

The Inclusive City: delivering a more accessible urban environment through inclusive design.

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Abstract

This paper examines the reasons why the design of urban public space in the UK has failed to provide easy access to the city centre for older people and people with disabilities. After tracing the impact of medical, social, and bio-social models of disability on professional attitudes and values, the account goes on to consider ‘architectural disability’ that is produced by the design of the built environment. The distinctions between general needs, special needs and inclusive design are examined, and the impact of these different approaches is considered in respect of built environment legislation and architectural practice. Access to the city centre is conceptualised in terms of the ‘transport chain’ and public toilets are identified as a missing link in that chain. The provision of accessible ‘away from home’ toilets in city centres is examined as a worked example of the tension that currently exists between designing for

special needs and inclusive design. The paper concludes by speculating about the part that chartered surveyors could play in implementing a more inclusive approach to design.

Barriers to Access in City Centres

For the first time in the history of the planet, urbanisation has become the fundamental human condition. Urban populations are growing three times faster than overall populations and soon, three-quarters of the world's people will be city dwellers, (Giradet, 1996). Cities are the engine of economic development, employment and opportunity. They can be diverse, vibrant and exciting places, especially for the young, but many are also polluted, congested, overcrowded and crime-ridden. More specifically the urban built environments, particularly the pedestrian environments that we have created, are not sympathetic to the needs of older people and people with disabilities.

Figures representing the number of people with disabilities in the United Kingdom vary widely depending on the source, but what can be inferred from the available data is that a significant percentage of the population may be considered (by themselves or by the definitions found in various models) to have an impairment which, “has a substantial and long term effect on [their] ability to carry out normal day-to-day activities” (Disability Rights Commission, (DRC), 2002, p.119). In 2001, the Office of National Statistics reported that 8% of adults recorded having difficulties going out of doors (Office of National Statistics, 2002). A conservative estimate in 2002 reported that 12-13% of the population (5 million people) has some form of impairment (Oxley, 2002), whilst a current estimate by the Disability Rights Commission suggests that one in five adults in Great Britain is a disabled person (DRC, 2002). Further breakdowns of figures

reveal that two-thirds of disabled people are aged over 60 years, the majority of whom are female. With the demographics of aging predicted to shift progressively over the next 30 years, current estimates suggest that by 2030 the population aged over 65 will have doubled, whilst those in the population aged over eighty years in age will have trebled (Atkins, 2001; Frye, 2003). These figures not only suggest that a large proportion of the population may currently experience difficulty in gaining access to many aspects of the built environment due to the wide array of explicit and unseen barriers to access that currently exist, but also that unless we address the issue of accessibility within the built environment now, this problem is set to increase in the years to come.

Older and disabled people have much to gain from living in cities, and cities will undoubtedly gain immeasurably from balanced, socially inclusive communities. There is a growing awareness that all building users should be able to carry out their work and leisure activities efficiently, safely and pleasurably according to their abilities. Yet, despite a wealth of government directives on access, the design of the built environment has lagged behind. Indeed, the urban built environment represents the most concrete example of how people with impairments can be disabled by barriers to access.

Despite the imminent implementation of Part III of the Disability Discrimination Act (DDA, 1995) that will come into force in October 2004 and which, for the first time, directly addresses the design of physical features within the built environment that are a barrier to access, many commercial and public buildings are still not accessible for wheelchair users, few buildings provide the aids and signage to assist wayfinding by people with sensory impairments and most

public transport systems exclude people with a wide range of disabilities. No one maintains overall responsibility for the design of the urban public realm and so improvements to public access are patchy and piecemeal. Disabled people are therefore denied opportunities to lead independent lives because the poor design of our cities and urban centres poses barriers to accessing suitable housing, public transport, public spaces and buildings.

The urban public realm presents some of the greatest challenges in breaking down barriers that impede disabled people's access to the city centre. Although some city space may be considered accessible, the topography of the wider urban environment has created spaces of physical inaccessibility and social exclusion for older and disabled people. Imrie (2001, p.232) notes that dividing the city into those who can or who cannot access its space generates "distinctive spatialities of demarcation and exclusion". The design of the city's physical infrastructure, pedestrian realm and transport systems have thus far prevented people with disabilities from participating in areas of urban social life taken for granted by the able bodied, and in effect have set apart non-disabled from disabled people. Segregation by physical access creates an urban environment that has been defined by some authors as 'enclosed', 'barriered' and 'bounded', and a 'space of exclusion' for many in the population (Gleeson, 2001; Imrie, 2001). Kitchin and Law (2001) consider disabled people to have their movement and mobility circumscribed by their limited access, leading to a particular and selective use of cities based on infrastructure limitations.

From a design point of view, the 'holy grail' is 'seamless travel' where everyone can move effortlessly from origin to destination, between various modes of transport and from building to

building and place to place within the urban fabric. However, many aspects of the design of the built environment currently deter older and disabled people from using town centres, including difficult access and changes of level, high, steep steps, poorly maintained pavements, busy roads with few controlled crossing points, isolated, unlit bus stops, a dearth of adequate seating and inadequate public toilet provision. Other deterrents include perceptions that the urban environment is unsafe, the high costs of travel by public transport, lack of information, unhelpful drivers and unreliability of public services, (Atkins, 2001). Until these problems are resolved, policy statements that emphasise the importance of an inclusive urban environment will be perceived by at least some members of society to be little more than empty platitudes.

This account therefore sets out to examine some of the reasons why urban design has failed to rise to the challenge of an increasingly diverse society. Starting from definitions of disability that historically were based on medical models, it will be suggested that until recently designers uncritically accepted wider, socially-sanctioned constructions of body difference, so that the onus was placed on the individual to adapt the 'abnormal' body to an environment that appeared to have evolved 'naturally' to suit 'normal' people. The pragmatic solution was to design for 'special needs', thus perpetuating the distinction between mainstream society and minority groups.

This approach will be contrasted with more recent socio-cultural models of disability, which propose that the environment itself actively produces disability. According to these models, a person becomes disabled by the barriers they face, not by their impairment. The policies, practices and values of built environment professionals and disabled people's own reticence

about articulating their needs then combine with self-limiting behaviour to ensure that this unjust situation remains unchallenged. The issue of the inclusive design of ‘away from home’ toilets will be used to illustrate more general social attitudes to the provision of access for people with disabilities to the built environment and its building stock.

Medical and Social Models of Disability

All human beings operate within a range of abilities and are able to do different things at different ages. Ability is therefore a relative concept, relative that is to the abilities that are considered to lie within the normal range of behaviours for a human being at a particular chronological age. Set within this context, disability becomes synonymous with deviation from the normal. According to the World Health Organisation (WHO, 1980), ‘impairment’, is a loss or abnormality of psychological, physiological or bodily structure or function. ‘Disability’ then refers to any limitation or lack of ability resulting from an impairment, when performing an activity in the manner or within the range considered normal for a human being. ‘Handicap’ refers to the disadvantage that an individual experiences as a result of an impairment or a disability, that limits or prevents the fulfilment of a role that would be considered normal for a person of the same age, gender and circumstances. These definitions imply a causal chain, whereby impairments cause disabilities, which in turn lead to handicaps.

This causal chain is not, however, accepted uncritically. For example, disability rights organisations take issue with the implication entailed in definitions which propose that the disabled body is not normal and that disabled people are either patients with a medical condition that needs to be treated, or victims of some personal tragedy and so need to be looked

after. Disability activists offer alternative definitions of disability, based on the assertion that disability is primarily disadvantage or restriction imposed by a society that pays little or no attention to the needs of people with physical, sensory or cognitive impairments so that they are excluded from mainstream social life. This makes disability an issue of social justice and inclusion.

These diametrically opposed positions are associated, respectively, with the ‘medical’ and the ‘social’ model of disability. The medical model assumes that disability is caused by an impairment, which then becomes the focus of attention. The medical approach seeks to ameliorate or cure the impairment and, by so doing, to reduce or eliminate the disability. The danger in this approach is that people are reduced to stereotypes defined by their disability. At the same time, the individual becomes the focus of change and society is absolved of the responsibility to ensure that disabled people’s rights are safeguarded.

The social model, on the other hand, asserts that whilst individuals may have impairments that may or may not require medical treatment, this need not prevent disabled people from being able to live a normal and fulfilling life. Rather, it is society’s unwillingness to devote enough resources to ensure that they do, which is the root cause of social exclusion. The social model points to environmental barriers, poor employment protection, inadequate civil rights legislation and so on, that prevent disabled people from enjoying the same advantages as non-disabled people. This view stresses the importance of broader attitudinal and environmental factors in shaping disabled people’s lives arguing, in effect, that disability is socially produced.

These two opposed models have both been criticised for selectively emphasising different aspects of disability; the medical model for ignoring social values and attitudes and the social model for denying the debilitating effects people experience as a result of impairment. A third position, the 'bio-social' model attempts to reconcile medical and social positions by proposing that the make up of the human body affects an individual's ability to interact with the built environment but at the same time who or what is defined as disabled depends on social attitudes and values. As Imrie and Hall (2001. p.35) observe, "bio-social perspectives note that impairment is usually collapsed into a series of general and chaotic categories, such as vision, mobility and hard-of-hearing, which do little to reveal the complexities of impairment. Indeed, impairment is neither fixed nor static, or confined to any particular part of the population. It can be temporary or permanent, debilitating or not; in short, it is a contingent condition dependent on circumstances".

Bio-social perspectives therefore begin by acknowledging both the complexity of impairment - for example, there is no agreed definition of impaired vision and every vision impaired person's experience of sight loss is unique - and the diversity of social responses to impairment, which can range from empathy and inclusion to intolerance and ostracism. The richer framework afforded by the bio-social model allows the issue of multiple disability to be addressed, thus providing a more holistic alternative to the stereotyped accounts based on single issue disability, see **Figure 1**.

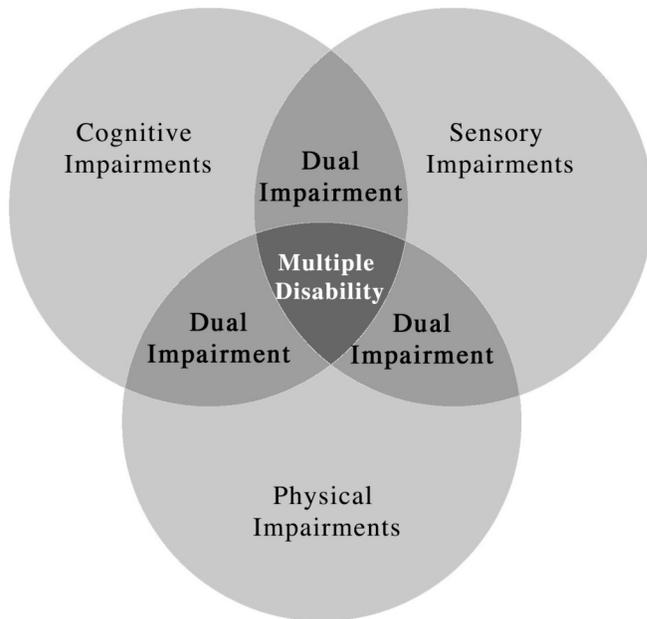


Figure 1. Dimensions of disability

For example, in a recent study of vision impaired adults (Hanson *et al*, 2004) just over half of all those consulted had additional major health problems to serious sight loss, and this figure approached nine out of ten among older vision impaired people (Hanson *et al*, 2002). Though the most numerous combination, affecting about half of all those with additional disabilities, was sensory and physical impairment, the majority of informants reported a complex cocktail of health conditions. Multiple disability is a far more challenging issue for urban design than that of making towns and cities more accessible for people with reduced mobility, as it requires a more complete understanding of the circumstances under which environments are experienced as disabling.

Architectural disability and environmental pressure

One important factor that can either constrain or enable disabled people's lives is the design of the physical environment. 'Architectural disability' is a term that has been used (Goldsmith,

1997) to describe how the physical design, layout and construction of buildings and places can confront people with hazards and barriers which make the built environment inconvenient, uncomfortable or unsafe and may even prevent some people from using it at all. Here too the word 'disability' implies a loss of functionality, but in this case the term refers to badly designed, shoddily built or poorly maintained buildings, which are dysfunctional in that they can adversely affect people's access to and use of the environment.

A moment's thought confirms that poorly designed buildings can disable or handicap older people, children, adults with babies in pushchairs, larger, taller or smaller people and those carrying heavy loads, as well as people with a physical, sensory or cognitive impairment. Some features of buildings may not even be convenient for young, healthy and able-bodied people. Almost everyone experiences problems in using the built environment at some time in their lives. Seen in this light, we are all potential or actual victims of architectural discrimination as a result of conventional building design. One design manual (Wylde *et al.*, 1994) suggests that as many as 90% of individuals may be architecturally disabled in some way or other at some time in their life.

Lawton (1974) has concentrated on how the built environment can restrict options for older people. He uses the more neutral term 'environmental pressure' to describe the impact that poorly designed homes, public buildings and places can have on people's lives. He defines environmental pressure as a state induced by the necessity of dealing with environments built for younger, fitter people which may render the older person more vulnerable, or more docile and accepting of environmental constraints. He warns that either a drop in competence or an

increase in environmental pressure could account for the apparent negative effects of ageing, particularly as older people are only able to adapt within a relatively narrow range of architectural variables. More positively, he asserts that small improvements to the older person's physical environment may produce a substantial reduction in environmental pressure, so that "the payoff for effective environmental intervention is very high for older people in poor mental or physical health", (*ibid.*, p.259). Exactly the same propositions would apply in the case of people with a disability. For both groups, a well-designed environment has the potential to be 'therapeutic' rather than disabling.

Imrie and Hall (2001, p. 36) have identified four assumptions that are current within the construction industry that prevent the built environment from being designed in such a way as to reduce environmental pressure or architectural disability. These are that:

- 1) there is insufficient demand among disabled people to justify providing a more accessible built environment;
- 2) it is unreasonably costly to provide environments that are fully accessible;
- 3) meeting the needs of wheelchair users is sufficient to meet the needs of all disabled people;
- and
- 4) accessible environments can be provided by specifying technical design solutions without there being any corresponding change in social attitudes, values or practices.

Another contributory factor may be that design guidance tends to utilise anthropometric data that are based on average body dimensions and characteristics. These data reinforce the view that human bodies come in standard shapes and sizes, and that designing for the average, normal person will ensure that most people's requirements are satisfied. However, one of the

most powerful disincentives for the inclusive design of the built environment is professional attitudes and assumptions, encapsulated in the distinction between general and special needs.

From General and Special Needs to Inclusive Design

Throughout the second half of the twentieth century, the medical model of disability was enshrined within the design professions in the distinction between ‘general’ and ‘special’ needs. This opposition still lies at the heart of many current discussions and debates about the design of the built environment. The terms originated with the birth of the Welfare State and, for much of the late twentieth century in the UK at least, they seemed so natural and obvious that all other options were excluded from thought. Design for general needs assumed that the client or end-user of the building or product was a young, physically fit, educated, middle class (usually) male adult who embodied the anthropometric stereotype. Design for special needs then addressed the requirements of all those groups who did not fit the previous definition of the client, such as children, older people, those with mental health problems and women. According to this viewpoint, people with physical, sensory or cognitive impairments are, by definition, people with special needs.

At the time, the ‘special needs’ approach seemed a pragmatic way of solving practical problems, by tailoring buildings and products so that they were ‘just right’ for each particular client group. However, insofar as it was based on needs not rights, it led to a remedial, problem-solving approach, where designers operated in a fragmented customer marketplace in which there was invariably a low take up of purpose-built solutions whilst, so far as buildings and products are concerned, it has led to unattractive, stigmatising, remedial environments that announce people’s disability to the public at large. More recently, the approach has been

criticised for assuming that the design process is divided into ‘us (the designers) versus them (the users)’, as opposed to designing for ‘all of us’ (Sklar and Suri, 2001).

Today, the approach has changed from one of tailoring buildings and products for fragmented constituencies of people with special needs and instead, greater stress is being placed upon the importance of ‘inclusive design’, ‘universal design’ or ‘design for all’. Inclusive design means creating environments and products that are usable by all, without the need for specialist adaptation or design, see **Figure 2**. This goal arises out of the understanding that disability is socially defined.

Special Needs	Inclusive Design
Designer client. Persona of a young, fit, active, male, white adult the yardstick for good design.	People are individuals, who have different needs and requirements during their life course.
Others - older people and people with disabilities - are not ‘normal’ clients.	Us - we all have goals / aspirations as well as problems / impairments.
They have ‘special needs’.	We share ‘generic needs’.
Micro-environmental approach	Macro-environmental approach
Ethos of specialisation and pragmatism.	Ethos of normalisation and enablement.
Tailors the environment so that it is ‘just right’ for each client group.	Extends parameters of design until no one is excluded
Telling people what they need.	Asking people what they want.
Does your disability prevent you from using the city centre?	What is it about the design of the city centre that prevents you from using it?

Figure 2. From ‘special needs’ to ‘inclusive design’, (adapted from Hanson, 2001)

An inclusive environment is one in which all users, whatever their abilities, are able to carry out their day to day activities comfortably, effectively and safely without being restricted by the poor design, maintenance or management of the built environment. The principles of inclusive design aim to accommodate the broadest range of bodily shapes, dimensions and movements, in the belief that designers and manufacturers should ensure that buildings, products and services address the needs of the widest possible audience, see **Figure 3**. A key outcome for

inclusive design should therefore be to both alleviate environmental pressure and architectural disability, and also to achieve a greater measure of social equity and justice. However, critics of inclusive design argue that in many cases it is impossible to provide a ‘one size fits all’ solution. Some people will always be excluded.

Principle	Description
equitable	the product is useful and marketable to people with a range of abilities
flexible	it can accommodate a wide range of individual needs and preferences
intuitive	the product is easy to use
effective	it works in most situations and for most people
tolerant	the product can cope with user-errors
efficient	it does not stress or tire the user
appropriate	it is ergonomically designed to be acceptable to the majority of users

Figure 3. Principles of Inclusive Design (adapted from the Center for Universal Design, 1995)

Benktzon (1993) has therefore proposed a ‘design pyramid’ as a graphic illustration of how to overcome the objection that inclusive design is an unrealisable goal. She has divided the population into three broad but unequal bands, see **Figure 4**. At the base of Benktzon’s pyramid are the large numbers of able-bodied people, the middle layer comprises people with reduced capabilities and at the top are the small numbers of people with severe impairments, including “people in wheelchairs and people with very limited strength and mobility in their hands and arms”, (*ibid.*, p.19). The approach assumes that if products are designed to be used by a particular layer, they will automatically be useable by all those in the lower layers.

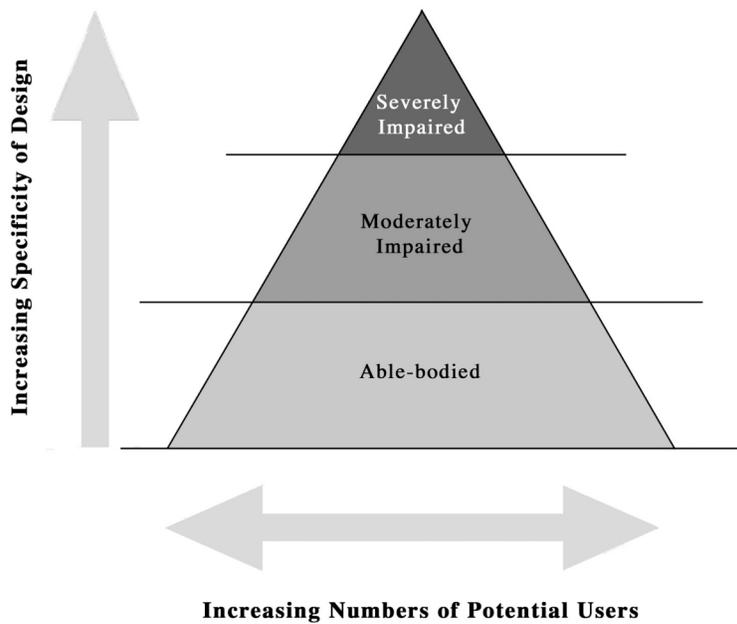


Figure 4. Benktzon's design pyramid (adapted from Benktzon, 1993).

Three levels of 'inclusion' have therefore been more generally adopted by the proponents of inclusive design (COST 219, 1997). They are:

- 1) Mainstream products for everyone, including people with disabilities;
- 2) Mainstream products that can be customised for use by people with disabilities; and
- 3) Specially-designed products tailored to the requirements of people with severe disabilities.

This allows for customised and tailored products to meet a need in situations where it is particularly difficult to extend the design parameters of mainstream provision to include everyone. Clearly, this approach can be extended to the design of the built environment.

Building on Benktzon's user pyramid, Keates et al (2001) have developed a more sophisticated model known as the 'Inclusive Design Cube', to support designers in conceptualising the

complex design processes involved in understanding the requirements of users with a wide range of abilities. Starting from the position that the designer should be concerned with people's capabilities, not their disabilities, the authors advocate a proactive approach that assumes a wide range of user capabilities from the inception of the design.

The cube is a model that relates together capability, population profile and design decision-making in a simple graphical format, see **Figure 5**. Each axis of the cube represents the users' physical, sensory and cognitive capability, and the enclosed volume represents the population included. The largest enclosed (grey) volume represents the proposition that inclusive or 'user-aware' design will generate products that can be used by large sections of the population but recognises that these are likely to be inaccessible to people with reduced capability in any of the three dimensions. For the most severely impaired users at the extremes of the cube (black), it may be necessary to tailor products through special-purpose design. For people with moderate impairments (white) it should be possible to customise a mass-produced product, provided that it was originally designed using inclusive design principles. Conversely, it should be possible to increase the potential population of users of any building or product by using technology and design to augment the users' motor skills, senses or cognition. In principle, this model is able both to specify capacity more precisely and to address the complex issue of multiple disability referred to earlier.

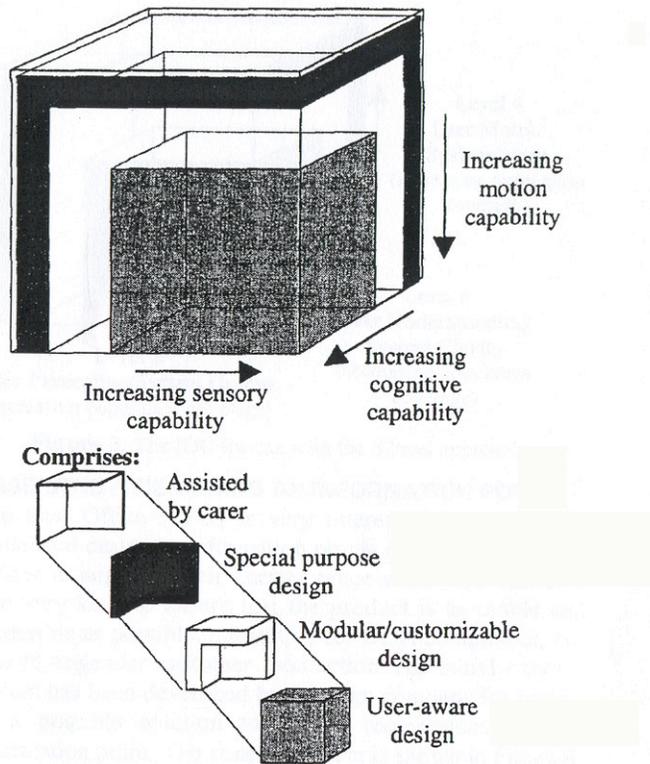


Figure 5. The Inclusive Design Cube (reproduced from Keates et al., 2000)

To illustrate the practical consequences of Benktzon’s approach for architecture, Goldsmith (2000) has devised a ‘universal design pyramid’, see **Figure 6**. When checking to see if a building is convenient for all its users, Goldsmith proposes that the architect should begin with row 1 at the base of the pyramid, which represents fit and active people who can “run and jump, leap up stairs, climb perpendicular ladders, dance exuberantly and carry loads of heavy baggage”, (*ibid.*, p.2). In row 2 are normal adults who, whilst not being athletic, can still move about freely in the environment. No additional considerations need to apply when designing for these user-groups. The straight line A represents the satisfaction of these people’s requirements by unselfconscious design.

Row 3 also represents active people, but in this case they happen to be women, who Goldsmith points out are subject to architectural discrimination whenever they use public buildings because they need to queue for the toilet, as women are not provided with enough facilities. In row 4 are older people, who probably would not regard themselves as disabled even though they may be less active and possibly use a walking aid, and adults with children in pushchairs. Both groups experience difficulty using a normal WC compartment in public buildings because of inadequate space. In row 5 are ambulant disabled people. Goldsmith argues that none of rows 3-5 inclusive would be inconvenienced, if architects were to design normal toilet provision for members of the public that accommodated these people's requirements for a level access and extra space within the cubicle. A 'universal' (to use Goldsmith's preferred term) approach could therefore extend the parameters of design to encompass all these user-groups relatively easily. The squiggly line B represents this extension.

The people in row 6 are independent wheelchair users. In the UK, since the mid 1980s, this group has been legislated for by Part M of the Building Regulations. These have historically taken a 'special needs' approach to design. Thus, wheelchair users are provided with a special, unisex accessible WC compartment, which is not available to ordinary members of the general public, see **Figure 7**. The 'for the disabled' prescription inscribed in earlier versions of the Building Regulations ensures that the needs of this group are accommodated, but this will not be of assistance to people in rows 3,4 and 5 who, not being disabled, are consequently excluded. Line C represents the satisfaction of wheelchair users and hints that the people in the tiers below could be accommodated if 'disabled' toilet provision were to be extended to other groups. Those in rows 7 and 8 are users whose needs are not covered by current legislation.

The individuals in row 7 are wheelchair users who need assistance to go to the toilet, and scooter users. People in row 8 need two carers. Many people in these tiers could access public buildings if these were designed inclusively, as line D indicates.

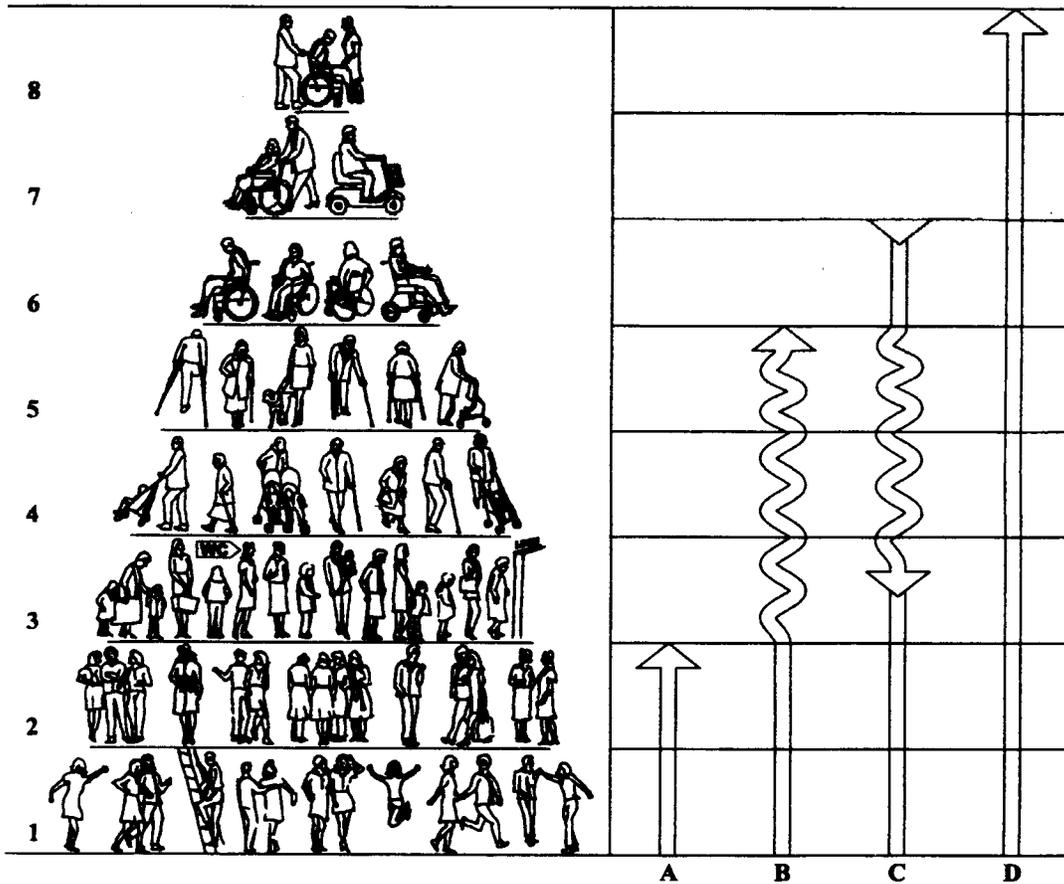


Figure 6. The Universal Design Pyramid (reproduced from Goldsmith, 2000)

Unlike the inclusive design cube, Goldsmith’s universal design pyramid is heavily weighted towards the needs of people with impaired locomotion. In row 5 there is a person with impaired vision, guided by her dog, but this is a rare exception. Goldsmith argues that it is adults with locomotion impairments who are able to benefit most from inclusive / universal design. He acknowledges the limitations of his particular approach with respect to children but not the potential benefits that could accrue were inclusive design principles to be extended

to those with sensory or cognitive impairments as he claims that, “by way of information conveyed on architectural drawings, the scope available to help people with sensory or cognitive disabilities is tiny by comparison”, (*ibid.*, p. 4). However, this statement does not take account of the ability of a building’s written specification to record information that cannot be captured in the working drawings.

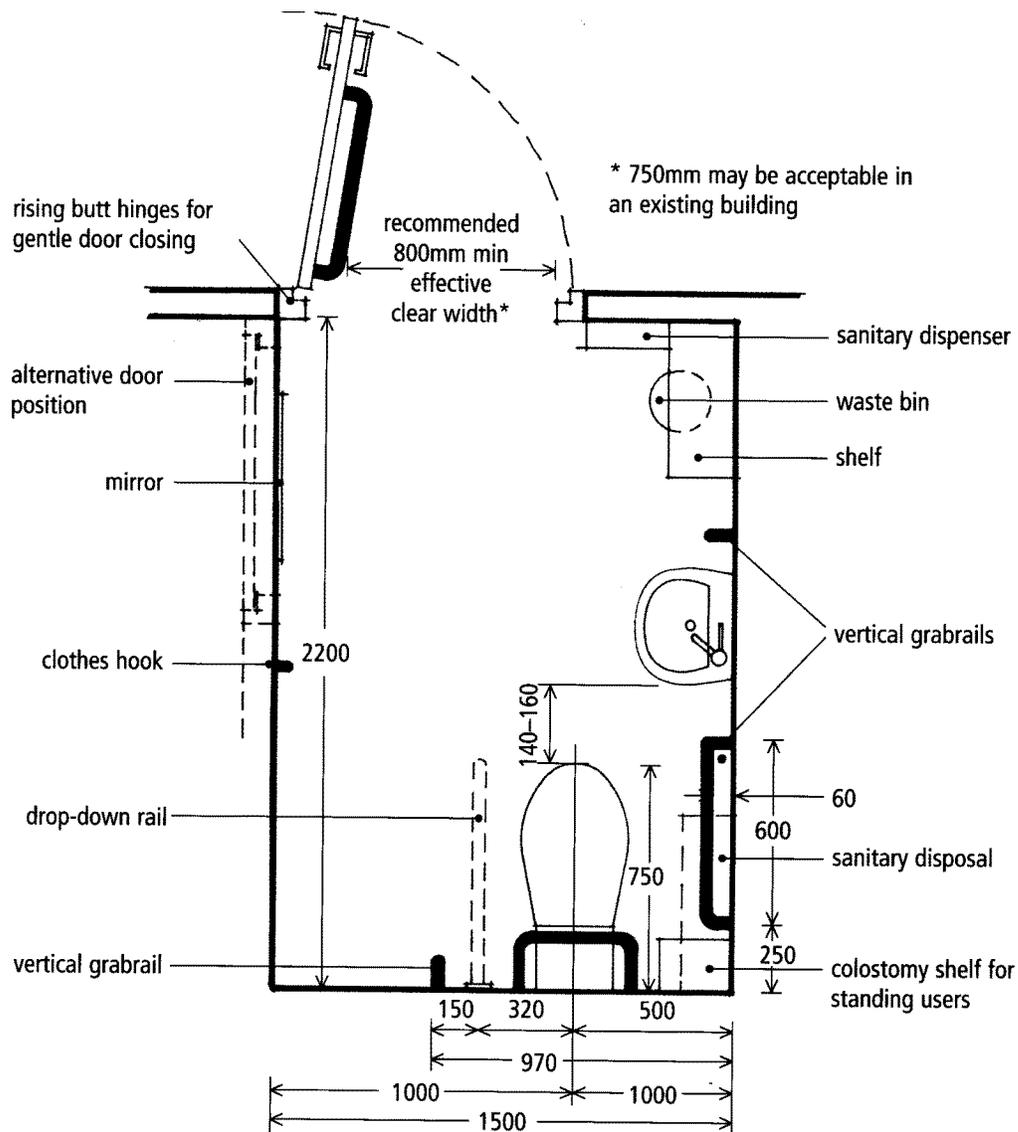


Figure 7. Plan of a wheelchair accessible BS8300 unisex corner WC compartment
(reproduced from Lacey, A., 2004)

Goldsmith's position, which gives greater prominence to designing to take account of physical impairment as opposed to sensory or cognitive deficits, is contested by other disability researchers. Imrie and Hall (2001, p.43), for example, have pointed out that "by responding principally to the needs of wheelchair users, such professionals are reacting, in effect, to a minority of people with physical and mental impairments" rather than to the majority of disabled people who have a wide range of physical, sensory and cognitive impairments. Likewise, Greed (2003) notes that current guidance on many aspects of design is shaped principally by the needs of wheelchair users, even though these are not the most numerous disabled grouping. Giving as an example, the current BS8300 unisex accessible toilet illustrated in **Figure 7**, she observes that because toilets for disabled people are represented by the wheelchair logo, this presents a narrow, stereotypical definition of disability which excludes people with other impairments and 'hidden disabilities'. The use of the wheelchair symbol to indicate accessible entrances, routes and spaces does nothing to widen popular perceptions of disability.

Inclusive design is a complex process, which requires an integrated approach in order to overcome the limitations of individual viewpoints. It has many advantages, compared with non-inclusive design, see **Figure 8**. However, it demands a user-centred approach to design that actively seeks to understand users' requirements. This has been characterised (Sommer, 1983) as 'social design'. The crux of social design is working with people, not for them. This implies the (at least partial) surrender of the role of designer as expert in favour of a more participatory approach. As Imrie and Hall (2001, p.20) point out, "users' knowledge is potentially a key

resource and the point is not to challenge the architectural or design skills of professionals per se, but to interlink them more effectively with the experiential knowledge of lay people”. However, Imrie and Hall (*ibid.*, p. 14) also caution that, “the potentially radicalising effect of social architecture or design has barely resonated with, or influenced, developers, designers or architects in relation to their thinking about the needs of disabled people”.

Inclusive design	Non-inclusive design
Concern with meaning and context	Concern with style and ornament
Participatory	Non-participatory
Orientated to people	Orientated to organisations or institutions
User-centred design	Owner as exclusive client
Low cost	High cost
Bottom-up design approach	Top-down design approach
Democratic	Authoritarian
Seeking to change design attitudes	Conforming to prevailing attitudes to design
Use of appropriate technology	Use of high technology
Use of alternative models of the development process	Development process controlled by corporate interests
Heterogeneity	Homogeneity

Figure 8, Inclusive and non-inclusive design (adapted from Sommer, 1983, p7 and Imrie and Hall, 2001, p.19)

Legislating for Social Inclusion

Inclusive design has the potential to be a radical force within the urban design process that could lead to more sustainable communities which, as defined by Egan (2004, p. 7), “meet the diverse needs of existing and future residents, their children and other users, contribute to a high quality of life and provide opportunity and choice.” Currently, the main instruments in the UK to ensure that access to buildings and services is provided for disabled people are Part M of the Building Regulations (2004), BS8300 (2001) and the DDA (1995). Specifically, from October 2004, the DDA will place a new duty on service providers to make ‘reasonable adjustments’ to the physical features of their premises, by altering or removing barriers to

access that arise from how the building has been designed or constructed, including how buildings are approached and entered, so as not to discriminate against disabled people. The aim of the Act is to ensure that goods and services are made available to everyone in the same way. Offering disabled people an alternative form of service to that provided for non-disabled people, whilst acceptable under the terms of the Act, is considered to be an inferior solution to that of ‘debarriering’ the environment. In this respect, the intention of the Act is to adopt an inclusive approach to design. Yet at the same time, much of the language used in the Act, beginning with its emphasis on ‘disability’ rather than ‘enablement’ perpetuates the medical model of disability by harking back to the ‘special needs’ paradigm.

This criticism can also be directed to the latest version of Part M of the Building Regulations, which has been updated to support Part III of the DDA. As mentioned earlier, Part M was originally introduced in the 1980s, extended in 1992 and 1998, and has been revised with effect from May 2004. It provides general guidance to developers on access standards, and information on some of the ways in which the requirements set out in the Regulations can be satisfied. Insofar as the current Regulations require that “reasonable provision shall be made for people (author’s emphasis) to gain access to and use of the building and its facilities” its language is more explicitly inclusive than previous versions, whose reference group was disabled people. The new Part M is intended to assist many more people within society than wheelchair users and those with limited mobility, including people with babies or small children and those encumbered by luggage. Consideration is also given to the access requirements of people with a sensory or cognitive impairment.

So far as individual buildings are concerned, we are currently witnessing a sea change as service providers conduct access audits and alter their premises in order to fulfil their enhanced obligations under the terms of the DDA. From this year, new buildings and alterations or extensions to existing buildings will need to take account of the minimum legal standards for access set out in Part M. Even so, recent research by the Department for Work and Pensions (Roberts *et.al.*, 2004) has revealed a low level of awareness among service providers about equal access legislation, with fewer than half of the businesses surveyed being aware of the impending changes. This is not the place to discuss the meaning of the key terms in Part III of the Act or Part M of the Building Regulations, as there is widespread agreement that in the final analysis it is the courts that will determine whether a service provider is in breach of the new laws. It is sufficient to note here that the new access directives apply to buildings but not to urban public space.

Bennett (1990) and Imrie (1996) have noted that policy and regulations are often poorly enforced by the responsible authorities, and so implementing the DDA may require a number of court actions to be taken. Part M has also been criticised as weak legislation that “couches regulations in a vague and ambiguous manner, which does little to define clearly what is possible” (Imrie and Hall, 2001). The requirement that ‘reasonable provision’ be made for people’s access is a particularly contentious issue, that Barnes (1991) has argued permits too much latitude as to how this is interpreted in practice. Goldsmith (1997) has noted that ‘reasonable provision’ may result in changes to access being ‘tacked onto’ a building. Gleeson (2001) adds that poor implementation coupled to a lack of performance evaluation of any

'improvements' made, could lead to 'a deeper sense of cynicism' and subsequent 'political exclusion' amongst the very people that the legislation was intended to help.

Without careful consideration of the changes made to barriers to access within the built environment, the selectivity and discrimination towards disabled people's mobility could well continue (Goldsmith, 1997). However, the literature agrees that creating access for disabled people in response to Part III of the DDA and Part M of the Building Regulations should ensure that the built environment becomes more socially inclusive. Changes enabling access to public buildings, cafés, shops and leisure facilities will also benefit the increasingly ageing population, as well as parents with babies and young children, and those with temporary mobility problems. In short 'an accessible environment will benefit all' (Oxley, 2002).

However, if space within public access buildings is set to become more accessible and inclusive, the same cannot be said of the space between buildings. The Department for Transport has issued extensive guidance on best practice on accessible pedestrian and transport infrastructure for disabled people, that provides information on a variety of issues including human factors and design, the pedestrian environment, the use of tactile paving, the design of car parking spaces, bus stops, taxi ranks, signage, lighting and information (see, for example, Oxley, 2002). Local authorities are encouraged to prepare local transport plans and walking strategies, and to designate 'home zones', but these guidelines do not have any legal status. Where large scale urban regeneration projects are implemented, the pedestrian environment may be considered holistically and inclusively but, in the case of the vast majority of ordinary town centre environments, interest in and responsibility for accessibility stops at the boundary

of each site and no one is responsible for the overall integration of the urban realm. This means that for many disabled people who rely on inclusively-designed public transport and accessible pedestrian networks to negotiate the city centre, the objective of ‘seamless travel’ will not be accomplished by the new legislation. Accessible buildings will have limited scope to bring about an inclusive society if they cannot be reached because the design of the public urban realm continues to exert environmental pressure.

Seamless travel in urban public space

The ‘transport chain’ employs the metaphor of a chain to illustrate how the separate parts of a whole journey can be conceptually linked together into a chain that illustrates the ideal of ‘seamless travel’ where every journey can be made effortlessly without breaks or ruptures. Atkins (2001) suggests that thinking of a journey this way allows for movement to be considered as a linked whole, rather than as a set of discrete operations. The transport chain suggests a linear movement, and reflects a ‘one size fits all’ model of thinking that does not take into account the flexibility of many people’s lives. A chain is also a metaphor for a restraint, an object that impedes freedom, especially the freedom to roam. The 1999 report ‘From Exclusion to Inclusion’ by the Disability Rights Task Force (DRTF) has stated that “for all disabled people to be able to travel, and to travel with confidence, all aspects of the transport chain must be accessible”. However, Atkins (2001) has noted that “a transport chain is only as strong as its weakest link” and Hesketh (2002) has pointed out that, in reality, very few of the ‘links’ are truly accessible and so many journeys for mobility impaired people fail.

Atkins has suggested the transport chain could be extended beyond transportation planning to include matters such as urban planning and design. This would address the issue of a more inclusive urban public realm. However, Bichard *et al*, (2004) have pointed out that a key missing link in the transport chain that is seldom considered by urban designers is the provision of adequate ‘away from home toilets’ as, without these essential facilities, most people are limited to being away from home for just a couple of hours at a time. The alternative metaphor of a leash, as in ‘the bladder’s leash’ (Kitchin and Law, 2001) has been used to describe how the mobility of people with disabilities is restricted within the urban environment by the absence of accessible public toilets in city centres. Because of this human need to ‘spend a penny’, a very intimate, domestic function insinuates itself into the public space of the city. It is a need that is rarely spoken about in public, or if it is debated the topic is addressed with a mixture of humour and embarrassment, which is why the design of ‘away from home’ toilets may present a paradigm case that tests society’s willingness to embrace a more socially inclusive approach to urban design.

Public Toilets – a worked example

Although omitted from the transport chain, the provision of public toilets could be considered an essential link within this chain. Currently, public toilets are provided in many bus stations, although provision on bus routes is negligible. Similarly most central railway stations have toilet provision, whilst smaller stations have had facilities closed (Greed, 2003). There is little or no provision on London’s Underground network, the lack of which has been cited as one of the principal barriers to accessing the Underground for older and mobility impaired people (see Atkins, 2001, pp. 3-10 & 4-9). Whilst the paucity of suitable provision in the wider

environment is noted by Barker *et al* (1995), Oxley (2002) and Kitchen & Law (2001) as a major concern for older and disabled people, there is no current policy aimed at addressing these concerns.

Most 'normal' public toilet provision is not well designed, and may disadvantage or embarrass many potential able-bodied users. Ordinary mainstream toilets are therefore far from inclusive. On the contrary, they represent a key site within the built environment of architectural disability. A proportion of all men and boys using urinals will be inconvenienced by the fact that the bowl is not set at a convenient height for them. Many young girls find that the WC pans and the wash hand basins in the female toilets are too high for comfort. Wash hand basins are usually set too low for a proportion of all standing people comfortably to use them. Toilet seats are sometimes too low for the convenience of people who suffer from a back, knee or a hip problem. People who are ambulant disabled would benefit from grab rails to help steady them, but these rarely form part of normal toilet provision.

Usually, toilet facilities are provided on an equal basis for men and women, yet the relevant research suggests that women take twice as long as men to use the facility. Women are therefore obliged to queue. Usually equal areas are allocated male and female toilets, but because male urinals take up less space than a WC cubicle, the number of facilities provided for men tends to be greater. This gender discrimination may not have been challenged because women are largely unaware of the number of public facilities (particularly urinals) that are provided for men, and vice versa.

Researchers (Goldsmith, 1976, 1997; Greed, 2003) have consistently pointed to a range of design issues in respect of mainstream public toilet provision that differentially adversely affect women, including the (minimal) size and proportions of the average public toilet compartment, coupled to the fact that the clothing women wear is more prone to contamination and the requirement to accommodate a sanitary waste disposal bin in each cubicle reduces its usable space. Other people who are particularly disadvantaged by current standards are pushchair users, who often have to choose between leaving children outside in the pushchair or folding the pushchair and carrying both it and the children into the WC compartment. Goldsmith found that fewer than one in ten were prepared to risk the first option and he pointed out that the second is extremely inconvenient. For Goldsmith, therefore, the design of public toilets encapsulates broader issues of discrimination and justice within the built environment.

The situation is even worse in respect of disabled people. Inadequate access to public buildings may be inconvenient for disabled people but, as Goldsmith (1976) has pointed out, “at public lavatories this could induce a crisis”. He has further observed that, “among disabled people, the accessibility of public lavatories is of greater importance than for any other building type”, (p.356). Part III of the DDA is destined to have an effect on public toilet provision, as access to and the design of such facilities will have to be reconsidered. Already the numbers of public toilets show a decrease in the available facilities, with an estimated 40% of on-street toilets having closed over the last decade (Greed, 2003). The current number of public toilets available nationally totals approximately 10,000; of these 3500 have access for people with disabilities, whilst baby changing facilities are provided in 1300 facilities (BTA, 2000).

Paradoxically, the implementation of Part III of the DDA may exacerbate public toilet closures. Many older facilities were originally located below or above ground level so as to minimise their prominence within the urban fabric. Other premises at ground level may be costly to convert to include a BS8300 accessible toilet, yet not to do so could be interpreted as discriminatory. Faced with this dilemma, some public sector providers have already opted to close all their facilities, thereby not discriminating against anyone but disadvantaging everyone. Other providers have supplemented their ordinary provision by an accessible automatic public convenience (APC) in the hope of discharging their obligations under the terms of the DDA, but these are unpopular with the general public and their design is such as to exclude many disabled people. This may satisfy the letter of the law but it is not in the spirit of the legislation.

At the same time, purveyors of goods and services to the public who provide a WC for the convenience of their customers will soon have to ensure that disabled customers are also catered for in this respect. This could bring about a transfer in responsibility for 'away from home' toilet provision from the local authorities to the private sector. Women and disabled people already rely on a 'mental map' of customer toilets in department stores, supermarkets and shopping centres that afford them privacy, comfort, cleanliness, convenience and dignity. In theory, these existing facilities should be supplemented by a greater number of accessible toilets, provided and maintained by city centre businesses, after October 2004. However, in practice, some providers have already adopted a policy of locking their facilities in order to prevent their use by people who are not customers.

Recent research in Clerkenwell, an up-and-coming cultural quarter in the very heart of London (EPSRC, 2004) revealed that the majority of pubs, clubs, restaurants and galleries were unaware of the impending access legislation. A small minority had attempted to alter their premises to remove barriers to access and provide a more accessible environment, but even where this had occurred and the management claimed to have an accessible toilet on the premises, more often than not this was not suitable for wheelchair users or other disabled people. Despite the fact that there is a wealth of technical guidance on how to design and equip an accessible toilet, including the advice contained in BS8300 and the Building Regulations, most of the examples visited during the course of the research were badly designed or downright unusable. Even though the provision was well-intentioned, design errors and mistakes in the fitting out of the WC compartment compromised its suitability for disabled users. The authors of the CAE/RIBA 'Good Loo Design Guide' (2004) believe this is because designers and service providers simply do not understand how disabled people actually use a unisex or other accessible toilet and what its specification is intended to achieve.

The specifications for the unisex corner and unisex peninsular WC compartments in BS8300 and Part M of the Building Regulations are intended to cater for the needs of wheelchair users (row 6 of Goldsmith's universal design pyramid). The technical specification for this user group is critical in determining the accessibility and usability of the WC. Not only must every item shown in **Figure 7** above be provided, these must be the correct fixtures and fittings and they must be located in exactly the right place. The design is therefore in the top level of Benktzon's design pyramid. In this sense, the BS8300 accessible WC is a tailored product but, following accepted inclusive design principles, it can be justified on the grounds that everyone

occupying the lower tiers of the design pyramid will also be included. The irony, then, is that they are not! Originally conceived of as a pragmatic, ‘special needs’ solution to the needs of disabled people, the wheelchair accessible WC was intended as an alternative to mainstream provision, not as a socially inclusive design.

Anecdotally, it has been suggested that some wheelchair users react with hostility to the use of ‘their’ facility by people with ‘invisible disabilities’. Some providers have combined a baby changing facility with the accessible WC and, particularly where it is the only adult and baby room, this has also proved a source of discontent among some disabled users (though others point out that disabled users may also need to change a baby). Paradoxically, an unintended consequence of inclusively framed legislation is that the accessible WC has emerged as a hotly contested space among the stakeholders in the disability arena, encapsulating issues of ownership and entitlement that are becoming increasingly socially divisive.

For example, we are now in a position where many accessible toilets can only be used by people in possession of a special RADAR (Royal Association for Disability and Rehabilitation) key. The ‘key scheme’ was originally introduced in 1979 to allow local disabled people to access a purpose-designed unisex public toilet, which, because it was locked, would not be a target for vandalism. It was controversial from the outset because it could not be guaranteed that every disabled person arriving at the facility would have a key. Meanwhile, providing a ‘disabled toilet’ somewhere in the town centre meant that ordinary public toilet facilities need not be universally accessible, a determining factor in today’s dearth of public toilet facilities.

A recent court ruling has indicated that providers who want to lock their accessible toilet should join the RADAR scheme, so that disabled customers will not be discriminated against by having to ask for a key, but this does not resolve the difficulties of the many people with disabilities who are not members of the RADAR scheme. . As Greed has observed, “locking might ‘protect’ the toilets but it makes them doubly inaccessible for all”, (Greed, 2003, p.160). Meanwhile, RADAR keys are widely available to people who access the facilities for antisocial purposes, thus defeating the original intention behind locking the accessible compartment, which was to maintain it in good working order.

The origin of the ‘unisex accessible toilet’ in the ‘special needs’ approach to design also accounts for the fact that, tailored as it is to the needs of wheelchair users, the BS8300 compartment cannot be relied upon to cater for all other disabled users. For example, some disabled people prefer to use a ‘unisex’ compartment, set apart from the male and female facilities for the general public. This is because they can then be accompanied to the toilet without embarrassment by a carer of the opposite gender. Other disabled people feel that having to use a ‘unisex’ compartment is itself stigmatising and embarrassing, and they would much prefer it if the ordinary facilities for their gender were designed so as to accommodate their requirements. In a recent critique of the unisex accessible toilet, Goldsmith (1997, p.183) suggested that, “the idea that that it could be right for every disabled person was always absurd”, adding that, when the concept was first introduced, disabled rights activists were so keen to promote it that the (then) BS5810 toilet (an earlier specification to BS8300) became an icon as, “if disabled people were to have rights, a right they should be entitled to was the availability of a BS5810-type compartment”, (*ibid.*, p.183). This attitude is in sharp contrast to

a truly inclusive approach to design, which would ensure that the facilities used by ordinary members of the general public could accommodate everyone.

The rigidity with which gender separation is currently enforced within ordinary mainstream toilet facilities means that it is not possible for a man or woman to assist their partner to visit the toilet without suffering opprobrium. As was the case with the RADAR key scheme, slackening the bounds of social convention opens the door to abuse. In the case of whether or not to lock the accessible toilet, the fear was of vandalism or ‘misuse’ by non-disabled people. In this instance, strict gender separation is maintained to deter sexual harassment when engaging in the intimate activity of using the loo in what is, to all intents and purposes, a public space where everyone else is a stranger. In neither of these cases is there an optimal design solution. Compromise between the needs of different users is not possible and something has to give.

A third example from current research (EPSRC, 2004) will serve as a further illustration of how complex and multi-faceted the design of a simple toilet has become. Some profoundly impaired people take longer to use the WC; up to half an hour may be needed if the visit involves removing and replacing complex body bracing. The length of time that the accessible WC needs to be occupied can prove problematic for other potential users who are forced to queue, particularly if their impairment requires them to visit the toilet urgently and regularly, as would be the case for someone with a urostomy. One solution that is acceptable to disabled users would be to fit a ‘timer’ to the WC to indicate how long it will be occupied. However, there is a danger that people wanting to occupy the compartment for antisocial purposes would also make

use of the timer. The preferred solution for those who provide and police away from home toilets is that if a disabled person needs longer, they should put a temporary notice to that effect on the outside of the toilet door. Clearly this is not an inclusive solution, as most toilet users (disabled and non-disabled) would find the suggestion unacceptable.

In this, as in all the previous examples, the effectiveness of inclusive design raises divisive social issues. In this last illustration a potentially useful innovation is unlikely to be adopted by manufacturers because of its potential abuse by a small minority (people engaged in drug taking, prostitution, cottaging and vandalism) who do not use 'away from home toilets' as intended. Wherever possible, the providers of unattended facilities response is to 'design out crime' by 'target hardening' their premises, but in so doing they make them unattractive and inaccessible to everyone else. For example, in order to prevent drug users from injecting themselves in public toilets, some providers have installed 'blue' lights that prevent addicts from seeing their veins, but this also renders the toilet unusable by some people with impaired vision and by people with a colostomy or a urostomy, who need high light levels to clean their stoma. This attempt to deter unlawful use also penalises some disabled people. Perhaps the ultimate ethical challenge for inclusive design is the issue of whether public toilets should have a facility for the safe disposal of used needles, which may otherwise be left on the toilet floor placing cleaners and lawful users at risk.

This is the crux of the matter. The inclusive design of an 'away from home' toilet superficially presents itself as a mere technical affair, where successful design can be reduced to a matter of 'getting the specification right'. In reality, wherever the designer attempts to intervene in the

design process, the inclusive design of public toilets unveils fundamental social processes that not only regulate relationships between different user groups but also cross the boundary between acceptable and unacceptable behaviour.

A new role for surveying

Inclusive design therefore presents both challenges and opportunities for surveying. Building surveyors will need to be aware of service providers' obligations in respect of Part III of the DDA when advising clients who are looking to acquire premises from which to carry out their business. Members may be called upon to perform access audits, in which case it is important to draw an inclusive definition of disability that extends to sensory and cognitive impairments as well as restricted mobility. Valuation surveyors need to be aware of the reduced value of premises that are not fully accessible and it is they who will have the responsibility of costing any 'adjustments' that might be needed to comply with the law. Estate surveyors who manage portfolios of properties for property owners will need to advise their clients as to what might constitute 'reasonable steps' with regard to 'debarriering' the built environment, and whether it is the owner of the building or its tenants who is responsible for the work. Surveyors could become involved in representing the client's interests in the accessibility of new buildings at the design stage, perhaps in estimating the likely costs and benefits of inclusive design. In exercising these and other functions associated with social inclusion, surveyors will need to be aware of the assumptions and motivations of the principal stakeholders engaged in the decision making process and the various theoretical models that they could be using to underpin decision taking.

In respect of the urban built environment, the part surveyors might play in achieving ‘seamless travel’ for people with disabilities initially might appear less obvious, as their principal professional role is in relation to buildings and their sites. However, one lesson to be learned from the issue of public toilet provision is that decisions made in one area of the built environment often have ramifications for other apparently unrelated areas. Thus, the closure of local authority provision is leading to shift in people’s perceptions about how the ‘need to go’ should be addressed. The DDA will undoubtedly place a greater pressure on businesses that deal with the general public to provide accessible toilets for customers and visitors. Balancing the immediate capital costs of a well-designed toilet that meets the needs of disabled users against the longer term gains that may be achieved through demonstrating a commitment to high quality ‘customer care’ will be a difficult shot to call.

As Imrie and Hall suggested earlier, achieving a more accessible built environment might be accomplished by specifying technical design solutions that meet the requirements of the DDA, but embracing a more inclusive approach to design has the potential to achieve far more in terms of social justice and inclusion. They have suggested that making the environment more accessible for older and disabled people will require a change in social attitudes, values and practices and, in this respect, the design professions have the necessary knowledge, skills and understanding to lead the way. This far, inclusive design of an accessible urban environment has been presented as an issue of social justice, but it is also a matter of economic competitiveness. By 2020, there will be 100 million older people in Europe (Roe, 2001), representing a massive ‘grey marketplace’, and disabled consumers are also an active and increasingly vocal market sector. Inclusive design is therefore a ‘win-win’ situation for service

providers and built environment professionals alike, in which profitability goes hand in hand with social responsibility. Inclusive design therefore offers surveyors an unparalleled opportunity to contribute to a better, more inclusive built environment and by so doing to bring about a better, more inclusive society.

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