additional years in poor health conditions because of their lifestyles (AIA Vitality, n.d.). One of the most important emerging issues relating to an ageing population is social isolation and community engagement in the elderly (Ibrahim, et al., 2013). Family support has been the main contributor to the well-being of the aged, and it has been found that when one lacks family relationships and regular interactions with family members, they are at a higher risk of falling into social isolation (Donaldson et al., 2015).

The issues associated with ageing in China are also on par with Australia and Singapore. With 123 million people over the age of 65 (9% of the population), China has one of the largest elderly populations in the world. The over 65 group is estimated to represent 30% of the population 2050 (Chow and Nelson, 2015). How this group of people will be cared for as their health and mobility deteriorate is an issue that has yet to be fully addressed. As ingrained in traditional Chinese values, immediate or extended families should look after elderly family members. This long held traditional Chinese value of 'filial piety' is actually sanctioned in the 1982 Constitution of the People's Republic of China; Article 49 states that "parents have the duty to rear and educate their minor children and children who have come of age have the duty to support and assist their parents (in Wong and White, 2004)." This is problematic in that it in some ways negates a government duty to introduce and regulate formal policy or care measures for the elderly population. Living conditions in major cities like Hong Kong have changed since Article 49 was introduced. Hong Kong is an international urban hub for trade and commerce, which has directly affected the cost of living and availability of affordable housing. In Mainland China and Hong Kong, young people are working longer hours, travelling longer distances for work, as well as delaying marriage and choosing to have fewer children when they do marry (Li, Xuan 2016). All of these factors have impacted on the ability to care for their aged parents. Although most families would like to support their elderly parents, in many cases this is not possible. Therefore support from either the community or the state is necessary. However at the moment this support is largely lacking.

Empathy, Co-design and Participatory Design:

In order to create an effective design solution, a designer must understand the user and importantly, empathise with their situation. Although a designer may feel that they understand a user group (eg. statements such as "when I was a kid…"), this alone may not be enough for a designer to gain an in-depth understanding of a users' state of mind or position. "Design empathy requires direct and personal engagement," explains Battarbee 2004. It requires the designer to dig deeper and "'step into the user's shoes" and "walk the user's walk" in order to design products that fit the user's life." (Kouprie and Sleeswijk, 2009).

Traditionally designers address a brief via primary or secondary research and then create a design solution based on that research and finally test the results on the user. The co-design process breaks down this hierarchical system thus allowing the user to engage with the designer from the beginning of the process and to work in tandem with them on the solution. When designing something in this way it is possible to 'improve the design artifacts' effectiveness and support mutual learning between all participants (Donovan 2016, p.564). "Design is about changing; changing artifacts, as well as changing people, organizations and communities," explains Bratteteig and Gregory (2001).

It has now become commonplace to accept that users are valuable sources of information and that when they engage in the design process, new innovations and creative solutions can occur (Wheelwright & Clark 1992). Co-design (also termed co-creation and participatory design) is a process that merges the roles of designer and user (Sanders 2002). Participatory design is not a new process, having been introduced in the late 1970s by Scandinavian's Kristin Nygaard and Pal Sorgaard who argued that "the capability of multi-perspective reflection is essential" in design of new technologies (in Gregory 2003, p.62). Their theories evolved out the understanding that designers of new technologies often had limited knowledge of how users actually engaged with their products and services (Burr and Matthews 2008).

Participatory design is based on three interconnected concepts all of which acknowledge the importance of the user in all complex systems. The first objective of participatory design is "improving the knowledge upon which systems are built," followed by "enabling people to develop realistic expectations and resistance to change," and finally "increasing workplace democracy by giving members of an organization the right to participate in decisions that are likely to affect their work

(Bjorn-Anderson and Hedberg, 1977)." According to Bratteig and Gregory (2001), "participatory design approaches seek to include the future user in most parts of the design process; even as co-designers."

Although co-design processes have become the cornerstone of many contemporary design practices, Burr and Matthews (2008) warn: "The able development of new products, even in cooperation with users, is not always sufficient to guarantee the (commercial) success of those products." However the main strength of this process of designing is that it can introduce new and novel approaches that are directly informed by the end user.

Future health and wellbeing services will only succeed if they respond to end-user needs," explains Pantsar-Syvaniemi et al (2013). Co-design is growing in its use as an effective way to improve health care systems, products and patient behaviors however there is some pushback to this as a method. In the USA, for example, there has been a long history of creating services that "eliminate human error" and in doing so designers favor "automated quality control" over the individual responses of people in the design process as people are perceived to "be a source of error" (Gregory, 2003).

Culture and Healthy Aging:

Within the context of education, Susan Fries (n.d.) explains differences between cross-cultural and multicultural. 'Cross-cultural' applies to more than one culture, as for example, a comparative study across two different cultures. Multicultural, when referred to a society or context, is usually associated to a melting pot where different cultures coexist.

Both Singapore and Australia are considered multicultural societies with a focus on tolerance of religious and cultural belief systems across a wide range of cultural backgrounds. In Australia, one in four people were born overseas. There are over 260 languages spoken in Australia and Australian people identify with over 270 different ancestral backgrounds (Australian Multicultural Policy 2013). Singapore is a nation of immigrants whose ancestors came from all over Asia, Australasia and Europe, but mainly from China, India, Indonesia and the Middle East. When Singapore was founded as a British Colony in 1819 its population was roughly 74% Chinese (from various dialect groups), 14% of Malay or Javanese origin, 8% Indians, and the rest mainly Eurasians and Europeans (Lian, K.F. 2016). This mix is similar

today with a sizable population of people that identify with a range of religious beliefs such as Buddhists, Christians, Muslims and Hindus.

Singapore is an exemplar of a society that works to balance multicultural tolerance. It was a multicultural society long before it became a modern nation-state and therefore multiculturalism has become deeply entrenched in the society and governance of the country (Lian, K.F, 2016). Strong community bonds and a feeling of cultural stability have helped Singapore to achieve a world-class healthcare system. It ranks sixth in the world for the quality of its healthcare programs and has one of the lowest health-care expenditures in the world (Hasletine 2013, p.1). Australia follows the Singapore model that asserts that the rights of migrants as citizens are to be protected and their cultural origins respected (Lian, K.F. 2016). Lessons learned from Singapore in dealing with a multicultural aged population may be a way forward for Australia.

'Healthy Ageing' can be defined as "optimizing opportunities for good health, so that older people can take an active part in society and enjoy an independent and high quality of life (Swedish Institute of Public Health, 2006)." According to Tan et al (2010, p. 697), "Culture has been regarded as crucial to understanding successful ageing." A 2010 study by Tan et. al comparing 10 Chinese-Australians and 11 Anglo-Australians, aged 55 to 78 years found that the groups had similar outlooks in to ageing in that both groups associated successful ageing with health and personal responsibility. They differed in their outlook on perceptions of healthy ageing as Anglo-Australians regarded growing old gracefully and acceptance as important aspects of successful ageing, whereas Chinese-Australians valued financial security and an active lifestyle. The findings of this study asserted that when dealing with aged care services in Australia, a cross-cultural approach is needed.

Cross-cultural design Methods

During our Singapore 2017 study tour, we directed multicultural teams to find design solutions to a design for healthy aging brief that posed cultural questions. Our approach involved a combination of *fusion teamwork* with *design thinking* and *co-design* methods. *Fusion teamwork* is described by Janssens and Brett (2006) as a process in which teams from different cultural backgrounds work together on a project in which the facilitators encourage the exploration of cultural difference as a means to find creative solutions. According to Crotty and Brett (2012, p.212),

'Multicultural teams should have the raw material to be creative, but to use that raw material effectively, they need a teamwork process that supports the preservation of cultural differences.'

Students were also taught how to go through a design thinking process. The first step of the design thinking process is to "step into the shoes of the user" and come to a solution from a position of empathy (Brown, 2009). The terms "user-centred" or "human-centred design" are often used to describe the process of designing something from the human perspective. According to Krippendorff (2004): "Human-centeredness takes seriously the premise that human understanding and behaviour goes hand-in-glove; that what artefacts are is inseparably linked to how their users perceive them, can imagine interfacing with them, use them and talk about their stake in them with others." Using methods and tools from design thinking, co-design and fusion teamwork, we gathered students from different countries and disciplines to collectively explore design solutions for the aging population.

Case Study: "Inspired by Singapore: Design for Healthy Ageing"

The "Inspired by Singapore: Design for Healthy Ageing" workshops and exhibition were held from June 27th-July 7th 2017 as part of the New Colombo Plan funded "Inspired by Singapore" study tour for Graphic Design, Industrial Design, Web Design, Film and Nursing students. The workshop program brought together 75 design and nursing students from the major urban centres of Singapore and Hong Kong and four cities in Australia (Melbourne, Canberra, and our TPP students in Graphic Design from NSI Sydney and QTAFE Brisbane). Students from the University of Canberra, Monash University, Nanyang Polytechnic and the Technological and Higher Education Institute (THEI) of Hong Kong participated in the project.

While students from the different institutions had variations in the assessment related to their studies, the students were all required to prepare a group work that included a prototype design solution and description that showed in-depth understanding of the subject area. Prior to the study tour, students from UC industrial and Graphic design had to conduct research and prepare initial reports on selected topics related to aging. Workshop topics covered a range of issues associated with ageing in Singapore and Australia including; dealing with new technologies, age-friendly environment design, social isolation, dementia care, nutrition and dealing with

chronic health issues.

Once in Singapore, students were grouped in multicultural and multidisciplinary groups, according to the different topics above. Students and staff visited cultural sites, aged-care homes, hospitals, community centres and gardens, day care and rehabilitation centres, in order to learn more about the current state of ageing in Singapore. Students also participated in empathy activities, were they had to navigate a space with different walking aids used by the elderly, such as wheelchairs, walkers, crutches and walking sticks, among others. Afterwards they worked in multi-cultural and multi-disciplinary groups to create new design solutions, as products, spaces, services, interfaces and improved user-experiences.

Students created design projects that looked at creating new solutions for residential care, making the use of new technologies easier, creating 'healing' environments through landscape design and using new technologies to monitor and promote healthy habits. "On-the-Go" is a project that used new technologies such as screens and scan-able cards so that the elderly could get a GP to plan out custom diet plans and exercise regimes for the patient that would be readily available when the user scanned a 'Go' card at any custom kiosk in food halls and parks. Another solution, "Ubuntu" posed the concept of a communal living situation for the elderly that relied on a 'sharing' concept in which the aged lived and worked together in a self-sustaining community. "Gold-Edge" is a custom device that allowed someone who was not comfortable with using new technologies such as a smart phone, an easy to use device where they could check and monitor their health statistics.

Student Concepts; *From top left: Ubuntu Village, CME Bio-Scan, Affinity Sanctuary,*

On the GO, and Gold Edge

A final exhibition of the student's work was displayed at the prestigious National Design Centre in Singapore from the 7-11th of July. The topic and work prepared by our students was well received by Singaporean design professionals, academics and also by nationals from other Asian nations. Subsequently the work from this exhibition has been displayed in a feature article on the Korean Institute for Design Promotion. Considering the short timeline, the student works showed a depth of understanding of issues regarding the aged in Singapore. As a cross-cultural and multi-disciplinary group, they had reflected on what they had researched prior to the tour and in the site visits to create interesting new solutions. Despite such a large and diverse student group (75 in total), generally the teams worked together well and comments from the tour feedback report exhibit the willingness of the teams to come together to solve problems and create the final exhibition work. Whilst a few groups complained of issues with communication and clashes with disciplinary practices they were all able to pull together and create viable solutions to the issues posed for the exhibition.

Students and Staff of the 2017 Inspired by Singapore: Design for Healthy Ageing Tour at the National Design Centre

Student Testimonials:

"We worked well [as a multi-cultural and multi-disciplinary group], we were not all that different and had a high work ethic" – Australian Student Participant, (2017 Study tour feedback report).

"I loved every minute and every student was lovely and unique in their own way and I loved learning about their culture" - Australian Student Participant (2017 Study tour feedback report).

Conclusions:

New generations of designers will have to face 'wicked' problems which increase in complexity. The adequate and human centred resolution of such problems requires new skills in Arts and design graduates. In these scenarios, it is very improbable that designers operate individually, as a solo practitioner, free-lancer or designer-maker. More complex design challenges require multidisciplinary teams which can view a problem from different disciplinary areas of expertise, in order to comprehensively address the different aspects of such complex and multilayered problems. One of such problems is definitely 'healthy aging' where impacts include many aspects in peoples lives, such as socialization, economy, health services and many others.

Within a globalized and interconnected world, cultural aspects are not any more in the domain of the 'local community' of the designer. Cross-cultural design methods help students compare and contrast lifestyles and design solutions across different cultures, helping them to understand each solution in context, and also allowing them to compare and evaluate them. Multicultural environments, such as Australia and Singapore, require that students understand and respect differences and similarities across cultures, in order to generate solutions which cater for a broad public.

We consider that cross-cultural co-creation processes, tools and methods as described in this paper have a very important value in the education of new generations of art and design students.

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