

# Strategic Design of Built Environments for Safe Ageing

**Jim Harrison, BArch. LittD.**

**Lecturer in Architecture, Queen's University Belfast**

## **1. INTRODUCTION**

Design of the built environment must accommodate the widest range of users and their abilities, providing supportive buildings and spaces to allow everyone to lead a fulfilling life. An inclusive design approach considers the widest range of abilities and brings benefits to a much wider group of users. This is particularly true in the built environment, which is static and permanent, so it is imperative to get it right first time.

Although originally driven by the needs of people with disabilities, inclusive design now acknowledges the needs of users with the widest range of abilities, to provide the physical environments needed to support and sustain them in leading fulfilling lives. Where any built environment has not been considered holistically, with elements placed together *ad hoc*, there will be barriers to individual mobility and hazards for more vulnerable people – people who are old and frail, or limited by health conditions, encumbered by baggage or with young children. For many, the greatest obstacles and dangers are the most obvious ones: steps, kerbs and uneven or slippery surfaces, particularly when these are poorly designed, maintained or badly lit. These all-too-familiar features generally come about by default, because those who create them are unaware of the potentially grave risks that they present, say, to someone with weak eyesight, or a frail elderly person with osteoporosis. For such a person, a fall can very easily occur, resulting in serious injury and permanent reduction of mobility.

When we age we will almost invariably experience decrease in abilities, which may be gradual in the normal ageing process, or sudden and precipitate where an individual has an accident, breaks a bone or has a stroke. But in either case the degree of loss of ability will be particular to the individual and not necessarily follow a set pattern. It may also be paralleled by a number of other impairments, sometimes related and sometimes not. But the majority of older people generally do not consider themselves to be disabled and they may actually feel inhibited about using facilities which are labeled for the use of people with disability, such as lifts or accessible toilets, even though they have a right to benefit from them in terms of amenity and increased safety.

### **Case 1**

*Steps and stairs are major causes of falls for older people, particularly if there are no handrails and the step nosings are not distinguishable.*

## **Familiar and Unfamiliar Environments**

Whilst one of the driving forces behind inclusive design is to increase personal independence, this may be less effective unless the elements that provide such support are well integrated into the environment, rather than appearing as separate parts within the system. Such integration needs to be consistent and ‘joined-up’ so that users may move about and use the amenities confidently, whether in their own home locality or in places further a field. This is important because we all as individuals inhabit a world where there are two sorts of built environment: one is familiar – our personal and everyday “home-zone” including our dwelling and its surroundings and places that we regularly visit. The second sort of environment includes any places that are unfamiliar, that we do not visit regularly. In these surroundings we rely on some degree of consistency in the elements for finding our way (signage, identification of routes, etc.) and using a whole range of amenities and facilities. These include such simple things as moving about and navigating our way across streets and up and down changes in level.

The first situation – our own “home-zone”, is generally an environment where we can make choices, or perhaps bring about changes to make it more accessible and, hopefully, safer as we age or become less able. These may be personalized and idiosyncratic in their arrangement but are familiar and placed according to our needs. The other type of environment is the unfamiliar one. For this form of environment it is, therefore, far more important that the elements that provide safety, accessibility and way finding have some degree of consistency and are recognizably useful, even if their overall arrangement varies from place to place. Any user of this form of environment will probably be more cautious and dependent on ‘reading’ the clues that show routes, locations of amenities or ‘affordances’ – and be aware of potential hazards and obstacle or barriers.

## **The Theory of Affordances**

One helpful way towards understanding the potential value any design element, particularly in a built environment, is the notion of ‘affordances’. This term was coined by the ecological psychologist, J. J. Gibson (1979), and subsequently developed by Ingold (2000) to explain the common interactions between organisms and their surroundings. In the man made-world this helps us to understand the emergent properties of interactions between specific combinations of environmental features and the users of this environment. This is often referred to as our ability to ‘read’ the environment or a designed object; an example of this might be our ability to recognize how to operate a piece of equipment by recognizing the ‘on/off’ switch or turning a knob to increase the power. As a useful conceptual tool for designers ‘affordance’ can be used to explore the amenity required by users with a range of abilities (or disabilities) for different environments to achieve acceptable levels of health and safety and accessibility, including how this may be discreetly integrated (Zaff, 1995). Donald Norman took the notion further, writing on this topic, including the useful book “The Psychology of Everyday Things” (1988).

An illustration of how affordances can have positive or negative qualities may be found in the use of glass doors which have the potential for some users of having a positive affordance in allowing one to see through it, but for people with low vision this transparent quality may mean the door is invisible and so presents a serious hazard and

they may accidentally walk into it. It is worth noting that the affordances are not of the door alone but of its relationship to the total environment, such as lighting conditions, as well as the users' perception. Using affordance as a tool for analysing design intentions enables us to see that the same physical property of an environment can give rise to both positive and negative affordances simultaneously for different people, depending on their physical abilities or 'effectivities'. For older people there is a greater need for these elements to be overt, either in recognisable forms and positions, such as handrails, visible nosings on steps, or through signage - usually the familiar blue and white 'disabled' logo.

*Faced with any physical situation we all have different ways of perceiving what is there and deciding how it fits our needs and abilities, particularly if these are impaired. A flight of steps will appear to many users as the best way to go from one level to another, but to a less sprightly individual it may imply hazards in the possible slipperiness of the tread material, aggravated by the absence of a handrail. For a person in a wheelchair steps will always be an absolute barrier, whilst person with impaired vision may be concerned with his or her ability to distinguish between the edges of the steps and the potential hazard that this presents. A well-designed staircase might incorporate positive affordances of safety, ease of ascent / descent and, for people who may become fatigued half way up, perhaps a welcoming resting place on the landing. However, as well as being a potential barrier to some, or a viable means of ascent to others, yet other users may see a step as a good place to sit, provided that no one will fall.*

## **Case 2**

*The flight of steps at the V & A Museum in London is designed with a ramp incorporated, so that it may be used in different ways by people – not just as a means of ascent.*

## **Case 3**

*The designer of this Danish Day Centre for the Elderly shows an appreciation that users may need to rest at the landing –and it makes a sociable place to sit.*

In order to promote independent mobility it is especially important that the design of environments in both the public realm and in each individual's 'home-zone' should both anticipate (and so reduce) potential hazards, whilst supporting the spectrum of users' needs for access and safe use of all the facilities. Inclusive or Universal Design approaches embody these principles and recognise that everyone has limitations. But in achieving a built environment that is truly inclusive it is necessary to take a holistic approach, rather than solving each part as it happens. Merely installing special provision for wheelchair users wherever there is a change in level, for example, is not a complete solution. A more fundamental and strategic attitude is needed.

## **Access Statements**

Achieving inclusive environments has much to do with responsibility on the part of the players who make the environment and how they ensure that it is appropriate – not just in design of the various component parts, but of the way in which these join together. It is the continuity and integration of the access provision that is so important and without which the other parts, no matter how well designed, may become ineffectual. For the architect more and more regulations may bring about safer and more accessible building interiors, but it is sometimes the case that a perfectly well-designed place is rendered confusing or inaccessible by poorly-coordinated provision of routes to its entrances. Analysis of many problems in accessibility, for example, will reveal that the barriers come about by default rather than design. Sometimes this is due to a lack of appreciation of the need or technique, but frequently the problems occur through lack of coordination between one provider and another, where the boundaries of one agency's responsibility changes to another. It is not unusual to find that a building may be designed to be fully accessible internally, but the external routes, designed by another department, present barriers which mean that a wheelchair could not enter. Even where access for wheelchair users is possible, it may be cumbersome and often entails expensive duplication of routes.

### *Case 4*

The approach to the student hostel in Singapore obeys the code on accessibility (Has Rams) – but it is a costly and non-inclusive duplication of routes.

### *Case 5*

With the same building, if the designer had reduced the grade level of the building and used the topography to begin the pathway from higher up the road the result would have been more effective and inclusive.

### Strategies towards Inclusive Access

To make accessibility more complete, an 'Access Statement' is now a mandatory part of any planning application in Britain, to ensure that key access requirements are incorporated into all design proposals. Consultation with potential users including disabled people is recommended, as is the appointment of an "Inclusive Design Champion" or professional access consultant to promote these issues. Together with the design team they will help to provide an Access Statement to support outline and detailed Planning Applications. Guidance on this innovative approach is given by various agencies, including the Disability Rights Commission, who describe Access Statements

as ‘achieving an inclusive environment by ensuring continuity through the planning, design and management of building and spaces’.

### **The ‘Lifetime Home’ Concept**

Another initiative to achieve more complete mobility, especially for independent living is the concept of the “Lifetime Home” and its application into all housing in Britain. This idea was developed by the Joseph Rowntree Trust in England, a charitable organisation concerned with the quality of housing. Recognising that most accidents occur within the home and many houses in Britain are two-storey, this concept reduces the need for older people to have to go up and down stairs to use the toilet during the day. Recent legislation now requires a toilet to be provided at entry level, so that an occupant could go about their daily life without having to go from one floor to another, even if they are in a wheelchair. Part M of UK Building Regulations also requires thresholds to doors to be level and for circulation spaces to be large enough for a wheelchair to manoeuvre. This standard has been taken up by a number of countries, and recent legislation in Singapore’s code on barrier-free access in buildings now includes similar requirements for stepless thresholds.

### **Shopmobility**

Pedestrianisation of many British town centres has meant that there is no longer the same ability for people to park at or be dropped off close to the front door of shops. Because this causes problems for people with limited mobility and discourages them shopping and visiting leisure and commercial facilities in their local towns, a system called “Shopmobility” has been developed linking local authorities, local chambers of trade and a charitable organisation concerned with the needs of older and disabled people. There are currently some 250 Shopmobility schemes in operation in towns and cities in the UK. These loan manual or powered wheelchairs and scooters for use within a town centre or shopping mall. They are for everyone, young or old, whether their mobility impairment is temporary or permanent. What is interesting is that this widens the range of people who use wheelchairs and motorised scooters to include people who would not normally own one, but do so for a specific purpose –increasing their mobility range to avail themselves of the town’s facilities.

These facilities are generally based in a public car park, where reserved parking is provided for users and their helpers and wheelchairs are available. But since provision of wheelchairs is pointless if the built environment is not compatible with their use, the Shopmobility scheme relies on collaboration between local authorities, who are responsible for the roads and pavements, and the local chambers of trade, whose shops need to be accessible, especially at their entrances. Pedestrianised routes in the town centre are all wheelchair accessible and entry to shops and public amenities are level and barrier-free. In this way, a good many customers are encouraged to return to using their local town shopping centres, rather than out-of-town supermarkets and malls, which are designed to allow shoppers with laden trolleys to use barrier-free routes from shop to car, laid out to standards similar to those required by wheelchair users.

## **Case 6**

*Shopmobility schemes in British towns go hand-in-hand with accessible streetscape and level thresholds to shops and public buildings.*

### Conclusions

Those responsible for the built environment, be they architects, planners and engineers, may still consider accessibility a somewhat condescending gesture towards people with disabilities, especially wheelchair users; but now there is growing regard for the rights of every individual. An inclusive approach to design acknowledges that anyone may potentially be handicapped by environments that are not supportive, at any time over their life course. This is particularly true with an increasing global population of ageing people who will live longer, more of whom are likely to develop degrees of physical and sensory impairment as they age and yet demand more independence in their living habits. For many reasons it makes good sense to ensure that they are not alienated or endangered by inadequate design or poor planning.

If considered from the outset of any design programme, access need not require elaborate or expensive technological solutions which are often not cost-effective ways to make up for design deficiencies. Simple approaches in strategic planning and coordination, especially by reducing unnecessary changes of level can make the built environment significantly more user-friendly. When these are properly specified and located they should be a seamless and natural-feeling pattern that is also unobtrusive. There is a saying that “the best pair of shoes are the ones you don’t feel” and so it should be with all the elements that make design inclusive and supportive.

*Source and Courtesy:* [www.designforall.in](http://www.designforall.in)