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Barriers to universal design and what to do about them

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Abstract

The term universal design was coined in the early 1980s to describe a way of designing that encompasses the broadest spectrum of the population regardless of age, ability level or background. Whilst there is general goodwill towards the idea of designing universally, the mass market housing industry in Australia is unwilling to implement changes to incorporate universal design principles. Risk management strategies are one reason. Another is the assumption that universally designed homes are someone else's business because it is specialised housing. A third reason is located in the housing delivery chain. This paper identifies the key factors posing barriers to the implementation of universal design, and presents a way of resolving the issues holistically rather than confronting the barriers individually.

Introduction

The way a home is designed can make the difference between living independently in familiar surroundings (ageing in place), moving to specialised accommodation (retirement village), or prematurely entering an institutional setting (aged care). Whilst there is little that can be done for existing homes unless homeowners can afford to pay for renovations or modifications, there is a case to be made for all new homes to be universally designed so that more people can maintain their independence regardless of their current and future physical capabilities.

Universal design is a proposition that products and environments should be designed with the whole population of in mind. It is about maximum amenity and useability by the widest number of people possible regardless of background, age, gender, or status. While there will always be niche markets for particular goods, there are many items that almost everyone uses (a kettle, a door handle, a tap), or wants to use (a shop, a school, a bus). At first glance this seems a reasonable idea – why exclude people by design: after all, sales opportunities are greater if the product appeals to a broader cross section of people. However, while universal design is considered a 'good idea' by many, it has been insufficient to change housing design processes in any significant way.

Universal design is not a “one-size-fits-all” approach to design; rather it is a user-centred approach that considers the functionality of the widest possible range of users (Iwarsson and Stahl, 2003; Centre for Universal Design, 1997). In basic terms, universal design is about making a home easy to enter, easy to move around in, and easy to adapt, as well as anticipate the occupants’ changing needs over time (Starr, 2010). It is acknowledged that one hundred percent inclusion is rarely possible, but this should not prevent designers from striving for the ultimate through iterations of their designs over time. In one respect universal design in housing already exists – they are the universals currently adopted by the industry. However, small, cost neutral, but important changes to these universals can make housing more flexible and adaptable to fit the real lives of occupants (Landcom, 2008). Although it is technically feasible to include the changes, such as level access and wider doorways, and that there is regular media attention to an ageing population, project home developers and builders appear reticent to change their practices to suit the changing demographics and the social inclusion agenda. The question of “why is this so” therefore became the focus of this study - to identify the barriers to the uptake of universal design in mass market housing, and to find out why they exist.

Background to the study

Explaining the concept of universal design to others is one of the major difficulties faced by its proponents. Although universal design is philosophically about inclusivity – including all people – those who are most often excluded by design have become the focus of any discussion on universal design. As a result, universal design is perceived as a design template for people with disabilities and/or older people (Goldsmith, 2000; Wijk, 2001). However, it is through the eyes of people with disabilities that the barriers are most apparent. Whilst a parent might be prepared to wear the inconvenience of carrying a pram up steps, this is not an option for a wheelchair or walking frame user. Consequently, those who are most regularly excluded by design have been its strongest advocates with the loudest voices. Parents with prams, cyclists, people carrying parcels, people with delivery trolleys or briefcases on wheels, pregnant women, and young children, all of whom benefit from inclusive designs, are left out of the discourse. In part, this helps explain why universal design has not received the attention it might. Those who understand the basic simplicity of universal design (for example, Imrie, 2006; Wijk, 2001; Goldsmith, 2000; Coleman, 2001) cannot understand why others do not. They understand that it is possible to design for diversity, to design universally, and consequently eliminate architectural barriers to inclusion in everyday activities.

Whilst the design and construction of the public domain is subject to regulations that support accessible environments, private homes remain outside the scope of such regulations. Consequently, a person might enter a public building but not their neighbour’s home. Indeed, they may encounter a situation where they cannot enter their own home, or even find themselves imprisoned within. Although some new dwellings in Australia are designed with an ageing population in mind, they are largely restricted to infill sites where local authorities demand a small proportion of new dwellings meet the adaptable housing code and be set aside for purchasers over fifty five years of age (for example NSW Department of Infrastructure, Planning and Natural Resources, SEPP Housing for Seniors, 2004). However, the same requirements are not applied to large-scale land developments of detached single family homes – those produced by project home builders.

Apart from the civil rights aspect of inclusive practice, there is a pressing economic and social need for housing to be designed for the whole of the lifespan. Accidents and illness can visit at any time – sometimes with life changing consequences. Disability and impairment affect not only those with the condition, but others around them. Consequently, a twenty percent rate of disability within the

Australian population (Australian Bureau of Statistics, 2003) is a useful statistic, but an insufficient measure to account for the full impact of disability to whole families, physically, socially and economically. Smith, Rayer and Smith (2008) sought to address this issue by devising an economic model using households rather than individuals. Three factors formed the basis of the analysis: the number of households with at least one resident with a disability; the average length of time a household resides in a single family dwelling; and the average lifespan of dwellings. Using conservative estimates, the authors calculated that there is a sixty percent probability that a newly built single-family unit will house at least one resident with a disability during its expected lifetime. When visitors with a disability were included, the estimations pushed the probability to ninety one percent (2008:289). This analysis avoids a static view of peoples' lives which encourages proportion arguments, that is, the number of houses to suit people with special requirements should equal the number of people with those requirements. Rather, it allows for a reasoning that recognises that life is not static – housing and households each have lifespans that move through time. Any household without disability present today could find that changed tomorrow.

The research process

The research process was designed to gain insights into participant perspectives as a means of not only identifying barriers, but also why they exist. Narrative accounts were drawn from in-depth interviews and a postal/online survey of industry participants, which included property developers, planners, regulators, architects, project home builders, building designers, engineers, and surveyors. An exploratory postal survey of new home owners was also undertaken as well as five in-depth interviews with wheelchair users who had recently built a house. The new home owner information provided additional context to the study as did an analysis of two sets of government housing documents, and transcripts from the hearings into the draft *Disability (Access to Premises – Buildings) Standard* (2010). The main focus of this paper, however, is on the findings related to the house-building industry.

As the literature (for example, Wijk, 2001, Imrie, 2006), and the data collection process revealed that universal design was taken as a euphemism for specialised “disability” design, a review of the disability studies literature was undertaken. It revealed that while disability is a natural part of life, it is not treated as such. Until recently, people with disabilities were segregated from society and hidden away: they became recipients of charity and viewed as a state responsibility (Goggin and Newell, 2005). Segregation and government control therefore became the norm. Although the independence movement of the 1970s challenged the institutional model and gained legal rights for people with disabilities, the movement was unable to challenge the notion of segregation and separatism that exists today (Bickenbach et al, 1999). Although the Australian Disability Discrimination Act (1992) opened the door to previously barred activities, it failed to change attitudes and remove stereotyping. Indeed, anti discrimination legislation retains notions of ‘normal’ and ‘non-normal’ within its texts. How attitudes are expressed in language should not be overlooked because it has the power to establish and maintain societal norms (Daruwalla and Darcy, 2005).

Language and terminology as a barrier

Australian building codes and planning documents abound with terms and language that infer special designs for separate groups of people: accessible, adaptable, visitable, universal, ‘disabled’, inclusive, senior, and aged. Truly inclusive designing would not incur any title or term at all and therefore no discussion would be necessary. As Wijk explains, “If and when human diversity becomes a natural starting point for architectural design all special terms will vanish, and so they should” (2001:28.17).

However, before this Utopian state can be achieved, the issues require debate and research and without a suitable and agreed lexicon, this cannot be effectively achieved. Iwarsson and Stahl, (2003), and Steinfeld and Danford (1999) both make the point that even those working in the area of disability studies and related fields assume shared beliefs and use terms interchangeably inferring that everyone is talking about the same thing when perhaps they are not. This lack of shared understanding and the tendency to use terms interchangeably was also apparent in the way industry respondents utilised terms.

When asked for their understanding of universal design, almost all industry interview participants gave a fair description of the concept. However, throughout the interviews, concepts were transformed into terms found in codes and regulations related to ageing and disability – accessible, adaptable and ‘disabled’ being the most frequently used. Terms were used interchangeably and it became apparent that ‘universal design’ is now in common usage as a catch-all term for any type of housing that might be suitable for people with disabilities and older people. This should not be surprising. Planning instruments and regulations include terms such as “disabled toilet”, “disabled ramp”, “disabled parking”, “disabled access”, for example. The grammatically correct term ‘accessible’ is replaced by the grammatically incorrect term ‘disabled’. If the toilet was truly disabled it would be inoperable. In reflecting societal attitudes, thinking processes have changed “disabled” from an adjective into a noun. Proponents of universal design are therefore seeking to progress a case of inclusiveness against a background of entrenched stereotyping and stigmatisation.

Perceived increase in costs as a barrier

The industry results showed that on the whole there was a belief that universal design costs “a lot more” (although participants offered no evidence) and in some cases participants believed the extra cost outweighed the benefits. Given the confusion over terminology, it is predictable that costs were assumed to be greater. If, for example, disability access in public buildings is treated as an afterthought instead of being seamlessly included at the design concept stage, this will appear to be an added ‘disability extra’, and as an afterthought is likely to cost more if changes or additions to design are needed. If industry stakeholders extrapolate this to housing, they would naturally assume an increase in costs. In terms of housing designed to the adaptable code, some adaptable features are more expensive, particularly the kitchen arrangements and some bathroom features. If universal design is considered to be another term for adaptable housing, it too would be thought to be more expensive than current house designs. However, the cost need not be greater.

The New South Wales State Government land development corporation, Landcom, conducted its own research and found that it costs one to two percent more in construction costs to re-design existing mass market home designs. They also found that if universal design features were considered from the outset, the cost was virtually nothing (Landcom, 2008). Landcom has been successful of late in encouraging project home builders to erect examples of universally designed homes, but the project home builders have asserted that they “still want to have some ‘normal’ homes in their displays” (Landcom representative, personal conversation, 8 April 2010). This is yet another example of failing to grasp that this is an all-homes design concept – a universal concept.

Social attitudes as a barrier

Universal design is working against a background of the personal denial of the temporal nature of current levels of capability, and the aversion to any product that is connected with disability (Wylde, 2008). One of the icons of ‘disabled’ design is the utilitarian grab rail found in all accessible public

toilets and other institutional settings. Another is the international symbol for accessibility showing a stylised form of a wheelchair user. As Wylde (2008) found, the issue of appealing to consumers, is the difficulty of selling an idea that conjures up images and perceptions of a less capable self. Indeed, the in-depth interviews with four of the five wheelchair users in this study revealed that they chose not to install grab rails in their own homes, such is the aversion to the fittings. Consequently any demand for changes to home design is unlikely to come from consumers, yet industry respondents cited consumer demand as a major force for change. However, whether consumers are in fact able to influence market supply tactics is another issue.

Marketing practice as a barrier

Industry respondents, particularly property developers and project home builders, often referred to their “housing products”. The notion of “products” moves the issues into marketing theory and practice. Life cycle theory segments consumers into: Fledgling Teens and Early Twenties; Courting, Nest Building, Full Nest, Empty Nest, and Sole Survivor (Dickson, 1997:168). This classification rests on assumptions that products can be produced to satisfy each of these archetypal groups who will purchase certain goods at certain stages of life. It is the role of the marketing professional to second guess these items and to develop a product development and sales program pitched accordingly. This fits with the notion that young couples, established family groups, and older people will require a different types of accommodation. Marketing theory also covers various models of consumer behaviour which help marketing professionals to anticipate consumer demand patterns. With more expensive items such as houses and cars, the decision making process is usually more complex. The consumer looks for expert advice and assistance, and this is where the sales representative plays their part (Dickson 1997:181).

New development sites contain the sales offices of several project home builders where potential consumers discuss their requirements with the sales representatives. However, consumers’ decision making processes are often less than rational, and here social decision making theories become yet another factor. Social decision making theories include consumers’ beliefs about the attributes of a product, the feelings it evokes, as well as processes of social comparison and desire to improve self-worth (Bagozzi, 1986). Consequently, where more rational information is not available, or ignored by the consumer, the promotion of positive images of improved lifestyle are more likely to influence purchasing intentions. Glossy brochures of smiling happy families in their dream home as well as the latest fashions in fixtures and fittings are all part of the product packaging. With dream home packaging evoking promises of a “best possible future”, it is unlikely that project home builders will want to promote anything other, and unlikely that consumers will ask for anything that detracts from this idealised vision of the future.

The micro theory of competitive rationality in which each company competes to make their product more attractive to potential customers and at the same time drive down costs to increase profit margins is also a factor: “Cost-cutting innovations are particularly attractive, because their resulting effects are more predictable than other innovations” (Dickson, 1997:24). This supports the respondents overwhelming concerns about cost increases because of innovation, that is, any change to the way things are currently done.

In summary, impediments to the uptake of universal housing design come down to three key factors. First, universal design is interpreted as ‘disabled’ design which is deemed ugly, and this is contrary to the marketing principle of selling an attractive product. Second, people with disabilities and older people are considered a separate market segment so they need separate places built specially for them,

which may or may not be attractive. Third, any change to design processes (innovation) are expected to increase costs and this is a serious business risk if the consumer is not perceived to be demanding such changes and therefore willing to pay for them. Creative industrial designers can overcome issues of aesthetics, although universal features are largely unnoticeable in housing. Market segmentation may still be appropriate because universal design principles can be applied to all market segments. However, the third aspect, cost efficiency measures, is a more difficult aspect to overcome. Whilst the work of Landcom (2008) shows that costs, if any, to housing construction is negligible, this is only part of the solution. The real issue is the cost of change itself, of introducing something new into the house-building system.

The house-building system as a barrier

The survey and interviews revealed a significant level (80%) of in-principle support for universal design features, but most participants (85%) believed they could only be implemented through introducing new regulations. It seemed paradoxical that something gaining such support could only be achieved by force. A closer examination revealed the reason regulations appear to be the only way forward is due to the structure of the industry.

Mass market housing in greenfield development sites largely consists of privately purchased detached family dwellings. Consumers choose a block of land, peruse the various specially constructed and furnished display homes, and then finally select the design that appeals the most. Facades and floor plans may differ in each of these homes, but structurally they are all very similar. This allows housing components to be produced in a factory-like way. Unlike a standard factory set-up, different sections of the house-building 'factory' are owned by different interest groups (land developers, planners, building designers, constructors). These fragmented sections are brought together in a single network where all the fragments are supported by strong links and agreements which are influenced by professional codes and cost-efficiency goals. van Buren and Priemus, (2002) found this to be the case when analysing barriers to the uptake of sustainable design. Actors interact in an institutional context around formal planned institutions, such as regulations, as well as informal evolved institutions characterised by ground rules (2002:78). The classic work of Katz and Kahn (1978) on systems theory offers some explanations for the difficulty in instituting innovative strategies in large organisations and institutions.

Application of Systems Theory

Katz and Kahn's (1978) work focuses on the social and institutional processes within organisations. According to systems theory, the underpinning factor that shapes an organisation and the way it operates is its size and age: as both increase, the organisation or system is more likely to become closed to external influences. In response to external threats a closed organisation is more likely to focus on internal rigid controls to maintain its equilibrium. In short, it becomes mechanistically driven and impervious to outside influence. Katz and Kahn develop the theory further and identify ten characteristics, two of which have the most relevance here: the role of authority and responsibility, and the way in which external feedback is received.

Large organisations have a hierarchical system of authority and responsibility. While the house-building system behaves as one whole entity, it is at the same time fragmented. Although it works in a mechanistic way, it lacks the hierarchical governance that single organisations possess. As a networked system it is not possible to identify a point at which authority or responsibility can be found, because power is dispersed throughout the system. Consequently there is no single point at

which to make an appeal for wholesale design changes. Any appeal to individuals within the system, say to architects and designers, is unlikely to succeed because of the closed nature of the system.

Mechanistic organisations have less capacity for receiving feedback from the outside world unless it is simplified or coded into a language that fits the existing norms, codes and practices. All other information is regarded as “error variance” or a one-off abnormal event if the information does not fit the organisation’s existing modus operandi (Katz and Kahn, 1978). Here we come full circle to the issue of communicating thoughts and the way in which language is used. The house building industry codes universal design as ‘disabled design’ because this it is the language it understands – a language embedded in regulations and rules. That is why 85% of participants said that nothing will happen without new regulations.

Because change is not easily effected from inside the machine, the house building industry needs someone or something outside the machine to make the changes – an appeal to an external arbitrator, in this case building regulators. New regulations allow the whole industry machine to start producing houses to new standards in a coordinated way because the rules apply to everyone. The system therefore retains its cherished machine-like stability, and profit margins are presumed to be protected. In addition, everyone in the sector must make the changes at the same time and this means no competitive advantage or disadvantage is experienced by individual companies. However, the property industry seems to believe that no change is still better than any industry-wide change, albeit simultaneously.

The transcripts from the hearings into the draft *Disability (Access to Premises – Buildings) Standard* for public buildings illustrate that while some in the industry were in favour of changes to the Building Code of Australia to create greater access for people with disabilities (architects and building surveyors for example), the property industry continued to argue for the status quo. One argument heavily prosecuted was based on the claim that the additional costs were not outweighed the benefits. However, when questioned by the Parliamentary Committee, the Property Council of Australia was unable to provide any data on costs or the method of calculating the costs (Parliament of Australia, 2009). It should be noted that the level of contestation about these public building standards, which were meant to bring legislative certainty to the industry such that they match the requirements of the Disability Discrimination Act, has caused a drawn out process lasting more than ten years. Such is the focus on minimising change in spite of changes in society expectations over this time as pointed out by the Australian Institute of Architects (Parliament of Australia, 2009).

To summarise thus far, if systems theory has a predictive value for the house building industry, focusing on housing design details will require the imposition of a new set of regulations even if they are contested. Such regulations will likely be based on a mix of existing codes because this is the language with which the industry is most familiar. However, regulation of universal design is a contradiction in terms. The concept of universal design is to iteratively strive for new and better design solutions over time. This is not possible with regulations that lock designs and dimensions into a particular point in time. So the question then arises as to whether regulations, voluntary or mandatory, would actually bring about the outcomes and benefits proponents seek. Perhaps there is another way of tackling the issues.

Another way?

Although moves are afoot to introduce universal housing principles through a voluntary code with a new name, old ideas will not be easy to change and common usage language will be slow to adapt.

This is apparent in the *Livable Housing Design Guidelines*, launched by the Parliamentary Secretary for Disabilities in July 2010, where reference is made to disability access standards and other instruments relating to disability, which continues to entrench notions of specialised design. In contrast to the Australian approach of attempting to manipulate the market mechanisms and hope that industry will eventually be persuaded to universal design, the Norwegian model for implementing universal design turned to the paradigm of universal design itself for the solution.

The Norwegian model (Bringa, 2001, 2007) faces the issue more holistically, determinedly, and systematically. The Norwegian government tackled the key barrier: the systemic nature of the issues and inability to place responsibility in the hands of any particular stakeholder group. By casting universal design principles across all planning and zoning policies everyone became responsible and accountable. This initiative also addressed the deep seated segregationist attitudes. By analysing existing policies and procedures for compliance with universal design principles, all officers, regardless of their personal or professional views, were required to work to the values of universal design. However, the success of every strategy is in the implementation and consequently the success of the project also rested on appropriate education programs and regular evaluations of progress. This was made possible by sustained government commitment over several years. The key here is to allow sufficient time for stakeholder organisations to go through the various stages of change from initial resistance, to challenging existing schemas to eventual acceptance of change.

The Norwegian model does more than address regulations: it addresses the underpinning attitudes towards people with disabilities and emphasises notions of inclusivity. Examining policies and applying principles of equity and inclusion is an educational process in itself. This approach also side-stepped the issue of market demand – consumers were presented with the finished product, avoiding the need to try and attract consumers to products that might conjure up images of reduced capability. The process created a new culture incorporating inclusive norms and values, and therefore a new way to use (or not use) the existing language, and by including people with disabilities in the planning processes, it overcame the closed feedback mechanism which caused the perception of “error variance”.

Conclusions

The findings indicated that stereotyping and marginalisation of people with disabilities and older people has changed little in spite of legislation and the advent of accessible public domains. Societal attitudes, including those of house-builders, are a key stumbling block upon which many other barriers sit. However the structure of the house-building industry poses barriers beyond those of societal attitudes. As a large fragmented system, the industry is forced to retain a vice-like grip on the status quo in order to minimise risk and maintain legislative and financial certainty. Any change is perceived to pose risks to this efficiency. Nevertheless, the industry is receptive to change if it is imposed through external controls such as building regulations because they maintain certainty and control across the system. The Norwegian experience shows that with political leadership the structural and systemic barriers to innovative practice within the house-building industry can be overcome. Examining and re-drafting policy planning documents to eliminate exclusionary practices overcomes barriers to innovation, offers opportunity for greater flexibility in designs, and sets the scene for a new discourse. Regardless, change requires an appeal to an external force. The force can come in the shape of building code regulations focusing on design details, or focusing on planning and zoning policies that concentrate on inclusive practices. It remains to be seen which route, if any, Australia will take.

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