

# Designing For Real People's Lifelong Needs

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## Introduction

With globalisation, information technology and an ever more well travelled world population, there is a heightened awareness of the value of user-friendly built environments. Changes in legislation, building codes and standards influence designers, whilst awareness on equality and empowerment issues allow users with disability to demand people-friendly built environments. The quality of user-friendliness demanded of the built environment will rise as a consequence of improved standards and higher expectations, often fuelled by anti-discrimination legislation. Initiatives such as UN ESCAP's Biwako Millennium Framework for Action<sup>(1)</sup> propel current approaches to designing for people with disability from being a social issue to a rights-based one. This requires inclusion for everyone, rather than merely designing for 'Special Needs', in people's wider habitats, allowing full access to facilities over a person's full life course into old age. Increased longevity and demographic shifts of ageing populations bring a multiplier effect in the widening of the ability ranges of building users, adding an urgent and global need for design standards to be appraised and adjusted to meet these changes.

Yet how many designers can say that they have these issues in hand, and know what is required for such a paradigm shift in their design responsibilities?

## Real people : a modern design imperative

'Real people' exist in many shapes, sizes and abilities, being truly representative of a population and are the converse of the mythical 'average people' who have for so long been used to set dimensional and ability standards of designed-for populations. Not only does the term 'real people' include persons with a wide spectrum of abilities and impairments (physical, sensory and intellectual), but also older persons with greater vulnerability, possible frailty and a range of limitations, even if these do not technically count as 'disabilities'. It is no longer sufficient to provide access and facilities for persons with disability as separate entities; a family group using a building could consist of a frail grandparent, a son with a sports injury and a grandchild in a stroller. Additionally, the parents may be pushing a full shopping trolley. Which of these family members should go on the designated "disabled-users route", and which should use the "normal" facilities? Of course it makes practical and economic sense that all of the family can use the same amenities with equal comfort, rather than have to make use of duplicate and separate circulation paths, vertical access, toilets and other facilities. The bottom line is that all environments must be considered as capable of being utilised by everyone, and must provide for their differing needs simultaneously.

## Legislation : part of the answer

Legislation, codes and standards can go some way towards bringing about the realisation of an inclusive built environment, but not without other driving forces and greater expertise from design professionals. This may be through mandatory requirements as part of building regulations, with rigorous enforcement to penalise designers and developers who fail to meet given design standards. But legislation can only oblige people to do things at particular times, and usually only by not allowing them to do the wrong thing; moreover, it can rarely be retroactive, unless the scale of any modification or retrofitting is great enough to require permission to be applied for. And then, even if all the legal criteria are met, this still does not necessarily guarantee inclusivity or user-friendly end products.

One of the main principles of any law is that it must be capable of being upheld. Drafting a workable code which is truly enforceable, without placing impossibly onerous requirements on developers, is not an easy task. And, if the spirit of the law is not clear to those who are obliged to follow it, any outcomes are likely to fall short of good design. Too often, and too late, plans are handed over to the draughtsman to be brought into line with the requirements, but without any sense of the needs of the users for whom the code was created in the first place. To address this problem, the 3rd Revision of the 'Singapore Code on Barrier-free Access in Buildings'<sup>(2)</sup> was drafted with a two tier system of technical points:

enforceable requirements and non-enforceable recommendations. It also contains information for designers on the principles and thinking behind the rules, including designing for sensory impairment, for the needs of children with disabilities and for older people in general.

Enforceability of any legal requirements can be encouraged by proactive initiatives on the part of the enforcing agency. It is, for instance, difficult to sustain the argument for making a private developer provide accessible features if the public realm does not afford the same levels of amenity; where inaccessible streets and pavements present barriers which prevent a person in a wheelchair getting to the building, it is patently unfair to demand that the owner should put accessible toilets inside it, which may never be used. To this end, the Public Works Department in Singapore complemented the introduction of the 1st Code on Accessibility<sup>(3)</sup> with a major upgrading of walkways in downtown areas. These served as positive exemplars for holistic urban environments which are still being followed.

## Designer attitudes

Sadly, there are often deeply rooted problems in the minds of those responsible for the design, construction and maintenance of the built environment – where the inclusion of people-friendly features is envisaged as a necessary but unwelcome evil, to be tacked-on late in the design process or left for the attention of architectural technicians at the final detailing design stages. Often this results

in solutions that meet minimum standards but are ugly and relatively expensive, since they duplicate facilities. This begs the question of how to raise the importance of non-handicapping built environments to the status of a fundamental, key design criterion – so that user-friendliness is ‘designed-in’ rather than ‘bolted-on’.

Those responsible for the built environment generally have neither first-hand experience of disability, nor the foresight to understand properly the common needs of an elderly population. Their attitudes are moulded by outdated stereotypes which may not adequately reflect the diversity of wants and needs of the wider spectrum of users; an example of this is a prevailing image of ‘what old people do’ which proves to be significantly different to the wants and needs that the majority of people express when asked ‘what will you do when you are old?’

### **User needs, assistive devices and design agendas**

An understanding of the implications in design and planning for the needs of all users requires an understanding of mobility and daily activities, including a working knowledge of the assistive devices which they may use to give them increased ability; this could consist of data on wheeled transportation, from rollator to motorised wheelchair, and also the requirements of people who use crutches, canes or tripod walkers, all of whom need including in the greater understanding of provision for real people. From a

familiarity with the kinds of assistive devices that people use, and their limiting factors, we can consider the best interfaces between these and the built environment and can arrive at suitable solutions. This includes specifying suitable floor surfaces and consideration of how level-changes, vertical access and transportation are to be achieved, the use of safety devices such as handrails, and provision of adequate space and dimension to manoeuvre. Where personal assistive devices (i.e. those owned by the user) are less useful, the built environment can make up the deficit in a number of ways, such as lifts and handrails. Also worthy of consideration are aspects of fatigue, since many people are inhibited about mobility through their lack of stamina, which may be aggravated by other impairment. In large scale urban developments it is important to provide resting places and not expect all members of the population to be able to walk or wheel large distances, nor to be able to climb long flights of steps, such as at pedestrian overpasses.

As well as the needs of people who use assistive devices for mobility, it is vital to design for people with sensory impairments, which may take the form of hearing problems and blindness (although in both cases the majority of impaired people have some residual sensory power). For people with low vision, (and this may include many older people), environmental conditions may be critical to their safety and their wayfinding abilities. Adequate lighting levels, with reduction of glare, identification of steps

and hazards, legible signage and marking of routes with tactile tiles all play significant roles in the inclusive and user-friendly environment.

Understanding these requirements and melding them together is not too difficult a task, but does require empathy and some common sense. At this juncture there is an opportunity for 'Access Advocates' to play an important role in emphasising the access issues and the need for inclusivity to be high on specification and design agendas.

### Lifelong design needs

Because everyone's abilities, and hence their needs, change throughout their life course, it is improvident to design only for any one stage or set of abilities. More sensibly, a 'loose-fit' approach, which allows for varying ways in which environments can be used, and for adaptation where and when this is needed, can sustain life-long usage and "ageing-in-place" (as opposed to having to relinquish the family home for somewhere more accessible, with the onset of old age or disability). The 'Lifetime Home' concept embodies aspects of safety, mobility and comfort, as a fundamental design principle, along with the capability of future adaptation.<sup>(4)</sup>

Easily-understood concepts, such as these have gained a hold in people's thinking in Western Europe and North America. Whereas in the past the family home might have become impracticable for a person when they became less able, through natural ageing or an impairment

or disability brought about by an accident, the lifetime home can accommodate their changing needs without expensive adaptation. Some modification may be necessary, depending on the degree of provision, but can be done simply and without elaborate structural work. Examples of this adaptive approach vary in complexity, and may be as simple as providing mounting points for grab bars in bathrooms; or locating towel rails, strong enough to take a person's weight, in places where their use may prevent a fall (when getting out of a bath or shower, for instance).

On a more sophisticated scale, should an occupant become paralysed, they may need to install a ceiling hoist to move from bed to bathroom. In a conventional apartment or house this would require that structural door lintels be removed to allow the track an unobstructed run; in the lifetime home, however, such changes are anticipated and the transoms above doors are of removable lightweight panels, and thus obviate expensive and disruptive construction work.<sup>(5)</sup>

Examples of 2-storey lifetime-homes in Japan allow for the possible installation of a lift between floors at some future date, if the occupant is unable to use the stairs for whatever reason. Such potential modification can be carried out by providing closets that are located adjacent to the main circulation on both floors, directly above one another. The dimensions and structure of these make for easy future installation of a wheelchair-accessible lift, simply by removing the

floor from the upper cupboard - but only as and when needed. The additional costs of such a facility are negligible, but would pay dividends if needed for future adaptation.

Many other simple but effective ideas can be incorporated into buildings, landscape and transportation, and not only in housing, nor just in urban areas. Many people with disability live in rural areas and their lives can be greatly enhanced by good design – which does not have to be elaborate or high-tech to be effective. There will be some commonality in the needs of users in urban and rural settings, but the solutions need to be found appropriate to the place. Wheelchairs may be less than useful in areas where there are rough and uneven pathways and roads, for example. Thus an appreciation of what such needs might be would require a working knowledge of the range of potential users, their needs and the equipment they might use and the techniques of incorporating these in an integrated (rather than an ad-hoc) manner.

### **Accessibility models and barriers**

In extending the usefulness of the built environment to the needs of the widest range of people it is perhaps unfortunate that a 'wheelchair user' is often taken as the model for non-handicapping design elements, when there are many other forms of assistive devices other than wheelchairs and many other forms of impairments that require equal consideration. Examples of such other users are persons with sensory

impairments, persons with cognitive/intellectual impairments and seniors who are healthy but have diminished abilities due to the natural ageing process. But all too often these people come up against a range of obstacles and hazards which inhibit and endanger their normal activities.

It is not meant to suggest that people-unfriendly features are deliberately incorporated into the built environment, these are often the unfortunate outcome of no one being aware of inconsistencies at key junctions and connections. Barriers and hazards are as often the result of what has been left out as of what has been put in, often as a result of a lack of communication between the different parties or departments involved, linked to a lack of awareness of just how significant these inconsistencies might be to a person with disability. Common examples are the lack of kerb cuts between an accessible parking space and an accessible walkway, or the erecting of a piece of street furniture, such as a lamp post or bus stop which blocks a pavement. Such occurrences are surprising since many skilled persons are involved in the specification, design and construction phases - and yet the handicapping element is still built. Remedial work may often be required, which is always a more expensive solution; or else the element remains unremedied and proves to be a continuing barrier or hazard to those using the place. One effective way to eliminate the unintentional creation of these barriers is to appoint people responsible for overseeing the whole system in an holistic way, and to give them the power and

responsibility to ensure non-discriminatory outcomes; these parties can be 'Access Officers', appointed consultants or experienced representatives from user groups.

### Design decisions

But merely placing the responsibility for getting these things right should not simply be pushed to an outside consultant. Too often such matters are added as an afterthought, whereas they ought to be an integral part of the concept from the outset. Eventually, all design professionals should have adequate sensitivity and design knowledge to be able to integrate user-friendly principles, including good detailing and correct specification, as second nature every time they make a design decision.

Although designers must bear the responsibility for good design from the inception, they must also make sure their intentions are carried out to the letter, by adequate and informed supervision. In developed economies the 'Access Champion' is a knowledgeable expert with "appropriate skills in four areas, namely consultation and negotiation skills, technical skills, legal skills and contractual skills." <sup>(6)</sup>

### Educating the professions (and others)

Other ways of achieving higher standards, as outlined in the Council of Europe's recommendations<sup>(7)</sup> are to train and educate all parties, from development authority and professional designers (architects, highway engineers, and

everyone else involved), through to the artisans who will carry out the final construction work. This might be most effectively done by first-hand contact with the real users, observing the difficulties which simple obstacles can present to them and hearing their comments on these. By apprising all parties on how an ill-designed or poorly constructed element can present a major barrier or hazard to a less-able user, they should be more effective in carrying out their role with due consideration for inclusivity.

Design professionals need to ensure that any design is fit for its purpose. This includes curbing the temptation to create visually-exciting but user-unfriendly forms of design in the public realm, such as highly reflective and patterned floor surfaces on routeways, which cause visual confusion to many people, and may be slippery when wet. Exotic staircases, with glass treads or open risers can be equally problematic for many people. But deeper research on this topic, and the dissemination of good exemplars are needed to demonstrate how aesthetic quality can be pursued whilst retaining standards of safety and accessibility, without the architecture becoming sterile or monotonous.

There are schools of thought (and perhaps of architecture) that seem to believe that the presence of 'real people' will mar a work of architecture, and some otherwise very good journals persistently print seductive photographs of beautiful interiors (almost always new and not-yet-occupied) without any traces of the occupants or their activities contained in

the buildings. When the buildings illustrated have a primary social purpose one might expect to see how the occupants fit in and, to be deemed really effective as design exemplars, possibly a revisit to such buildings in three or more years, which would be very revealing on how well the architect answered the occupants' real needs. Feedback to the design professions is an all-too-rare occurrence, even though techniques for Post Occupancy Evaluation (POE) are readily available.

Initial consultation directly with user groups, followed by feedback and advice, is a vital component of the cycle of creating accessible environments. But, in turn, the users may need informing about what is viable and how effective compromises can be reached to ensure that the needs of all ability ranges are addressed, and not only those of one ability set at the expense of others. This must be achieved without conflicting demands being expressed, that will only serve to confuse the providers and designers, and which may be used as an excuse for doing nothing or only satisfying the most vocal user group.

Conflicts can arise in what is seen as good design. One example of this is the occurrence of designers producing (and, worse still, building) combined steps and ramps – sometimes called 'stramps'. These creations may look attractive and appear to give simultaneous change-of-level access for both wheelchairs as well as ambulant users, but in practice they are dangerous in use for a person in a

wheelchair, as there are no rails or upstands to prevent the wheels from running off the edge of the ramped surface, nor any handrails. For ambulant disabled people and blind or low-vision users, the situation is no more reassuring: continuous handrails cannot be put in without interrupting the ramp, and at many points there are differentials in the height of risers, which taper where the ramp runs diagonally across the steps and could be potential deathtraps. The net result is something that many people fear to use, or will be endangered by if they are not aware of the potential pitfalls. From case studies of built or proposed examples, and the feedback from users, sufficient evidence is available to designers to discourage creating them – and yet they continue to be included in major building and hard landscape proposals.

Accessible environments, like intelligent buildings, generally do not advertise the fact overtly. As with a well-tempered indoor environment, we should not be aware of air-conditioning: only benefit from the comfort it affords. If we can hear the fans, or feel a chilly breeze, it is deemed less than adequate. So it is with user-friendly environments - like a good pair of shoes, one cannot feel them, but can walk and wear them in complete comfort. The presence of too much signage with the familiar blue and white wheelchair logo (the internationally accepted disability symbol) usually indicates a less than satisfactory design. It is, however, quite difficult to spot (or even to photograph) a good 'accessible environment', unless one is sensitised to


the needs of a range of people; sadly, it can be much easier to find and identify bad examples!

But architects and others are real people too, and need encouragement just as much as anyone. Good publicity should be given to good design, and special awards created to signify a job well done; such awards should be judged by panels which include the real users. In 1998 the Singapore Institute of Architects (SIA) joined with the Handicaps Welfare Association (HWA) to set up the biennial SIA/HWA Award for “Handicap-friendly buildings and environments” which promulgates good design without compromising aesthetic quality.

## Conclusions

Designers, and others responsible for the built environment, not only need empathy for the wants and needs of users, they also need the foresight to anticipate rising future standards and expectations.

‘Real people’ should be the target group for design consideration and it is imperative that users become properly empowered to speak out on the importance of non-handicapping built environments for them to lead normal lives. Freedom to access the built environment is a fundamental human right and not to permit this is a discriminatory act. Anyone can be an ‘Access Advocate’, and more people should take up the challenge of promoting safe and easy-to-use built environments that can be enjoyed by everyone. There is a pressing need for more professional ‘Access



Champions’ in developing economies to influence, monitor and achieve inclusivity, and for a better-informed community to create accessible environments for all citizens - as a fundamental right. The end goal is to achieve a non-discriminatory ‘Accessibility Culture’ in which inclusivity is taken as read, to be seamlessly incorporated in all aspects of the built environment, its buildings, streets and transportation, and everything contained therein. Then we will have truly designed for real people’s lifelong needs.



## Notes and References

1. UN ESCAP. "Biwako Millennium Framework for Action towards an Inclusive, Barrier-free and Rights Based Society for Persons with Disabilities in Asia and the Pacific". United Nations Economic and Social Commission for Asia and the Pacific, 28 October 2002.
2. BCA (Building and Construction Authority) *Code on Barrier-Free Accessibility in Buildings*. Singapore 2002.
3. PWD (Public Works Department) *Code on Barrier-Free Accessibility in Buildings 1995*. Building Control Division, Singapore 1995.
4. Lifetime Homes. York: Joseph Rowntree Foundation 1994.
5. Parker, K J and J D Harrison, *Lifetime Habitats*. Proceedings of the First International Conference on Quality Life in Cities: Issues and Perspectives. Volume 1. School of Building and Real Estate, National University of Singapore, pp. 359-363, Singapore, March 1998. ISBN 981 04 0126 4.
6. DPTAC: 'Access Champion' as described in "Inclusive projects : a guide to best practice on preparing and delivering project briefs to secure access", Disabled Persons Transport Advisory Committee (DPTAC), dptac 07, HMSO, U.K., June 2003. <http://www.dptac.gov.uk/inclusive/guide/index.html>

7. Council of Europe: Appendix to Resolution ResAP(2001) 1, 15 February 2001. states:-

*"The right of all individuals, including persons with disabilities, to full participation in the life of the community involves the right to access to and use and understanding of the built environment."*

### On education, the resolution continues:-

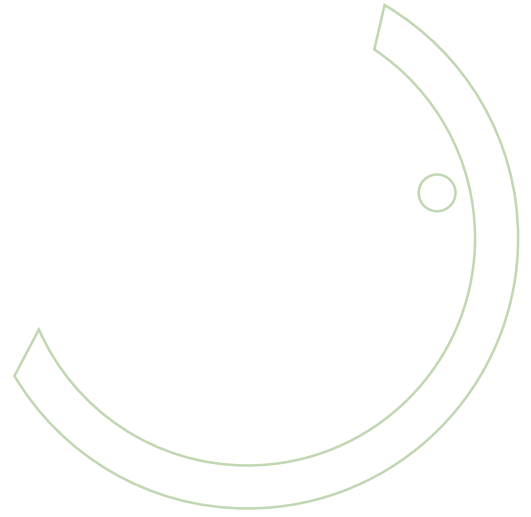
*"Convinced that universal design and accessibility have a key role to play in the promotion of human rights and fundamental freedoms and should therefore be incorporated into all levels of the education and training programmes of all occupations working on the built environment."*

*"Curricula should be developed with the co-operation of users, including organisations of and for people with disabilities."*

*"The concept of universal design should be brought into focus for other professions working with the built environment, such as regional planners, property developers, estate agents, landscape architects and landscape gardeners, as well as interior designers. It should also be brought to the attention of users, customers and clients, including organisations and bodies representing them."*

*"Since architects and engineers are not involved in all building projects, as many are carried out by craftsmen, such as bricklayers, carpenters, plumbers, and electricians, the initial vocational training of all professions concerned should include universal design principles."*

(Website - <http://cm.coe.int/ta/res/resAP/2001/2001xp1.html> )



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Dr. Harrison regularly addresses seminars and workshops on access and safety issues in the built environment at international, regional and local levels, including work for UN ESCAP and UN ESCWA, with contributions to UN publications on barrier-free design. He is a member of the UK Register of Access Consultants and advises professionally on these. Whilst working in Singapore he served on the Working Group on Planning and Housing for the Interministerial Committee on Ageing and on the BCA Committee reviewing the Code on Barrier-Free Accessibility in Buildings, contributing a new section on the needs of older citizens.

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