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That's So Not Cool: introducing students to Elder Design

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ABSTRACT

To develop effective design solutions for end users whose life experiences, health, mobility, and cognitive functions are significantly different to our own, we must recognize and challenge our assumptions about those users. When we set out to inspire novice designers to practice in a field widely considered as the height of 'uncool', we also challenge beliefs about the nature of design itself. Introducing young novice designers to 'Elder Design, (ED) i.e. design responses to the needs of people over the age of 65, achieves both these goals. It also meets a rapidly ageing society's requirement for designers with an understanding of this user group.

This paper presents an analysis of a graduating student's design for a chair intended for residents' use in a residential aged care facility (RACF) in south-western Sydney). Effective design solutions in this area require a multidisciplinary approach involving an understanding of environment-behaviour relationships, the ageing process, dementia, nursing practices, operations research, and ergonomic design for user groups with highly specific (but varied) needs. In addition to the end users, ED introduces students to clients such as RACF operators, who are themselves experiencing rapid change in the types of the services they provide and the care models which inform them. In this context, effective problem-solving begins with problem identification -- for all parties. Evaluated via interview and the analysis of design outcomes, the project provides an insight into possible approaches to developing education for user-centred design solutions across many fields.

INTRODUCTION

"Cool. adj. laid back, relaxed, not freaked out, knowswhat's goin' on. Has come to mean anything popular."
(Opehlia, 2003)

"Much recent design has satisfied only evanescent wants and desires, while the genuine needs of man have often been neglected by the designer." (Papanek, 1972: 24)

Victor Papanek's clarion call to embrace social responsibility through design first appeared almost four decades ago and yet for most consumers (and quite a few designers) the term 'design' is still stubbornly synonymous with 'style'.

But some things have changed, not least an increased awareness of the rights of minorities and the marginalised, so that even Papanek's use of the word

'man' rather than 'humanity' has become quaintly dated.

Reflecting these changes, today's student designers are introduced to the concept of Universal Design (cf. Lidwell et al. 2003). Some may also be familiar with legislation such as Disability Discrimination Act (1992) or even ISO/IEC Guide 71 (2005), which provides guidelines for developing standards that meet the needs of older people and people with disabilities.

Nevertheless, the entrenched belief that 'good' design equates to 'cool' design means that the most commonly imagined end user in student projects is a twenty-something in possession of a large disposable income and no disabilities.

Correspondingly, the elderly are likely to be perceived as the least cool of end users. As a result, despite the significant growth in the over-65 cohort, and the opportunity for design to help improve their quality of life and care, few students are either aware of or interested in developing a career in this field. In this regard, the graduating class in the Bachelor of Design program at the School of Design in UNSW's College of Fine Arts is no exception.

In their final (fourth) year of study, each student develops a design proposal involving a 'real' (or putatively real) client/end user. The project is developed over a 14-week session and involves two weekly 3-hour studio sessions in any combination of two of the following areas of practice: ceramics, spatial design, textiles, graphics, object design and jewellery.

Seating design is a popular choice for self-selected projects and graduating class projects feature a regular crop of chairs and stools. They are often innovative, imaginative, and highly marketable, and generally intended for the cool crowd who visit trendy bars and live in upmarket inner city apartments. In 2006, however, one chair was specifically designed for elderly residents of aged care facilities.

The chair was intended to improve comfort and reduce the risk of users developing pressure sores, ie. wounds that develop as a result of prolonged or intense pressure. Pressure sores can be extremely painful, difficult to heal, and a site of potentially life threatening infections. As a result of a range of aged related changes, the elderly are particularly susceptible to pressure sores, and since even mobile residents typically spend many hours sitting down,

appropriate seating (and constant position changing) is a key strategy in reducing the risk.

The student (referred to here as 'Karen') designed a prototype chair for use in residential aged care facilities and the panel of judges at the final presentation awarded the design a Distinction; it later appeared in the Graduate Exhibition.

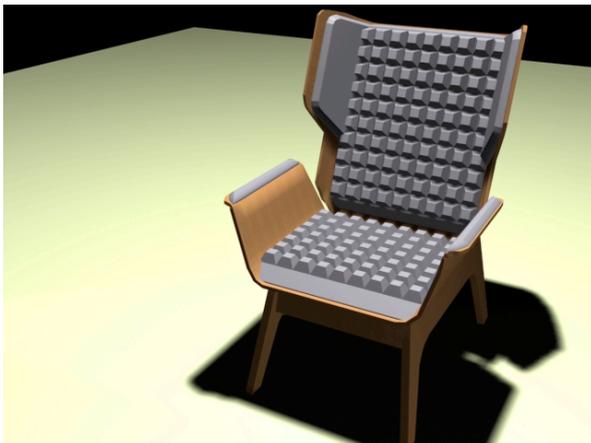


Fig. 1. Presentation drawing of Karen's chair.

I. METHODOLOGY

In order to understand how other students might be inspired to engage with this kind of 'real world' design, and to develop courses that could provide them with appropriate knowledge and resources, I interviewed Karen about her own experiences and made transcripts of the the interview. After surveying the relevant literature to familiarise myself with the key issues in elder design, I invited a group of aged care consultants ('the experts') to critique Karen's design. The consultants were a nurse educator, a physiotherapist specialising in aged care, and a registered nurse managing a dementia unit.

II. RESULTS

A. The Student

In her interview, Karen explained that she had wanted to "make a difference" to quality of life of people with disabilities. She had initially thought of developing a design to assist the vision-impaired but was uncertain what to do. As I had taught Karen two years' previously, in a studio-based course on spatial design, she sought my advice. I suggested she make contact with an aged care facility with a view to examining issues of wayfinding for the vision-impaired.

After visiting a local RACF, meeting the director of nursing, Karen heard about the issue of pressure sores and opted instead to design a chair, a project she believed would draw on her existing skills. As Karen reported:

"I started to think what they can have in their own

room that makes them happy. A lot of nurses told me [the residents] sit all the time. I thought how about I make a chair that can make them happy. That's why I designed an armchair. Then I found out about the pressure problem."

During the design development phase, Karen focused most of her attention on the pressure relieving foam, though the chair also featured headrests for sleeping. She reported that she had relied largely on intuitive responses, had not consulted any biometric data, or the available literature on seating for the elderly. Neither did she provide a comparative analysis of her design and those of existing chairs in the RACF or other precedents.

B. The Tutors

The design tutors had no direct experience of design for the elderly and both felt uncertain about the criteria and design parameters the chair would have to meet. They restricted their input to comments on chair design for the general population and for resolving problems of the foam cushion. As Karen reported *"I had the impression they wanted to see a design that was more 'out there', some kind of invention. I don't think they understood what I was trying to do or why it was important."*

C. The Experts

The aged care consultants noted a number of unresolved problems in the design. For a user group such as the elderly, with high rates of urinary and fecal incontinence, the innovative 'egg-cup' foam cushion – the critical functional feature of the design -would have to be either produced in a removable, washable material, or covered with a waterproof, washable surface that would effectively neutralise any benefits from the form.

The experts noted other characteristics that could present problems for elderly users:

The cushion elevation and height would make movements from the stand-to-sit/sit-to-stand positions difficult for some older people. The cushion height would also increase the risk of falls. (Falls associated with transfers to and from chairs are a major cause of injury-death amongst the elderly.)

The cushion width was not optimised for support postures for independent egress.

Arm widths and surface textures were not optimized for grip.

The presence of sharp corners on the arms and headrests increased the risk of skin tears for end users and others in the vicinity of the chair. (Fragile older skin is highly susceptible to tearing (ie. shearing at the epidermal/dermal juncture) as a result of even minor impacts.

The experts applauded the design intention whilst recognising the complexity of the challenge for which Karen had been unprepared.

III. DISCUSSION

What are the challenges and how could Karen have been better prepared to meet them? Clearly, her self-developed brief to “design a chair to increase comfort and reduce the risk of pressure sores” needed considerable expansion in terms of end user requirements.

An adequate brief would also specify preferred STS (stand-to-sit and sit-to-stand) movements, foot, leg, back, arm, and head, postures whilst seated. Since optimal dimensions depend on a wide range of factors, it would be necessary to determine whether the chair was intended for single or multiple users, as the design might need to accommodate variations in use between users or for the same user over time.

The intended location(s) for use should also have been investigated in order to determine optimal dimensions, weight and ease of portability.

The intended uses would also need to be specified, since a chair for socialising with others may require different characteristics to one intended for solitary use. Issues of functionality are complex. Chairs self-evidently are for sitting on, but other questions need to be asked in the context of residential aged care. Will the chair be used for occupational or recreational purposes? For mobilising? (wheelchairs) For restraining or providing falls prevention? (bucket chairs); for evacuation? (‘commode’)

Seated residents may be involved in a wide range of activities, such as eating and drinking (or being assisted to eat and drink), reading, watching TV, sleeping, socialising. Elderly residents are also likely to be self-administering or receiving medication; to require frequent movement and transfers associated with continence management. They may also receive medical and clinical care whilst sitting. They may have canulas, pacemakers or other medical equipment, all of which can impact on usability. (For a more detailed discussion of chairs and their uses amongst the elderly, see Nitz: 2000).

Chairs can also have therapeutic functions beyond comfort. Regular use of rocking chairs by residents with dementia has been shown to correlate to a reduction in the rates of depression/anxiety and PRN pain medication (Watson et al. 1998). Each of these opportunities and/or requirements has implications for chair design.

And there is the sensual experience of the chair, its surface textures, colour, and form, and its context. Individual and generational differences inevitably mean that what appeals to a 22-year old designer may not

appeal to an 80-year old user on aesthetic grounds.

To understand users’ needs, familiarity with key issues is essential. The elderly in both ‘low’ (‘hostel’) and ‘high’ (‘nursing home’) residential care present with a wide range of age-related health issues. In addition to dementia, incontinence, and a high risk of falls (the commonest reasons for admission to aged care), other common conditions include vision and auditory impairment, poor balance, cardiovascular complications, respiratory conditions, osteoporosis, osteoarthritis, rheumatoid arthritis, Parkinson’s disease, delirium, depression, and poor oral hygiene. In some cases, the potential impact of design may be clear, in other cases, less so (poor posture can exacerbate respiratory problems, poor circulation may result in oedema.) Some conditions, such as oral hygiene and hearing impairment, may appear unrelated to chair design without a knowledge of clinical care practice. However, residents receive oral care while seated. Would the design facilitate or impede that care? Similarly, the chair’s acoustic profile may promote or impede conversation. The wings Karen developed as headrests would reduce direct sound from the sides. They would also reduce the field of vision. As challenging behaviours may be provoked by sudden stimuli, this unintended potential outcome would also need to be considered (see Poole, 2004). As Shipley (1980) has observed, poor chair design can impact on the autonomy and the affective state and the health of the elderly user. It can exacerbate existing health problems and may increase the risk of injury.

And then there is also the issue of cost. In order to meet the needs of RACF operators (or individual residents and their families) who may be unable or unwilling to invest large sums in multiple units, costs need to be contained.

The complexity of these issues make the task challenging even for an experienced designer. The novice designer could have avoided, or at least been alerted to the pitfalls, if she had carried out a more thorough analysis of primary and secondary user needs and preferences, a critique of existing designs.

A growing body of research developed by nursing and medical practitioners, physiotherapists, ergonomists, provides a valuable background, but as Cohene et al. (2005) have noted, close observation of actual environments of use and the participation of end users and/or their carers is indispensable to determine needs, to draw on existing knowledge and skills, and to test design proposals in elder design.

A rigorous development phase raises some ethical concerns. How can effective prototype testing be carried out without risking the well-being of the end users? How can elderly people be involved in any form of research when they may not be able to give informed consent and may become (particularly in the case of people with dementia) distressed or disturbed?

Design for the elderly of course extends beyond chairs.

The growing body of literature concerning ED reflects the increasing importance and interest in this area. For example, Parker et al. (2004) found a significant correlation between characteristics of the built environment and residents' quality of life outcomes in a UK nursing home. Mihailidis et al. (2004) outline the principles for developing context aware Assistive Technologies (AT) ie devices or systems that enable or facilitate the performance of tasks (from monitors of gas cookers to locators of lost objects) in order to maintain independence. The field is vast and design can play a vital role in promoting quality of life and care. Some 210,000 Australians are currently diagnosed as having dementia, a figure projected to rise to 750,000 by 2050. In response to similar statistics, design educators have begun developing programs to sensitise students to the needs of people living with dementia. Canestaro and Houser (1995) for example, developed immersive programs that enabled learners to experience firsthand some of the physical and cognitive challenges faced by people with dementia.

IV. CONCLUSION

The emerging field of Elder Design is rich with opportunities. The ageing process affects every aspect of human experience. Ageing is not only associated with physical and mental loss, it is also associated with the loss: of social networks, social roles, identity, economic power, loved ones. Design across every field of practice from multi-media interactive systems for people with dementia to healing gardens and a range of assistive technologies, can play a role in maximising quality of life, improving the quality of care, and minimising the impact of those losses.

From a design education perspective, ED also offers a profound insight into designing for others. Elderly end users have very different needs, preferences and experiences to those of young able-bodied designers. As a result, young designers must first recognise and then challenge their assumptions about the users, the brief, and even the design problem that they have articulated. This requires a knowledge of the current research in areas that may impact on the design, and a direct engagement with the lifeworlds of the end users and their professional and personal carers.

A chair, a sitter, and others who interact with the sitter do not exist in a design vacuum. In a residential aged care facility they are part of a complex operational system involving shift workers, service providers, the resident community and their families. In order to understand the design requirements of any single element such as a chair, one needs to understand something of the operational management which governs its purchase and maintenance. This in turn will be reflected in the model of care followed by the facility. If, for example, a facility

professes to follow a person-centred care model, design decisions can either support or impede the implementation of the model (Garbutt and Greal, 2006).

Ultimately, this kind of ethnographic understanding characterises all user-centred design. The educational benefits of projects that focus on the needs of the elderly – or any other group that whose lifeworlds are distinct from those of the novice designers – are transferable to all design problems. At the same time, the introduction of ED into the studio curriculum can also raise awareness of certain 'genuine needs' – and the possibility of meeting them through good design.

Now that's cool.

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