Report of the Fourth International Expert Seminar on Building Non-Handicapping Environments: Access Legislation and Design Solutions

Budapest, Hungary, September 2-4, 1991

Organized by
CIB, the International Council for Building Research, Studies and Documentation, Working Commission W84 in cooperation with the Royal Institute of Technology, Department of Building Function Analysis, Stockholm and the National Federation of Associations of Disabled Persons (MEOSZ), Budapest, Hungary

sponsored by
the Swedish National Council for Building Research, Stockholm, Sweden

Report edited by Adolf D. Ratzka, Ph. D.

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Presentation of the organizers

CIB is the abbreviation of the French title of the International Council for Building Research, Studies and Documentation. CIB's purpose is to facilitate and develop international cooperation in building, housing and planning research, studies and documentation, covering not only the technical but also the economic and social aspects of building and the related environment. CIB, with its over 100 Working Commissions, works through congresses, symposia and colloquia. Working Commission W84 "Building Non-Handicapping Environments" was founded in 1984.

The Hungarian National Federation of Disabled Persons' Associations, MEOSZ, was established by persons with physical disabilities in 1981 as a central federation of their associations which had their origins in the mid-seventies. There are a total of 48 member associations with 29,000 individual members. The Federation consists of associations founded along diagnostic lines, such as multiple sclerosis or rheumatism, and of special interest organizations, such as the Hungarian

Sport Federation of Disabled Persons and the Section for Young People. MEOSZ' aim is to represent and protect the interests of its member organizations and all Hungarian persons with physical disabilities. MEOSZ conducts its work in a range of working groups each focussing on topics such as vocational rehabilitation, education, culture, transportation, legal services, etc. The most important bodies within the Federation are the Board of Presidents and the Council of Leaders which consists of the chairpersons of the member organizations.

The Department of Building Function Analysis, Department of Architecture, Royal Institute of Technology, Stockholm studies the relationship between man, built environment and society. The original focus has shifted from the definition of spatial and other basic functional user requirements to more complex aspects of the use of buildings and urban environments including decision processes in planning, building and management as well as housing in developing countries. The aim is to provide data and arguments to enable environmental designers and users to advocate users' interests in the planning process and to widen the public debate in cultural, economic and political terms.

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Opening address

Prof. Dr. Gy. Sebestyén
Secretary General, CIB,
International Council for Building Research Studies and Documentation

The agreeable task frequently falls to me, as Secretary General of CIB, to welcome on CIB's behalf participants at such conferences. This pleasant obligation is tempered by the fact that so often it means that I am unable to attend the Conference in person. Such is the case with this seminar. I would have wished very much to be present, and it is a matter of utmost regret that this has not been possible.

Naturally, I would have enjoyed being here in a city where I have spent most of my career but the main reason is less personal; you are participating now in a Workshop relevant to construction for housing, for the environment, and for society. Building non-handicapping environments is an expression which includes a negation only to express its positive ambitions even more strongly - to build in order to enable all people to work, live and move around freely - in short, for all of us adequate housing in an adequate built environment.

Therefore please accept the wholehearted gratitude and good wishes from the CIB Community and from all of us.

Opening address

Dr. Pál Gadó

Host Organizer, MEOSZ, Budapest, Hungary

Honored participants of the Accessibility Legislation Symposium, I welcome you on behalf of the National Federation of the Associations of Persons with Disabilities. In past two years we worked together with CIB to prepare this event. We do hope that the topic of the symposium will be analyzed in depth from different aspects and the working group will provide a useful summary of all statements made here.

We Hungarians would like to learn a lot from the lectures and discussions included in the program, as well as from the informal talks we will be able to have with you during the days of the meeting. Most of you are coming from well-established parliamentary democracies where legislation has an important role in civil life. We, and similarly our neighbors, had been living for 40 years in totalitarian political systems where laws and rules, no matter whether good or bad ones, were dictated and average citizens or their associations were neither allowed to initiate nor to comment on these. Now, these possibilities are open even for us. Hungary has become an independent, free nation with all kinds of democratic civil rights. However, we do not have experience in making use of these rights. We will carefully listen to your reports about the due contents of such regulations and about the ways through which you achieved accessibility legislation in favour of disabled persons population. We are glad to have this meeting in our country right now when we can start advocacy for a correct legislation and for the enforcement of the existing one.

In this sense I wish you very rewarding sessions and also I hope you will enjoy your free time in Budapest. The immediate surroundings of the symposium venue, the Buda Castle district, might be of special interest to architects or those who care for history because this had been the capital of Hungary since the beginning of the 16th century. Unfortunately, many wars passed through this region and much was destroyed. Still, if you wish, you can get a fairly good introduction to our history in this quarter by old stones and a good guide. I hope you find everything you came for.

Summary of the sessions

Workshop 1 Access legislation

Chairperson: Bas Treffers, Netherlands

Rapporteur: Peter Dunn, Canada

Presentations were given by:

Zoltán Csorba, Mayor's Office, Budapest, Hungary
Classification of the environment.

Tibor Polinsky, Budapest, Hungary
Disability Legislation in Hungary.

Miloslav Maxa, Czechoslovak Building Center, Prague, Czechoslovakia
Access Legislation in Czechoslovakia.

Vjatcheslav K. Stepanov, Club "Contacts", Soviet Union
Accessibility for persons with disabilities in the USSR: needs and problems.

Felix M. Uritsky, Club "Contacts", Soviet Union
Assistive devices and accessibility problems.

Gordana Rajkov, Savez Distroficara Jugoslavije, Yugoslavia
Role of the Muscular Distrophy Association of Yugoslavia in eliminating architectural borders

Zoltán Csorba, Mayor's Office, Budapest, Hungary

In 1981, the Municipal Council of Budapest built 80 specially designed homes for people with disabilities. However, under the old government there have been few changes since that time. Socialist states only placed a marginal emphasis on accessibility. What may be needed now are some new international recommendations for human rights. However, Budapest recently decided to form a barrier-free environment in main public areas and institutions. The Budapest master plan also needs to be changed given the changing economic and social conditions. The following are suggested ways of doing it by developing four types of zones:

- Unhindered environments (public areas should be totally accessible)
- Private areas (should be highly recommended, but not ordered)
- Dangerous areas (access should be allowed only for those willing to take the risks)
- Protected areas (such areas should be protected against all people)

Discussion: Issues were raised related to having all areas accessible. It was strongly recommended that all public transportation be accessible.

Tibor Polinszky, Budapest, Hungary

In Hungary 300,000 - 500,000 citizens have a physical disability. Hungary began to discuss the issues of accessibility in 1981. In 1986, issues were raised regarding the National Building Code. Since that time, considerable research has been carried out to develop standards for accessible construction in Hungary. Hungary is also considering adopting the European proposed design. There are special problems in Hungary which must be addressed including narrow stone doorways. Hungary is trying to promote accessible design in the universities, in research and the planning process. The present Building Code requires public buildings to be accessible. However, there are no specific design criteria.

Discussion: Issues raised in the discussion included the importance of considering people with hearing and visual impairments; the high institutionalization of people with disabilities in Hungary; and the fact that design research of a similar nature has gone on in other countries since 1956 (i.e., reinventing the wheel).

Miloslav Maxa, Czechoslovak Building Center, Prague, Czechoslovakia

Czechoslovakia has not accomplished much in terms of access even with the new government since November 1989. In 1985, the government passed a decree stating that structures used by disabled people should be accessible. However, the government did not enforce these general regulations. Several draft guidelines have been developed for residential buildings, multi-family buildings and public buildings. The government also provided a subsidy to promote products and materials used for accessible design. In 1986, the Central Commission for the Environment for Disabled People in the Czech Republic in Prague was established. This body was reconstituted by the new government in 1991 to enforce building standards, provide consultation, promotion and publicity.

Vjatcheslav K. Stepanov, Club "Contacts", Soviet Union

From 1917 to 1986, there were no major efforts for persons who are disabled in the USSR. There

was very little financial support for people with disabilities. It was very unusual to see people using wheelchairs in the community. In the last five years, organizations of persons with disabilities have been started. However, this process has been slow because of the lack of funds. Mr. Stepanov has written several books about accessible building elements and structures. Children with disabilities have been moved from big institutions to smaller ones of 6 - 8 children. Children with disabilities often go to segregated schools although there are also efforts towards integration. There are special institutions for those individuals with visual disabilities.

Discussion: There was discussion about whether persons who are disabled were 'sick'. Segregated education was questioned.

Felix M. Uritsky, Club "Contacts", Soviet Union

Club "Contacts" stresses the concept of independent living. Buildings in the Soviet Union are very inaccessible with heavy doors, many stairs and narrow passageways. The Soviet Union cannot import enough assistive devices because of the large demand in the Soviet Union and the high costs. The state system is still very clumsy and has a hard time responding to social needs. As a response, Club "Contacts" was developed with three shareholders as a non-profit partnership in conjunction with local persons with disabilities in Moscow. The Club is producing assistive devices and equipment in partnership with persons who are disabled.

Discussion: It was felt that this response was very innovative and stressed the relationship of assistive devices and independent living.

Gordana Rajkov, Muscular Dystrophy Association, Yugoslavia

One of the main activities of the MD Association of Yugoslavia is elimination of architectural barriers in cooperation with other groups of persons with disabilities. The first major step began in 1977 when groups of persons who are disabled met to discuss architectural barriers. The next step was to inform the public about the problems of barriers. The Ministers of Housing and Public Works in all of the republics were contacted, specific proposals for new regulations were recommended. In 1985-86, the federal government established a working group and adopted standards for parking, curbs, crossings and public buildings, lobbies and doorways of apartments. Also, the Republic adopted standards in the 1980's for special planning and land use which emphasized accessibility. Now, the MD Association is stressing the enforcement of these standards. The federal government declared 1989 the year of fighting architectural barriers. The MD Association dealt with these issues also at the local level using films about inaccessible local areas.

Workshop 1 Design solutions

Chairperson: James D. Harrison

Rapporteur: Ian M. Eilenberg, Australia

Presentations were given by:

Joanne Milner, Robert Gordon Inst. of Tech., U.K.

Disability awareness and architectural education.

Miloslav Maxa, Czechoslovak Building Center, Prague
Barriers in the public environment: The problems of barrier removal in the Czech Republic.

Satoshi Kose, Building Research Institute, Japan
Design guidelines for public collective housing for the aging society: Move toward a new area in Japan.

Erik Bahn, Arkitekterne Bahn, Denmark
Research on recycle systems in households especially concerning people with disabilities

The first speaker of this session on design solutions was Joanne Milner from the Robert Gordon Institute in Scotland. She carried out research with the aim to prove that building designers do not give adequate consideration to the needs of people with disabilities, that they perceive persons who are disabled as a separate minority who require 'special' provisions. Within this context it is suggested that the building designer would be more able to serve the needs of people with disabilities, if building design education adopted a more user responsive philosophy. She noted that there has been a change in perception of persons with disabilities around the world. There is, however, a need for a holistic approach to the problem.

Her research was in three parts. The first part consisted of a survey by mail of which there was a 43 per cent response. Findings showed a definite improvement in access, one area was in the use of banks. In 1968, only 4 per cent of people with disabilities visited the banks themselves, but by 1990, 64 per cent went personally to the bank. Stage two was to look at the curriculum content of architecture courses. Of the architecture schools surveyed, 30 schools (79 per cent) responded. Only 8 schools specifically addressed barrier-free design. Of these only three gave specific lecture series, others by project work or briefings. Overall it appears that education in this area only occurs where a lecturer has a specific interest - personally disabled or with a relative or friend who has a disability. Stage 3 aimed at evaluating student awareness of barrier-free access for persons who are disabled. Her methods involved workshops, simulated exercises and site visits. By use of blind testing, it was clear that the widest education provided greatest awareness. Her conclusion was that lack of access awareness directly related to education programs.

A paper was read on behalf of Miloslav Maxa who explained that the greatest problem in Czechoslovakia was not lack of designer awareness, but more a lack of suitable materials and systems. The Czechoslovakian Building Center produced a document with 37 pages of suggested products and details and in 1900 reissued this document covering some 90 details. Over 7,000 copies of this document were distributed. One company has responded and has produced a remote controlled garage door. Private sponsorship is now required to advance this work.

Satoshi Kose from Japan gave an interesting presentation on the future problem of the aging Japanese population - 1 in 4 will be over 65 years of age by the year 2020. In Japan, cultural traditions are very important and quick changes are not possible. The aim is to modify existing designs to permit the people to remain in the same home throughout their lifetime - from infancy to old age. Recent government guidelines have recommended that all new houses be constructed to enable this to happen. He discussed specific problems, including the different methods of bathing used by the Japanese which creates more water in the bathroom than Western bathing, the Japanese custom of changing street shoes for slippers at the front door, beds that are on the floor, not raised like Western style beds, draining of balconies, etc. The solutions included gradings to build up surfaces to a single level and the elimination of steps.

Guidelines established in March 1990 were aimed at old persons, rather than persons with disabilities. There is no consideration of the use of wheelchairs indoors. Houses are generally too

small. He showed a series of slides to demonstrate his various points.

Tina and Erik Bahn from Denmark discussed two related pieces of legislation from 1990: a) All old persons and those with disabilities must be able to stay in their own homes. b) The requirements to separate all waste into its various categories for disposal or recycling. They approached these two problems in three ways: how to separate the waste within the kitchen; how to take out the waste; and the problems of disposing of the waste into the correct receptacle outside the building. Their work was based on a block of apartments built in 1969-70 where the kitchens were due for upgrading. The occupiers took an active role in assessing the work, from the sketch plans to the final products. The initial solution to the waste in the kitchen started as a mobile unit and finished with a unit hinged to fold away under the internal corner of the bench, thus making good use of an often hard to get to part of any kitchen. This was readily accessible from a wheelchair.

The outdoor waste bins were very large with lids which often had to be held open with the head whilst the waste was deposited. The installation of a small section on the lid, with a pull handle device allowing the rubbish to fall in, solved this problem. The presenters showed a series of slides which illustrated the development of these assistive devices. They concluded that there is no one solution to cover every problem and that each problem requires a separate solution, but that the underlying approach is the same.

Discussion took place and two clear areas were enunciated:

- The need to improve the education of the architect and builders,
- The need to improve all relevant aspects of buildings to make them accessible for people with disabilities, and equally for old persons.

Workshop 2 Access legislation

Chairperson: Marilyn Golden, USA

Rapporteur: San Yuenwah, Thailand

Presentations were given by:

Jon Christophersen, Building Research Institute, Norway
Building regulations for accessibility: intentions and practice.

Ian M. Eilenberg, Victorian U of Tech RMIT, Australia
Australia takes tentative steps to take up the challenge of persons with disabilities.

Robert A. Fern, The Canadian Parks Service, Canada
Access in the Canadian Parks Service.

Marttiina Fränti, Ministry of Environment, Finland
National report on Finnish access legislation.

James D. Harrison, School of Architecture, NUS, Singapore
Recent advances in accessibility legislation and incentives in Singapore.

Yuri Novikov, Byelorussia
Accessibility legislation in Byelorussia and the Byelorussian Society of Persons with Disabilities

Six papers containing case studies on access legislation in Europe, North America and Asia & Pacific Region were presented. The papers dealt with building regulations; access legislation for housing; access to national, recreational and cultural facilities; recent advances in promoting accessibility in a newly industrializing economy; and progress towards legislation to eliminate social and physical barriers to the full participation of people with disabilities.

The Norwegian presentation examined the effects of access regulations on planning, detailing and building, with special reference to dwellings, related outdoor spaces, and other structures in housing areas. It was based on information gathered from nearly 60 interviews with local building authorities, architects, and suppliers of industrialized housing. Site visits to "life-span" dwellings and new buildings had yielded additional information. Norwegian access building regulations applied to all new construction and major reconstruction work. The regulations covered buildings that were open to the general public as well as those where people with disabilities might work and be housed. Since the introduction of the regulations in 1976, the technical skills of planners and builders had improved, and so has their awareness of accessibility. Building plans existed for full accessibility but those were often not realized. In that regard, there were several main areas of concern that remained to be addressed. Firstly, there was a need for detailed drawings to be made available to workers, foremen, site engineers and local authority controllers. Secondly, parts of the regulations gave insufficient detail. That often led to difficulties in comprehension and implementation. Thirdly, insufficient clarity in the wording of specifications caused parts of the regulations to be disregarded. There was a need to incorporate life-span dwelling criteria into the regulations. These criteria were employed by the Norwegian State Housing Bank for giving loans for dwellings. Life span dwellings that were fully accessible received the best financing. Fourthly, there was a need for more systematic checking on actual compliance with regulations. Fifthly, there was a need to include accessibility into the education of the building professionals. On the accessibility issue, two national organizations of disabled people exerted continuous pressure on government departments.

The Australian presentation contained a critical discussion of the legislative provisions of access. While all buildings open to the public were required to provide access for people with disabilities, that requirement was more often observed in name than in deed. Nevertheless, many architects were increasingly giving attention to access to main entrances and elevators, partly as a result of standards covering facilities for persons with disabilities in elevators. These were also improvements in the accessibility of the interiors of buildings. The general improvement was traced not so much to conformance with legislation as to the economic incentive inherent in accessible buildings that had sale value. The implications of accessible construction for an aging population in Australia were pointed out.

The Canadian presentation described the development of an Access Plan for each of the national parks, historic sites and historic canals, under the Canadian Parks Service, one of the largest in the world. The planning exercise had been initiated in response to Federal Government legislation and directives on accessibility. The cooperation of agencies representing disabled persons in interpreting the directives and developing a process for implementation were outlined. Public speaking campaigns, training of all 5,000 service staff on disability issues, token awards for supporters and humanization of the accessibility issue to win the support of architects and developers were among the strategies that had been employed to promote accessibility. Among the results of those strategies were the availability of audio-cassettes of information on trails, large print signs, model exhibits that were designed for tactile perception, descriptive videos with captioning, and the installation of broadcasting and listening systems in all parks.

The Finnish presentation pertained to a national report on Finnish access legislation. Finnish access legislation included access norms based on performance criteria, building regulations in the norms

of a national building code, and guidelines with detailed measurements on accessibility. While the guidelines served only as recommendations, the building regulations were binding. The presentation emphasized the need for clear mandatory regulations in place of vague performance criteria in building codes. Concerning enforcements, the presentation outlined an enforcement mechanism that was operative at the municipal level. Enforcement of a Finnish access legislation did not depend on the size of a structure, be it a new building or one under renovation, but on the type and use of the building itself. The structure should be open to the public in general, or owned by a public body, state or municipality. Enforcement of the installation of elevators in public buildings and business facilities through incorporation of the requirement in a binding regulation was underlined. In the private building sector, legislation covered services open to the public. However, public outdoor areas and private workplaces and residential buildings were not covered though numerous initiatives to improve accessibility in this area were under way. The presentation further highlighted the role of organizations of disabled people in bringing about access legislation. The National Association of Persons with Disabilities, in particular, prepared the technical papers required by the Ministry of Environment for improving building norms on accessibility.

The Singaporean presentation focussed on access legislation enacted within the past two years, including incentives to encourage the incorporation of access features. The legislation covered new and retrofitted public buildings, workplaces and barrier-free walkways in the public domain. The presentation examined the contrast of economic prosperity and a desire for a "more caring society" which had influenced the recent enactments of access legislation, along with concern over the provision of access facilities both for Singapore's increasingly aging society, as well as for a wider range of tourists. It was noted that the most significant step taken by public agencies had been the upgrading of continuous barrier-free walkway systems in the city. Initiatives were under way to resolve the mismatch between public and private sector provisions for accessibility. The Singapore Institute of Architects, in cooperation with the Singapore Council of Social Service, had formed the Accessibility Advisory Service to assist employers in improving the accessibility of the workplace, for which they could claim tax deductions up to a maximum of S$100,000. The special problems of designing barrier-free pedestrian routes in an equatorial climate were pointed out in the presentation.

The Byelorussian presentation introduced the efforts of the Byelorussian Society of Disabled Persons to help in the development of legislation to eliminate social and physical barriers to the full participation of people with disabilities in society. The Byelorussian Parliament was expected to adopt a draft law on the social protection of persons who are disabled. The society had participated in the development of building requirements for the creation of an accessible environment. The role of seven members of the Society as members of parliament was cited as being significant in supporting the Society's effect concerning legislation.

Workshop 2 Design solutions

Chairperson: Ales Chytka, Czechoslovakia

Rapporteur: Pauline Nee, U.K.

Presentations were given by:

Marijan Gnamus, DOS Designers, Yugoslavia
Concern for everyday problems of persons with disabilities in the street
Ewa Kurylowicz, Arkitektury Pracownia S. Kury, Poland
Adaptation of the National Theater in Warsaw to the needs of persons with disabilities

Paul Parakattel, Santhigiri, India
Creating accessibility in developing countries
Gisoo Ghaem, Building and Housing Research Center, Iran
Research on urban planning and architecture for persons with disabilities in Iran: Planning for provision of design criteria

Certain themes identified in these presentations, as well as other presentations throughout the seminar, were as follows:

All countries experience similar problems: people with disabilities are handicapped by their environment as much as by their disability. All societies are thus denied a full contribution from people with disabilities.

There are however significant differences which designers, legislators and activists must be aware of. Mr. Parakattel spoke about the problems in a country where many people cannot afford a wheelchair. Ms. Ghaem pointed out that Western design criteria did not address the cultural traditions of other countries.

The countries with less developed disability movements are using research carried out elsewhere, when appropriate. There is no point in reinventing the wheel: Ms. Kurylowicz used U.S. standards when designing adaptations for the theater; Ms. Ghaem used UN criteria of sizes of children when developing criteria for schools; Mr. Parakattel told how they had learnt from the mistakes of institutionalization, particularly useful in a developing country where its expense is also critical.

Of these countries only Iran had produced regulations for design, as late as in 1989. They were all devising and hoping to introduce regulations. In this they would learn from the wide ranging discussions throughout the seminar on the necessary adjuncts to legislation such as education, implementation, monitoring and enforcement.

The whole range of the urban environment must be considered, from urban planning to individual homes: Mr. Gnamus had considered in detail design in the home.

It is easier to provide access in the new buildings: Ms. Kurylowicz talked about the special problems/attitudes encountered when dealing with a building of special historic interest.

The concept of 'macro' or 'universal' design is informing debate and action in a positive and meaningful way: Mr. Gnamus explained how so-called 'normal' speeds for crossing roads are difficult to define. Even those people without significant disabilities will at some point have motion problems, particularly when very younger or older. Ms. Kurylowicz pointed out that certain steps leading up to the Krakow theater created a safety hazard as well as a barrier. Macro design attempts to create environments for a total population - environments which will not need adaptations to cater for specific disabilities.

The particular importance of integrating all education was stressed by Mr. Parakattel and Ms. Ghaem.

Plenary session The Americans with Disabilities Act and other policy tools in the United States and Canada

Chairperson: Adolf D. Ratzka, Sweden

Rapporteur: San Yuenwah, Thailand

Presentations were given by:

Peter Dunn, Wilfrid Laurier University, Canada
Accessible housing legislation and policies

Marilyn Golden, Disability Rights Education & Defense Fund, USA
Working for anti-discrimination legislation

Walter Park, Independent Housing Services, San Francisco, USA
Housing for people with disabilities: affordability, discrimination, and architectural barriers

Sidney M. Wolinsky, Disability Rights Education & Defense Fund, USA
An analysis of enforcement mechanisms for implementing access legislation and remedies

Pauline Nee, London Borough Islington Architects Dept., U.K.
Anti-discrimination legislation as basis for barrier-free design: How could ADA be adopted to the U.K.?

Horst Frehe, Selbstbestimmt Leben Bremen, Germany
Anti-discrimination legislation in Germany?

Ottmar Miles-Paul and Uwe Frehse, Interesseverein für selbstbestimmt Leben, Germany
Creating a political alliance for anti-discrimination legislation in Germany

In a presentation on anti-discrimination legislation as a basis for barrier-free design, a comparison was made between the historical roots of the Americans with Disabilities Act (ADA) in the U.S. civil rights movement and the prevalent British perception of accessibility as a charitable dispensation of a traditional welfare state. The lessons of the ADA that were perceived as being relevant for the British disability movement included the importance of networking and mutual support among people with different types of disabilities, high profile agitation and the leadership role of people with disabilities in advocacy. The presentation drew attention to some legislative shortcomings. For example, standards tended to be minimum and legislation per se did not win the hearts and minds of designers. It was proposed that existing political organizations such as trade unions be notified to work towards the achievement in the U.K. of the goal inherent in the ADA. For that, there was a need for closer links with the broader disability movement within Europe.

In a Californian presentation analyzing enforcement mechanisms for implementing access legislation, three conclusions were stated. Firstly, all three major levels of government (national, state and local) should participate in the enforcement of access legislation, with statutory provisions for enforcement by officials at each of those levels. Secondly, statutes should provide for private enforcement by individuals and groups. Thirdly, remedies in statutes should include the following:

- injunctive relief,
- damages to the individual,
- severe penalties for the violator,
- attorney's fees to be paid for by the violator to the litigant.

The presentation identified four requirements for effective enforcement:

- involvement of persons with disabilities in enforcement positions,
- intensive training of enforcement staff, on disability issues and accessibility design,

- education and training of people with disabilities to enhance their understanding of their rights,
- use of all enforcement mechanisms.

The efficacy of heavy penalties for negotiating enforcement by invoking the threat of the immediacy of a law suit was emphasized. There was, however, disagreement on this view.

A presentation on a U.S. non-profit housing service agency described activities to address three housing problems faced by people with disabilities: affordability, discrimination, and architectural barriers. Those activities included housing relocation, advocacy, counselling, home modification, and redesigning of government-built housing. The agency had developed a training manual for a training program on the Fair Housing Amendments Act. As a result of training and discussions on the Act, building designs are increasingly incorporating accessibility features. It was pointed out that the major changes contained in the Act were the inclusion of people with disabilities and families with children as protected groups, and specification of a judicial enforcement mechanism in the form of fiscal penalties.

The German presentation on anti-discrimination legislation covered the aspirations for a German policy tool that would be similar to the ADA, and the creation of a political alliance for anti-discrimination legislation, which benefitted from European networking. In the current developments on constitutional changes following the unification of East and West Germany, the German disability movement aspires to equalization of the general system of society through incorporation of the following components in revised legislation. These components are: an expansion of anti-discrimination provisions to cover people with psychiatric, other mental, and physical impairments, as well as the relationship between individuals, and not only between the state and the individual; and affirmative action, in addition to social subsidies. Further, human rights legislation should explicitly cover people with disabilities, while people with guardians should have the right to vote. Public transportation and housing policies should include access provisions. The need for legal service, counselling and independent living centers to support the movement for legislative change was noted, as was the desirability of including in new laws, funding provisions for those centers. The creation of a political alliance for German efforts towards anti-discrimination legislation was informed by a combined approach featuring civil disobedience, political lobbying and cross-disability solidarity. The consciousness-raising, networking, self-advocacy and publicity endeavors of a coalition of eight member organizations for anti-discrimination legislation were described.

The Seminar was further informed of the role of the European Network on Independent Living (ENIL) in campaigning for equal rights for people with disabilities in Europe as an effort to strengthen the European disability movement. Plans were under way for observation throughout Europe of a day (5 May 1992) of public protest against discriminating practices. The presentation on Working for Anti-discrimination Legislation drew from the experiences of the U.S. disability movement in achieving passage of the ADA. Central to the U.S. success were concerted and long-term efforts to effect change in the perception of people with disabilities as passive recipients of handouts to one that highlighted their active participation in society as tax payers, voters and consumers. This related both to the self-perception of people with disabilities and to public perception. A strong Independent Living Movement and awareness of disability rights were also viewed as fundamental to bringing about the ADA. The importance of unity across the disability movement was emphasized. Self-advocacy, face-to-face meetings with legislators, continuous and direct contact with officials, and telecommunications networking were among the strategies that had been used.

In the Canadian presentation on anti-discrimination and civil rights legislation, a comparative

review was made of Canadian and U.S. efforts in that regard. Issues for consideration in adopting a civil rights approach and principles for barrier-free housing were identified. It was noted that legislative change occurred only if people advocated for that change. Moreover, implementation and enforcement mechanisms were necessary to support legislation. Professional groups had to develop an adequate understanding of disability issues and the relevant legislation, for implementation to be effective. Training and education materials had to be developed and programs had to be conducted for those groups, to assist them in translating the legislation into practical change at the local level.

Plenary session European access tools

Chairperson: Sven Thiberg, Sweden
Rapporteur: Bob Fern, Canada

Presentations were given by:

Claes Thorén, Nordiska Nämnden för Handikappfrågor, Sweden
Existing legislation in the Nordic countries

Roy van Hek, ISG/CCPT, the Netherlands
Presentation of the 'European Manual'

Bastian Treffers, Dutch Council for the Disabled/ICTA, the Netherlands
Legislation: Strategy or a final solution?

Hans Örnhall, Boverket, Sweden
Towards European requirements and guidelines for an accessible built environment: An analysis of the 'European Manual' (CCPT 1990) from the Nordic experience

Alain Armeni, Ministry of Housing, France
Towards a general accessibility in the built environment for individuals with i mpaired mobility in France

Dieter P. Philippen, Institut T.L.P.e.V., Germany
Access Legislation

Presentations were made on the need to develop a manual on access that would be used by all the member states of the European Community (EC). The presentations also concerned the impact that this manual could have on non-member states. The presentations are summarized as follows:

Variation in access standards and the development of a draft manual
Speakers discussed the development of access standards in various European countries. In France, for example, although standards and legislation were in place in the 1970's, very little was done to implement the legislation. By comparison, the Netherlands and the Nordic countries (Sweden in particular) followed through with the implementation of their legislation. As a result, mobility impaired citizens of these countries now enjoy a high degree of access. However, they find it frustrating to travel outside their country where standards are often lower or non-existent.

Since the early 1980's, as other European countries developed legislation and implementation strategies, the EC has moved closer together. As a result, it became a goal of the EC to develop consistent legislation and standards. Led by the Netherlands, EC members met to develop a "manual of standards". Members agreed that standards would have to be phased in to allow some countries to raise their standards. Members also dealt with the provision of access to heritage and

other buildings. (It was noted that the Netherlands has completed studies on access to heritage buildings and that other countries are interested in their findings.) The first draft of the manual is now in circulation for review and comment.

Note: It would be best if a formula could be found that will satisfy both sides (e.g. a standard that countries which are not as advanced in the area of access can accept while ensuring that more advanced countries will not lower their standard to match the new one). One approach could be to acknowledge this situation in the manual and to indicate that the manual is a minimum standard to be used at this time and that it will be revised in the future to match the current expectations of other countries.

Manual format
Other points raised concerned the format of the manual. These included: using more diagrams to illustrate the various points raised; using a more integrated approach; clarifying various issues (e.g. why the manual was developed and who will it benefit); and determining whether or not the manual should include design solutions.

Impact of the manual on non-member states
Ensuing critiques and discussions noted that the final manual would have an influence on how non-EC member countries would proceed with the issue. For example, participants from Nordic countries, because of their close affiliation with the EC, were concerned that their countries would adopt the lower standards contained in the manual. They asked for the opportunity to review and comment on the final draft. Participants from other countries (e.g. Hungary, Poland, Russia, Byelorussia and Thailand) stated that they were interested in the manual. They were hopeful that sections of the manual could be applied now in certain circumstances and that other sections might be applied later. Delegates from Canada and the United States also stated that they were interested in examining the manual.

The rapporteur must admit that the writing of the summary was not an easy task as he has not had the opportunity to see the manual.

Towards general accessibility of the built environment for persons with limited mobility

Alain Armeni, Ministry of Housing, France

French experience with respect to the integration of disabled individuals in the built environment has made progress in recent years. The requests of disabled individuals have indeed developed to a considerable degree within the last decade, which makes it necessary to take their problems into increasing consideration.

The first step was taken in 1966 when a policy was adopted to adapt a percentage, albeit a rather small one, of housing in certain housing construction projects for use by disabled persons. The accessibility of outdoor space was not given much attention at that time and affected only the area immediately adjacent to housing.

The difficulties of this policy, and notably the impossibility of balancing supply and demand, led the French Government in 1974 to adopt new measures tending to generalize the accessibility of the buildings and the housing units they contained. In reality, it was chiefly the outside accessibility

of all the buildings for multi-family housing that was generalized at that time, because the measures concerning the interior of the dwellings were not very satisfactory for wheelchair users (for example, the sole obligation was to have inside doors with a width of 70 cm).

In 1975, the associations of disabled persons obtained an extension of this policy by the passage of a law which provides:

"The architectural arrangements and fixtures of housing accommodations and buildings open to the public, notably school facilities, university and training buildings, must be planned in such a way as to make them accessible to persons with disabilities".
(Law of Orientation in Favor of Disabled Persons, June 30, 1975)

Since 1978, in application of this law, all public buildings that are new or substantially rebuilt, as well as all new roads and streets and those undergoing major repairs are required to be made accessible. Moreover, work will have to be gradually carried out to make the existing buildings and previously constructed road system accessible. The scheduling of this work will have to be made public by the individual owners and local governments responsible.

The technical measures that have been adopted are intended to permit a large degree of autonomy to individuals with limited mobility, particularly those who use wheelchairs without aid. In new installations, facilities that are provided at the time of construction cost very little. A certain margin of toleration has be allowed in old installations, and projects must be examined with regard to technical possibilities within the limit of reasonable costs.

It is a matter that will take a long time. A service in the Ministry of Urban Development and Housing is devoted to taking accessibility into consideration in urban development as a factor for the improvement of the quality of the built environment for everyone.

In 1980 improvements were made in the measures covering accessibility in housing. There again, the measures were aimed at giving people with limited mobility the greatest possible autonomy and, as in the case of public buildings, contribute to an improvement in the quality of housing for everyone. That is why it seemed advisable to generalize them. The regulations now in force include measures applying to the actual access to all new apartment buildings, minimum requirements for all the housing units they contain, and more extensive requirements applying to all housing units accessible to people using wheelchairs.

The first of these are fairly standard. They involve the provision of access by ramp or, preferably, level entrances; corridors and doors of sufficient width outside and inside the buildings as well as inside all the dwelling units. An elevator is obligatory when there are 4 or more floors above the ground floor and, if there is no elevator, the stairways must be sufficiently easy to use for elderly persons and those who walk with canes, for example, and they must be accessible to people being carried in a chair.

According to law, all housing units located on the ground floor as well as those on an upper floor to which an elevator gives access must be accessible to persons with disabilities. All such housing units must have a living area that is easy for a person using a wheelchair to use (kitchen, living room, at least one bedroom, toilet and bath). However, this facility may be anticipated without actually being furnished at the time of construction. In this case, the architect will have to prove that the transformation necessary to permit a person using a wheelchair to use this unit can easily be made by work that touches neither the structure nor the exterior of the dwelling unit and does not alter its form, especially by decreasing the number of rooms.

This rule, called "housing adaptability", seeks to leave the architect a certain degree of freedom of

design. It is obviously desirable that the modifications which people in wheelchairs are forced to make should be reduced as much as possible. If the housing accommodations built in France at the present time do not regress, most architects will provide living facilities that correspond to the needs of individuals using wheelchairs at the time of construction, because these facilities are of the same nature as those now being widely sought (a somewhat larger kitchen, a bedroom of at least equal dimensions, etc.). The average additional cost required for adaptable housing is relatively small ranging from 0.5 to 1 per cent.

In the sector of private homes and old housing units there is no legal obligation to make them accessible at the present time. Recommendations have been made, accompanied by a certain number of financial aids to serve as encouragement. Thus from the housing unit to the street and to public buildings, the entire environment can be made accessible. A considerable backlog has accumulated but it is hoped that building accessibly will eventually become routine rather than forced by law.

Technical measures are shown in the appendices which are available from the author.

Waste disposal in the household - recycling systems for everyone

Erik & Tina Bahn, Arkitekterne Bahn, Danish Building Development Board, Denmark

Sorting of garbage in trash chutes

When you are used to throwing your waste away through a hole in the wall, it can be difficult to be motivated to sort the valuable part of the rubbish and carry it a bit further in order to place it in a container. But now a new Danish sorting-system has been developed to divide the trash already at the garbage disposal chute. The plant is designed to sort four kinds of waste; other categories can be added. This is how the system is used:

- The system will always show the position "Residual rubbish".
- By depressing the button indicating "Compost", "Glass" or "Newspapers" the desired category is obtained.
- The green light at "Residual rubbish" goes off immediately when another category light is pressed. After about five seconds, the green light for the desired category goes on. Thus any residual waste already thrown down will have time to arrive at the correct container.
- When the green light is on for the chosen category the chute can again be used. Garbage may only be deposited when the green light is on.
- After about ten seconds, the system will again return to the normal position "Residual rubbish"
- A yellow light indicates that the system is being emptied and therefore cannot be used.
- A red light indicates an error in the system. This can be due to jamming, for example. When the error has been repaired, the system is turned on by pressing the button "Reset" for about three seconds.

The research project includes development and testing of recycling systems for waste disposal which is user-friendly and usable for as large a group of the population as possible, and which can be installed in an existing or new kitchen without economically-demanding changes or additions. The Building Development Council has supported the project and issued a paper with a description of the problems of the housing project and its inhabitants (tenants), the conditions, documentation, and conclusion of recycling in multi-story housing and perspective. A leading consideration in the project has been to enable tenants to contribute oneself and take part in the daily activities. The

arrangement and accessories of the home have to be adapted for the various abilities the residents have during the years. The research has taken place in existing standard kitchens containing very little space.

The site

Rådhusdammen was chosen as an actual site because of the complex's present waste disposal system's unsatisfactory performance for those of the residents who are disabled, and because of Rådhusdammen's typical low-density housing configuration. Rådhusdammen consists of 96 apartments, 34 of which are on the ground floor and are well suited for people with disabilities. Rådhusdammen was built during 1979-1980.

The preconditions

The legislation and the exiting environmental and waste disposal systems have been important factors for the project. The starting point for the development of new recycling waste disposal systems in households has been that the actual solutions must fit in a larger context around reuse of waste disposal, (i.e., municipal garbage collection). The project has illuminated the problems and the needs around recycling waste disposal for the residents in the household and in the two sheds placed in the courtyards.

Methods for the development phase

The work method has been a combination of rough drafts/drawings and testing of models and prototypes executed by the architects Bahn MMI and MAA. The prototypes have been tested along the way by the Råddammen residents, who have participated during all the project's phases through residents' meetings. In August 1990 the project took part in Albertslund's municipal environmental exhibition. The exhibition's spectators showed considerable interest in the waste management problem.

Proposals

The following are suggested improvements concerning accessibility and lighting in the housing complex's two garbage storage:

- ventilation against odors,
- automatic doors,
- glass door and lighting.

The existing containers were given smaller lids which are much easier to handle:

- container with lid on the side,
- container with a smaller lid, mounted on the existing container lid,
- container with a sliding lid, mounted on the existing container lid.

The containers are to be painted in appropriate colors and given symbols indicating their content. Easily recognizable signs and touch-typing are to be applied. In the small standard kitchen the

following ideas have been tested:

- garbage wagon on wheels containing four compartments,
- "pull-out" cupboard, mounted under the kitchen table in the "dead corner",
- "swing-out" cupboard, mounted under the table in the "dead corner",
- "pull-out" plate, mounted on the top and bottom of the kitchen cupboard.

Disposal through a chute in the kitchen table with a direct connection to the personal recycling waste disposal container has been tested. The container needs to be pulled out only when emptying is needed.

Conclusions

The research project has shown, that it is impossible to produce one complete solution which satisfies all users' needs. Several systems have been developed, each consisting of a standard basic module, having room for minimum two compartments for compost and residue waste. Buckets or bags and cleaning devices can be added. Glass and paper containers are stored either in the systems or elsewhere in the house. At the end of the research project the systems have shown to be usable, however in no way fully developed and refined. Testing has shown that further refining of details is necessary.

In the near future, all households have to take part in some form of organized recycling waste disposal system. Therefore it is of importance to have developed several sorting systems which can be installed in existing standard kitchens without large alterations causing economic burdens.

The research project has been developed with support from BUR. The project has been elaborated by Arkitekterne Bahn, Holbæk and Nelleman A/S, København.

Accessibility legislation

Jon Christophersen, Building Research Institute, Norway

Introduction of accessibility legislation in Norway has followed political policy decisions. Presently, central legislation to ensure easy access in new developments is in force. Implementation is the responsibility of local authorities. It is within their power to provide local regulations to further accessibility beyond the central and general legislation. In addition, various incentives for better accessibility on a voluntary basis are in operation.

Policy instruments

Policy documents are drawn up by government departments or, on the municipal level, by the local administration. The former will seldom carry legal weight. Instead, their status is advisory - but recommendations may be and often are of major importance. One such document is a government paper of 1971/72 which has played the part of political basis for Norwegian access legislation. It outlines the principal aim: "To ensure that physical environment in buildings and surroundings should not hinder disabled peoples' activities of daily life." On the local level, policy documents may be worked into a more binding framework, provided sufficient political backing can be

achieved. In addition, most political parties have policy statements on accessibility in dwellings and/or the built environment. Recent policy decisions for better accessibility are to a large extent motivated by plans for social reform under the general heading of "integration".

Enforcement provisions

Central
A building code, building regulations, and a building regulations guide book act as the legal framework. All new construction and all major conversions throughout the country must satisfy both the code and regulations including accessibility, as covered by the regulations (not by the code), should be provided for:

- buildings that are open to the general public,
- buildings where people with disabilities people may have a place of work (places for work for ten or more persons),
- buildings containing more than 4 dwelling units.

By accessibility, both internal and external arrangements are demanded, including access roads and paths, corridors and circulation spaces, toilet facilities, minimum door widths, etc. The regulations have frequent references to specifications which are outside the legal framework, but have status as recommendations. Most widely used are Norwegian Standards, information sheets from the Norwegian Building Research Institute and criteria developed by the Norwegian State Housing Bank. It may, however, be noted that accessibility specifications in the building regulations apply only in minor ways to the dominant type of dwelling construction, that is low to medium density timber frame housing.

Local
Compliance with the regulations is checked locally, as a routine matter. This poses a slight dilemma: Regulations are given and maintained by a central office to cover all parts of the country. Enforcement is decentralized to some 450 different local authorities. It follows that results may vary according to the level of practice, local expertise, competence and understanding. Smaller municipalities will rarely have sufficient technical skill; it is generally assumed that their practice is somewhat lacking. Of particular interest on a local level are the rather wide powers given in the building code: Regulations that go further than the building regulations may be - and often are - laid down for specific areas within a community. This has had relevance for housing in the sense that a considerable number of areas have been set aside for "life-span dwellings" (see below).

TABLE
Norwegian access legislation

(Left column)
Central level:

Legislation
building and planning code
building regulations
standards

Incentives
guide lines

subsidized loans
certifications for products

(Right column)
County or municipal level:

local control & enforcement
local regulations specific for a given site or area

Incentives for better accessibility
Incentives for voluntary provision of accessibility of higher standard than demanded have proved a successful supplement to legislation. Norwegian Standards and various certifications for building products are typical examples. More important are the life-span dwelling criteria employed by the Norwegian State Housing Bank. The bank allows state subsidized loans - i.e., below market interest - to small and medium sized new dwellings. Accessible dwellings get the higher loans, and life-span dwellings receive the best financing. In life-span dwellings all major dwelling functions are fully accessible for persons operating manual wheelchairs:

- the main entrance door is accessible with a wheelchair from the parking place,
- living room, kitchen, one bedroom, bath/toilet are on the same level as the main entrance,
- when fully furnished and equipped, these rooms have sufficient dimensions to allow turning and passage for wheelchairs,
- doors have sufficient widths and low or no thresholds.

Experiences
Intentions for accessibility in Norway may be characterized as good, providing both a central, legislative framework (which local authorities are empowered to strengthen) applicable to all buildings and incentives which have proved successful, meaning higher standards of accessibility and usability. Our questions were: how are legislation and incentives put into practice and what are their results? Two projects gave opportunity for research. One concerned life-span dwellings, the other looked into the workings of the building regulations on construction in residential areas. The building regulation project was carried out first. Findings from it were confirmed and detailed in the life-span dwelling project.

The studies

Our studies concern access legislation in the building regulations and the life-span dwelling criteria. The aim of the studies was to find out how access rules and regulations affect the planning professions, the control functions and the end result: the building of residential areas. The life-span dwelling project includes recommendations for improved criteria.

For the building regulation project, we interviewed a total of 50 building controllers in public authorities. Five went into detail, the other 45 interviews were conducted over telephone and concentrated on three main problems: provision of elevators in residential buildings; provision of accessible toilets in dwellings; and practice on exceptions from the access rules. We also interviewed four architects in private practice and the three biggest suppliers of timber frame housing. The five detailed interviews were followed up with site visits, to sites suggested by the interviewees. The 19 building projects we visited included kindergartens, dwellings, office buildings, local meeting rooms and a couple of mixed developments with shops, offices and

dwellings.

For the life-span dwelling project, we interviewed three architects employed by the Norwegian State Housing Bank. We conducted a half-day seminar/discussion between the representatives of the housing bank and a variety of organizations for people with disabilities, and we organized site visits to 21 completed dwellings in 19 different projects. These were accompanied by a person using a manual wheelchair, representatives of the Housing Bank and a developer.

The site visits were in both studies prepared through critical analysis of drawings. We devised simple systems for annotating plans and used plans annotated in advance as guides through each project and every building, supplementing the advance annotations as visits progressed.

Specifications for access

Instrumental in the implementation of policy decisions, building regulations and life-span dwelling criteria need to be well defined, well edited and easy to apply. Good intentions not withstanding, we found problems of application and practicability both in the life-span dwelling criteria and in the building regulations - to the extent that serious obstacles to accessibility may be difficult to avoid.

The building regulations define the lowest legal level of accessibility. They have wide application - to all buildings - but low definition and insufficient detail specification limit their practical workability. The life-span dwelling criteria are better defined than the building regulations. They are linked to a considerable economic incentive which also carries a certain marketing value. The criteria have proved instrumental in changing dwelling layout and design. Our studies show:

Building regulations

Problems of editing
Access demands are split up and spaced far apart, thus complicating cross referencing, and causing disregard of important details.

Wording
Parts of regulations are vague or give insufficient detail, thus their practicability is reduced or in some cases negated. Lax practice in granting exemptions from regulations is common.

Building types
The most common types of housing are not covered by the access regulations. Public spaces (e.g. restaurants) are insufficiently covered.

Life-span dwelling criteria
Attention to detail and to continuity of access from car parking through entrance to bedroom and toilet is needed.

Due to the problem mentioned in the previous paragraph, life-span dwelling criteria have had greater importance on dwellings than the building regulations. As life-span dwellings make up 33 per cent of dwellings financed through the Housing Bank, it can be estimated that some 15 per cent of all new dwellings have life-span standard.

Problems of wording, editing and practicability will in many cases have the effect of neutralizing even costly measures for accessibility. The results on site show that insurmountable barriers occur where details have been overlooked or disregarded.

Results of planning

Demands for accessibility have led to better planning. Planners are more knowledgeable than before, their buildings show that attention to access problems are taken seriously. There can be no doubt that planners' awareness of barrier-free design has increased considerably in few years. Interviews, plans and buildings show clear evidence of this. Measures which would have been highly unusual earlier are planned and executed, partly because the building regulations demand them and partly because of the economic incentives afforded through the larger state subsidized loans to life-span dwellings. As a result, knowledge which formerly belonged to the realm of specialists has become a general planning tool.

The planners' main objectives, providing circulation areas, doors, elevators, toilet facilities, etc. in correct positions and with sufficient dimensions, are in all major respects taken care of. Almost all necessary functions can be reached. This 'almost' causes concern, as nearly every project had unnecessary barriers, many of which represented insurmountable obstacles. The nature of these barriers illustrates a need for better control, and - of primary importance - a need for change in building practices. Both are largely questions of workmanship and may be achieved through a higher level of competence, i.e., information and education, particularly as regards craftsmen and site workers.

The interviews disclosed that accessibility in housing is generally not achieved through the present wording of the building regulations. They apply to larger structures, i.e., blocks of apartments. Construction of high- and medium-rise housing has decreased in recent years and is hardly found outside the capital. It is, however, interesting that parts of the timber frame housing industry develop all new house types according to the criteria for life-span dwelling standard.

Control functions

Control functions are routine matters for local authorities and the Housing Bank. The former have rights (but no duty) of control on all building, while the latter only controls dwellings financed by the bank (a little less than 50 per cent of all new dwellings). As control covers both the design stage and the building process, one might assume that accessibility is ensured. In practice, most buildings have serious faults.

Local authorities check drawings and follow up on site at various stages during construction. The Housing Bank checks drawings for life-span criteria and visits dwellings immediately after completion. Both control systems should, consequently, give ample opportunity for pinpointing and correcting any and all obstacles to accessibility.

The practical functioning of control systems hinges on specifications (given in rules and regulations) and individual competence and attention to detail on the part of the controllers. Our interviews give evidence that practice varies. The building regulations are far from specific, but open to interpretation. Thus, a building approved by one local authority may well be refused by its neighbor. An additional problem is that due to vague wording. Some regulations have never taken effect. The life-span dwelling criteria, although better defined and enforced by a more centralized authority, are similarly criticized.

Our principal aim was to map the consequences of rules and regulations on finished products -

built environment in residential areas. With surprising regularity, we found a series of typical faults.

Serious obstacles due to building faults are overlooked. In general, these are faults of detailing rather than planning or layout. The striking feature is that typical faults of detailing are repeated on a majority of the buildings, regardless of building type or function. Although our sample is small compared to the total amount of new construction, the studies show a regularity of typical faults which indicates that the problem is general and may be found in most, if not all new building.

The acuteness of this problem is further underlined by the fact that the typical faults pose obstacles which in a majority of cases negate other investments for accessibility. This may be taken as proof of a severe shortcoming: knowledge of correct building details is severely lacking - detailing for accessibility is a comparatively new skill and it contrasts strongly with established building practice on several important points. Typical faults and obstacles are the subject of the following chapter.

Result - buildings in residential areas

The purpose of the site visits was to investigate how planning for accessibility is carried out in building practice. The abundance of building faults constitutes a serious problem: wrong details seem almost a norm, typical faults were repeated on nearly every of the forty buildings visited.

The studies illustrate that defects of planning are no longer an acute problem - Norwegian planners do a fairly good job - but workmanship and on-site control has fallen behind. Obstacles which do not show up on elevations and floor plans can easily be found on site. Although the majority of these obstacles clearly contradicts rules and regulations, controllers will rarely take notice and make demands for improvements. Consequently, a number of severe barriers were found in buildings meant to be accessible. The life-span dwelling project gave the best illustration, as all buildings were "tested" by disabled persons in manual wheelchairs. Another positive effect of the visits was the experience imparted to representatives of the local authority or Housing Bank.

Obstacles and faults could be observed externally, on main approach routes to the buildings, and in the spaces inside.

Common problems

External obstacles

Access roads and paths
Where demanded by rules or regulations, drawings show gradients of maximum 1:12. In some cases, the actual gradients were steeper, but more often would a stretch of 1:12 footpath have sudden, short portions with a steeper gradient. Thus, well-planned paths were made inaccessible.

Access ramps
Although clearly specified in access legislation, access ramps are often too steep and/or lack landings at the top. Landings that interrupt long stretches of ramps are particularly rare. The life-span dwelling project also illustrated a need for alternative solutions to ramps. Where provided as access to private houses, ramps are removed by the users.

Changes of level

Inadequate solutions, particularly of changes of level between landing at entrance door and finished floor inside, were among the most common faults. This is a particularly good example of the need for change of established building practices. Level solutions have not been commonly sought earlier. They are, however, provided when clearly demanded. Examples are entrances to supermarkets.

Internal obstacles

Doors
Being the most important means of access, doors also pose frequent obstacles. Typical examples are:
Heavy (fire) doors, which in effect block corridors, passages, entrances to underground car parks and in many cases also entry to apartments. This contravenes legislation, and is a legislative problem, as products - lighter doors - may not be found on the market.
Positioning of doors causes problems; wrong positioning reduces door width, space necessary to reach door handles is often forgotten.
Thresholds are traditional in Norway, and are sometimes still demanded by local authorities, although legislation specifies otherwise.

Changes of level
The most important problem is access to bathrooms. Provision of floor drains and floor heating cause increased thickness of construction, and, consequently, change of level between bathroom floor and adjoining rooms. Various solutions are tried for life-span dwellings. For other dwellings, a paragraph in the building regulations might apply, but is disregarded because of unclear wording. Other changes of level occur, often as consequences of inaccuracies in building. Normal tolerances are often insufficient, if full accessibility is to be achieved.

Lack of logic
Some faults can be explained by lack of logic in the wording of rules and regulations. An understanding of accessibility as a continuous circulation system running from car park through all important functions of buildings seems rare and is not brought out in the specifications.

Conclusion - future development for better accessibility

The studies show that better accessibility - or indeed compliance with legal requirements - in Norway now depends chiefly on better workmanship and better control on site. Both issues are questions of competence: better attention to detail on the part of controllers and increased knowledge of correct working details on the part of building site workers. Improved legislation may then easily follow. Coupled to this is the need to keep planners' awareness alive.

Competence improvements
A policy for inclusion of accessibility in education for the building professions has been agreed on recently. This provides a necessary framework, so that accessibility may be introduced more systematically in all fields of education related to building planning and practice. Thus, better execution of building details may be achieved.

Changes of legislation
Weaknesses of legislation account for some of the access problems found through our studies. The life-span dwelling criteria will be adjusted within the next few months; the adjustments will likely follow our recommendations closely. Altering and improving building regulations is a slower and more difficult process. A chief aim is to move their content as close to the life-span dwelling

criteria as possible. It is doubtful whether this is at all feasible today. A more pragmatic approach would be to aim for full implementation of the regulations which are in force - and to improve the wording of paragraphs that are disregarded. Implementation depends, however, on control and the decentralized control systems are not easily reached. Pressure for improvement of building regulations has proven effective, although slow, in the past and is continuing.

Changing building practice
The building trades are by nature conservative and changes are difficult to effect. A lot more work is needed, though stumbling blocks are numerous and hard to overcome. Both our institute and the Housing Bank are trying to catalogue and evolve new and better building details from which simple, economic and easy to follow recommendations may be published. It would seem that this aspect is lagging behind the other two main issues for better accessibility in the built environment.

Classification of the environment

Zoltán Csorba, Mayor's Office, Budapest, Hungary

In 1981 the Municipal Council of Budapest decided to build on a regular basis special homes for persons with disabilities, as indicated by the International Year of Disabled Persons. This resolution was carried out within the framework of the yearly housing program. I had the task to help solve problems, mostly of a technical type, which were considerably different from that of the routine mass housing process.

About 80 homes were completed in the different housing estates, which indicates the tight limits of the program. The action launched on the occasion of the IYDP could not meet the needs of more then one tenth of the estimated real requirements. The program, foreseeing a systematic action of building accessible homes stopped; no similar initiatives have been realized since. The newly elected governing bodies of local representation may do something in the future.

As new democracies in East and Central Europe turn towards privatization and the voluntary principle new aspects are needed in order to promote the creation of non-handicapping environments and homes by means of regulation in accordance with the declared principles. In the former socialist states the task of improving the environment for people with disabilities has had a marginal role. Such programs were started in peripheral areas and were slow to make quick efficient changes.

In these countries, proprietary rights have gained the main priority, and new forms of influence are needed. The key for solving these problems could be the elaboration of some international recommendations, separated from the pure social aspects. These recommendations could provide a new approach, based on legality and human rights. Recommendations should discuss the following ideas. The relation between man and environment could be categorized in 3 different types:

1. Private areas:
Areas with "exclusive" use, where the user's (mainly the owner's) personal rights are dominating. The user has the right to decide about the configuration of his own house and apartment and about the degree of danger tolerated.

Semi-private areas with "limited" use, where the decisions are taken by a group with common responsibility. Such decisions are made in case of buildings with shared ownership.

2. Public areas:
This category includes public institutions, public park areas, and all places accessible by everybody. Human and civil rights ensure the general accessibility and the common use of these areas.

3. Protected areas:
This includes areas where the environment must be preserved or is under conservation, and it may not be changed.

These three main kinds of user and environment relations allow classification on the following basis:

- prevention from the dangers caused by the behavior of people, and the responsibility for avoiding dangerous situations,
- accessibility and non-handicapping configuration of the built environment, and the responsibility for ensuring these as a declared human right.

The above principle could give a good approach for the categories of the legislation. This classification could be applied in the regulations of the physical planning. My proposal is to define the following four zones:

Zone A
Unhindered, accessible environments have to be created which citizens are allowed to use or enjoy any time, having the natural civil right to exercise different activities (i.e., premises of public institutions like town halls, police stations, court houses, hospitals, etc.). Also, the public areas on which these buildings are accessible. The areas of pedestrian traffic, such routes and places. The bigger public parks and all places, where the master plan or other regulations prescribe the formation of these kind of areas.

Zone B
On the "private" areas unhindered accessibility can not be ordered, but highly recommended in order to provide an environment that meets the demands of old people, people with disabilities or children, baby pram users, emergency delivery, ambulance and health services. The formation of the unhindered environment is the task of the owner. To set the responsibilities clear, recommendations for the prevention of accidents would be very useful.

Zone C
The "dangerous" environment is a special area where access should be allowed only for persons able to take the risk involved in the use of these areas. Regulations are needed here to form the boundary and mark the danger with signs.

Zone D
The "protected "environment. A certain requirement is the protection of the environment against the radical human influence. This can refer to the built environment (monuments), or natural environment (national parks, protected values). The declaration of the special legal status in these areas can be a solution to the problem.

The classification described above could form a complex system on which to base the requirements for the legislation. This way the owner's rights and the autonomy of the local governments will not be violated. At the same time, disabled persons, old and young people and the rest of us will have a comfortable, adaptable and useful environment.

The former methods of town planning handled separately the special functional areas of the town. New tendencies emphasize the character of the part of the town and try to preserve the main

features of it. My proposal, according to the new ideas, stresses one of the most important elements of the character, the safety of free moving, which is the prime condition of the comfort feeling.

As you may know, the General Assembly of the Municipality of Budapest recently decided to make the main places and institutions in the capital barrier-free. It will be a long and permanent program.

The first task is to specify the demands. It is difficult because, until now, there were neither research programs nor institutions responsible for complex human health research in the residential environment investigating the mental and physical impacts. We need the experiences of the developed countries, including regulations, plans, and proven solutions.

We have to find the means to transform both the mind of professionals and the mentality of the people.

Accessible housing legislation and policies: A framework for future policy development

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This paper incorporates materials from a presentation made by the author at the Aging into the 21st Century Conference, entitled: "Policies and Community Responses which Promote Barrier Free Housing for Seniors", Ottawa, April 18-21, 1990 and the author's manuscript entitled: "A Comparative Analysis of Barrier-Free Housing Policies for Elderly People in the United States and Canada." Helpful information and assistance were provided by numerous people including staff from the Canada Mortgage and Housing Corporation, the U.S. Department of Housing and Urban Development, the Adaptive Environments Center and Dale Taylor and Beth Curtain who typed this paper.

Abstract

There are many housing issues which individuals with disabilities confront when trying to live in the community. This paper will focus on the range of policy and legislative issues which need to be tackled in order for countries to promote a barrier-free housing environment. There are several policy options which can help create additional barrier-free housing. These policy approaches can be utilized to various degrees to impact the extent of accessibility in new public, private and non-profit housing and existing construction and rehabilitation. The strengths and weaknesses of the different policy approaches which have been undertaken in Canada and the United States will be compared including the potential of the housing rights model in the United States and the social welfare safety-net approach in Canada. Future housing laws and policies must be formulated based upon social justice, universal coverage, comprehensiveness, adaptable housing standards and consumer control. A range of policy options are outlined; however, this paper emphasizes that different governments must consider their own unique needs and political context in their nation in selecting the most effective strategies for making the housing environment barrier-free.

There are multiple barriers which individuals with disabilities have to confront in the community. For example, public transportation may be inaccessible and unavailable; attendant care services may be inadequate and dehumanizing; employers may discriminate against people with disabilities;

income maintenance programs and health care assistance can be inadequate and create disincentives to work; or community facilities and programs may be unresponsive and inaccessible. In addition, individuals may not be able to get out of their homes or get around inside because of architectural barriers. Even in the housing environment there are numerous issues which people with disabilities confront. Landlords may discriminate against disabled people. Landlords and tenants can be patronizing and create problems for visiting home care attendants. Housing can be unaffordable, especially for people with low to moderate incomes. Large housing projects are often unsafe and may not have adequate accessible neighborhood facilities. Also, many communities do not have emergency housing hostels and facilities which are physically accessible.

Fig 1. Housing issues confronting disabled persons.

- physical barriers in housing,
- attitudes of housing mangers and other tenants,
- high housing costs - affordability,
- discrimination in housing,
- safety issues such as lighting,
- lack of emergency housing accommodations,
- lack of neighborhood support services.

This paper will focus upon one of these concerns by describing issues related to making the housing environment barrier-free for individuals with disabilities. Then specific policy options will be outlined. The policy approaches undertaken in the United States and Canada will be described including the strengths and weaknesses of these policy initiatives. In addition, this paper will stress the importance of considering the ideology and jurisdictional arrangements of a country in developing public policy. Finally, principles and a process of dealing with these concerns will be outlined as a framework for future policy development.

Benefits and costs of barrier-free housing

Making housing barrier-free can be helpful in a variety of ways. A number of research studies have documented some of the social and economic benefits of barrier-free housing. For example, a cost-benefit study undertaken by the U.S. Department of Housing and Urban Development estimated that adapting existing housing reduces the need for support services and yields benefits that amount to 13 to 22 times the levels of costs (Robinette, 1978). Elderly clients of a national demonstration home repair and housing adaptation program felt that these services enable them to function far more independently (BE&C Engineers Inc., 1977). A study by Silvia Sherwood (1981) indicated that 50 per cent of the 344 people applying to the Hebrew Rehabilitation Center for the Aged in Boston in the early 1970's were capable of functioning in the community with appropriate supports and accessible housing. An evaluation of Project Open House, a program which adapts homes of individuals with disabilities in New York City, found that adapted housing was a major predictor of the productivity of these individuals including the amount of time they spent out of bed, working in their homes and participating in community activities (Dunn, 1990). Finally, Adolf Ratzka (1984) documented research in Sweden which found that 12 per cent to 30 per cent of the moves of disabled individuals to nursing homes and sheltered housing could have been avoided by accessible housing alone.

Even though the benefits of barrier-free housing may be very significant, housing adaptations can often be made at a very reasonable cost. Project Open House spent an average of only $1,500 in

1986 to adapt existing homes of consumers (Dunn, 1990). If houses are adapted prior to construction the costs are even less than retrofitting homes. If accessibility is incorporated into a design prior to construction, the cost of making 10 per cent of the units accessible is less than 1 per cent of the total constructions costs (Bartelle Memorial Institute, 1977). More importantly, units can be constructed to be "adaptable" to the individual needs of residents. Doors and corridors can be made wider, counters made adjustable and bathrooms designed so that grab bars can be easily installed to respond to the needs of the consumer. Chollet (1979) estimates that adaptable units can be constructed for only slightly more than conventional ones. Adaptable housing can be constructed so that everyone can use this universal design. The design is blended in so that it is often difficult to see that counters or clothing rods in closets are adjustable for people with different heights.

Outstanding concerns

The outstanding need for barrier-free housing is substantial in the United States and Canada. In 1990 there were approximately 34 million Americans with a major health problem or mobility limitation living in the community. (U.S. Department of Health and Human Services, 1990). In Canada there are 3 million people in households who have a physical, developmental or mental disability (Dunn, 1990 b). Research studies have estimated that approximately 1 per cent - two per cent of the total population require housing adaptations, or about 2.5 per cent - 5 per cent of all households (Dunn, 1985). Struyk (1982) has estimated that there are between 865,000 to 1,300,000 elderly households alone in the United States that still require housing adaptations to accommodate their disabilities.

Fig 2. Sectors to be covered by housing policies.

Types of Housing:	Existing Housing	New Construction or Renovations
Private Home Ownership	1	2
Private Rental	3	4
Public Rental	5	6
Non-Profit Rental	7	8

Since there is a substantial benefit and need to create barrier-free housing, it is therefore important to consider issues in creating effective policy responses. It is particularly difficult to develop effective policy responses because the issues are numerous, and often complex. In order to ensure a barrier-free housing environment policies must deal with existing housing, new construction and rehabilitation. Policies must also address private, public and non-profit housing as well as single-unit and multi-unit construction (see Figure 2). As a result, housing policies may need to deal with multiple government jurisdictions at the national, regional and local level. Policy initiatives may need to cut across the public, private and voluntary sectors. Finally, there may be a range of implementation issues such as ensuring that organizations effectively monitor compliance with barrier-free legislation.

It is useful to consider some of the major policy options which can create a barrier-free housing

environment. These policy options include:

1. Government housing construction programs:
national, regional or local governments can help finance or directly construct new housing which is barrier-free;

2. Housing vouchers:
agencies provide vouchers or certificates to disabled people to obtain and to pay for existing adapted housing;

3. Community service approach:
agencies can assess the housing needs of their clients and adapt existing housing units for qualified clients;

4. Grants, loans, reimbursements and tax incentives:
government agencies can provide grants and loans directly to homeowners, tenants and/or landlords to adapt existing dwellings, health care insurance organizations can reimburse consumers for adapting their existing homes, or governments can provide tax incentives for adapting housing;

5. Building codes and regulations:
different levels of government may ensure that new or renovated housing is barrier-free through enacting building codes and regulations; and

6. Civil rights legislation:
governments can establish legislation that prohibits discrimination against people with disabilities and requires that housing accommodate individuals' disabilities.

These approaches can be classified using Chambers (1986) typologies of policy initiatives (See 3).

Figure 3. Policy options for barrier-free housing.

	Forms of Benefits or Services
I. Government Housing Construction	Material Goods
II. Housing Vouchers and Certificates	Vouchers
III. Community Service Approach	Expert Services
IV. Grants, Loans, Reimbursements and Tax Incentives	Cash or Credits
V. Building Codes and Regulations	Legal Regulations
VI. Civil Rights Legislation	Anti-Discrimination

The approach in the United States

The United States government has created barrier-free housing using several approaches (See Figure 4). One major approach is to create new public, private and non-profit housing which is

accessible. Unfortunately, the federal government in the United States has dramatically reduced its expenditures upon subsidies for new housing. Schwartz, Ferlanto and Hoffman (1988) explains that the budget of the U.S. Department of Housing and Urban Development (HUD) was reduced by 57 per cent from 1980 to 1987, from $35.7 billion to $15.2 billion, for basic programs such as rental assistance for elderly and disabled persons. HUD's assistance in new rental units dropped from 129,400 in 1980 to 19,000 rental starts in 1986. Funding for Section 202 for elderly and disabled people dropped from 15,000 to 10,000 new units per year. HUD budget accounted for 7 per cent of the federal budget in 1978 versus 1 per cent in 1982. Instead of assisting in the development of new housing HUD is increasingly providing financial assistance in the form of housing certificates and vouchers for consumers to obtain housing in the private market. As a result, some states have attempted to fill this void with their own housing programs. Although many of the states have developed a wide range of innovative programs these services are not very consistent across the United States (Schwartz, Ferlanto and Hoffman, 1988).

Figure 4. An overview of the United States approach.

I. Construction:
Federal subsidies for public, non-profit and private housing with accessible requirements for each program, but recent radical cutbacks in federal expenditures (4,6,8).

II. Vouchers:
Increased emphases of housing vouchers and certificates in the private market (7)

III. Services:
An uncoordinated patchwork of community service housing adaptation programs (1,3,5,7).

IV. Grants/Loans:
Minimal grants and loans, or health care reimbursements for adaptations (1).

V. Codes:
Varying state building codes, but with the potential of increased uniformity because of F.H.A.A. (4,6,8).

VI. Civil Rights:
Increasing strong civil rights housing legislation with accessible regulations and some adaptable housing requirements (3-8).

Note: ( ) numbers are housing sectors affected in Figure 2.

One of the major U.S. responses in providing housing for families with low incomes has been the public housing program. HUD pays the construction and operating costs of public housing projects which are operated by over 3,300 local housing authorities. In 1956 the eligibility criteria were extended to individuals who are elderly and in 1964 to disabled persons. By 1990 there were 1.2 million occupied public housing units. However, from 1986 to 1990 HUD only constructed about 25,000 public housing units. (Special Committee on Aging, 1991). HUD has also provided loan assistance to public, non-profit and private agencies to develop housing for people with disabilities.

The major program has been the Section 202 Direct Loan Program. Section 202 was started in 1959 for seniors. In 1965 HUD added "physically handicapped" to the eligibility category for Section 202. However, only 8 projects for "handicapped" residents were funded between 1965 and 1974. The Housing and Community Development Act of 1974 broadened the definition of handicap for federal housing programs to include developmentally disabled. By 1977

approximately 10 per cent 11 per cent of Section 202 construction was for "handicapped" persons compared with the original allocations of 1 per cent and many units were scattered on site or integrated community based housing. Plus, HUD established the Office of Independent Living for the Disabled (OILD) to advocate and promote the needs of people with disabilities. In addition, disabled individuals were defined as families for eligibility for Section 8 and the Section 235 home ownership assistance program; independent living group residences were made eligible for Section 8; and Community Development Block Grants were made available for housing adaptations (Ross, 1980).

Over the last 10 years HUD has been reducing its financing of new housing construction for disabled people, but these cutbacks have not been as severe as reductions in spending on other housing programs. The only major HUD program which has been continued is Section 202, but on a more limited scale. However, in 1987 HUD established a requirement that at least 25 per cent of Section 202 be for "handicapped" individuals. The evolution of HUD's policies was first to recognize the needs of seniors including those with disabilities, then to provide services for younger adults with "handicaps" in a similar manner as for seniors, then "handicapped individuals" were recognized as having some distinct needs which required different responses and finally programs were expanded to include individuals with developmental and mental disabilities. Nevertheless, these programs have been cutback under the Reagan and Bush administrations.

Despite the fact that the U.S. federal government has drastically reduced the funding for new housing, HUD has adopted more progressive regulations related to making new federally funded housing barrier-free. In 1968 the Architectural Barriers Act (ABA) was passed which required that all federal government facilities be accessible including public housing. The 1973 Rehabilitation Act extended this coverage to all federally funded programs even in the private sector as part of Section 504 and established the Architectural and Transportation Barriers Compliance Board under Section 502 to enforce compliance with barrier-free regulations. Nevertheless, it took HUD 15 years to finalize its own Section 504 requirements although HUD did adopt other standards in the interim. HUD's Section 504 requirements are that at least 5 per cent of all housing be accessible for individuals with limitations in mobility and 2 per cent be accessible for people with visual and hearing impairments. These regulations were developed in response to civil rights legislation. However, HUD has developed separate regulations and guidelines for some of its programs. For example, the Section 202 program requires that developers make 5 per cent of all units fully accessible, plus another 5 per cent accessible except for the kitchen and 2 per cent for individuals with visual and hearing impairments (HUD, 1990).

HUD has recently placed increasing emphasis upon certificates and vouchers for tenants to rent their own dwellings. Since 1974 Section 8 has paid landlords subsidies for low income tenants in existing housing, new construction and substantial rehabilitation as well as provided tenants with certificates to rent their own housing. HUD is now implementing a voucher program in which tenants are subsidized the difference between 30 per cent of their income and a rent standard regardless of their actual rent costs. By 1990 approximately 945,000 units were covered by the certificate program and 250,000 units by the voucher program. Roughly 46 per cent of these tenants were seniors and individuals with handicaps. However, research has indicated that a high proportion of individuals who were eligible for certificates and vouchers are not able to rent housing in the private market in the United States, especially visible minorities and people with special needs (Special Committee on Aging, 1990).

The efforts by governments and non-profit agencies to adapt existing dwellings in the United States are very piecemeal. Many of these services are focused upon the needs of younger adults to get in and out of their homes to obtain jobs. These services are often not based upon need, but rather the type of service for which someone qualifies. For example, people who are eligible for Veteran's Administration service can receive up to $35,000 in renovations, while an individual with similar

needs on Medicaid might have few, or no modifications covered by this service (Dunn, 1986). The grant and loan programs are even more piecemeal in the United States. There is not a comprehensive national program to modify existing homes. There are a few specialized and/or local programs. For example, the Farmers Home Administration provides low interest loans and grants to rural homeowners 65 and over, some states provide low-interest deferred loans for modifications and some municipalities have used Community Development Block Grants for this purpose.

Nevertheless, most disabled people are not covered by these programs (Dunn, 1986). Health care reimbursements are also not very extensive. They usually do not cover home adaptions, but Medicaid waiver provisions in at least eight states provide coverage for a varying amount of housing adaptations. Private insurance companies usually do not pay for home modifications and only in cases where these adaptations are perceived to be cost-effective (Hyde, 1989). However, at present the U.S. Internal Revenue allows individuals to deduct the costs of home modifications from their income tax as part of their medical expenses, but 7.5 per cent of their adjusted gross income is first deducted from all their medical expenses.

Many states have legislated building codes to ensure that new or renovated apartment buildings are barrier-free. These codes may require that architectural drawings are inspected before buildings are even constructed and that buildings are inspected prior to occupancy. Many states have gradually adopted barrier-free housing codes; however, a survey found that state standards and enforcement mechanisms were very divergent and often ineffective (American Bar Association, 1979).

One area in which the United States has made substantial progress is civil rights legislation for disabled people including laws covering the area of housing. The ABA in 1968 was the first major piece of civil rights legislation for disabled people. It dealt with removal of barriers in public buildings. Then in 1973 the Vocational Rehabilitation Act established the framework for disability rights in the U.S. including requiring that publicly financed housing be accessible.

In 1988 the Fair Housing Amendments Act (FHAA) amended Title VI of the Civil Rights Act of 1968 by adding people with disabilities and families with children, to this law, so that they could not be discriminated against in terms of housing. Starting in 1991 this Act required that new public, private and non-profit housing with four or more units be accessible and conform to several adaptable housing design criteria. This act focuses upon individual complaints; however, it also assists in bringing state barrier-free housing codes up to a national standard. It requires that states who wish to enforce these codes locally and receive HUD funding for this purpose have to have state codes at least equal to the FHAA regulations. Finally, this law also ensures that landlords must allow a person with a disability to make modifications to their apartment (Disability Law Center, 1989).

In 1990 the U.S. Congress dramatically expanded its civil rights legislations by adopting the Americans with Disabilities Act (ADA) which extended civil rights protection for disabled people in employment, public accommodation, transportation and telecommunications.

The approach in Canada

Despite the fact that Canada is adjacent to the United States its overall policy approach to barrier-free housing is different (see Figure 5). The Canadian approach reflects a different constitutional arrangement and ideological tradition. According to the 1867 British North American Act the responsibility for housing was assigned to the Provinces. Therefore, it has been more difficult in Canada to develop a national housing legislation, or national civil rights related to

housing. In addition, Canada does not have the same historical emphasize upon civil rights as does the United States.

The early European immigrants to the U.S. were concerned with the excesses of central governments and the lack of individual civil rights. In contrast many of the early immigrants to Canada were British loyalists and/or were from a collective and cooperative tradition. Therefore, a more extensive social welfare and collective approach evolved in Canada with substantive government services including in the field of barrier-free housing.

Figure 5. An overview of the Canadian approach.

I. Construction:
Federal subsidies for public, non-profit, cooperative and some private housing with a moderate reduction in expenditures and requiring 5 per cent accessible units (4,6,8).

II. Vouchers:
No housing vouchers or certificates - only subsidies for existing units.

III. Services:
Minimal community service adaptation programs (1,3,5,7).

IV. Grants/Loans:
A national and provincial housing adaptation program(s) of grants and loans for existing home modifications, but minimal health care payments (1).

V. Codes:
Provincial building codes in 8 out of 10 provinces - usually requiring 5 per cent accessible units (4).

VI. Civil Rights:
No national housing civil rights, but developing provincial accessibility civil rights to follow the federal charter of rights and freedoms (3-8).

Note: ( ) numbers are housing sectors affected in Figure 2.

Since housing is a provincial jurisdiction the Canadian federal government, through Canada Mortgage and Housing (CMHC), has chosen to assist the development of housing through financial instruments such as grants, loans and insurance arrangements. For example, in 1949 the federal government provided 75 per cent of the capital and operating costs of public housing, while the provincial and municipal governments paid 25 per cent of these costs. In 1964 CMHC expanded its share to 90 per cent of the capital costs which expanded public housing development substantially throughout Canada. Approximately 200,000 units were constructed; however, in 1979 CMHC replaced this program with the Section 56.1 Social Housing Program partially because of the negative image of public housing.

CMHC now provides subsidies and insurance to the provinces, municipalities and non-profit organizations such as churches or cooperatives to construct non-profit and cooperative housing. Under the cooperative program CMHC provides up to 100 per cent of the capital costs through insured mortgages from a private lender, along with subsidies and rent supplements for poor tenants in these mixed income housing developments. Under the non-profit program all tenants have low incomes, rents are geared to their incomes and CMHC pays the difference between funds raised from rents and the costs of the program. The province can elect to administer any of these

programs (Goldblatt, 1989).

Many of the early public and non-profit housing units were not barrier-free. The provinces and local housing authorities had discretion over the number of units which would be accessible. In response to the International Year of Disabled Persons, CMHC instituted a requirement in 1981 that 5 per cent of all federally financed units be accessible. CMHC has not yet developed "adaptable" design requirements for their housing although CMHC is involved in research in this field. By 1990 there were approximately 4,800 public housing projects with 205,000 units which provide homes for about 430,000 people. Plus, there are approximately 328,000 social housing units of non-profit, cooperatives and limited dividend units (CMHC, 1991). It should be noted that Canada has approximately one tenth of the population of the United States.

CMHC has not adopted a housing voucher or certificate program similar to the U.S. Instead CMHC has focused upon funding social housing programs, rather than giving individuals certificates to purchase housing in the market place. However, CMHC does provide subsidies for individuals with low incomes in existing housing through a rent supplement program (Section 44.1a) which is cost shared on a 50-50 basis with the provinces. The federal and provincial governments subsidize individuals in specific units in non-profit, cooperatives, limited-dividend and to a lesser extent some private apartment buildings (Gross 1985).

The major strength of the Canadian approach is the federal and provincial grant and loan programs for individuals with disabilities to modify their homes. There are some government and non-profit organizations which modify their client's homes. However, this service approach is less emphasized in Canada than in the United States because of the grant and loan programs.

In 1973 CMHC implemented the Residential Rehabilitation Assistance Program (RRAP) for home improvements for people with low to moderate incomes who lived in designated neighborhood improvement areas. By 1981 this home improvement program for rundown neighborhoods evolved to include grants and loans for housing adaptations. In 1986 RRAP-D for disabled people was developed for housing adaptations in any area in Canada. RRAP-D provides individuals with up to a total of $10,000 in loans, including up to $5,000 in grants depending upon income, to adapt their home. From 1968 to 1990 approximately 14,700 individuals received RRAP-D to modify their homes. CMHC also provided grants for landlords to modify their buildings up to $5,000 for self-contained units and $2,500 for bed-sitting units. In return the landlord had to agree to rent ceilings over 15 years and to bring their building up to minimum property standards. This program was discontinued in 1989 partially because of financial constraints (CMHC, 1991).

In addition, many of the provinces have developed their own grant and loan programs for housing adaptations. Some of these programs have targeted certain groups in need such as seniors, while others were initiated to cover geographic areas which did not qualify for the early RRAP program. These programs range from $350 to $15,000. One of the most extensive programs is the Ontario Home Renewal Program for Disabled People (OHRP-D) which evolved similar to RRAP, but now is available to all disabled people in Ontario regardless of income. Loans are available up to $15,000 for home adaptations and all or a portion of these loans may be forgiven based upon a sliding scale of income (Ontario Ministry of Housing, 1986). However, despite Canada's extensive government health care system most provinces do not cover housing adaptations under their health insurance. Nevertheless, provincial governments may cover assisted devices including hearing aids, glasses, canes, walkers and wheelchairs. In addition, housing adaptations may be deducted from income tax as a medical expense as long as medical expenses are at least 3 per cent of adjusted gross income.

According to the British North American Act the provinces have jurisdiction over building codes for housing including regulations related to barrier-free design. However, the provinces of

Newfoundland and Prince Edward Island do not have provincial building codes. Plus, the extent of accessibility regulations varies between the provinces. However, the provinces have increasingly ensured that new multi-unit construction and renovations are accessible and 5 per cent of the units are adapted. The provinces usually adopt the standards of the National Building Codes which are developed every five years by the National Research Council (NRC). In 1975 the National Building Code included accessibility requirements and in 1990 some guidelines for adaptable standards were developed (Ontario March of Dimes, 1990).

Until recently there has not been the same amount of emphasis upon civil rights legislation for disabled people in Canada as in the United States. Nevertheless, when Canada repatriated its Constitution from Britain in 1982 the federal government enacted the Charter of Rights and Freedoms including Section 15 which prohibits discrimination on the basis of mental or physical handicap. Canada is now the first nation to have a section prohibiting discrimination against people with disabilities in its constitution. However, the Charter of Rights has not been as thoroughly implemented into specific enforceable legislation as the FHAA and ADA.

Nevertheless, the federal and provincial governments are attempting to bring some of their legislation into line with the Charter, especially their human rights legislation. At the present time several disability advocates are formulating a federal omnibus bill which could amend several existing federal laws to incorporate anti-discriminatory provisions (Standing Committee on Human Rights). In addition, in 1989 Ontario led the provinces in establishing "Guidelines for Accessing Accommodation: Requirements for Persons with Physical Disabilities". This bill will allow people with disabilities to lay a complaint with the Ontario Human Rights Commission, if they do not feel the environment or any public or private programs adequately accommodates their disability. (Ontario Human Rights Commission, 1989).

A summary of these models

The barrier-free housing policy approaches which have evolved in the United States and Canada reflect different ideological traditions and jurisdictional arrangements. The United States has built upon its strong civil rights tradition in formulating individual housing rights, while Canada's strength is its national and provincial grant and loan programs to adapt existing housing. Canada's grant and loan program can act as a safety-net reflective of a British social welfare tradition. However, it is more difficult in Canada than in the United States to create national civil rights for housing because housing has been clearly delineated in the Canadian constitution as a responsibility for the provinces.

The U.S. government has dramatically reduced its financing of new construction of apartment buildings under the Republican administrations of Reagan and Bush. With a growing anti-collectivist orientation the U.S. administration has increasingly placed its emphasis upon the private sector including rapidly expanding voucher and certificate programs for the "deserving poor" to attempt to find and obtain housing in the private market place. In contrast, the conservative federal government in Canada, although making cuts in several significant government programs, has continued to subsidize substantial numbers of new social housing units through its non-profit and cooperative programs. CMHC has not embarked upon a voucher program similar to the U.S.

The U.S. has continued to rely upon a charity model of community services to adapt the homes of certain qualified clients. A few grant and loan programs have been started for a very limited group of people with disabilities in the United States. In contrast Canada has developed an extensive grant and loan program in which individuals are given funds to select their own contractors to adapt their own homes.

In both the U.S. and Canada there is a wide discrepancy in regional building codes which control the extent to which new and renovated multi- unit apartment buildings are barrier-free. Not all of the states and provinces even have building codes regulating accessibility in housing construction. However, with the U.S. Fair Housing Amendments Act there is pressure for the states to conform to federal standards to respond to civil rights legislation. In fact, the civil rights approach in the United States requires special attention because of its dramatic implications.

A civil rights approach

The development of civil rights for people with disabilities has created sweeping changes in the United States. A civil rights approach to social change is also very consistent with the philosophy of the independent living movement of advocating for full economic, social and political participation in society. Therefore, it is useful to compare in some more detail the strengths and weaknesses of this approach in the United States and Canada and to consider the implications for developing a civil rights emphasis in other countries. For the purposes of this paper civil rights refers to laws which ensure that individuals are not excluded from any public or private services or programs (Percy, 1989). Civil rights do not include all legislation laws and regulations related to individuals with disabilities such as housing adaptation programs.

Figure 6 summarizes the history of civil rights related to housing for disabled people in the United States and Canada. It is interesting to note that some of these rights were established over 20 years ago in the United States with a major impetus occurring in 1973 with the establishment of the Vocational Rehabilitation Act. It then took approximately 15 years for HUD to translate this legislation into their own specific barrier-free regulation for housing. Some of these major civil rights developments occurred while there was a conservative Republican President. President Nixon proclaimed the 1973 Vocational Rehabilitation Act and President Reagan the FHAA. However, Percy (1989) explains that President Reagan attempted to deregulate many of these civil rights. However, disability advocates and pressure groups fought successfully against most deregulation efforts.

Figure 6. Housing civil rights in the U.S. and Canada.

U.S.

1968 Architectural Barriers Board Act

Requires federal government construction to be accessible.

1973 Rehabilitation Act

Section 502 establishes Architectural and Transportation Barriers Compliance Board

Section 504 requires federally funded programs to be accessible

1988 HUD Finalizes its Section 504 Housing Regulations

1988 Fair Housing Act Amendment (FHAA)

Starting in 1991 all new housing with 4+ units must be accessible and have some adaptable features

Establishes laws for non-discrimination practices in selling and renting housing to disabled people

Requires landlords to allow tenants to make modifications

Canada

1981 Obstacles Report and government responses including CMHC established program requirements that 5 per cent of all new federally financed units be accessible

1982 Adoption of the Canadian Charter of Rights and Freedoms

Section 15 prohibits discrimination on the basis of mental or physical handicap

1985 Implementation of the federal parliamentary Standing Committee on human rights and the status of disabled persons

1989 Adoption of the Ontario Human Rights Commission's Guidelines for Accommodating People with Disabilities

All facilities and programs must accommodate the needs of people with disabilities

199? Work on a federal Omnibus Bill

Proposes amendments to existing federal legislation, rather than establishing a separate law for disabled people

Figure 7. Issues to consider in adopting a civil rights approach.

I. The ideology of the country and government's receptivity.
II. The jurisdictional arrangements in a country.
III. The most effective form of civil rights.
IV. The potential strengths and strategies of pressure groups.
V. The implementation, monitoring of compliance with the laws and relobbying by pressure groups where necessary.

It took Canada almost 10 years longer than the United States to implement civil rights for disabled people. In 1982 the Canadian Charter of Rights and Freedoms helped ensure that individuals with mental or physical handicaps were not discriminated against. In 1985 the federal government established the Court Challenges Program which provided funding through the non-profit Canadian Council on Social Development to challenge existing laws which did not conform to the social principles of the Charter. It took approximately 7 years after the Charter before Ontario led the provinces in translating the federal law into provincial guidelines for people with disabilities. Anderson (1989) points out that these Ontario guidelines have some advantages and disadvantages in comparison with the FHAA regulations. They do not specify specific minimum accessibility standards for program or service; however, they do require that the environment and service accommodate the unique needs of each disabled individual.

A great deal of the progress in the development of federal Canadian policies occurred as the result of the report Obstacles published during the International Year of Disabled Persons in 1981 and in response to follow up federal reports which have assessed inadequacies in federal programs and legislation. The Standing Committee on Human Rights and Disabled Persons was established by Parliament as an ongoing Federal legislative committee to assess the responses of federal government departments and make recommendations to Parliament.

Figure 7 outlines some factors that might be considered in developing a civil rights approach in any

country. Clearly it is important to determine if the country, people and government are receptive to civil rights legislation. Many advances in civil rights have occurred in liberal democracies (George and Wildings, 1985). Plus, it is useful to ascertain if there are any existing jurisdictional constitutional arrangements which might impede or promote this type of legislation. It is vital to determine the specific forms of civil rights legislation which should be adopted. Should there be one inclusive bill, several new laws or an omnibus bill to amend existing legislation?

Developing a comprehensive pressure group campaign is very important in bringing about these changes. Percy (1989) also points out that implementation and monitoring of civil rights legislation is often very difficult, but it is crucial in creating any effective social change. He stresses that it is very important how laws are translated into action. He also explains that pressure groups may need to be reactivated in order to ensure effective implementation of policies. Policies are very dynamic in their implementation and require special attention.

Figure 8. Ideal principles for civil rights for barrier-free housing.

Civil Rights Should Stress:

Housing Sectors:
That all existing and new public, private and non-profit housing be barrier-free including single family homes.

Complaints:
That individuals have the right to make individual or group complaints and that the implementing organization have the right to initiate complaints on behalf of disabled people.

Inspections:
That civil rights target building codes, so that buildings are inspected for compliance with barrier-free regulations prior to and after construction, or renovations.

Enforcement:
That severe fines and effective enforcement procedures be established.

Standards:
That adaptable as well as accessible housing standards be mandated.

Finally, Figure 8 outlines some potential principles for civil rights legislation. These principles are possible goals for this type of legislation which may not all be politically feasible, but at least plots out a possible course of action to consider, change and/or refine. These principles stress that all housing sectors should be barrier-free. Civil rights legislation should attempt to ensure that monitoring organizations can advocate and initiate their own complaints as well as responding to ones initiated by individual consumers. Civil rights should also focus upon building codes, so that buildings are inspected for compliance to barrier-free regulations prior to construction and do not have to rely solely upon complaints after construction. Finally, research studies indicate that adaptable housing is more effective and useful to a whole range of people than mandating that a certain percentage of units be accessible (Steinfield, 1979). Therefore, civil rights legislation should mandate adaptable housing standards.

Strong civil rights laws which are effectively implemented and enforced can have a dramatic effect in making housing barrier-free. These laws can establish a basic right to barrier-free housing and thereby impact upon other existing and future legislation. Such legislation can give individuals the backing and support to file a legal complaint and to hopefully have their housing modified to

accommodate their disability. Civil rights legislation can also serve as a legal safety-net for individuals to complain when their home is not accessible as well as to facilitate proactive measures. Nevertheless, a civil rights approach has several limitations.

Governments may not be receptive to this kind of policy approach. Jurisdictional arrangements may make civil rights laws hard to adopt or implement. Civil rights legislation does not address the amount of new public, non-profit and private housing which a government may finance although it can affect the percentage of new units which will be barrier-free. If a government is cutting back upon the overall financing of housing construction civil rights laws are limited in addressing these reductions. Unless civil rights laws can impact housing codes and regulations, these efforts may depend upon complaints after construction is complete.

In terms of the FHAA this law did not have an impact upon existing housing, or future single family homes. Approximately 51 per cent of the individuals who require home modifications are single family homeowners (Dunn, 1985). Potentially civil rights legislation could affect those sectors; however, with a strong building industry lobby it may be difficult to ensure that existing homes are barrier-free without grant and loan incentives. Civil rights laws can not help poor people adapt their existing homes. Grants and loan programs might be far more effective in addressing existing single family homes. Nevertheless, civil rights has a great potential for impacting housing as has been demonstrated through recent policy efforts in the United States.

A framework for future development

There appears to be no one ideal approach which countries can undertake to ensure that housing is barrier-free. Barriers in housing can severely limit an individual's ability to live independently and to participate actively in the community. Social change requires identifying a future societal arrangement and carefully considering alternative courses of action to achieve these goals. It is important to understand the unique ideology and culture in a country and its jurisdictional arrangements. Recommending a social change approach from one country which should be adopted by all nations is egocentric and has proven ineffective in social development efforts throughout the world. In fact, even programs and policies which are adopted from another country usually need to be modified to fit the context of a different political, economic and social environment.
Therefore, what is recommended is a process of policy development. It is first useful to assess the barrier-free housing issues in a country. For example, Ratzka (1984) explains that in Sweden special elevators are needed to make the extensive number of three story walkup apartment buildings accessible. Then it is necessary to develop some guiding principles or overall goals of a national barrier-free housing policy. It may be useful to identify the types of housing or sectors which need to be tackled. Different policy options then can be identified and selected perhaps based upon their potential impact, feasibility in relation to ideology and jurisdictional arrangements and effectiveness in addressing the overall housing issues. It is likely that since so many complex issues must be addressed that more than one policy approach may be necessary. It is crucial to mobilize support, lobby and ensure that effective policies are adopted. It will be necessary to monitor implementation and compliance of policies. Finally it is important to evaluate the effectiveness of these programs and, if necessary, relobby for social change.

Figure 9. Principles for a barrier-free housing policy:
A housing rights agenda.

I. Basic rights:

That individuals with disabilities have a right to barrier-free housing.

II. Universal coverage:
That this right be for people with any type of disability, in any location in a country and irrespective of level of income.

III. Minimum standard (quality):
That a minimum housing standard be established which ensures accessibility and adaptability housing.

IV. Comprehensiveness (quantity):
That comprehensive laws and policies be developed and implemented for all housing sectors and ensure adequate quantity of barrier-free housing.

V. Other housing issues:
That other housing issues be effectively tackled including the need for affordable safe housing with adequate community supports and positive landlord and tenant attitudes which promote independent living.

Figure 9 provides an example of the types of principles which might be formulated for a housing rights agenda. These rights are not necessarily strictly civil rights, but rights to the resources of a barrier-free housing environment. These principles stress universal coverage, minimum standards based upon adaptable housing regulations and comprehensive policies. They emphasize the importance of dealing with the quantity as well as quality of resources.

Figure 10. One possible policy approach.

Comprehensive housing policies

I. National civil rights for barrier-free housing
(For individual and collective issues and to guide policy)

II. Universal barrier-free housing codes and programs
(For new construction and renovations)

III. A national comprehensive housing adaptation program
(For existing housing and to act as a safety net)

Community involvement and control

IV. Community information on rights and programs
(Information on consumers rights and programs)

V. Consumer involvement in services
(Involve consumers in policies, housing adaptation services and management)

Finally this agenda explains that other related housing issues must be dealt with including: affordability, safety, discrimination, neighborhood supports and attitudes of tenants and landlords.

One possible approach in achieving these goals is outlined in Figure 10. It emphasizes civil rights which can help create barrier-free housing including single family homes and to act as an instrument to guide policy; adaptable housing codes to deal with new construction and renovations;

and a national comprehensive grants and loan program to renovate existing homes and to act as a safety-net. This approach also highlights the need to extensively disseminate information about programs and rights and to ensure that consumers are involved in all aspects of the development and implementation of policies and programs.

Nevertheless, it is vital for countries to assess their own issues determine their goals and select the most effective policy approaches. Creating social change takes a considerable amount of time, energy and commitment. Although an overall comprehensive approach may be formulated incremental opportunities for change may also be very expedient. However, it is important to develop a comprehensive plan which can provide a framework for future policy development and help ensure that the housing environment is responsive to all of our present and future needs.

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Australia takes tentative steps to take up the challenge of persons with disabilities.

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Introduction

In Australia, it has been calculated that 15 per cent of the population is in some way disabled. This includes both physical and mental disabilities. Yet the majority of the non-disabled population either try to ignore these people, or consider them the problem of someone else. One of our best known, and highly awarded, residential architects designed his 'best' homes on the side of hills, usually with multiple levels and main access only from the bottom. Internal access was via steps. A common place for offices is over shops (law firms are especially noted for it), accessible only up long, narrow flights of stairs. This practice is slowly changing, as will be discussed later, but continues in the industrial/commercial area. Residential design has a very long way to go to improve access for disabled persons.

Most of the legislation is aimed at the public use of commercial or industrial buildings. The Building Code of Australia specifically excludes single residential units. There is growing pressure in the community, lead by those with disabilities (or organizations representing them), for equal consideration as any other person in any given circumstances. This has become evident in the equal-employment legislation now in force throughout Australia. The current changes in the building regulations, discussed below, reflect this approach. Curbs have been graded at most street intersections or pedestrian crossings and ramp access to the majority of public buildings and transport facilities are accepted as the norm rather than exceptions. One of the few areas still causing concern is access to some forms of public transport - buses and the renown Melbourne

Streetcars.

Building Codes

The new 'Building Code of Australia' (BCA) which came into force on the 8th April 1991, incorporates the requirements of construction for all buildings throughout most of Australia (Western Australia has not yet accepted the new code), with overriding legislation permitted in each individual State. Part D of the new Code is related to the provisions of Access for 'People with Disabilities'. It applies to all commercial and industrial buildings, but does not include private residential buildings. Sub-part F2.4 relates to the Sanitary Facilities to be provided for people with disabilities in similar buildings.

Victorian Building Regulations
Prior to the BCA each state in Australian had its own set of building regulations. Typical were those in force in my home state of Victoria. Here the predecessor to the BCA was the document entitled the 'Victorian Building Regulations' (VBR), which was enacted in May 1984. The VBR incorporated two clauses - 46.9 which nominates the "Requirements For Disabled Persons" and section 53.3 which details the "Access Requirements for Disabled Persons". Section - Schedule 9 - detailed the physical requirements for meeting these requirements. One such requirement related to pathways and internal ramps, where the minimum width was 95 cm and the maximum gradient of a ramp was to be 1:12, unless specific requirements were incorporated such as level rest stops at a maximum of 9 meters.

These clauses applied to that class of building which included all boarding houses, special accommodation buildings, residential parts of schools, hospitals, etc. and to office buildings and retail related outlets with a floor area in excess of 500 sq.m. It applied to warehouses and factory buildings in excess of 3000 sq.m. floor area, and to all public institutional, health (hospitals) or assembly buildings (e.g. church halls) in excess of 1000 sq.m. floor area. Single and multiple housing was not included.

Uniform Building Regulations
The much older Victorian 'Uniform Building Regulations' (UBR) came into force in 1958, but did not include the chapter on 'Access and Facilities for the Disabled' (Chapter 38) until 1981. The information in 'Schedule 9' of the VBRs is almost identical to that in this older document.

Building Code of Australia
In the Preface to the BCA it states that:

"The BCA sets down the objectives, and, so far as it can, performance requirements and deemed-to-satisfy provisions which apply to the construction of buildings for all classes of occupancy in any part of Australia."

Within the BCA, both Parts "D3" and "F2.4", to which I referred earlier, nominate the 'quantum' but give no indication as to the 'how'. This has been left to other nominated documents. Clause 27(2) of the Victorian Building Control Act states:

"(2) Any code standard rule, specification or provision adopted pursuant to sub-section (1) shall be deemed to be a building regulation."

As the BCA was adopted by the Victorian Government, this clause is thus in effect. The main reference documents are Standard Australia's No: AS 1428.1 - 1988 - Design for Access and

Mobility; 'General Requirements for Access - Buildings', (also published as a Supplement with basically the design detailed drawings only) and AS 1735.12 - 1986 SAA Lift Code - Part 12 - 'Facilities for Persons with Disabilities'. The General Requirements (AS1428) was revised in October, 1989 with the issue of a number of amendments.

These are complimented by the 'Notes on the Science of Building' (NSB), nos. 200 to 207, published by the then Experimental Building Station (now part of the Commonwealth Science and Industry Research Organization - CSIRO). These were issued between August 1981 and July 1982 as a direct affect of the 1981 United Nations, International Year of Disabled Persons.

Within the BCA, Table 3.2 sets out the Requirements for Access for people with Disabilities. Even here the New South Wales requirements differ - being much broader than the BCA. Victoria has adopted this section without change - a rare occurrence in itself. The original VBR in section 54 was much closer to the NSW current requirements.

Public access

In Australia, since the early 1980s, largely following the International Year of Disabled Persons and given new emphasis with the implementation of the BCA, it is a general requirement for all buildings open to the public to provide access for disabled persons. This is often observed only in name rather than deed - that is, access from back lanes for wheel chairs and the need to use goods elevators rather than the normal access. The aim is to make all buildings accessible to all people no matter what their physical condition.

Many architects now have to give more consideration to incorporating disabled access and making their buildings disabled-person friendly. These include ramp access, special parking areas near the main entrance or adjacent to elevators, elevator controls at a convenient level for a person using a wheelchair rather than stilts. This is partially as a result of the Australian Standard SAA 1735 covering facilities for disabled people in lifts.

External access to buildings is the principal area given consideration, but consideration to internal designs are also being improved. Wider doorways, adjustable levels for working desks and the provision of disabled toilets readily accessible, are all now being accepted as the norm. Yet even here it is not uncommon to find an accessible toilet down a narrow corridor where the user of a wheelchair either cannot get in, or once in, cannot manoeuvre to get out of the chair and/or has to back out of the toilet.

One good example of what can be achieved is the Victorian Arts Centre, where the main State Theatre accommodates some 2500 people on three levels. On the lowest level, which is some seven stories below the street level, provision has been made to permit the severely disabled to attend performances. A special elevator with wide double doorways and a flat area at the back (where the entry to the theatre is located) will accommodate even mobile bed patients and provide them with sight lines. As a general rule, under the health laws in Victoria, people are not permitted to stand or sit at the back of theaters. Thus, this is a case of positive discrimination.

Variations to regulations

Variations to the regulations are generally the responsibility of a government appointed Building Referees Board. The Board and procedures are covered by Part IV of the Victorian Building

Control Act. In particular;

"Cl. 55. (1) The owner of any building or land, or his agent, the permanent head of any government department, any public authority or council, may apply for a determination by a Board that a particular building regulation shall not apply with respect to or in relation to the building or land in respect of which the application is made or that a building regulation should be modified or varied with respect to that building or land."

Each application will cost $AUD 150. On one job in Melbourne, a major hotel and office complex, over 200 applications for modifications have been submitted and granted - but not one to alter the disabled access provisions.

Failure to adopt standards

There is a general improvement in the provision of facilities for disabled persons in new buildings in Australia. This has been a result largely of legislative requirements rather than from the building owners or developers. Economic incentives have only had a minimal effect to date, with the monetary return on the building holding sway over the user convenience.

As late as November 1990 I read a long article in the local newspaper from the disabled community commenting on the problems of access into buildings. Architects have been criticized for not giving enough consideration to the needs of people with disabilities. In the current edition of Architext (the directory of publications for architects) there are very few related publications; one, 'Designing for the Disabled' by Goldsmith was published in the United Kingdom in 1976. Neither have I been able to find any 'practice notes' issued by the Royal Australian Institute of Architects covering this area.

One reason why it has taken so long for the standards to be adopted into the average building is partially the way in which the over-riding legislation was written. The VBRs did not include specific references until December 1981. The VBRs in clause 53.5 stated:

"This Regulation shall apply...(to) building constructed after 1 December 1981."

Further in clause 56.2 (2) it stated:

"The Council may require entire buildings to conform...the proposed alterations represent more than half the total volume of the original building..."

The significance of these clauses meant that old buildings which were renovated, but not altered by more than 50 per cent, did not have to make provisions for disabled persons. There was a time limit of 3 years, so that you could not do the alterations in stages to avoid the need to upgrade, in less than 3 year periods. This did not necessarily apply where a change of use is planned. In this case Cl.6.6 of the VBR took precedence:

"The use of a building shall not be changed from that of one to that of another class unless...the building complies with the requirements of the Regulations applicable to the new class."

This clause is now incorporated into the current regulations. From the early 1980s onwards Australia began to renovate its older buildings, where previously it had demolished and rebuilt, and this change of approach to older buildings coincided with the growth of awareness of the needs of disabled persons. Careful design meant that this work could be undertaken without the need to

apply the disabled clauses (and others relating to fire and room size, general access, parking, etc.), thus saving expenditure and maximizing short term returns. Ten years later, these same buildings are being upgraded to include disabled facilities.

Change in public perception

In the past, Australia has paid a lot of attention to disabled children. Charity functions such as beauty queen contests were common and widely supported. However the emphasis tended to be on the budding 'queens' rather than the disabled children themselves. Credit must be given to these functions as very large amounts of money were raised by some very hard working people. The only consideration given to the blind was either the Blind Babies Annual Appeal or the use of blind piano tuners. The deaf were known by their school on Melbourne's major highways, rather than for the people themselves.

In the 1980s this has changed. The beauty contests still occur but the emphasis is money for disabled people and what it can do for them, rather than the contestants themselves. There is a growing understanding of the nature of disabilities and how to communicate with disabled persons.

One major reason for this change has been that disabled persons began to speak for themselves. Self help groups and organizations set up to assist them began to emerge. Organizations such as the Australian Council of Rehabilitation for Disabled (ACROD) have raised the awareness of disabled persons and the need to make provision for them in buildings.

It is written in the book of Proverbs 22:6, Train up a child in the way he should go; and when he is old, he will not depart from it. This is the basis for the gradual acceptance of the need to adopt the various standards and codes. There has also been a trend to integrate disabled children into 'normal' schools and to provide teaching assistants to help with the obvious problems this might create. By making the young aware, the community will hopefully gradually change its old attitudes and adopt the new.

Thus, the public are seeing disabled persons as simply another branch of everyday society, with specific needs, not as freaks to be locked away. Perhaps the increasing use of specially adapted computers and electronics have been a major breakthrough in communications with people, who in the past have not always been able to communicate their needs.

Old persons

It is interesting that the current legislation and guidelines are addressing the requirements of disabled persons, not the 'handicapped'. At the moment there is no specific legislation, that I have seen, laying down requirements for old persons as a group. This would appear to be an area which will require further consideration as the percentage of the population considered 'elderly' (generally those over 65) grows.

Summary

The Australian legislation is well advanced in its consideration of the 'non-handicapping' environment. It is not static but under regular review and updating. There is a definite imbalance in

that most of the implementation of 'non-handicapping' requirements are as a result of Government requirements rather than voluntary implementation. However most of this legislation has come about through pressure from those groups directly associated with the problems and does reflect a growing public awareness of the need to provide a barrier-free environment for everyone.

Access to services and facilities in the Canadian Parks Service

Robert Fern, The Canadian Parks Service, Canada

Foreword

The Canadian Parks Service (CPS) administers one of the largest park systems in the world. This park system consists of 34 national parks, over 80 major national historic sites, 9 historic canals and 2 marine parks. Five new parks should be added to the system within the next four years.

It is no easy task to make a park system which includes varied natural landscapes and historic structures accessible to people who have physical, sensory and mental disabilities. Ideally, all areas and programs should be accessible to all people.

The Canadian Parks Service has recently made "accessibility" a high priority with the result that many important changes have taken place. However, it is recognized that total accessibility cannot be accomplished because of the paramount need to preserve heritage values and natural landscapes as well as for financial reasons. Therefore, alternatives acceptable to persons who have disabilities and to those in the park system (and others who support it) need to be found and implemented.

This paper will highlight some of these important changes, discuss how and why they are taking place and will focus on processes and activities that worked in the Canadian context. It must be emphasized, however, that circumstances vary from country to country and what works in one may not work in another. Hopefully, the experience gained in Canada will have some application in other jurisdictions.

Background

CPS began working on access projects in the mid-1970s (about four years before acceptable standards were approved). During this time special measures were taken because of the need to protect the systems' heritage values. Trial and error prevailed: it was a learning experience. Unfortunately, this anachronism resulted in some projects not conforming to the new standards once they were approved.

Only limited access was achieved when building codes were amended to include accessibility standards. This was due primarily to the following factors:

- access standards were new and did not include directions on application which caused some confusion,
- it was difficult to apply these standards to heritage buildings and natural landscapes,
- research to support certain standards (i.e., for beaches, wharfs, docks, etc.) had not been completed,
- comprehensive consultations with agencies that represent disabled persons, as well as with

disabled individuals, did not take place in the development of the standards or during design and construction phases of projects,
- the needs of persons with sensory disabilities (i.e., visual and hearing) were not considered.

By the mid-1980s, as designers and architects became more familiar with the standards and the needs of mobility impaired persons more buildings and facilities were made accessible.

However, access to historic buildings still had to be defined and priorities set. Also, other problems such as finance and issues relating to design had to be overcome. To do this, the Canadian Parks Service developed and is currently implementing "A Strategy and Action Plan for Access for Disabled Persons". Many areas are covered in this strategy. These include:

- the setting of priorities and defining what access means to CPS,
- cooperation with agencies that represent disabled persons,
- staff training,
- the re-adjustment of capital funds,
- the integration of access into existing planning processes,
- examining the roles and responsibilities of volunteers and cooperating associations,
- defining how access to historic structures can be achieved.

The Strategy emphasizes the need for persons who have hearing, visual and mobility impairments to have equal and, where possible, integrated access to park and site themes, recreational opportunities and essential services.

During the implementation of the Strategy, it was realized that many park visitors, other than those who have disabilities, have benefited directly from the new accessibility standards (i.e., a tactile exhibit for visually impaired persons increases the understanding and enjoyment of the exhibit for everyone; a captioned video for persons with hearing impairments benefits seniors and persons who speak a language other than that used in the video; and a trail made for mobility impaired persons benefits families who have children in strollers, persons with heart ailments and seniors.)

The most important element of the access program has been the cooperative efforts between CPS and the agencies that represent disabled persons. These agencies work with CPS in a number of areas including the development of training programs and the formulation of design solutions. Without this interaction the program would not be so successful.

The most beneficial effect of this cooperation has been how these agencies have "humanized" the access issue for park service employees. When representatives of the agencies have been brought together with parks service employees, the parks staff have gained an opportunity to understand the issue first-hand, while the persons with disabilities have developed a better understanding of the mandate of the parks service. This is an on-going and valuable process. It is important to note that agency representatives are well-versed with the situation before they meet with CPS employees. This allows both parties to discuss the issues with a common understanding. It is also advantageous to include a social element in such gatherings - to encourage interchange in a more relaxed atmosphere (which also promotes better understanding).

Before such a meeting took place, many parks service staff felt that persons with disabilities would not understand or appreciate the conservation mandate of CPS and that they would make unreasonable developmental demands (i.e., pave every trail to the top of every mountain). These misconceptions were based on a lack of awareness and understanding of the needs and expectations of disabled persons. It was soon evident that they, like everyone else, want to see

Canada's major heritage areas preserved and do not want any more than the average Canadian.

The question that we, who work in the access area, must ask ourselves is why do people like those of the park service have these pre-conceived ideas? There are probably two major reasons. One is that people without disabilities may have a fear of disabilities themselves. They are therefore nervous with the issue which can sometimes lead to a general lack of understanding about it. The second is that some employees may feel threatened by something they do not understand and may believe that if access is provided, it will conflict with their agency's (and their own) ideals.

For CPS the interaction has been meaningful. CPS considers the agencies that represent disabled persons with which it works as important partners. CPS management appreciates, and encourages further interaction between the park service and these partner agencies.

It is also important to understand, though, that even when management supports the access issue, some employees may still feel "threatened" (i.e., in the case of CPS, some exhibit designers and other individuals working for the protection of heritage buildings). To overcome this, one can try the same approach of bringing the two sides together - although some persons may still remain unconvinced. At CPS, we found it advantageous to find a professional "ally" (i.e., someone who understands and deals with persons who feel threatened) to bring the access issue to the attention of his/her peers. Once done, the two groups, along with the "ally", were brought together to discuss the issue. It is important to approach some professionals in this way, as they see one of their peers supporting an issue that is a threat to them. This approach and a stroke of good fortune (of finding the right "ally") worked well for CPS - especially when the issue was brought to the attention of the designers.

It is also important to find out why a particular group feels threatened and to deal with their feelings. Once again, using the exhibit designers as an example, we found that many feared that their creativity would be threatened if they designed everything to be accessible (i.e., all print would have to be in black and white, in a certain size and in a certain style, etc.) When the myths were successfully dealt with (i.e., that everything does not have to be in black and white, etc.) the exhibit designers became major supporters of the issue and see it as a way to improve their work for the benefit of everyone.

CPS has now held two successful media and design workshop on access and will be holding an expanded workshop in the future. Designers are currently working on a number of pilot projects and the results will shape the way information is given to the visiting public in the future.

Many building designers and architects also feel threatened by the access issue - a major reason being that there are many "ugly ramps" around to reinforce their misconceptions. Very few appear to have a good understanding of the issue; and unfortunately, at this time, only one school of architecture in Canada offers a course on the subject (some include it in other limited areas). The result is that new architects have little understanding of associated issues when they leave school (though schools of architecture would argue the point).

Good examples of accessible architecture should also be promoted to heighten awareness of the issue and to give it a more positive image. Some Canadian provinces (i.e., Ontario and British Columbia) give annual awards to architects who have produced good, accessible designs for buildings. More such programs are needed so that architects will not only have poor examples to draw upon when the access issue is discussed.

In CPS, architects are now consulting with representatives of agencies that represent people with disabilities. This is proving to be a growing process for both - the architects because they are becoming more familiar with access issues and the representatives because they are becoming

familiar with concerns for building design.

It must be realized that not all agencies possess the expertise in every area that an organization such as CPS requires. They, too, require sensitivity in the areas requiring assistance. To help them obtain this expertise, CPS established agreements with three of the leading agencies in Canada. There is a small financial arrangement associated with these agreements.

Accomplishments

CPS has accomplished a great deal in the area of access in a very short period of time (although CPS is the first to admit that there is more to do). CPS now has an access plan for each national park and historic site (118 plans) and is nearing the completion of year 1 for the implementation of those plans. Improvements made during the year will benefit all three major physical and sensory disability groups (i.e., captioning of all major videos and the purchase of audio-listening devices for each park and site; the development and use of tactile exhibits and signs; the construction of more accessible trails and picnic and camping areas; the re-design and retrofitting of buildings, theaters, washrooms, etc.).

The future

Things are looking good. Within three years, all major facilities, programs, recreational opportunities and services will be accessible to all persons. All staff will have received some degree of sensitivity training. Where direct access cannot be provided, alternative methods will be offered. The result will be improved services for everyone - not just persons with disabilities.

National report on Finnish access legislation

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The access norms are based on the performance criteria expressed since 1973 in statute 85a of the Building Decree, amended in 1990, concerning public administration and service buildings as well as private business and service facilities. The Building Norm on Accessibility, code F1, first included in 1978 in the National Building Code of Finland and amended in 1985, consists of regulations in the form of performance criteria, and also of guidelines with detailed numerical measures on accessibility.

Only the building regulations in the norms of the Code are binding, the guidelines are recommendations on possible good solutions.

There is an enforcement mechanism at the municipal level. The municipal building authority, the building committee, is responsible for applying any norm when granting building permits. According to a new statute in the Planning and Building Act, enacted in 1990, the builder and the developer are also responsible for fulfilling the norms. The Act serves as a source to the local authority in enforcing access statute 85a and building regulations on accessibility. Only the body or individual, whose project the building permit concerns, and the neighbor of this future or existing

building, can appeal to the County Administrative Court if discontented with a decision made by the building committee. However, a disabled individual, who is neither the applicant of a building permit nor the neighbor of someone who is, has the possibility to complain to the Attorney General. During the 1980s, disabled communities and individuals have, in some cases, used this way of complaining about the disregard of statutes and norms by local building authorities.

Types of disabilities are expressed in the statute referring to "Individuals whose ability to move around, or to be active, or to orientate themselves is restricted due to age, disability or illness ". The definitions based on this statute 85a include access to the structure from the street and access within the structure, including toilets.

Access legislation refers to new buildings but must also be considered for application in existing buildings under renovation or restructuring.

Enforcement does not depend on the size of the structure in question, but only on the type and use of the building itself. The structure should be open to the public in general, or owned or administered by a public body, state, municipality, church etc.

The requirement of elevators is based on performance criteria in the building regulations of the Code. Complaints to the Attorney General have shown that these criteria are insufficient. Almost in all cases the cause of the complaint has been the lack of an elevator. The guidelines give a difference in elevation of two or more storeys when an elevator is needed. The minimum size for a personal elevator is 110 cm x 140 cm. The elevation differences as described in the guidelines ought to be made a binding regulation to enforce the installation of elevators in public buildings and business facilities.

In newly built structures, there remain areas without access such as, storage rooms, technical machinery rooms, etc. In existing buildings, for which a building permit is needed for reconstruction work, applying the legislation depends upon the existing building itself, considering its future use. If existing architectural barriers can be technically removed, doors will be widened and ramps and elevators will be installed, regardless of costs. Rare cases, in which the historical nature of a building prevents the remodelling of its main facade and if because of that, access for disabled persons through the main entrance cannot be provided, other entrances are to be made accessible. Nowadays, access is also often voluntarily planned by the property owner.

Access legislation refers to public buildings which includes: municipal and governmental office buildings; schools and universities; social or medical facilities; cultural and religious premises; recreational and sports facilities; public transport terminals; and train, bus and subway stations. In these buildings both visitors and internal working staff benefit from this accessibility. In the private building sector the statute concerns businesses or services open to the public so that everyone has to have the possibility to enter. This legislation refers to shops, markets, hotels, restaurants, etc. The building legislation only refers to those structures to be constructed or renovated and the area immediately outside. The legislation does not refer to public outdoor areas such as parks, streets, etc. except when a public building is to be built in those areas.

Access legislation does not include private workplaces or residential buildings. The subject has been lobbied but the initiative has not yet reached the stage of preparing a statute. There is no legislation, enforcing accessibility to vehicles used in public transport. The cities of Helsinki and Tampere are experimenting with low-floor buses and streetcars for public use. The Helsinki subway was originally planned for and has accomplished accessibility. The Finnish State Railways are developing a new railway wagon accessible for people with disabilities. Ferries sailing between Finland and Sweden are accessible.

Awareness of access regulations is spread through trade journals, and courses and seminars attended by planners, building authorities and disabled consumers. Training is voluntary and courses are organized mainly by local organizations of disabled persons.

In the future, the access norms will be accompanied by a separate publication of good examples of accessibility in renovated existing public buildings. The publication has been prepared by the National Association of the Disabled and will be published in 1991-92.

The interests of disabled and old persons in bringing about access legislation are represented by organizations of disabled people, organizations for disabled people, by disabled individuals and also by the government social authorities. These parties are involved in lobbying and formulating draft proposals on access legislation. The National Association of the Disabled prepares technical papers for improving the building norms on accessibility required by the Ministry of the Environment.

The National Council on Disability, a special body of disabled people's organizations and government officials has existed since the mid-1980s. The Council takes initiatives on any legislation to improve the situation of disabled persons.

The initiative on access legislation was due to the results of a working group of the Nordic Ministers Council in the beginning of the 1970s. At the same time, the organizations of disabled persons in Finland became active in this matter. The already existing building statute of Sweden on accessibility served as a model for the Finish governmental agency in preparing the first statute 85a in 1973.

Research on urban planning and architecture for disabled persons in Iran: Establishing design criteria

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The paper is the result of a research project at the Building and Housing Research Center of Iran with contributions from Dr. Mohsen Habibi and Dr. Fatemeh Mirfatah, professors at Tehran Universities. I thank Mrs. Forouz Rooshanbin, the head of the information department of BHRC, for translating the paper to English.

According to the statistics of the World Health Organization 10 per cent of the total world population are physically disabled. In Iran, the 8-year war between Iran and Iraq increased the number of persons with disabilities to a considerable extent.

Architectural and urban barriers prevent persons with disabilities to participate in social activities. In spite of so much capability and potential, these people have many difficulties due to the mentioned problems, while society too is deprived of their abilities and talents.

The research project on "Designing the public and private spaces for the disabled, adaptation of the present situation and provision of the optimized conditions" was started in 1987 at the Building and Housing Research Center (BHRC). It consists of four main stages:

- Designing urban spaces for disabled persons,
- Designing public buildings for disabled persons,
- Designing educational buildings for disabled children,

- Designing residential buildings for disabled persons.

The project attempts to establish design criteria which take into account the movement abilities of persons with disabilities. When designing public and private spaces access measurements and reach dimensions must be considered. Of the persons using technical aids (crutches, canes, wheelchairs, etc.), wheelchair users often face the greatest barriers. Using the anthropometric data of wheelchair users as the basis for measurements in designing urban spaces, including public and private buildings, will also eliminate the difficulties of other disabled persons.

Planning urban spaces

In this study, a person using a wheelchair moved along the sidewalks of the city while existing barriers and circumstances which hindered the wheelchair user's movement were identified. Renovation and rehabilitation solutions could be created through analyzing the existing problems. The general objective is to adapt existing urban elements (e.g. alleys, sidewalks, pedestrian bridges and crosswalks) for ease of movement. These adaptations will provide design criteria for future planning of urban elements. Parking and public telephones and the floor coverings of the passages were studied and appropriate design criteria were established.

Designing public buildings

It is true that many of these buildings are not accessible for the old, the very young and persons with disabilities. Thus, this part of our community is deprived of access to these buildings due to poor design and performance.

Reconstruction projects after the 8-year war demonstrate that not only should new construction be built accessibly, but that existing buildings be renovated with accessibility for persons with disabilities in mind. Negligence of the design criteria can result in inaccessibility, isolating many groups of people and holding them back from participation in social and economic activities. Persons who became disabled due to war actions are especially considered here because society feels indebted to them.

Design criteria of public buildings from England and Canada were studied. Key elements in those countries' accessible design solutions were as follows: entrances, corridors, openings, stairs, ramps, elevators, toilets, signs and drinking fountains.

Public buildings are divided into the following categories: health-centers, commercial buildings, administrative complexes, service complexes, cultural centers, recreational buildings, transportation buildings, and industrial buildings.

Designing educational buildings

Designing educational buildings was the third stage of the project. Because of the difference between children's and adult's anthropometric data, they were studied independently from public buildings. Statistics about the standing height of 300 children, studying in the rehabilitation centers of Tehran, was taken. It showed that children with disabilities have a shorter standing height in

comparison with non-disabled children. The measurements were used as a basis for designing school buildings.

Of the three views on education of disabled children (segregated from non-disabled children; semi-integrated; and fully-integrated) the latter was the viewpoint adopted in the BHRC research project. To fulfil this objective, barriers in accessibility to schools such as entrances, school yards, openings, floor coverings, corridors, stairs, ramps, furniture inside the class, wall finishings, and sanitary spaces were studied and the design criteria which are suitable for children with disabilities were established.

Designing residential buildings

Research on housing design criteria suitable also for disabled persons was started in June 1990. Though we had access to a large number of American and European publications on housing design, their references were not of great use because of social and cultural differences. Adaptation of housing continues to be the main problem in accessibility.

The main objective of our research was the creation of individual independence of the person with a disability at home so that he or she can live actively with other members of the family. Three categories of existing homes were distinguished:

The first group are houses which had not been adapted for their residents. In this group, other members of the family respond to the disabled persons needs (i.e., carry them), despite the high risk of accidents and health problems for those who do the carrying.

The second group includes different provisions for adaptation of the house but because of lack of knowledge of usable criteria for disabled people, these provisions were not only insufficient to their requirements but, on the contrary, created more barriers.

The third group are houses owned by the family. In this group, different ways for adapting the house have been considered. Moreover, advanced technical possibilities have been used in planning these houses.

In this project, entrances, corridors, doors, windows, ramps, lifts, lavatories, handrails, bathrooms, kitchens, stores, living rooms, bedrooms, yards, balconies and garages were studied. In these elements the difficulties were found and ways of adaptation, as used by the second and third group, were recognized with the required criteria in this field presented.

Living in an institution instead of the family atmosphere can never induce a sense of lively existence in them. Feeling that their life is somehow temporary and dependent on others, may cause depression and isolation. Therefore, as long as the main reason why persons disabled through the war live in institutions are the inaccessible houses of their families, it is strongly recommended to adapt and modify their housing conditions.

Simple methods of adapting houses for a disabled person are usually not expensive and do not always require special tools; knowing different methods is the most important factor. Using mass media to disseminate information on the simplest and the cheapest methods of adaptation for disabled persons will help those who want to adapt their living environment but have no knowledge about the ways of doing it.

Design criteria which include persons with disabilities

The design criteria resulting from our research were presented to various organizations for feedback and input in October 1988. In incorporating these viewpoints BHRC started a commission consisting of interested individuals, experts and the professors of the universities. This commission started its work in February 1989. The two publications, "Urban space and the disabled" and "Public buildings and the disabled" were the basis for providing the draft of design criteria. The draft was approved by the Iranian High Council of Urban Development and Architecture on May 1989 as the final design criteria in Iran. These are:

- Optimal design criteria for urban space including sidewalks, pedestrian overpasses, crosswalks, parking and urban facilities,
- Adaptation of sidewalks, pedestrian overpasses, crosswalks, and parking,
- General requirements of the design criteria for public buildings including entrances, corridors, openings, stairs, ramps, elevators, toilets, and signposting,
- Recommended criteria for adaptation of urban space for disabled persons.

The criteria described in section 1: "Optimal design criteria for the urban space", are compulsory in all the present and future urban development and building housing projects, governmental or non-governmental, since June 1989. All authorities responsible for preparation, investigation and approval of urban plans, executions of satellite towns and housing projects are bound to observe these criteria in all stages of their work.

In order to minimize and improve the present urban barriers it is necessary to carry out all modifications described in section 2: "Adaptation of sidewalks". This is to be done before preparation or renewal of urban development projects in order to adapt the present situation to the appropriate standards.

Observation of regulations described in section 3: "General requirements of the design criteria for public buildings" is obligatory for designers and architects active in urban development plans. The executing authorities responsible for issuing building and inspection licences are bound to follow these regulations accurately and appropriately.

All public buildings are subject to these criteria, specifically government buildings must be gradually adapted according to the requirements of this code. Distinction of the extent of modifications and improvements and the necessary duration for completion of such works is the responsibility of a commission consisting of delegations of the Organization of Social Welfare, the Foundation of War Disabled and the Ministry of Housing and Urban Development. The latter is obliged to obtain legal guarantee of codes and requirements from the competent organizations.

Application of criteria in section 4: "Recommended criteria for adaptation of urban space of the disabled" is, at present, optional but will become obligatory according to determination of the commission mentioned above and through the obtained legal guarantee.

The Ministry of Housing and Urban Development is obligated to review and revise the code requirements and adapt it with new developments and conditions once every five years in cooperation with Organization of Social Welfare and Foundation of the War Disabled and obtain the approval of Iranian High Council for Architecture and Urban Planning.

The Americans With Disabilities Act (ADA) of 1990: An activist's

perspective

Marilyn Golden, Disability Rights and Education Defense Fund, U.S.A.
(The text was transcribed from her talk.)

ADA in the context of earlier legislation

I'm here to talk about disability civil rights laws in the United States, that is laws protecting people with disabilities from discrimination. What is discrimination? Discrimination is when you're treated differently than a non-disabled person would be in the same circumstances. If a non-disabled person can enter a building and you can't due to architectural barriers, that's discrimination. If you're deaf and you cannot make a phone call to the doctor and there's no telecommunications system there to help you, that's discrimination. If your child is given an inferior education in a separate school just because she can't see, that's discrimination. Every country discriminates against people with disabilities along similar lines. I want to tell you at least a few examples of discrimination that we have.

A few years ago at one of our independent living centers, for every wheelchair accessible apartment or house that the organization found there were 50 wheelchair users who needed one. A couple of years ago in one of our newspapers there was a story about a zoo in the state of New Jersey. The zoo-keeper would not allow a group of children with Down's Syndrome to enter. He was afraid they would upset the chimpanzees.

The disability movement in the U.S. has achieved a series of laws against discrimination. The best and most important is very recent, the Americans with Disabilities Act of 1990. It would be untrue to say that these laws have eliminated disability discrimination, however we have moved forward greatly with these laws. It doesn't solve all our problems and neither I nor anyone else would pretend that it does. What we in the United States lack in particular are important social welfare benefits that many European countries have.

The first important predecessor to ADA was passed in 1973, our Rehabilitation Act, a section of which said that the federal government and any entity/organization receiving money from the federal government can't discriminate against disabled people. This meant greatly increased opportunities for disabled people in universities. For example, people who are deaf can often get sign language interpreters to interpret for them in their college classrooms, for free. Government offices have to provide written materials in forms that can be used by people with visual impairments: formats like Braille or large print or on cassette tape.

In 1975 the United States passed the Education for all Handicapped Children's Act which stipulates an education for every disabled child in the most integrated setting appropriate for the child. As a result of this law many more disabled children are in regular classes. If children need special services like speech therapy or mobility training those services are provided for them in a regular school. The concept of this law is that every child who is disabled has an individualized education plan developed for him or her. The plan is developed by a team of teachers and professionals from the school and the child's parents.

In 1986 the Air Carrier Access Act was passed in the United States. The Act states that airlines can't deny disabled people to use their public transit services. Some of you know that we had a very interesting incident this week where the need for a law like this came to life when Lufthansa had announced their intention to refuse to allow me to fly from Frankfurt to Berlin, under conditions that were discriminatory. Like all good disability advocates, the Frankfurt disability community lost

no time going right into action. They got the press interested very quickly and the press called Lufthansa and Lufthansa changed their mind. I should add that the American law I mentioned has helped a lot with another important problem, the carrying of batteries needed by people who use motorized chairs.

The Fair Housing Amendments Act came about in 1988. The housing act only covers new housing. It prohibits discrimination in the selling or renting of housing. For example, landlords would often refuse to rent an apartment to a mentally retarded person, or a person who at one time had a psychiatric disability. That's no longer legal. Also, this law made it illegal to establish local laws that restrict establishing small group homes for people with disabilities that leave institutions. The law requires landlords to allow you to modify your rented house if you wish, at your own expense, which was often denied before. And last, but not least, it requires new multi-family housing to have certain basic accessibility features.

In housing, as in employment under the ADA, landlords and employers still have a tremendous amount of discretion over who they rent to or hire. These laws are not quota laws nor do they require a preference for disabled people. What they do is say that the landlord or the employer can't reject a person solely due to their disability. That's not just words, it's an important difference. You may wonder, How do you prove that was the reason they rejected the person? We have experience with this in the United States because we have other civil rights laws, for example, protecting women and people of color. We have found that it is not easy to prove nor can we do it in every case, but you can prove it often enough to move the situation forward. Sometimes there are a series of disabled people, not only you, who have the same experience with a certain employer or landlord and if there are more people who are claiming it, it's easier to prove.

Regarding architectural barriers there are three different situations: 1) new buildings, 2) buildings that are being remodelled or altered, and 3) existing buildings that aren't being changed in any way. New buildings have to be accessible. There is a small exception in very small buildings, in buildings under three stories or under 3000 square feet (Editor's note: equal to approx. 330 square meters) per story. They don't have to put in elevators but they have to do everything else. That doesn't hurt us too much because most brand new buildings, even little ones have elevators anyway. When buildings are remodelled or altered, the altered area has to be made accessible. In addition to that, up to 20% of the remodelling costs has to be spent, if necessary, to provide an accessible pathway to the altered area. For all the existing buildings, restaurants and stores that aren't being remodelled, we have a modest standard, not a real high amount that has to be done. But every one of them has to do something. What they have to do depends on how big and wealthy they are, basically. A little corner store might just have to put up a little ramp. But a big, fancy hotel would have to spend a lot more maybe building a big ramp or putting in a lift or remodelling a whole bathroom, etc.

ADA also covers transportation. The biggest point here is that all newly purchased busses, regardless whether their operator is private or public, must have lifts. With rail systems, at least the most important stops have to be modified over a period of time. There was only one part of ADA that went into effect very fast and that is the requirement that transit operators make any new bus accessible. That went into effect 30 days after the law was enacted because the entities it covers are the large transit operators who were watching, they knew about the law, and there was just no need to wait around. And it was a nice symbolic victory for us because we had worked so hard on that issue to get it right away. But for other parts of the law the time limits vary a lot sometimes 1,2, or 6,7 years even For example, making accessible very old subway stations, that takes a longer time.

ADA covers public places. This includes many kinds of places such as: restaurants, stores, hotels, doctors offices, theaters, private schools, social service agencies, museums, and recreation sights, etc.. Owners and operators of these places cannot refuse goods and services to a disabled person.

When I say public place, I mean a privately operated public place. They can't make you have to do something special that other people don't have to do, like bring an assistant, for example. If they have to provide a disabled person with something that costs money for them to participate, they have to do it up to a certain point. For example, a doctor might have to provide a sign language interpreter for a deaf person who is coming to see that doctor. Any group that gives tests or exams that lead to a certain profession must make their premises accessible. Examples are courses for a real estate license, for law, interior design.

I told you a lot of things laws can do, now I want to tell you what these laws can not do. There is one main thing these laws cannot do: they cannot implement themselves. Passing a law is not the end of a project, the law is only a tool. It is an extremely useful and important tool, but it is still only a tool. Sometimes people make the big mistake of thinking that when a law doesn't automatically implement itself, it was a mistake to spend the trouble to get the law in the first place. People who think that, misunderstand the nature of the law. No laws ever go instantly into complete 100% implementation.

Enforcement

The ADA doesn't levy fines but there are other ways to enforce the laws. A person who has encountered discrimination can file a complaint with an agency of the national government which has to be investigated and settled. The only responsibility the disabled person has in that situation is to file the complaint, and that's pretty easy to do, sometimes you don't even need to write it down, you can telephone it. I wish I could say the investigations were perfect and happened quickly that's not the case, but again, it's enough to move forward. They don't have the burden of proof; they say what happened and an investigation is made into the facts. A law suit in court is something that can be done after this, if the complaint process is not satisfactory.

The ADA doesn't require infinite, limitless things of private businesses. Each part of it is carefully crafted to be fair to both disabled people and businesses. That's a hard line to draw but I think the result is that we did it pretty good. So each part of the law has it that the covered entity has to do things up to a certain point. The requirements are reasonable and now that they are law, they have to do it. We can assume they're not always going to do it the way we want and then some complaint has to be made.

Arguments

We had to change the image of disabled people from caretaking to civil rights. We had to convince society and Congress that we wanted to do more than watch TV all day. We want to raise families, shop, go to church, everything. Instead of being a drain on the economy, we want to be productive, contributing citizens. We wanted to get away from professional begging and instead insist we be given what we deserve. In fact this was one of our main arguments that society would save money when we work and are active and add to the economy instead of existing solely on benefits.

We said that the purpose of the ADA was to look to the future. It might be too expensive to remove every single barrier today but it makes sense to set up a policy where everything new was completely accessible. We argued a lot that it would save money for disabled people to be taxpayers instead of being dependent on the economy. We talked a lot about the harms of discrimination. We argued that the things we wanted to do were things already done in previous laws, nothing unexpected or unknown.

Politicking

Though achieving ADA was a big battle, it is important to understand that this wasn't our first civil rights law, as certain parts of society had already gone through this. And also, different states, among our 50 states, may have had good laws in some of these areas already.

ADA was first introduced to Congress in 1988. We did not push it very hard because it was an election year. After the two presidential candidates were nominated, we played one off the other. We did the same thing that if you're not united, your opposition will do to you. We told George Bush's campaign that Michael Dukakis's campaign was about to endorse the ADA any day. However, that was not true. Actually, we were telling the Michael Dukakis campaign not to endorse it. So in a couple of George Bush's speeches he referred to the right of disabled people to be integrated into society. Those statements helped us a lot to get Republican endorsement in Congress. In order to get the Democrats we worked with one of our best friends, who was a Democratic leader, to re-write the bill. The re-written bill which was still strong was now defendable. We made it a little more similar to some of our earlier laws, and the Democrats had already supported those earlier laws so we could get them to support this law because it was similar. And that's how we got the Democrats.

Grass-roots work and lobbying

I'd like to talk about the grass-roots activities we did. Marches and demonstrations and things like that were very helpful and important. Sometimes we could do this with a very small number of people. I've been telling a story about a Congressman from Los Angeles that was going to support some amendments that we didn't like. I called up someone I knew who would do this and I had her just get three or four people to go to the Congressman's office and they went in carrying signs and said that they were not leaving until the Congressman agreed not to support these amendments. They didn't mean what they said - they weren't really going to stay until he agreed, perhaps just a few hours - but it worked. In a couple of hours the Congressman called from Washington back to Los Angeles and talked to those individuals on the phone and told them he had no intention of supporting any amendments; no problem! So the point is that you don't always need large numbers.

At one point we actually deliberately delayed a particular committee vote until after a certain demonstration. It was important that we got letters written and individuals lobbying their elected officials, both of those two things, by people who were from the local cities that elected the officials, not the Washington lobbyists, but their own constituents who vote for them. If it was only the Washington lobbyists it would not have been enough support we couldn't have done this big a thing. It had to be their own constituents whom they had to listen to otherwise they wouldn't be voted in.

One of my jobs was to be in touch with the community in each state so that when we needed something from that particular member of Congress I could contact them directly. Also we had a huge mailing list of disabled people across the country and we would mail people updates about what was happening and what we wanted them to do. I had a network of 25 very strong and qualified leaders across the country who did a lot of the same work in their regions. They each had to be the kind of people that bring people in as opposed to the kind of people who like to do everything themselves. We had a special number that people could call if they wanted to send a

telegram to their member of Congress. We printed over a million New Years postcards which said: To Pass A Strong ADA. And we distributed them for free to disabled people all over the country to send to their member of Congress. We had at the very end when the bill went to the floor of the House of Representatives a big network in every state to get lots and lots of phone calls (hundreds of thousands in just a few days) to the Congressperson's office.

One thing that happened during the ADA process is that the people who liked more to do demonstrations and street actions worked a lot more with people who work on policy and law. That didn't happen at the beginning but by the end it was happening. The important thing I learned was that really truly neither side could have succeeded with out the other. Without the street actions, the people who do the policy work could never have gotten this strong a law. If the street demonstration people didn't have the policy people there would have been no one to work out the change that they had made more possible.

At one point we got the government to do a series of hearings across the country, and the government wanted to have them in out of the way places but we made sure that they were in places where we were strong. And we made sure the rooms were full of speakers and people were doing street theater and it was a big show of protest. It was very important that we could back up our threats so that if we said the community would do action, then there was action. If we said we would lobby, then we did lobby. We delivered on our promises. If you deliver, then the administration respects you as a powerful political force. If you don't deliver, they know you're just hot air and they don't have to worry about you.

Coalition building

ADA could not have come about without building powerful coalitions. The work on this started long before ADA. The main way you establish a big coalition is to choose an issue such that as broad a group as possible will have interest in that issue. You have to know the needs of other disability groups besides your own. For example if you pick an issue that you want to pass a law that you want to get more ramps in buildings, the groups that will come to your coalition are wheelchair users. On the other hand, if you formulate your issue that you want to have a law to construct buildings that have ramps and assistive listening systems for deaf people and appropriate warning systems and alarms for blind people, more people will come to your coalition. The other thing is that you have to find common areas of agreement, even if you may disagree on other issues with these groups. All you have to agree on is a specific set of issues that you're working on. The process of working together will educate them and later they will agree with you on more issues.

Starting with our first civil rights law in 1973, our movement has a long tradition of every different disability group working together: mobility impaired people; visually impaired people; hearing impaired people; mentally retarded people; people with psychiatric disabilities; people with hidden disabilities like epilepsy, cancer or diabetes; and people with AIDS. In the United States there's an important new group, people with environmental illness. People who have very bad physical problems due to chemicals in the environment. It also means every kind of group, traditional groups as well as movement or more activist groups. There are many reasons for this, one is that with more groups you're stronger. Another reason is that if you're not united, the other groups will end up attacking what you do. And then the government and the opposition have an excellent excuse not to give you what you want. They just say, Well they don't know what they want. So you try to bring as many people and kinds of groups together as possible. Some organizations won't come even though you ask them, you should try to get them, try to encourage them to come. But if they won't, you just work with whoever does. If you're doing the right things and moving

forward the other will follow later. Once the train is actually leaving the station, they're going to want to be on it. This unity enabled us to do some interesting things. It helped us get around between the split between traditional disability organizations and the newer, more activist organizations.

We had to get other civil rights groups, like people who work for the rights of women and other groups to realize that disability rights was as political and important as these other groupings. One excellent argument was guilt. For example, telling the women's movement that they weren't addressing the problems of disabled women. The main thing was to work with them rather then expect them to figure it out on their own. Like everything else it took some work and some time, in fact, some of us had to put in time working on their issues so that when we needed them they would work on our issues.

A lot of the churches supported us on the ADA. I would say that over time you would have to educate them that what you really want are your civil rights. Maybe they need to understand that you'll tell the media that you'll like them more if they help you on civil rights than if they take care of you. Which raises another idea which is that you have to figure out what the group that you want to work with, what is their interest and put that in your program.

I know it would be very easy to argue that a law like this is not possible here because your country is so different. You may feel that you don't have a lot of pre-conditions ready that we had because of our earlier work but many incredible and unpredictable things have happened in history. In 1988 when the first ADA was written and published, some of our smartest leaders thought it was ridiculous, not to mention impossible. They were convinced that those of us who thought we could do it were on drugs. Similarly, two years before the Berlin wall fell people thought it was completely impossible. So keep that in mind and go for it.

Recent advances in accessibility legislation and incentives in Singapore

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Background

Without natural resources and very little land to spare, Singapore's achievements are entirely due to the endeavors of its population and its geographical position; thus any steps to consolidate its greatest asset, the people, are in the interests of the country as a whole. So far the dynamics behind development have been in terms of market forces, but the realization that some aspects of national responsibility cannot be achieved by these criteria alone has brought a call for a more human face to be applied to development. The country's economic strength has now led to the realization that it is possible to become a more caring society.

Four years ago "Agendas for Action" were agreed upon to look at aspects of society that would benefit from such development. The needs of special population sectors were studied, leading to the publication of a report in August 1988 on employment, accessibility and transportation for disabled people. Of interest to this discussion are the proposals on accessibility which called for the introduction of a mandatory Accessibility Code for all buildings (including existing ones) and not rely on a voluntary one.

Introduction to Singapore and relevant administrative bodies

Singapore is an island republic with a population of just over 2.7 million and some 614 square kilometers in area. Because of the limitations of land much of the housing development carried out in the last 25 years has been high-rise, and latterly the Housing and Development Board (HDB) has been the sole national authority responsible for the physical planning and implementation of public housing. Over 87 per cent of the population is housed in such HDB-produced housing, and about 78 per cent of these dwellings are owned by the occupants.

The central urban areas of the city are generally densely developed, having some of the tallest high rise buildings in S.E. Asia. The Urban Redevelopment Authority (URA) is responsible for the planning and development of commercial and private-sector areas.

The city and the island as a whole has a well-developed infrastructure of roads and footways, telecommunications, a sanitation and storm-water flood-control system and all that would be expected of a modern city. Development of this is largely the responsibility of the Public Works Department (PWD) which, like the URA, is part of the Ministry of National Development (MND).

The Singapore Council of Social Service (SCSS), and in particular its Disabled Services Division, plays an important role in coordinating a wide range of activities, including 20 voluntary welfare organizations, and voicing their needs and aspirations to official channels, as well as administering grants and charitable incomes from the Community Chest.

Statistics and attitudes towards physical disability in Singapore

Available statistics on physically disabled people in Singapore do not truly represent the situation as a whole. In the past, registration as a disabled person was voluntary, but since the benefits of being registered disabled are not yet very great (as compared, say, to welfare-state countries like U.K. where they are very real and may include financial grants, parking permits and so on) few people seemed to respond. As people in Singapore become older, they may well qualify technically for the category of 'disabled', but as this condition (or combination of loss of various physical abilities through ageing) comes about gradually, they might not consider themselves as such.

The Central Registry of Disabled Persons (CRDP) recorded 12,526 disabled people (with all forms of disability) at the end of 1988, less than 0.5 per cent of the total population. This was clearly not an accurate picture, compared to other Asian nations like Japan or Hong Kong. Using their approximate percentages (3.8 per cent) a more realistic figure of 97,000 was estimated in 1988. Because of its ineffectiveness, the Registry was disbanded in 1989 on the recommendation of the Advisory Council on the Disabled.

In the past some stigma has been attached to a lack of physical or mental ability, often resulting in parents not coming forward to obtain help or advice at an early stage, or in failing to send their children to school or take them out in public for fear of adverse comment. Of course not all the barriers to disabled persons are physical ones; an interrelationship between awareness, motivation and the need for the creation of a benign and accessible physical environment must be perceived by society as a whole before any real change can be brought about. Singapore is a competitive society, and some traditional beliefs and superstitions die hard. Attitudes are changing and organizations such as SCSS have achieved much in informing the public and promoting positive attitudes to disability.

One recurring justification for providing an accessible physical environment is the more predictable statistic of old age. The 1988 report estimated that the population aged above 60 years would be 332,390 or 11 per cent of the total population by the year 2000, increasing to 26 per cent in the 30 years following.

The information from the now-defunct Central Register of Disabled Persons to accurately demonstrate how many would benefit by any access codes may have proved a weak argument for their introduction, based on statistical evidence alone; logically it would seem that by including old persons a more weighty case could be made, and it is no surprise that the Access Code includes old persons in its scope.

Precedents: A chronology of the development of awareness and application of accessibility

The special needs of people with physical disabilities have been a concern in many sectors of the government and professional bodies for some time; since 1978 all of Singapore's New Town centers and the ground floors of housing blocks built by the Housing and Development Board have been provided with some accessibility features, and modifications have been implemented as part of their 5-year maintenance cycles.

Interest in providing a wider barrier-free environment was obviously growing during this period, including the formation of a study team in 1980 to consider the necessity of introducing legislation to achieve "a barrier-free environment for the disabled and the aged" but an appreciation of the need was apparently not yet rooted into the general consciousness.

In one attempt to remedy this situation the 1981 Yearbook of the Singapore Institute of Architects printed the findings of the SIA Research and Documentation Committee (1979/80) in the form of a design guide, entitled "Barrier-free Design for the Physically Handicapped in Singapore". This was intended as a basis from which architects could convince clients to voluntarily adopt accessibility features into new buildings.

In that same year the Singapore Council of Social Services published a useful booklet entitled 'Access Singapore: a Guidebook of Accessible Places in Singapore for the Physically Disabled', which was compiled to make users more aware of existing facilities and presumably to encourage owners of buildings that accessible buildings were a good thing. This has subsequently been updated in 1989 and 1991.

The Singapore Institute of Architects continued to proclaim the importance of designing adequate facilities in all new buildings; a special issue of the Nov/Dec 1982 SIA Journal entitled 'Designing for the Handicapped' included an article on 'Modifying our Environment for the Disabled: a Question of Concern', as well as graphic illustrations of some of the typical problems which wheelchair users face, and a description of provisions for accessibility at Ang Mo Kio Town center.

In 1983 a committee recommended that the building regulations should be amended to incorporate an Accessibility Code, that 'basic accessibility features' should be incorporated in all government buildings, and that public walkways, parks and gardens should be similarly accessible.

There appears to have been some reaction to the idea of introducing legislation which would affect all new building, for in July 1985, when a committee was appointed to find solutions to the

problems of accessibility to buildings by disabled users, the outcome was to recommend the incorporation of features to conform to a set of guidelines proposed by the Ministry of National Development (MND), but that no legislation should be adopted to force building owners to make new buildings accessible; rather that government statutory boards should set an example in providing basic facilities to the MND guidelines.

For their part the Singapore Institute of Architects (SIA) and the Real Estate Developers Association of Singapore (REDAS) agreed to adopt these guidelines and persuade members to incorporate 'basic facilities' in their new developments. In practice the profession and the private sector were slow to voluntarily adopt these standards, or perhaps developers were not convinced that they were worth applying. It seemed that without some form of legislation a truly barrier-free environment would simply not happen.

The Housing and Development Board's contribution

The Board (HDB), as the major housing authority in Singapore has been largely responsible for rehousing the majority (87 per cent of the population) in the last 31 years. Anyone who has visited Singapore will realize the impact this has had on the physical landscape of the island, and its significance in achieving the stability and prosperity which makes the Republic an international center for trade.

Apartments, almost invariably in high-rise blocks, are generally owned by the occupants whilst the maintenance of exteriors and public areas is done by the HDB. Regular maintenance cycles ensure a commonly high standard, whilst in recent years a program of upgrading and retrofitting of a some aspects of these apartment blocks has been carried out, particularly in some of the older buildings. In catering for the disabled user the HDB has a record of providing accessibility features in all contracts tendered from January 1985 and in upgrading existing buildings. The provisions are in line with the HDB's own guidelines which, also according to the Accessibility Code, allow such provision as Access Decks on upper floors to be wide enough for two wheelchairs to pass, elevator landings on each floor (some earlier blocks had a scissor arrangement with one elevator lobby shared between two or three floors) and ramp access from external car parks to elevator lobbies. In this respect the HDB has led the way in both provision and management of facilities which benefit those with access difficulties.

But the sheer scale of upgrading older housing areas should not be underestimated; in 1988 the Advisory Council on the Disabled reported "it was found that a commendable start has been made by the HDB. Much more, however has to be done. The concept of a totally barrier-free environment has yet to be achieved in our public housing estates".

Access for disabled people in Singapore: Recent advances and the current situation.

The Advisory Council on the Disabled was formed in April 1988 "to work out a set of programs for the disabled as part of a government plan to implement the Agenda for Action". Their report and recommendations submitted in August were made public in the more comprehensive 'Opportunities for the Disabled'. This put forward a convincing argument for (amongst other things) accessibility of all communal areas and facilities for disabled people.. By April 1989 the new Building Regulations were on the statute books, whilst the Code on Barrier-Free Accessibility in Buildings, to which it refers, appeared in February 1990. The Preface to the Code states:

"Before the Building Control Act 1989 and Building Regulations 1989 came into force, few buildings in Singapore had been designed with special provisions to serve old persons and the handicapped. To create an environment for a more caring society, a new requirement on the provisions for old persons and physically handicapped has been incorporated into the new Building Control Regulations 1989. The new Regulations require certain minimum facilities to be provided in all new buildings to which old persons and the physically handicapped are reasonably expected to have access."

This code, which is drawn up in pursuance of the Building control Regulations 1989, provides detailed guidelines to help developers, architects and engineers in planning and designing the various special facilities in their building projects to cater to the needs of old persons and physically handicapped. The systematic introduction of the code's requirements into new buildings and existing ones undergoing major retrofitting will make our building stock more friendly to old persons and the physically handicapped.

In April 1989 the new Building Control Regulations were introduced, superseding earlier ones published in 1973 and 1979. Under Part IV (Design and Construction) regulation 36 covers "Buildings to be designed for use by disabled persons". This simple regulation states:

1. "Where a proposed building is one to which disabled persons have or may be reasonably be expected to have access, that building shall be designed to the satisfaction of the Building Authority in such a manner as will facilitate access to and use of that building and Its facilities for disabled persons.

2. A building shall be deemed to be designed in accordance with paragraph 1 if a) the areas of the building specified in the Table in this regulation have been designed to facilitate access to and use of the building and its facilities by disabled persons and b) the building is in accordance with the Code on Accessibility for the Disabled in Buildings":

In the Regulation is a table which defines 13 types of building (from residential, commercial, educational and health buildings, to car parks) and the extent to which provision is required; in most cases this is "Every area intended for public access". This regulation obviously only covers applications to construct new buildings and also "Where the Building Authority is of the opinion that such repairs, alterations or additions are major and substantial and are generally spread over the entire building" then the regulation may be applied. In fact many existing commercial buildings, ten or more years old, are currently being upgraded and hence will need to have accessible public spaces. But the fact remains that the bulk of the nation's existing building stock will probably remain relatively inaccessible for some time to come.

The Code on Barrier-free Accessibility in Buildings contains another table, (Figure 1) that is more specific on the minimum provisions in certain types of public buildings. It does not entirely concur with the Regulation, in its classification of building types, but is unambiguous in its requirements.

Figure 1. Provisions for disabled persons, by building type.

Type of Building	Minimum Provisions
Banks	At least one service counter shall be provided.
Shophouses and first-storey shops	The shopping area shall be made accessible in accordance with this Code.
Hotels	At least one guestroom shall be provided for every 200 guestrooms or part thereof.
Concert halls, cinemas, theaters, stadia or other places of public resort where permanent seating arrangement is provided	At least one wheelchair space shall be provided for every 400 seats or part thereof.
Religious buildings	The main area of worship shall be made accessible in accordance with this Code.
Hostels, halls of residence or dormitories	At least one level, preferably the access level, shall be provided with facilities in accordance with this Code
Hawker or food centers	At least one table without any fixed stools or chairs for every 10 tables or part thereof shall be reserved for use by disabled persons or at least two tables, whichever is the greater.
Car Parks (surface car parks or multi-storey buildings)	At least one car parking lot shall be reserved where car park the total number of car parking lots is not more than 50 or at least two car parking lots shall be reserved where the total number of car parking lots is more than 50.
Others: (Large department stores, supermarkets, resort, public concourses)	Seats, possibly of the tip-up type, shall be provided public for disabled persons who are unable to stand for a long period. An empty space to accommodate a wheelchair shall also be provided.

Tax incentives and SIA advisory service

In an effort to try to improve the situation of inaccessible buildings, the Singapore Government introduced a scheme in 1989 to encourage employers to modify their existing premises to allow access for physically disabled staff, wherein the costs of such improvements can be offset against tax, provided the work complies with the Code on Accessibility. Tax deductions may be claimed to a maximum amount of S$100,000.

To promote this scheme, the Singapore Council of Social Service commissioned and published a broadsheet, outlining the advantages and showing graphically the sort of modifications which would allow basic accessibility features for existing buildings. At the same time, volunteer members of the Singapore Institute of Architects formed the Accessibility Advisory Service in conjunction with the SCSS to give advice to interested employers on the ways in which they might enhance their workplaces. This was launched at a press conference on 5 December 1989.

Since inception, the scheme has received only a limited number of requests for advice and, as far as can be ascertained, no owner has actually taken advantage of this incentive to modify business premises. The reasons for this are unclear; perhaps the current employment situation means that

employers are less than eager to employ someone who is registered as disabled, when they can find non-disabled staff.

The cost argument

The cost of provision of basic accessibility features, as a burden to the developer, was investigated by the Urban Redevelopment Authority in Singapore as long ago as 1980. Using the Cuppage Center, (Commercial Offices, plus multi-storey car park, food center and wet market) as a model, a controlled costing exercise was carried out to compare the cost of the building with and without facilities of access for disabled persons, and the conclusion was that these could be provided for an additional 0.11 per cent of the total (at 1980 prices).

Compared to incorporating accessibility features in a new building, the cost of modifications to existing buildings will clearly be more expensive, since many features will either have to be replaced or duplicated to make them suitable. The cost of retrofitting a walk-up building with an elevator is likely to be disproportionately high.

One factor which might be taken into account in summing up the opportunities for providing accessible buildings could be the relatively high proportion of high-rise buildings in Singapore. Because they are higher than five storeys and would normally be provided with elevators of reasonable size, the upgrading of the buildings to accommodate wheelchairs would be quite simple. But in the public sector not all buildings would fall into this category, as schools and clinics are generally low-rise.

Definitions of disability and a comment on the scope of codes

The generally accepted definition of disability in Singapore is much the same as the WHO interpretation. "People whose prospects of securing, retaining places and advancing in educational and training institutions, employment and recreation as equal members of the community are substantially reduced as a result of physical or mental impairment."

Such a generalized statement does not differentiate between physical and mental factors causing the disability. The possibility of improving the situation for the physically disabled, by removing those elements in the built environment which form barriers to access and facility, will be much more easily achieved than for the mentally impaired. To this end Singapore's "Design Guidelines on Accessibility for the Disabled in Buildings" circulated for internal use by the Public Works Department of the Development and Building Control Branch, tries to be more specific by stating that, for the purposes of public buildings, "The disabled are those who, as a consequence of physical disability or impairment may be restricted to or inconvenienced in their use of buildings due to:

- presence of physical barriers, such as steps or doors which are too narrow for wheelchairs,
- lack of facilities such as ramps, elevators, staircase, handrails,
- absence of suitable facilities such as WCs, telephones, suitable furniture, etc.

Note however that in the preface to the Code on Barrier-free Accessibility in Buildings the phrase "the elderly and the physically handicapped" is used no less than five times in five sentences; the elderly, though not specifically with physical disabilities, are clearly seen as one of the major

beneficiaries of the new legislation.

The current document, "Code on Barrier-Free Accessibility in Buildings, 1990," which forms the basis for the building control regulation requirements in force in Singapore, which evolved out of the PWD's internal Guidelines (much of the wording is identical) does not include the sensory disabled (which its precursor did) but comes clean by stating that a "disabled person" means (only) someone who is either ambulant disabled or a wheelchair user, "as a consequence of physical disability or impairment". In its 'Scope and Definitions' chapter the Code makes it clear that it is narrowing the real thrust of its requirements as being "intended primarily to apply to the wheelchair bound. Such provisions would also cater to the ambulant disabled. However, where possible and practicable, optional access provisions and facilities are recommended to serve the needs of the ambulant disabled. Such provisions when taken as a whole would also greatly benefit the elderly and infirm."

The Code also contains further definitions: "Ambulant disabled means a person who is able, either with or without personal assistance, to walk on the level or negotiate suitable graded steps provided that convenient handrails are available." "Wheelchair-bound means a person who is unable to walk, either with or without assistance, and who, except when using mechanized transport, depends on a wheelchair for mobility."

Two things emerge from this; firstly the definitions of disability are closely linked to the physical and built environment and to the inability of the disabled person to adequately cope with everyday barriers and "normal" facilities, and secondly the assumption that if the wheelchair user is accommodated, then most other persons with disabilities will probably be able to access the building and be catered to by its facilities, as well as to parents with pushchairs or prams (though there appear to be few in Singapore). Such rationale has the ring of pragmatism about it but it may well be true that a wheelchair user can be most disadvantaged by even the lowest of barriers, and thus has the most to gain in personal independence in a truly barrier-free environment.

In its scope the Code on Accessibility breaks no new ground; door, corridor, stair and ramp access dimensions and details are covered; minimum sizes and heights of control buttons for elevators, (but no mandatory requirement for audible signals) are given, and sanitary provision for both wheelchair users and ambulant disabled people are comprehensively covered. General design requirements cover such provisions as reserved parking lots, and pavements from them to the building which are unimpeded and have a maximum ramp gradient of 1: 1 0. Facilities with counters for writing or service must construct the counters at a certain height and have clear space for the wheelchair below.

Problems of the discontinuous system

Prior to the introduction of the Code on Accessibility a number of architects and clients were enlightened enough to provide toilet accommodation accessible to users with disabilities, only to find that the building was in itself not entirely accessible to this section of the population (unless they arrived by motor vehicle) because of curbs or steps in the public domain. In other words, there was a mismatch between public and private provision, a discontinuous system. Under such circumstances developers may be excused for being reluctant to spend a little more money on special provision when those for whom it has been provided are unable to reach it. Equally frustrating are examples where public footways leading to a building are barrier-free, until one arrives at the threshold of that building only to find that it has steps up to its front door.

Since 1970 the Public Works Department has made it standard practice to provide curb-cut ramps

at all newly-constructed footpaths, but in a city with an infrastructure as comprehensive as Singapore's, this represents a lot of remedial work to upgrade those footways constructed prior to this. Eventually, however, Singapore can achieve a barrier-free environment by a combination of initiative in the public sector and legislation to require the private sector to make equal provision.

Some special problems of designing in an equatorial climate

Singapore's equatorial climate poses some problems for the designer of barrier-free pedestrian routes. The incidence of rainstorms and the sheer volume of water precipitated require that any hard paved area must be drained and that run-off must be controlled to prevent the flooding of building basements. For this reason high curbs (often 200 mm or more) separating road from footpath and raised thresholds at building entrances are very necessary. Storm-water drains, often covered by metal gratings, are ubiquitous features of the public domain. Obviously all of these can prove to be barriers or hazards to the disabled user.

As the climate in Singapore is always hot and continuously humid, physical conditions can be uncomfortable. For the average pedestrian the perceived reasonable comfortable walking distances are more limited than in a temperate climate. It is especially important to provide shade as well as shelter, particularly as physically disabled people cannot so easily protect themselves from the sun or the rain as they move about.

Although not a climatic problem some consideration should also be given to the local method of cleaning floors, which is to use copious amounts of water to hose dirt into channels or scupper drains and thence to floor gulley-traps. Where such methods of cleaning are expected, (and this may range from markets and canteens to domestic bathrooms and kitchens), it is usual to provide a raised coaming or a slight change in floor level to prevent washing water spilling over into other areas. These slight changes in level are, of course, a hindrance to the wheelchair user, as well as a hazard to the ambulant or the visually disabled pedestrian.

Current walkway schemes by the PWD

Since the introduction of regulations requiring accessibility to all new or retrofitted buildings in the private sector, it has now become incumbent on government agencies to match the level of facility in the street approaches to buildings. In April, 1988 PWD undertook a survey, at the request of the Committee on Employment, Accessibility and Transportation, to look at the accessibility problems in the Orchard Road area, one of the main commercial, hotel and shopping districts of the City and the Civic Center of the City. Thereafter that same department began to draw up proposals for an ambitious scheme for a level, unimpeded walkway system for both these areas and for the downtown financial business district, all of which are nearing completion. Costs for these are quoted at $49 million Singapore, of which $29 million can be directly attributed to improvements for disabled user.

Imminent future plans include similar improvements in the touristic areas of Chinatown, 'Little India' and Kampong Glam/Bugis Street. Eventually, the upgrading of the other urban and suburban areas will include the removal of all barriers like curbs and steps.

One of the major problems, especially in the Orchard Road area, is that the shopping centers and hotels are set back from the street, so that vehicular access is by means of a service road running between the building and the footway. At each building plot's boundary the footway is intersected

by the entry/exit road, which is hazardous for pedestrians and difficult for wheelchair users. PWD's scheme has eliminated the problem, relocating service roads on the outside of walkways.

Accessibility by vehicle

Many large commercial buildings in Singapore have integral multi-storey or basement car parks served by an elevator to the main floors. Such buildings are adequately accessible to the wheelchair users provided that they use cars. This is a relatively small proportion of those affected. A wheelchair user wishing to arrive by taxi would be taken to the front door taxi drop-off point, which may have curbs or steps, rather than to the elevator in the car park, as this would demand that either driver or passenger have prior knowledge of the facilities provided, and possibly be prepared to pay for car park entry charges.

Mass transportation

The Mass Rapid Transport (MRT) system is designed for rapid transport at peak times and any potential delay is obviated. Consequently, no toilets and only limited seating are provided inside the ticketed area, and the vertical circulation is by escalators which move more rapidly than normal. At a planning level it would seem the presence of wheelchairs may have been seen as presenting problems too difficult to handle and that the conscious decision might have been taken to encourage their users to take alternative means of transport not difficult in Singapore where taxi services are good and no point on the island is excessively far.

It is also rationally argued that the presence of wheelchairs would cause evacuation problems in an emergency. However, this has not precluded the MRT from providing facilities for ambulant disabled users; in fact there are some seats on the MRT prominently marked as being for priority use by the aged or disabled, but anyone with major disabilities would probably find difficulty in claiming this right.

Taxi services are economical and efficient. Some taxis carry stickers "Care Cabs" and belong to a SCSS scheme to match drivers to disabled passengers who have transport problems in getting to work or school. A taxi subsidy scheme alleviates fare problems for those who are unable to meet the costs of daily rides. Recently introduced London-type taxis are proving especially capable of accommodating wheelchair users.

Private car ownership

The number of owner-drivers of purpose-built or modified vehicles on the roads is low (although statistics are not available). One reason for this may be that disabled people are less likely than others to be high wage earners and hence may not be able to afford a vehicle, even though substantial waivers on import and registration fees are applicable for these classes of vehicles. Also, owners would be eligible for benefits in terms of reductions in parking fees in HDB estates. So far less than 60 new vehicles have been registered under this scheme. It should be remembered that whilst specially constructed or modified vehicles are quite common on European roads this is not the case in Asia. The apparent discrepancy may be partially explained by the history of the last fifty years: amputee ex-servicemen returning from the Second World War were supplied with such vehicles, having been drivers previously and still being productive wage-earners even in their

disabled capacity. The Asian counterpart would probably be much more difficult to find, and only now are purpose-built or modified vehicles becoming used in Singapore.

The future may change the situation, Singapore is still a relatively young nation. However, the ageing but relatively well-off population used to the freedom of driving their own vehicles will surely expect to continue this privilege even though some of their physical faculties may become impaired. We may expect a greater demand for special parking close to building entrances and better access from car parks to work places or recreation.

Conclusions: the future

It is too early to assess the success of the recent advances in legislation and upgrading the walkway system. Most buildings coming up for completion were already approved before the current legislation came into force, and there are still major obstacles to be tackled in the public domain. Footbridges are common and were formerly thought to be the most effective way of crossing the road without disrupting traffic flows. Alternatives need to be found, if total accessibility is to be achieved. In some places elevators are proposed suitable for wheelchair users.

On a broader perspective, future trends will probably cater to a more financially secure sector of the ageing population who, unlike their forbears, will not give up their favorite pastimes, or stop driving their cars simply because they are becoming older and they probably will not register themselves as disabled persons. Just as an old man complains that the birds do not sing as loudly as when he was young, so the older generation will be less tolerant of a physical environment which presents barriers to their mobility. The scope of access legislation clearly involves old persons as benefiting from any improvements in that area, as well as pregnant women, parents with children in pushchairs and so on.

Tourism is a major source of income. A relatively high proportion of visitors are retired people, who are attracted by the safe and clean image of the city. This industry will benefit by improved accessibility, especially in those areas which attract visitors the shopping and hotel areas, and the historical quarters; in turn will come the international prestige, which a small republic like Singapore must maintain to survive.

What is perhaps most significant is that Government policy, whilst being generally quite pragmatic in its approach, is now able to broaden its scope to consider the needs of minorities, in the move "towards a caring society". That it has done so in such a short space of time, and that it has committed itself to the creation of barrier-free walkways which will eventually cover much of the built-up area of the island, is very much the style which Singapore does things. To quote the Minister for National Development, Mr. S. Dhanabalan, "Singaporeans can look forward to living in one of the best cities of the world by the turn of the century. We will certainly be the first developed city in the equatorial belt."

Design guidelines of public collective housing for the aging society: The move toward a new era in Japan

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Abstract

With the expectation of the highly-aged society, Japan is now trying to cope with the problems that will accompany the coming of the aging society. Social welfare policy is changing, mass-communication media are alerting, business opportunities are being sought. Housing policy is also changing. Previous policy has been to provide special housing units to aged persons, to live independently or as part of an extended family. This policy is now becoming obsolete, and the Ministry of Construction is shifting its emphasis. All newly constructed housing units will be required to comply with upgraded standards for the benefit of future aged persons. Some of the practical requirements will be: elimination of level differences within dwellings; provision of handrails to assist moving about; promotion of the development of building facilities that are suited to the needs of the aged persons, etc.

In addition to the formulation of guidelines for new public housing units, rehabilitation guidelines were published for the benefit of aged persons who seek various loan schemes assisted by the governments, both central and local. The guidelines mainly focused on detached/semi-detached houses, but key issues are common to collective housing, and are expected to be utilized as well. They will contribute to the upgrading of the standards of housing conditions in Japan, thus the quality of housing stock will be improved in the long run.

Introduction

Japan is expected to be the most aged society in the years to come. It is crucial to prepare for the change as the rate of aging of the population is unparalleled in the world; it will only take 25 years for the aged population in Japan to double from just 7 per cent to 14 per cent. In 2020, the ratio will be over 25 per cent.

With the recognition of the importance for the preparation of the coming highly-aged society, and to cope with the situation, the Ministry of Construction started a project on aging and dwelling design it the fiscal year (FY) 1987. The project, titled "Development of Technology for the Enhancement of Residential Environment in the Aging Society" aimed at solving the problem of housing for the aged, in terms of both policy on housing supply and guidelines on dwelling design. It also aimed at improving quality of the environment in the community scale, but this paper reports only on the issue of housing.

Problem

At the beginning of the project, many members in the committee (most are researchers and professionals in architectural design and building science) thought that special housing forms would suffice. It gradually became evident however that almost all dwellings have to be prepared for the time when the residents got older. Special housing can never be a solution when one in four persons are 65 years of age and over. There were two major reasons: First, the combined number of constructed special housing units and nursing homes of any kind can never catch up with the speed of the increase in population; second, the ultimate ratio of aged population is unbelievably high (one in four!) so that it is much more sensible to assume that almost all dwelling units will be resided in by aged persons sooner or later.

Even if the aged persons wished, they are unlikely to live with their children as an extended family, a popular form of households in the traditional Japanese way of life. Rather, the aged persons will

live by themselves as a couple or alone. They will perhaps choose to "age in place" as long as they can, so that appropriate dwelling design will become vital not to hinder them from living a comfortable life. Accessible dwellings in its broader terms will become a necessity.

Survey of aged persons' capability

The crucial issue was to identify the characteristics of the aged persons for whom the dwellings should be designed. Should we expect all aged persons to become wheelchair users and/or persons who spend most of the time lying down? Or, could they be more active and have more positive attitudes to life?

Two surveys were conducted to make clear the actual situation of the aged persons who live as an extended family, and those who live in special housing for the aged.

Survey of aged persons living as an extended family

The first survey was intended to understand the relationship between physical capability of the aged persons and design features of the dwellings; how healthy and active the aged persons are, and to what extent the considerations are given to improve the quality of living in the dwellings. The survey covered about 900 aged and 700 non-aged (below 65 years of age) persons. The findings were as follows:

1) Aged persons are relatively healthy, much healthier than normally assumed; about a third of the subjects can even run; about half walk without any assistive devices. Only 2 per cent of the subjects are wheelchair users or persons who spend most of the time lying down. As they grow older, however, their physical capability deteriorates, and about a half of those aged 85 and over need assistive devices.

2) The subjective evaluation of the design features in dwellings varied between aged and non-aged persons in such aspects of step and level differences as in entrances and at doors. The aged persons are experiencing a lot of troubles in those places while the non-aged do not seem to notice them as problematic. Stairs are an exception because the aged persons normally give up climbing up and down.

3) The aged persons seem to express their wishes for improvement of design only when their physical capability deteriorates and some supportive devices are needed.

4) In contrast, the accident incidence clearly indicates that the aged suffer from falls on the level even before they need some devices. Those who can walk without any assistive devices have a much higher incidence of accidents than non-aged subjects.

These findings seem to suggest that design considerations for the aged have to give priority to safety rather than to usability.

Survey of aged persons living in special housing for the aged

The second survey was conducted on those residents of special housing which is called

'Silver-housing'. The scheme is similar to British sheltered housing, with a resident warden living in the same block. Two examples, both with about 40 residents, were chosen for the survey. The questionnaire forms comprised of two parts, one on physical capability and the other on the effectiveness of the design details, which are supposed to be age-conscious.

The residents were independent when they were admitted to be in the scheme, and as only a couple of years have passed since the housing was built, no resident has needed a wheelchair or has spent most of the time lying down. Some of the design details were, however, already inappropriate for aged residents because the designers did not correctly realize the needs of the aged, or they just misunderstood the requirements. Such examples include: wrong placement of handrails; retaining level differences which have no meaning; inappropriate choice of light bulbs, etc. Another notable problem was that social services were not enough to cover the need of residents. The same problem was suggested in the U.K. because the warden was not necessarily qualified to give social services (but this was outside the scope of the survey).

Proposal of design guidelines

To avoid repeating the above-mentioned mistakes and to establish a minimum standard for future dwellings, new guidelines were requested from the Housing Construction Division of the Ministry of Construction. The new move, "Design Guidelines of Collective Housing", was prepared in March 1991 for the construction of public collective housing in 1991 and later. It is the first step toward accessible dwellings for most of the population without future needs of major rehabilitation work.

The concept of the design guidelines is to be summarized as follows:

- elimination of level differences within the dwelling unit,
- standard requirements for handrail installation,
- standard detailed design for the benefit of aged dwellers such as door hardware and other operating devices,
- requirements for equipment to support the life of the aged, including bathroom unit.

Examples of detailed design that comply with the guidelines

These points will mark the departure from the traditional design concept which has assumed young and able-bodied adults as dwellers, but resulted in many troubles to the aged persons.

In FY 1991, design guidelines for detached houses will also be established and prototype houses will be built. It is expected that the two design guidelines will be used to improve the quality of housing design with public financial support. Not only publicly constructed housing but also housing mortgage assisted by the government as the mainstream of Japanese housing construction has relied and will continue to rely on private initiative.

Conclusion: The remaining issues

The remaining problem is whether the design should be facilitated to accept wheelchairs into the dwelling itself. Current design requests that the wheelchair for outdoor use be placed in the entrance hall and be changed for a specially designed indoor wheelchair if it is necessary to use one indoors

as well. It comes from traditional custom of taking shoes off at the entrance hall in Japanese houses. To keep dust and mud away from coming onto the floor, there exists a step difference at the entrance hall. Should this be eliminated as well?

Notes

1) A more detailed description of the survey and the findings are given in the appendix paper.

2) Although many persons take off their shoes at the entrance hall in Sweden, for example, they normally do not change wheelchairs nor do they have step differences there (though there may be door thresholds). Another option would be to leave the electric wheelchair there for charging the battery and use much more compact and handy wheelchairs indoors.

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Capability of daily living of old persons and their accident experiences: Implication for the design of safer and easier-to-use dwellings

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Introduction

Within thirty years, Japan will experience an increase in the elderly population unprecedented in the world. Recently, the ratio occupied by the 65-years-and-over age group to Japan's total population has been rapidly increasing. Furthermore, the aging of the population is progressing faster than the estimate published by the Institute on Population Problems of the Ministry of Health and Welfare in 1986. According to a population estimate made in September 1990, old persons constitute 12 per cent of the present population. Three years ago, the author remarked on the influence of aging on buildings, but present and future conditions will likely be more serious than predicted at that time. A pessimistic view of the future is counterproductive, this paper will consider the problem more positively with a focus on the housing issue.

When we consider future-oriented measures to cope with the problems encountered by old persons, the first problem that arises is what should be taken into account when designing their dwellings, which are the practical centers of their lives? It is important to determine the range of the perceptions, judgements, and behavior of old persons whom we were dealing with. How well can an old person who has become frail or incapacitated can reside in a dwelling will largely depend on its setup. In industrially advanced countries, many feel it is desirable for old persons to reside in their own homes as long as possible. In Japan too, this has become generally accepted. To realize it, dwellings must be made to accommodate the declining capability of aging people.

A rare but satisfying alternative would be to design a dwelling for a particular resident and thus incorporating his/her terms and conditions. This would indicate that the elderly population was taken good care of. Unfortunately, such personal treatment is impossible. Accordingly, many people will require dwellings with better standard design than before to allow them to be conveniently used without major modification.

However, conventional design guidelines for specialized dwellings have been established particularly for disabled residents rather than the needs of old persons. Information has been scarce concerning what is indispensable to elderly people with no particular disabilities (i.e., who simply are aging slowly). As a result, it is generally thought that even when old persons grow frail and become incapacitated as they age, they will be able to freely operate manual wheelchairs. It is unrealistic, however, to expect their arm capability to be sufficient for managing a manual wheelchair when leg capability declines considerably. Personally, I have seen no elderly person who handles such a heavy wheelchair by himself, and the number of those who can do so will not increase substantially. It is also unthinkable for an elderly person to get in and out of a wheelchair frequently (e.g. for such activities as using a toilet) with only upper-body strength. Except when

going out, old persons are more likely to live inside a dwelling using handrails for support as much as possible. I do not agree with the idea of cutting back on fundamental dwelling furnishings with the expectation that help and care will be provided (especially by family members). This paper also opposes the belief that all dwellings should be constructed so that a large outdoor wheelchairs could be accommodated. Presently, various reasons make it difficult to obtain social support for the latter, and I am critical of the present large wheelchairs as the standard to be used both outdoors and indoors by old persons as they are designed for outdoor use under less favorable conditions. If use of a wheelchair is limited to indoors, it would be possible to make ones that are more convenient to handle. Those who are involved with rehabilitation understand this well, but many building researchers and designers lack the perspective. It is at least inappropriate to place old persons and people with disabilities (particularly those who use wheelchairs) in the same category for discussion. To give an example, ramps designed for a wheelchair can be dangerous (especially when descending) for elderly people with declining walking capability who rely on handrails or walking sticks. Until recently, it has been difficult to agree with concrete evidence exactly what the words 'the elderly' meant.

During the discussion of "Development of Technology to Improve Residential Environments in an Aging Society", the comprehensive technological development project of the Ministry of Construction, several kinds of research revealed data that provide clues to solutions. I would like to discuss the desirable dwelling design based on convenience and safety of residents through examination of those data.

Elderly people are quite varied

For many people, the most familiar elderly are their own parents. Because these elderly are familiar, the younger generation may consider them the general standard - which may be a greatly distorted view. What's more, the fact that these elderly people are family members can be an obstacle to objectivity. Also, because the mass media tend to focus on extreme cases, people often respond with excessive fear that the same will occur within their own home. This is why the distorted concept that most elderly people will become senile or bed-ridden is most influential.

Unless this bias is removed, reasonable discussion, including concrete dwelling design, will not evolve. Thus, we conducted two kinds of surveys and tried to clarify characteristics of the elderly using basic capabilities of daily living. We also conducted a survey to unearth the problems of present dwellings to grasp their connection to capability of daily living under the assumption that such work would clarify the fundamental issues that should be considered when designing a dwelling.

For this purpose, we conducted a survey on the extended families living in the Tokyo area, mostly in detached houses. We also surveyed residents living in such dwellings specially designed for old persons as "Silver Housing", the supply of which has recently increased. Our goal was to comparatively examine the actual effectiveness of dwellings specially designed for old persons.

Survey No. 1. Elderly living as an extended family in detached houses

Survey method
The questionnaire-answering populace accessed by Urban Life Institute of Tokyo Gas Co., Ltd. (TULIP) was comprised of Tokyo Gas customers who were randomly selected, asked to participate/cooperate in the survey, and who expressed consent.

For this questionnaire, the subjects were elderly people living with "under 65" family members. We aimed to collect about 1,000 respondents. The survey included questions on physical characteristics of the houses, such as detailed design and dimensions of dwellings, to clarify the difference in evaluating physical conditions by old persons (65 years and over) and non-elderly (under 65 years), thereby checking the requirements specially designed for old persons. In addition, considering the survey of stairs inside a dwelling, we surveyed basically detached houses. Items included in the questionnaire were as follows.

- Self-evaluation of capability of daily living and sensory characteristics, made by old persons themselves,
- description of dwelling characteristics (answered by a resident under 65 years),
- evaluation of dwelling characteristics (answered by all residents age 65 and over and one resident under 65),
- desires to modify dwelling characteristics (answered by the same as above),
- whether building-related domestic accidents occurred or not during the past year (answered by the same as above).

Walking capability was selected as the index of basic capability of daily living. Behavior capabilities of old persons were then evaluated along this axis. If capabilities of old persons in daily life can be relatively clearly classified along this axis for subjective and objective understanding, it will greatly contribute to design and other issues related to old persons.

To survey building-related domestic accidents, a questionnaire was prepared following the survey formerly used in Hyogo Prefecture so that results could be compared if necessary.

Survey results

The effective answer rate was considerably low, owing to the number of the questionnaire items and the fact that we could not analyze and evaluate the results when either data from old persons or from the non-elderly were not available. In terms of composition by sex, male respondents 65 years and over constituted a relatively high ratio - nearly half - compared to female respondents. One reason for this was that many households answering the survey were a combination of an elderly husband and a non-elderly wife. Nearly 70 per cent of those surveyed answered "None" when asked about job occupation. Therefore the ratio of "Stay at home nearly all the time" was fairly high (65 per cent).

In terms of houses, most were wooden, two-story homes. Age of the houses was comparatively long, as can be expected with wooden buildings. Total floor areas were relatively large, as multiple households were living together in detached houses.

Evaluating capability of daily living of old persons

According to self-evaluation of walking capability made by old persons covered by this survey, 31 per cent of 888 elderly people to whom data analysis was applied answered that they could run. This segment (classified as type I) is far from the image of the frail elderly person. 51 per cent answered that they were not confident about running, but could walk completely unassisted (type II-1). Around 15 per cent needed some assistance, such as a walking stick, a handrail, or a personal assistant (type II-2). Those who moved about by crawling or who could not move without a wheelchair (type III) and those who were persons who spend most of the time lying down (type IV) constituted just 2 per cent.

As walking capability differs with the individual, it is difficult to make sweeping statements. However, approximately half of the 65-69 age group were type I and most of the rest were type

II-1. In the 85 and over age group, type II-1 was slightly less than half and type II-2 nearly half; as expected, almost no one was type I in this age group.

Elderly people who were hospitalized at the time of survey were naturally excluded from the subject pool. However, the hospitalization rate was not extremely high for the age group. Taking this point into account, capability of daily living was considerably high on the whole, and old persons were not as frail as was generally imagined. (Heavy care was usually unnecessary.) This finding also correlates with the general trend in survey results in Sweden.

Collected data on other capabilities of daily living and sensory characteristics related to walking capability indicate that leg force - including that used to ascend and descend stairs - correlates closely with walking capability. On the other hand, factors concerning eyesight, coordination, and practice were not directly connected. Answers of "can do" and "cannot do" varied greatly, depending on what the required basic capability was.

Looking at the answers as a whole, "can do"/"cannot do" clearly changed in connection with the level of walking capability. For example, a positive answer to the question, "Can you take a shower in a standing position in the bathroom?" was obtained from 80 per cent of the type I group, 60 per cent of the type II-1, and 20 per cent of the type II-2. On the other hand, to the question "Can you dial the telephone?" slightly under 30 per cent of those in the type II-2 group answered negatively. Thus, it was not possible to establish criteria to measure the degree of decline in capability through this issue. Capability of conducting delicate tasks was closely connected with experience; in this case, the unfamiliar push-button phone was not favored. Sensory characteristics are closely linked to age.

Differences in evaluating physical conditions of dwellings
According to survey results on evaluation of physical design and dimensions of the house they currently live in (in terms of fear of accidents, inconvenience, etc.; see Figure 3), the burden or recognition of danger by old persons was remarkably high on such issues as step differences at the entrance rail, entrance door, bathroom doorway, toilet doorway, and level differences between Japanese and Western rooms. Also, old persons evaluated the handrail more highly than the non-elderly. The elderly considered above-mentioned design features to be serious problems.

In terms of convenience to use, many items were not highly evaluated by old persons; in fact, their evaluation was similar to that made by the non-elderly. For example, there was little difference in terms of faucet operation and hot water temperature adjustment. It seems that they do not give great consideration to replacing present furnishings with more convenient ones unless the need is urgent.

As to flights of stairs, there was little difference in subjective evaluation made by old persons and the non-elderly, which seemed strange at first glance. This unexpected result can be explained through other questions asked on frequency of stair use. Use of stairs by those 65 and over was rare. Not only the type II-2 group but also one third of the type II-1 group never or seldom use the stairs during the course of a day. Even in the type I group, one fourth of the elderly seldom used stairs. Nearly 40 per cent of the non-elderly use stairs frequently, and only about 10 per cent of them seldom do. Compared with the case of old persons, there was a great difference here. In short, old persons do not feel the trouble, because they do not use the stairs. What should be noted here is that private rooms for old persons are recommended to be placed on the lower floor when funds are financed by the Housing Loan Corporation. However, this unfairly narrows the possible living space for old persons.

Moreover, in the future, even three-story wooden dwellings will be introduced in the quest for maximal environment conditions on limited plottage. Thus, the concept of placing old persons on the ground floor will not, in more and more cases, be reasonable as a long-term solution.

Accordingly, stairs will become more significant. In this sense, the specification of the maximum allowable slope of 6/7 in the requirements for higher standard housing is considered a milestone. Also, old persons surveyed did not express strong desires to make safety- and convenience-related modifications, except in urgent cases.

Problems in relation to capability and desire to introduce more needs-oriented housing for the elderly
We examined problem areas and analyzed residents' desire for modification for daily living capability based on walking capacity. The study revealed that the two are closely related. Using the trouble spots and desires for modification/introduction of the non-elderly as a reference, types I, II-1, and II-2 elderly were compared. Type I elderly seems more energetic than the non-elderly, and the type II-1 elderly show a similar tendency. However, the type II-2 elderly feel seriously troubled in some areas. Entering and leaving the bathroom, laying out and putting away futon bedding, and managing stairs are the conspicuous troubles. Other problems are characterized by level differences.

Most modification requests center on handrails at the entrance, in the toilet, bathroom, and on the stairs and a bench in the dressing room. These features were pointed out by the type II-1 elderly and were particularly conspicuous among the type II-2. The only reason why the request for handrails by stairways was not so striking is that many elderly do not use the stairs. Accordingly, problems related to troubles and improvement requests for old persons begin to emerge with type II-1 and first become conspicuous with type II-2.

Occurrence of accidents in daily living activities and injuries inside the dwellings
Regarding domestic accidents experienced in the past year, 13 per cent of old persons and 8.6 per cent of the non-elderly answered that they had had accidents. Classified by walking capability, only 6.5 per cent of the type I elderly answered that they had had accidents - a figure which was lower than among the non-elderly. From type II-1 on, occurrence was more frequent. Type II-2 elderly had had 2.5 times as many accidents as non-elderly. Accidents causing injury shifted, with decline in walking capability, from stair-related accidents to other falls, such as slipping and stumbling on the floor. Of the total accidents, 16 per cent of old persons suffered broken bones. The more walking capability declines, the higher this ratio is. In addition, the ratio of going to the hospital (for treatment) and being hospitalized also rises, which may be related to it.

It has been pointed out that bones do age in elderly people and that the incidence of breaking bones also increases. Moreover, these broken bones result from light falls in almost all cases. The data we obtained proved similar.

Survey No. 2. Residents of special housing for old persons

The supply of special housing for old persons has been rapidly increasing, spurred on by the Silver Housing Plan. However, this plan basically stresses software, and examination of dwelling design - the hardware - was insufficient. Accordingly, individual designers were left to determine what should be included in an elderly specific dwellings in their plans, resulting in a lack of uniformity in design details.

In addition, design detail effectiveness has not normally been pursued after completion, and the post-occupancy evaluation (POE) in the buildings did not effectively function. Under these circumstances, the same design failures will naturally occur many times.

We therefore tried to examine and evaluate the details of specific dwellings built on the Silver-pia

Plan of the City of Tokyo how they were evaluated by the residents in terms of their capabilities of daily living.

As the subject of the survey was basically identical housing design for each building, it was expected that the interrelationship between design and capability of old persons would be clarified, thereby proving useful in establishing distinct guidelines for design details. This was the main purpose of the survey.

Outline of the survey

We selected Shinju-en (Setagaya Ward) and Tokumaru Keyaki-en (Itabashi Ward) as the survey targets. (There were about 40 residents in each house). We asked residents to evaluate the design of their dwellings. To make the survey as effective as possible, we prepared color photographs of details shot at relevant angles (for example, differences in level, handrails) and attached them next to the questions. We also asked about physical condition and capability of daily living of the residents using the same basic process as for Survey No. 1.

Next, we selected several similar houses in the Kanto and Koshin-etsu districts for subjects and conducted surveys in basically the same way. When photographs of the details were not available, illustrations were used.

Shinju-en was surveyed in late April, 1990, and Tokumaru Keyaki-en in late August. The remaining houses were surveyed from late September through October. At the time this paper was written, data had yet to be completed. Thus, herein, only the results of Shinju-en and Tokumaru Keyaki-en have been summarized.

Survey results

Shinju-en

Of the 40 residents of Shinju-en, two were hospitalized at the time the survey was made so answers were obtained from 38 residents. Average age: 77 years. Results on the question concerning walking capability indicative of their capacity showed that 6 people were type I, 23 type II-1, and 9 type II-2. As the admission qualifications specify that a resident must be independent, there were no type III elderly, even though some time had passed since admission.

Residents tended to grip something when stepping up at entrances and when standing at the toilet. Although the type II-1 elderly, according to walking capability, were not supposed to be using handrails, 5 out of 23 of them reported of gripping something when moving vertically in both of the preceding cases. As this shows, it is clear that the decline in capability appears sooner in actions involving vertical rather than horizontal weight movement, and support was thus sought for that reason (Table 3).

To the question of how often they went to the toilet at night, many of old persons answered one or more times. Thus, attention should be paid to the relative positions of the bedroom and toilet and also to heating the toilet at night during the winter.

Looking at the answers reveals that their former residences were often old apartment houses without baths and, in many cases, with public lavatories. Cooking was generally done over a gas range, and the residents do not normally recognize the danger of a fire occurring. At Shinju-en, electric cooking ranges were furnished. Only 4 of the type II-1 residents preferred gas cooking. This dwelling was basically for single people, thus the expectations for the cooking facilities were not great.

Evaluation of the details of a new residential environment indicates that handrails inside elevators and along corridors were not as necessary as assumed. In contrast, handrails along stairs and in

toilets are well accepted in accordance with the decline in capability. At the same time, questions were asked concerning evaluation of height of handrail installation at these places. Few opinions were expressed on what height would be most convenient; they seem to be satisfied with the very existence of handrails. This result also indicates that their former housing environments were quite below standard. Also, it may be connected to present housing conditions for old persons, making the residents feel thankful simply of the fact that they were admitted to this dwelling.

Elimination of the height difference between Japanese-style rooms and rooms with wooden floors was relatively well accepted, with no one answering that they hoped this difference would be restored. Many of those answering that there was no need to eliminate the height difference were the type I elderly, whereas the type II elderly greatly appreciated it - likely because they have an acquaintance who suffered a serious injury by misjudging the slight height difference or have heard a similar story. The emergency buzzer and life rhythm sensor were also well approved (25 of 31 and 25 of 28 effective answers, respectively, claimed these devices brought about a sense of security).

Old persons are most concerned with emergencies. In various surveys, the function of communication and information systems was rated the highest. An inquiry on actual usage revealed, however, that these systems were seldom used. Their biggest effect seems to be providing psychological security. In essence, it would be better to use them regularly, for example, to use the lines to converse, partly to prevent mistakes from being made during an emergency. Unfortunately, present conditions show that there are few examples of such usage in any facility, including Shinju-en.

In contrast, the hatch opening in the veranda for emergency use, which was installed to secure safe egress, was not well evaluated. (Only 5 of 20 effective answers claim they were assured by it.) The flexible board used as a balcony partition, which can be broken in an emergency, and the hatch for emergency use were standard equipment for securing an escape route to a neighbor's quarters. Both were poorly evaluated, not only by residents but those concerned with the facility. Thus, it can be said they are basically useless for the elderly. Such equipment should be reconsidered by returning to the basic principle of ensuring safety during a fire. They should be replaced with more active measures, such as small sprinklers.

Tokumaru Keyaki-en
We received answers from 32 of the 40 Tokumaru Keyaki-en residents (2 of the 8 not answering were hospitalized at the time). Average age: 72 years. Classified by walking capability, 6 were type I, 20 type II-1, and 5 type II-2.

Overall trends among the residents were similar to those in Shinju-en, with subjective evaluation of physical conditions mostly resembling one another. However, the ratio of those holding onto a handrail or something like it when stepping up to an entrance or standing at the toilet was lower than in Shinju-en. No type II-1 resident claimed to use the handrail at the toilet. The frequency of night-time visits to the toilet was as high as at Shinju-en. Regarding the effectiveness of such details as handrails, the residents did not evaluate height or convenience, possibly because they were relatively healthy, as just described. Most answered that the handrails were appropriate. This result was because the residents have no basis for comparison. However, the very existence of such details seems to be highly appreciated.

In clear contrast to the handrails, many complaints were expressed on the height of the (high) suspended closet and clothesline pole, which have been long and frequently used. The type II-1 elderly proposed that height differences in the kitchen, dressing room, and toilet be eliminated. Three type II-1 residents pointed out that the height difference between Japanese-style rooms and rooms with wooden floors was a problem.

The emergency buzzer near the toilet and in the Japanese-style room and the rhythm sensor near the toilet were generally accepted. Many answers indicated that residents do not know how to use the escape ladder and escape passage or were doubtful that they can use them - similar to Shinju-en.

Examination of survey results
The following items were clarified after examining survey results.

The capability of daily living of old persons was relatively higher than generally thought for both old persons living with their families and those living alone. Consciousness to elderly specific design was revealed by the type II-2 elderly, who began to suffer a particular decline in capability. Height differences of various places was indicated as a trouble to old persons. The active requests made by the type II-2 elderly for improvements in detached houses surpassed those made by the non-elderly when old persons and non-elderly are compared. Specifically, handrail installation (and others) were requested.

However, data on building related domestic accidents revealed that with the type II-1 elderly, a conspicuous pattern of accidents befalling old persons emerged (frequent falls on floors resulting from slips and stumbles). Thus, differences in floor height should be eliminated for the type II-1 elderly, who precede the type II-2 elderly. This has already been done in elderly specific dwellings. The opinion that height differences should be maintained was seldom expressed, even by the type I elderly.

Residents do not seem to have any practical basis of objections (in contrast to the assumption of the designers) against lack of level differences. Eliminating the height difference was appreciated not only by the type II-2 elderly, who are actually inconvenienced by it, but also by the type II-1 elderly, who are still active. In fact, eliminating such differences would be no easy thing, owing to the difficulty in changing traditional way of construction; designers often try to avoid the issue, by arguing for the importance of maintaining traditional Japanese culture.

It is said that old persons have special attachment to Japanese-style rooms and will not give up sleeping on futons in tatami rooms. However, there were many examples when they switched to beds when space became available through renovation, moving, or when old persons are given their own rooms. Survey results indicate that it was a very serious problem when they cannot use beds, because the narrow space in which they must store their futons and lay them out causes them a lot of trouble. However, their desire for tatami continues, as seen by the fact that when they can choose a dwelling unit, they prefer ones with tatami rooms to those with Western-style rooms alone. This seems to be a great gap between what is good for safety and comfort versus what is preferred, at least as long as the aged persons think they are capable of managing it.

Design requirements to keep pace with the growing aging population - What are indispensable elements?

The above survey clarified that a basic requirement of dwellings for a growing elderly population would allow old persons to live without much inconvenience. Simply, the minimum requirements based on the examinations made thus far, would be: 1) eliminating height differences; and 2) providing handrails. These are two requirements (basically necessary and sufficient ones) for designing a dwelling which will allow an elderly person to move freely, without any high risk of injury. The following five points are fundamental characteristics for a dwelling to be a supportive

one.

- Safety: To what extent should safety be pursued?
- Health: How healthy an environment can a house be?
- Function: How convenient should a house be? (How does one distinguish convenience from laziness?)
- Comfort: How would a stimulus-free environment affect a human being?
- Economy: Who will eventually bear the cost?

Supposing that residents and those people on the waiting list are elderly, setting the level of each of the above factors would be a question of making hardware to cope with aging-related decline and changes in various capabilities. As everyone ages, however, such houses must provide for an increasing elderly population rather than for elderly people alone. In other words, dwellings must consider the aging not of individuals but of the society as a whole. We hope we have made this point clear, as it will be key to supplying dwelling units in which old persons can live by choice, rather than by force.

However, it is not yet clear what concrete measures should be taken in this direction as the related contents have not been fully clarified - nor has their expression. A rough classification of these contents is as follows.

- Requirements for which specifications can be established.
- Those for which performance requirements can be specified.
- Those for which the property requirement itself has no definite form and is restricted to conceptual descriptions.
- Those which depend on the actual situation and degree of freedom.

In order for the dwellings to be designed and built, specifications must be established. Presently, not enough requests are being transformed into practical requirements; many are conceptual requirements described only in performance terms. Also, as mentioned earlier, when specifications are established, they are often for people with disabilities or wheelchair users, and not old persons. The move must, however, be toward a broader, more universal direction.

As mentioned above, a Swedish long-term follow up study concluded that it is basically wrong to consider old persons just as frail, which would support our survey results of the real situation.

Conclusions

The design requirements for dwellings for an aging population mentioned thus far include eliminating the height difference and providing handrails. Most of the points described herein were specified in "Rehabilitation Manual of Dwellings for the Needs of the Aged", basic guidelines compiled by the Japan Housing Reform Center. It will be widely used in rehabilitation of existing dwellings for old persons.

Another is the "Design Specifications of the Publicly Operated Collective Rental Housing Construction", compiled and issued by the Ministry of Construction. It is now obligatory to comply with the specification in order to obtain central government subsidies for new construction by the local governments. It is also expected to be applied not only to the Housing and Urban Development Corporation Housing and Privately Supplied Housing Construction. Guidelines for

detached dwelling design are also expected to be issued in the near future. It is expected that some financial incentives will accompany this.

Acknowledgements

The surveys cited here were conducted as a cooperative research between BRI, Asahi Chemical Co., Ltd. Housing Department, and Sekisui House Co., Tokyo Design Department. The author would like to express his sincere thanks to Mr. I. Kumano, Mr. K. Ebara, and Mr. D. Kimura of Asahi Chemical Co., Mr. I. Nitta of Tokyo Gas Co., Mr. A. Ohta and Mr. Y. Tanaka of Sekisui House Co., and Mrs. K. Watanabe of the Tokyo Metropolitan Government Housing Bureau. The previous Japanese version of this paper appeared in "Research on Disasters" published by the Association of Fire Insurance Rates Studies.

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Adaptation of the XIX-Century historical Slowackiego Theatre in Krakow, Poland to the needs of disabled persons among the audience

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This paper discusses adaptations in the XIX century Slowackiego Theatre in Krakow, Poland. Adaptations here refer specifically to modifications to parts of the building so that the needs and interests of people with disabilities could better be served. The theater was scheduled to host the International Conference on Security and Cooperation in May 1991. The adaptations were a part of the 12 million USD major renovation efforts within the theater building.

Assignment

In the original design, convenient access to all parts of the theater building had not been a major consideration. The writer was commissioned by the Main Historical Monuments Revalorization Board in Krakow to perform the threefold task of designing appropriate adaptations in the building, providing a description of building details, and researching technical aids/equipment that were available on the market to meet the needs of people with disabilities.

As the theater was an historical building, the Specialist General of Historical Preservation in Krakow had full jurisdiction over renovations to the building. Teams of architects and engineers from Krakow University of Technology had been designated as the General Designers of renovations to the theater. The results of this particular research project, as stipulated by the appropriate authorities, were then to be submitted to and implemented by these teams.

Background note

In Poland, as in many other countries, the needs of disabled persons have never been given due consideration, neither in building construction legislation nor in local building codes. The writer therefore was in no position to either demand or to expect that all accessibility requirements by disabled persons to the theater be met. The research findings were completed and submitted. Despite the fact that not all recommendations were implemented as proposed, the end results were satisfactory. The Slowackiego theater was the first historical theater in Poland to accommodate such adaptations. This pioneering effort served to dispel any previous apprehensions that changes to historical buildings in service of people with disabilities would invariably lead to damage of the structure.

Assumptions/guidelines

At the inception of this research project, the following assumptions were made:

1) the theater should be adjusted to the needs of persons with various disabilities, namely persons with sensory and mobility impairments,

2) the minimal degree of accessibility included:

- making the entrance to the theater building accessible to wheelchair users,
- accessing the different levels of the main lobby by installing an electrical stair lift on one of the symmetrically located stairways,
- enabling disabled persons to have access to the auditorium by rearranging the rear row seats,
- providing access to the stage for speakers who use wheelchairs. (Towards that objective, part of the orchestra pit would have to be covered up so that, next to the stage, a mechanical-vertical lift could then be installed),
- rearranging some of the toilets on the main foyer level.

Due to the lack of local building codes mentioned earlier, the writer based her proposal on regulations in the United States. U.S. guidelines were applied to the needs of disabled theater-goers. The desired number of seats for wheelchair users, the needs of persons using canes and crutches, and of those with impaired hearing were taken into due consideration. Western European and American building codes are similar in many respects. Concerning alterations to historical buildings, the Uniform Federal Accessibility Standard (UFAS) states that:

Accessibility may be limited to considering only one floor being opened up (UFAS: item 4.1.7./2/d/).
At least one accessible entrance which is used by the public shall be provided (UFAS: item 4.1.7./2/b/).
The provision of accessibility to toilet facilities may be accomplished by installing one stall for each sex, with appropriate restroom and sink facilities on the accessible floor (UFAS: item 4.1.7.).
Ramps steeper than 1:12 may be used if their total length does not exceed 60 cm (UFAS: item 4.1.7./2/a/)

The project

Entrance to the building
There used to be two steps from the curbside leading to the main hall, with a combined height of 36 cm. Aggregating the effects of the number of steps, their location and parameters, it could readily be judged that they were hazardous to the non-disabled as well as dangerous to and non-negotiable by disabled persons. Eliminating these steps could make entering the building easier and safer for all. The view of Krakow Specialist General of Preservation, however, differed from that of the present writer's. His decision was based on the proportions of the building facade. He insisted that the theaters front elevation be left without alterations. Given that constraint the present writer was obliged to propose an alternative solution.

The alternative solution was that one of the entrances on the eastern side of the building be adjusted to the needs of people with disabilities. The selection of that particular entrance was based on three major considerations: the vicinity of the parking lot to the side entrance; more space for cars within the lot, and the feasibility of securing a convenient collection of the entrance area to the main lobby.

The difference in height between the sidewalk and the entrance lobby was 106 cm. In this alternate plan, the space which could be utilized to construct the outside portion of the ramp was 245 cm x 600 cm.

Two alternative solutions were proposed. The first possible solution was focused on the two-part inner ramp. The first steep part of it (1:8) with a total length of 60 cm and a level difference of 75 cm was to be different in color from its background. It was to be equipped with handrails on both

sides of the ramp. The steep beginning of the first part of the inner ramp was to be connected with the second by a platform 150 cm x 155 cm The difference in levels was to be 33.3 cm with a slope 1:12 (8.33 per cent) and a total length of the second flight of the ramp 400 cm.

The alternative approach centered on exterior adaptations. The exterior platform leading to the two-part ramp mentioned above was to be 150 cm x 150 cm at the entrance, with the slope also being 1:12 and with the length of the two flights of the ramp 385 cm and 540 cm. The major difference between the two proposed solutions is that the exterior ramp was slightly longer in the latter and therefore the entrance platform could be higher. On that account only one inner ramp would be needed.

The two proposed solutions were combined, made feasible by simply elevating the sidewalk level by 7 cm. Only one inner ramp was needed, while the shorter exterior ramp was maintained as described in the first alternative. At the time this is being written, the inner ramp still does not have the proposed handrails, though the promise has been made that the proposal will soon be fully implemented.

Connecting lobby levels

The main lobby consisted of two levels connected by symmetrically located staircases. The difference in height between the two levels was 120 cm with the angle of inclination being 30° (ca 8 per cent). That enabled the author to suggest the instalment of an electric stair lift which could be deployed for any inclination up to 8 per cent. The type of electric stair lift as recommended had to be procured from abroad as it was not being manufactured in Poland. A semi-automatic Austrian stair lift was selected which could serve the needs of wheelchair-using theater patrons. The selection criteria went beyond considerations such as ease with which the stair lift could be operated, its reliability in case of power failure and cost. The factor which weighed perhaps more heavily than any other was the fact that the chosen model would blend harmoniously into the richly decorated surroundings of this historical building.

The lift has not been purchased yet but, again, assurance has been given that financial negotiations are under way, that an agreement is imminent, and that the two levels of the lobby will be successfully connected no later than September 1991.

Main auditorium

In addition to both the balconies, much of the main level auditorium had to remain inaccessible, a result of technical as well as financial considerations. Having to install elevators accessing all 700 seats of the auditorium, only 334 of which are on the level accessible from the main lobby, would be technically inadvisable and financially prohibitive.

According to UFAS guidelines, the optimal number of places for wheelchair users for 334 accessible seats should be 8. For people using crutches, the ideal number of seats with more space immediately in front of them should be 4 (UFAS item 4.1.2./18/). In addition, a minimum of 4 seats should be located within a loop amplifying the sound for those with hearing impairments. The auditorium's original isles had been designed with a slope of approximately 10 per cent. That would be too steep to be independently negotiated by persons using wheelchairs. For that reason, and for safer and easier fire evacuation precautions, it was deemed more realistic to reserve spaces for disabled persons at the rear part of the hall. The last two rows were first to be replaced by folding-chairs attached to the wall. These seats could be occupied by non-disabled patrons if so needed. That arrangement would also leave enough space for six wheelchairs when the wall-seats need to be folded. According to this proposal, the space needed per wheelchair was 122 cm x 84 cm. The height of the wheelchair seat was to be 50 - 52 cm. Before renovation, the floor elevation of the two last row seats was +139 cm. Therefore, according to the proposal, the sight lines of persons seated in wheelchairs on the floor level (+128 cm) would equal the sight lines of

non-disabled patrons before (139 + 40 = 179; 128 + 52 = 180).

According to the author's design, the higher level of the rear platform for the wheelchair user was to be connected with the foyer level. That was to be accomplished by introducing two short side-ramps. The intent was to facilitate the maneuverability by the wheelchair user and to render the traffic in the area less congested. Unfortunately, the location of these ramps was altered by the investor and as a result it could become problematic if all six wheelchair users should need to leave the place at the same time. The situation could arise in case of a fire. The author therefore intends to discuss and to resolve this potential hazard with the theater authorities. Finally, the proposal to cover a part of the orchestra pit was intended to permit the provision of two or more extra wheelchairs close to the stage. Disabled theater-goers who need to use these spaces, however, would have to rely on non-disabled persons to hoist their wheelchairs in place. This assistance is needed due to the auditorium's slope (10 per cent), mentioned earlier. For historical reasons, the slope could not be readily altered.

Toilet facilities
As ample space had been assigned to toilet facilities in the original plan of the building, designing accessible toilets was not a difficult task. With relatively minor adaptations, these facilities would fulfil their function.

Theatre "Miniatura"
The entire Slowackiego Theatre complex consisted of two buildings: the main, larger one and a smaller structure designed originally to serve some auxiliary technical functions. After the war, the smaller building assumed a new role. It began to serve as the extension of the main theater, housing smaller-scale performances.

Due to the relatively spacious parameters of the structure's interior, facilities within the building were quite readily accessible. From the outside access to this ornate building required only the instalment of a two-part ramp. The ramp would conveniently connect the sidewalk's level with that of "Miniatura" theater's entrance.

Within the building itself, the instalment of a "unisex" type toilet, adjacent to the toilet complex used by performers, completed remodeling requirements for this theater "Miniatura".

Conclusions

The absence of mandatory building codes to accommodate the needs of disabled persons in Poland is an unfortunate oversight. Despite the best of intentions and expert knowledge on the part of designers, there are no effective means to provide fully satisfying services to disabled persons. When introducing adaptations to historical buildings, even centimeters at times factor significantly into decision-making processes. For instance, in this particular project, the importance of the handrails on both sides of the ramps could not be overemphasized. However, as an expert designer, with no supervisory authority, the author had to engage in extended discussions with the General Designer's office so that the proposed handrails to the "Miniatura" theater would be installed, and that the precautions in case of a fire in the main theater could be taken seriously.

The Polish National Committee for Standardization has finally decided to begin legislation projects on building codes, covering the needs of disabled persons. It is hoped that with the experience gained through this project in addition to the experience from other nations more appropriate building regulations concerning the interest of disabled persons will be forthcoming in Poland as

well.

Access legislation in the Czech Republic

Miloslav Maxa., Czechoslovak Building Centre Prague, Czech Republic

This report addresses the present state of the problem, to the author's knowledge. No other government documents are known to exist. The author is engaged in the removal of built environment barriers, providing material and product base for construction.

Basic documents

The only binding document on access legislation is Decree No. 53/1985 covering general technical requirements on usability and accessibility of structures by persons with disabilities. Other documents under study are the First Draft Regulation (CSN) on Structures for people with motor-disabilities (general typological requirements) and the First Draft Regulation (CSN) on Structures for people with optic-disabilities (general typological requirements). Both were elaborated by the State Research Institute for Typization na Bratislava, Drienova 34.

Regarding transport problems, the Institute recommends an extra regulation for road construction under the Federal Ministry of Transport. The elaboration of the First Draft Regulation was preceded by an analysis distributed to 71 respondents for their comments. 44 respondents answered the submitted draft. The following legislation was taken into account framing both regulations: the above-mentioned Decree No. 53/1985; German regulations DIN 18024 (2nd part); DIN 18025 (1st part) and Yugoslav and Hungarian regulations on usability of structures by disabled people.

Specific data

Access norms are based on both numerical data (measures, etc.) and performance and typological criteria. When these regulations are passed and become valid they will be binding for all participants in the construction process who will thus be obliged to comply with these regulations, i.e., everybody following these regulations becomes responsible that they are not violated. Building offices or institutions approving construction work should be authorized to control the legislation enforcement. The most effective mechanism for practical enforcement of these regulations is financial subsidy. As far as law suits against individuals for damages if these norms are violated, such a situation is possible but the question is, with what effect? The mentioned Draft Regulation is elaborated for persons with motor disabilities but does not cover cognitive disabilities.

The definition of the regulation includes access to the structure from the street, access within the structure and access to other facilities (e.g. toilets). Access does not depend on the size of the structure but, for example, on the number of people accommodated in a hotel, or the number of seats in a cinema/theater, etc.

Elevators are the subject of individual articles of the regulation (art. 36-43). The minimum dimensions are 110 cm x 140 cm. After the regulation becomes valid all structures covered by this regulation should be constructed accessibly. Existing structures should be made accessible, if it is constructionally possible, by remodelling, modernization, innovation etc. Where regulation cannot be enforced, the investor must apply for exception, presenting documentation proving that no other

solution is possible. In such a case the investor has to ensure accessibility by other means (with the help of attendants, etc.).

Draft Regulation on structures for people with physical disabilities is proposed to refer to the following constructions:

a) residential buildings
b) multi-family buildings with apartments designated exclusively for disabled people
c) public buildings especially for:

- administration and management
- shopping and boarding
- services and postal and telecommunication services
- physical training and recreation
- schools and culture
- health service and social care
- temporary accommodation, hotels, etc.

In the case of structures for people with visual impairments, this regulation is valid for the following structures:

a) residential buildings
b) multi-family buildings with apartments designated exclusively for people with visual impairments
c) public buildings especially for:

- administration and management
- services, and postal and telecommunication services
- physical training and recreation
- schools and culture
- health service and service care
- temporary accommodation.

The regulation does not refer to public environments except for access from the street. Information about the passing of all new norms (i.e., also of the above-mentioned) is distributed in a specialized periodical, "The Czechoslovak Standardization". Furthermore, we shall give public notice of this new regulation in our new publication to be issued together with the catalogue of products by the Czechoslovak Building Centre Prague in 1991. Czechoslovak state norms are not accompanied by examples of practice.

When passing access legislation, the interests of disabled and old persons should be represented by the Union of Disabled People in Bohemia and Slovakia and also by the respective Ministries, i.e., Health, Work, and Social Affairs. Consumers can be involved only when they are convinced that the norms are violated. In such a case they can contact their Member of Parliament (Deputy). The enforcement of access legislation was initiated by the Union of Disabled People, the pressure of individuals, and by the interest of governmental institutions. A great role in enforcing this legislation was played by the International Year of Disabled Persons in 1981.

I express great gratitude and thanks to Ing. arch. J. Zapletalova, CSc. from the State Research Institute for Typization in Bratislava for her contribution in preparation of both these norms.

Barriers in the built environment: The problems of barrier removal in the Czech Republic

Miloslav Maxa., Czechoslovak Building Centre Prague, Czech Republic

Foreword

Both organizational and expert activity depends on personal initiative and the interest of a small group of enthusiasts affiliated with the Association of Disabled People in Prague. But as it turned out from the experience, even this Association shows no interest in this sphere of activity. This painful statement is even more embarrassing by the fact that neither state authorities paid any attention to this problem other than to pass Decree Nr. 53/1985, the fulfilment of which it did not control in any way, and with a small subsidy to promote products and materials for constructions designated for persons who are disabled. This situation has not even changed since the revolution in November 1989.
I have been engaged in the Central Commission for Environment for Disabled People in the Czech Republic in Prague since its foundation (1986) and was the main expert in the sphere of building products for construction designated for persons with disabilities and thus I have gained a lot of true and objective experience

Activity of the Commission - UKZP ZP

This Commission was established on the basis of Decree Nr. 53/1985 under theformer Union of Disabled People in the Czech Republic. Today it is called the Association of Disabled People in the Czech Republic, represented by a range of volunteers - specialists not paid for their activity. Without any implementation instruments the Commission substitutes the activity falling under the competence of state which showed no activity in the past and does not seem to intend to show any even now. Staff responsible for this area at the respective Ministries do not know what such an activity represents and thus have no interest in arranging anything.
By the end of June, 1991, the Governmental Committee for Disabled People in the Czech Republic was established under the chairmanship of the Prime-Minister of the Czech Republic, Petr Pithart; perhaps there is hope that improvement will soon come.

Main tasks and objectives of the Commission

Legislation
The Commission is to enforce Decree Nr. 53/1985 at the stage of preparatory works and design solution of the construction. Starting from the construction up to the final approval, the control is not provided because of the lack of manpower. The Commission is also responsible for initiating legislative amendments to the existing legal regulations, enforcing of modifications of Czechoslovak standards and other building regulations of relevance to persons with disabilities.

Housing
The Commission is to enforce barrier-free housing construction for disabled people in different regions. This task includes cooperation with the respective authorities including such aspects as

apartment distribution, booking and usability. Consultancy activity is regularly provided in all regions in the presence of professional consultants giving their statements on individual projects. On the basis of these statements regional commissions for environment of disabled people should control the requirement of barrier-free construction. Barrier-free construction should be visibly marked by internationally agreed upon symbols for access.

Materials and products
During the construction phase the Commission is responsible for providing active help and cooperation in searching for the necessary products, identifying the producers of selected products and equipment such as lifting devices, furniture, fittings etc. These products are not tested.

Promotion and publicity
The Commission engages in arranging and organizing professional meetings (seminars, symposia, lectures, congresses etc.) on specific subjects. Publishing activity is limited by the means available, i.e., it consists in issuing of annotations, research studies, specialized articles and even in assistance in compiling the catalogue of products for barrier-free constructions and in issuing the specialized publication "Barrier-free construction" which is currently in press.
In conclusion, it is necessary to point out that the Central Commission is represented by the chairmen of regional commissions (former counties) and by other specialists, e.g. for products, transport, etc. Experience has shown that this Commission is of high professional level, represented mostly by university graduates. Existential problems of the Commission are considered to be temporary as we hope that Government and Ministries will become aware of these problems before they themselves need wheelchairs.

Creating a political alliance for anti-discrimination legislation in Germany

Ottmar Miles-Paul & Uwe Frehse, Interesseverein für selbstbestimmt Leben, ISL, Germany

Ottmar Miles-Paul

The main reason I became active in the German disability movement 6 years ago was to work on getting rid of discriminatory barriers which I, as a person with a visual impairment, am constantly confronted with. After spending one and a half years working with the Independent Living Movement in the USA, I began working with the German umbrella organization on Independent Living, the Interessenvertretung selbstbestimmt Leben in Deutschland (ISL). As a social worker I am also working at the Center for Independent Living in Kassel, the Verein zur Autonomie Behinderter (fab e. V.).

The reason I chose to talk about creating a political alliance for anti-discrimination legislation in Germany is that in order to overcome the many discriminatory barriers disabling us, we must create strong political alliances. This process is a crucial first step.

To provide you with an overview of our latest activities and strategies in Germany, we have divided this presentation into three parts. In the first part I will describe the problems and difficulties in German disability politics which we, with our alliance, are trying to overcome. Secondly, I will describe how we established our political alliance and what sort of work we do in it. In the third and last section of our talk, my colleague Uwe Frehse, who is the German representative of the European Network on Independent Living (ENIL), will describe a concrete

beginning toward creating a broad and powerful alliance for anti-discrimination legislation in Europe.

To begin, let me describe some problems with disability politics as it has been and, for the most part, still is in Germany. In Germany we have many disability organizations. The majority of these organizations are strongly dominated by parents of disabled people and other non-disabled people and by their norms of how disabled people should live and behave. These traditional organizations, which are usually led by non-disabled people, generally work for the "good" of people whom they do not even consult. Additionally, these groups are usually strictly divided according to the disabilities they represent, and sometimes even compete with each other.

In the mid-1970's disabled people began to criticize the way traditional organizations work and started to set up their own organizations, in which disabled people reserve leadership for themselves. Civil disobedience and demonstrations are important tools which these groups use to influence disability politics. The umbrella organization on Independent Living which I represent and mentioned earlier, ISL, grew out of this movement and combines the strategies of each group: we use both civil disobedience and political lobbying. These kinds of disability organizations in Germany have hardly cooperated with each other at all and sometimes even fought against each other.

In the mid-1980's, news of a strong, successful Independent Living Movement in the USA and a coinciding, effective anti-discrimination legislation spread throughout Germany. Several disabled people travelled there and have brought back confirmation of the philosophy of empowering disabled people and of the cross-disability, political approach. The creation of a network of Centers for Independent Living was one major result of this new political wave in disability.

Another major result was that a few progressive people within traditional organizations realized how important it is that disabled people determine their own politics themselves and that a strong coalition is necessary to pass strong anti-discrimination laws. The "Americans with Disabilities Act of 1990" gave the German disability movement a big push. One traditional organization for mobility-impaired people, for example, organized a seminar in 1990 on anti-discrimination legislation. It was out of this seminar that the German Coalition for anti-discrimination legislation was born in November of last year.

The 8 members of this coalition represent a wide range of disability organizations in Germany and have been working well together despite different approaches to disability politics. Our common desire to have strong anti-discrimination legislation passed in Germany and the fact that we all realized that without a broad coalition of disability organizations we would not achieve this goal, made cooperation with each other easier. No single organization, however powerful, would be able to get strong anti-discrimination legislation passed on its own.

Since the word discrimination itself is a fairly new term in German disability politics - most disabled people do not think of themselves as being discriminated against - spreading the word is essential at this stage of the Coalition's work.

One major tool which we use to promote our ideas is a quarterly newsletter called "Disabled in Action" which I edit and distribute through the Kassel CIL on behalf of the Coalition. "Disabled in Action" is designed to be small enough to be inserted into disability journals but substantial enough to be distributed in its own right.

The newsletter, which is already a supplement to six periodicals, reports on upcoming events, provides tips on resources for further information about anti-discrimination legislation and reports on discriminatory practices and on protests. It also serves as a networking tool by listing

organizations which support the demand for anti-discrimination legislation. Since its first appearance in April of this year, more than 40 organizations - some of them umbrella organizations with thousands of members - wrote us that they support our campaign.

Another activity which served to spread the word about discrimination against disabled people and remedies for it was a conference on anti-discrimination legislation organized by the German Independent Living umbrella organization ISL, which my colleague and I attended in Bremen, just before we rushed to this meeting here in Budapest.

Other effective publicity strategies which we use include public lectures and exhibitions. We have invited Ms. Marilyn Golden and other prominent disability activists to speak in various German cities. At a major international rehabilitation exhibition this fall the topic of the opening session, to be televised in the form of a talk show, will be anti-discrimination legislation. The talk show will, among other things, serve to publicize a petition which describes our demands and requests support for them and we hope that both many signatures and legislative action will follow.

Soon negotiations will begin with various government officials, including people in the Ministry of Justice and the Ministry of Social Affairs. And finally in order to bring this idea onto the very streets, to produce the broadest publicity possible, a Europe-wide protest day has been organized for next year which my colleague Uwe Frehse will discuss and in which you all will hopefully participate.

Mr. Uwe Frehse

The European Network on Independent Living, which true to its name has already developed a good and effective network of people and organizations dedicated to the self-determination of disabled people, has decided to hold a Europe-wide Protest Day for Equal Rights and against Discrimination of Disabled People on the 5th of May 1992, on Europe Day 1992. This Protest Day will consist of a great variety of activities, including information booths, lectures and visits to political representatives as well as demonstrations and blockades. One major purpose of the Protest Day is to strengthen the European disability movement by developing a European coalition for anti-discrimination legislation. The Protest Day will make discriminatory practices a public matter by mobilizing the press and bringing our demands into every living room.

The Protest Day will have one organization per country coordinating the activities and public relations in that country, and the overall, European coordination will take place in Kassel, Germany. Anyone interested in participating should contact Ottmar or me and we can give you more specific information. We also can provide you with more background information about the new American legislation, the Americans with Disabilities Act, ADA, in the U.S.

The creation of an accessible Europe, of a Europe without architectural or any kind of barrier for people of any disability, requires a strong coalition among all disability activists and independent living and other groups on disability. Cooperation is a must for success. Together we can achieve a Europe with equal rights for us all. Together we are strong and can do it.

Universal design and designer awareness: The constraints of architectural education

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Introduction

An ongoing research project at RGIT is investigating Contemporary Public Buildings and Disabled Peoples' Design Requirements.

The research is a three-tiered study comprising the following avenues of inquiry:

- a base-line survey by means of questionnaire to establish access needs and priorities, as expressed by a wide range of disabled people,
- a questionnaire survey of United Kingdom Schools of Architecture to review the curriculum content and the nature and extent of access awareness,
- a longitudinal empirical evaluation of both building design students' cognizance of barrier-free design and the effectiveness of a series of incremental educational techniques designed to familiarize students with the barrier-free design requirements of a 'broader average' of the population.

The two latter sections are particularly timely given the recent advances in the Building Standards Regulations and design guidelines within Britain which reflect a 'Universal Design' approach, in particular Published Document 6523:1989 (forming the basis for the revised British Standard Code of Practice: 5810) and British Standard 5588.

Indeed the signs are that the universal design philosophy, which marks a move away from the popular perception of disabled people as a special and separate group, will permeate all new developments in the field. The British Standards Institution (BSI) has embraced this approach and is operating a phased review and development of legislative initiatives which will eventually 'coordinate and harmonize' not only British design prescriptions but also European ones.

This paper draws on the foregoing research results, particularly with regard to architectural education and argues that, whilst such legislative measures serve as an important design tool, they are insufficient in themselves. Appropriate user-responsive design relies not only on compliance with the minimum design guidelines but on the designer having fully absorbed the principles of universal design into his/her design vocabulary. Furthermore, it is suggested that given the formative role which the vocational educational process plays in shaping awareness of user needs, it is also the most promising means of communicating and fostering a more holistic philosophy which may inform the design process from the initial conceptual spark through to the final detailed design.

Definitions of disability

Social policy has changed very rapidly over the past decade. The World Health Organization in particular, revised its definition of disability by specifying a differentiation between the terms 'Impairment', 'Disability' and 'Handicap', which were often used more or less interchangeably.

- Impairment: "any loss or abnormality of psychological or anatomical structure of functioning"
- Disability: "any restriction or lack (resulting from impairment) of ability to perform an

activity in the manner or within the range considered normal for a human being"
- Handicap: "a disadvantage for a given individual, resulting from an impairment or disability that limits or prevents the fulfilment of a role (depending on age, sex and social and cultural factors) for that individual"

The International Classification of Impairment, Disability and Handicap (ICIDH) has had important social implications for building design and development. The ICIDH has:

- helped standardize the long problematic measurement techniques used previously to assess numbers of disabled people.
- served to highlight the fact that people with disabilities are not a small and exceptional minority but form a significant proportion (16 per cent) of the British population, when used as a scale by the U.K. Office of Population Censuses & Surveys,
- contributed to the realization that the greatest amount of disability is caused not by 'stable conditions' as previously thought, but by 'progressive or fluctuating chronic conditions' such as lung disease, cardiac conditions, arthritis or the deterioration of old age,
- expanded away from the former clinically and causally derived categories to include social and environmental handicap,
- expanded away from the former bias towards physical as opposed to sensory or psychological impairments,
- helped establish a broader concept of disability, that is endemic to the human condition, based on a continuum which ranges from extreme health on the one hand to the terminally ill on the other, rather than a dichotomy between so-called ' normal able-bodied' and ' special disabled'.

Overall, this reappraisal, by embracing the consequences and not just the causes of disability, serves to clarify the role played by various factors in the process of integration, ranging from employment and the personal social services to the impact of the built environment. However, public attitudes change very slowly and are still largely out of step with the recent shift in emphasis towards a more community-based, less institutional, segregative approach to care.

Access legislation: Current and future developments

U.K. access requirements have recently been subject to a great deal of scrutiny and development. The principal driving forces behind this resurgence of interest in the field, are the changing definitions of disability and philosophies as regards how the built environment should perform for the broad cross-section of people in society.

'Universal design', 'design for the broader average', 'barrier-free design', 'macro design' and 'integrated design' are all terms used to describe an attitude which marks a move away from the 'separatist' approach to disabled users. The belief that 'special' groups of people require 'special' provision appended or added the whole, if and when resources permit, is a view which contrasts with the notion of design for all people. Accessible design supports those less able to adapt to the constraints of the built environment by building in design flexibility, integral to the fundamental design. It thereby accommodates a greater number of behavioral options. The following changes and proposals reflect this more holistic design approach:

U.K.
British Standard 5810:1979 Code of Practice for Access for the Disabled to Public Buildings is

currently being overhauled. Published Document 6523 : 1989 forms the draft basis for the new standard and emphasizes a move away from "the popular perception of disabled people as problem to a more balanced view of our population as a whole presenting a wide range of needs"

The revised BS 5810 will also support Approved Document Part M of the Building Regulations 1987 and act as a 'deemed to satisfy' document for Part T of the Building Standards (Scotland) Regulations 1990.

British Standard 5588 : Part 8 1988, although a separate code aimed at the evacuation requirements of disabled people, prescribes the provision, not of special and separate facilities, but an expansion of the normal parameters of design. That is, demarcated safety areas used by the public and employees must also be accessible to disabled people.

USA & Europe
British and European legislation has followed the American example. The recent implementation of the American Disabilities Act (ADA) 1990, will extend wide-ranging anti-discrimination protection to disabled people. In particular, providing for physical access to all new public premises, which must be "readily accessible and usable". The editorial of 'Architecture' assessed the impact of the ADA, "Accessibility features must now be considered as natural to buildings as indoor plumbing, air conditioning, and sprinkler systems, not as a resented checklist of requirements to be tacked on to a design."

The European Construction Products Directive (89/106/EEC) requires member states to introduce or refine their access legislation by the end of 1992, after which point each will gradually be brought into line to reasonably approximate with the submissions of the other 11 members. It is predicted that by the end of the 1990's all the provisions will be harmonized and enshrine the basic philosophy of barrier-free design.

The Dutch Central Coordinating Committee for the Promotion of Accessibility (CCPT) has published a European Manual for an Accessible Built Environment. With the aid of significant representation from member states on the advisory committee, and the International Standards Organization (ISO), the manual was devised to act as the key reference document, and basis for the development and co-ordination of local and national access legislation. The principal tenet underlining this set of guidelines is universal design or the "integrated approach" as described by Maarten van Dirtmarsch of CCPT, "The creation of an accessible built environment is therefore of primary concern. It is not just a struggle against threshold levels or narrow door openings, but a struggle against a certain attitude of mind or mentality."

Access needs and priorities of disabled people

The pace of change in access legislation in the past decade has greatly increased. However, will the implementation of these new measures alone be enough to ensure an accessible built environment for all? How well will public buildings perform their intended function? How effective will they be in meeting the design requirements of people with disabilities?

Research at RGIT is currently investigating these questions in an ongoing three year project. The aim of the first stage of the study was to establish the attitudes, needs and priorities of disabled people in terms of design. Notwithstanding the proliferation of local and national design guides, very little research has been carried out in this area. The guidelines are largely supported, not by primary source material but by BS 5810, which is currently under review, pending the urgent requirement for further up to date empirical data.

A large scale survey covering the wide geographical spread of Grampian region, including Aberdeen City (population circa 500,000) was undertaken. A postal questionnaire was distributed to 376 users representing a broad cross-section of disability types. The sample was drawn from the records of voluntary organizations, occupational therapy groups, housing associations and press and radio appeals.

The frame of reference was restricted to include people with physical and sensory impairments. Due to limited time and resources those with a mental/psychological/psychiatric disorder were excluded. The questionnaire was carefully devised and piloted to ensure that it could be understood by people with a wide range of communication skills.

The response rate was 43 per cent (representing 164 respondents). Assessment of the responses against comparable studies show sample characteristics consistent with national average statistics. The influence of the significant cultural shift, within the past decade, towards greater integration is well illustrated by the results. Comparison with earlier studies as shown in Table 1, (Goldsmith, 1968, Thomson, 1979),, particularly with regard to key services such as post offices and banks, show greatly increased usage, and suggest a desire on the part of disabled people to manage their own affairs wherever possible. This contrasts with the earlier tendency in the 1960's, as noted by Goldsmith, of the delegation of essential tasks to helpers. It should be noted that although the 1990 and 1979 samples comprised both ambulant and wheelchair users, all the 1968 group used wheelchairs. These figures are however, preliminary and when further analyzed should yield more accurate insights.

Table 1: Disabled people who had visited key building types at least once within the 12 months prior to the survey

	1968 %	1979 %	1990 %
Banks	4	20	64
Post Offices	13	50	63

The RGIT findings also indicate that although disabled people are becoming increasingly independent they are significantly frustrated by access difficulties, as Table 2 shows. Indeed of the respondents who visited Post offices in the previous year, a quarter reported access as being either "often difficult", or "impossible".

These figures were further compounded, when in response to the question "if access to the following public buildings was good how important would it be for you personally to use each?", 75 per cent noted against Post Offices either "important" or "very important". However, only 63 per cent actually visit Post Offices, which suggests that 12 per cent would like to but can't. The high degree of access difficulty posed by this building type would seem to indicate that the problems in certain cases are so severe as to cause some people to give up trying.

Table 2: Difficulty of access experienced by respondents, during the previous 12

months to given building types.

Building types	access impossible	often difficult	sometimes difficult	access OK	no experience	x
Post Offices %	11.3	13.8	14.4	37.1	23.2	5
Shops %	3.1	26.0	29.1	34.7	6.8	3
Banks %	8.8	16.9	16.3	32.0	25.7	5
Libraries %	6.5	4.5	7.8	32.6	48.3	11
Education centers %	4.1	5.5	9.0	16.6	64.5	20
Pubs/clubs %	3.3	15.2	23.1	33.7	24.5	13
Theater/Cinema %	6.5	15.1	16.4	25.0	36.8	12
Health center %	3.9	3.9	6.5	51.3	34.2	12
Hospital %	1.2	6.4	12.2	65.8	14.1	9
Sports center %	3.4	2.7	2.7	21.0	70.0	17
Local sports stadium %	3.4	1.3	3.4	13.1	78.6	19
Swimming pool %	7.3	4.0	9.3	23.3	56.0	14
Cafés %	2.6	14.9	32.7	29.2	20.7	10
Friend's houses %	5.6	25.6	26.8	35.6	6.2	4
Church %	5.0	10.1	13.9	36.7	34.1	6
Museum/Art gallery %	5.3	6.6	9.9	12.5	65.5	13
Public Parks %	2.6	3.2	12.4	12.5	24.8	11
Public toilets %	4.4	13.3	21.6	28.0	32.4	7

x = Missing value

The findings of the first stage of the survey illustrate a lack of congruence between the designer's perception of need and actual need as expressed by disabled people. These results are a sad reflection of the extent of restricted access, still much in evidence today. Although the vast proportion of public buildings came into existence prior to the implementation of access legislation,

further qualitative evidence from the RGIT study, suggests that far too often even buildings which have been designed to accommodate 'special' needs fail in their intended function.

A series of 10 follow-up interviews with a range of disabled people brought forth a great deal criticism of, amongst other things, 'disabled public toilet facilities'. Indeed the consensus is so overwhelming that local government officials in the area, now refer to the many complaints received over time, as 'the disabled loo syndrome'.

The foregoing evidence points to a tradition of architectural barriers, and the disabled person, although now visible within society, must confront the reality that designers, by dint of their heritage, may often be ill-equipped or reluctant to make provision for his or her needs. This may be a legacy of many contributory factors, which include:

- The marginalized status of disabled people in society, who are stigmatized and perceived of as a special group, with distinctive characteristics and separate needs from the 'able-bodied' public at large.
- The tradition of the Monumental in architecture, which reflected power, prestige and defensive strategy by using steps, stairs and slopes as devices to metaphorically 'elevate' status.
- The tradition of the Modern Movement in architecture, intended to cater for 'everyone' as opposed to an elite, sought a formula, comprising a set of user-need prescriptions which could be applied to any given design solution. The Corbusian 'Modular man' emerged as the ideal 'average' user, which promulgated the widespread misconception of the 'normal user' as young, non-disabled and male.
- A lack of collaborative research within architecture, which has failed to seek systematic feedback, contributing to the failure of building designers to grasp the heterogeneous make-up of society and to communicate effectively and directly with ordinary people. Instead a process of self-appraisal through general discussion with the professional network or the architectural press has substituted.
- The current design vocabulary applied by designers is largely drawn from often inappropriate models of 'excellent' rather than good examples of 'ordinary' architecture, which might better serve the every day requirements of the public.
- The perception by developers and designers that providing more than statutory minimum provision will increase the costs of the development for little or no return.

Designer awareness

The preceding analysis shows that a change of attitude on the part of building designers and building owners/developers is urgently required if universal design is to be successfully implemented. However, are improved design requirements sufficient in themselves to ensure that this happy state is brought about? That question can best be answered by raising some points. Firstly, with reference to the RGIT respondents, who cited many examples of public buildings which had been built to comply with Building Regulations but still proved, if not completely out of bounds, a hindrance to circulation. These included: a new library, accessed only by two sets of very heavy, spring-loaded glass doors, trapping not only wheelchairs but crutches and prams en route; and a city bar with a corridor too narrow for a wheelchair, prohibiting access to the well equipped unisex toilet.

It could be countered that in the case of the above examples, the design flaws were brought about by the, as yet, inadequate design guidelines or had escaped the notice of the local planning department. However, although the real cause may lie with all three factors, the building designer must accept a large share of responsibility if he/she is to retain his/her important role as

professional arbiter between the many interest groups involved in the design process.

"The architect-designer, among those individuals has the added responsibilities of coordinating all contributions and giving them spatial expression." This degree of control, expertise and creative integrity could be threatened or relinquished if the designer were to suspend judgement and follow a set of strictly prescriptive rules regardless of context. In short, design guidelines can best be described as tools, and applied as tools.

There is a parallel here with CAD, which has been received with some degree of ambivalence by designers, those tending towards the 'architecture as art' end of the spectrum perceiving it as a threat to their essential creativity, and those with a more technological bent, perceiving it as an ultimate replacement to the role of architects. This is not to undermine the very important instructive role of the guidelines. They are essential if a satisfactory standard of accessible design is to be maintained. However, they are most effective if used in conjunction with the informed interpretive abilities of the designer.

A common view shared by many architects is that access is a byword for ugly. They argue that it is a costly and unnecessary constraint, cluttering up clean pure spaces with hospital hardware, like grab-rails, stair/chair lifts and ramps. A number of recent public buildings in America are hardly exemplars of good design, due to unattractive features which have been tacked on to the main form, often as an afterthought. They do, however, serve as useful exemplars of how not to approach access, by attempting to comply with codes at a late stage in the design process.

Indeed, accessible design when applied by a practitioner cognizant of physical differences, far from presenting limitations, calls for the imaginative expansion of the traditional architectural vocabulary. Designers must be educated to adopt a more positive approach towards creating designs which facilitate or reflect the intentions of the user, and to respond to this challenge as a creative opportunity to bring about satisfactory design solutions. That is, solutions which demonstrate a high degree of congruence, or fit between the design and user.

Raising awareness of the full range of people's needs may best be achieved by many routes, including for example, disability organizations, the architectural press, academic research, professional associations, design prescriptions, planning departments, access panels, continuing professional development and architectural schools. However, given its formative role in establishing early concepts which shape the design process, the vocational educational training of designers is the most promising starting point by which to initiate a more user oriented philosophy into the profession.

In 1981, International Year of Disabled People, the then president of the Royal Institute of British Architects (RIBA), aware of the recommendation by the Silver Jubilee Access Committee that "Architectural and Design Schools give more emphasis to the problems of access in their professional training" stressed that this concern should be of fundamental importance to the architect and should be conveyed through training, not as a separate subject, but as an underlying philosophy applicable to "all circumstances."

Schools of architecture: Curriculum content

A decade ago, RGIT carried out a questionnaire survey of the 38 U.K. schools of architecture to review the curriculum content and the nature and extent of access awareness. 30 completed questionnaires were returned, representing a 79 per cent response rate. Given that all schools who failed to reply within 3 months were issued with a reminder questionnaire and later a phone call, it

may be reasonably assumed that the remaining 8 schools give little positive consideration to access issues.

The results show that only 8 schools have course documentation which specifically refers to access requirements of disabled people. Within this context, design project briefs were most likely to address access considerations. However, although one school did cover the area in a Design, Technology and Management course and another in a series of human studies lectures, it was the exception. Far more likely departments approached access through project work, along with egress and other functional criteria, as and when it was considered appropriate; i.e., when the design failed to meet legislative requirements, rather than as a focus. 50 per cent of schools tended towards this line of thinking.

Of the 14 schools who provide a preliminary briefing on access, all do so as part of an introduction to a related project, however, in only 3 schools, is this pursued at any length in the form of a lecture. Nonetheless, access promotion, although addressed in depth by few schools (expressed here in percentages), takes many varied and interesting forms which range from liaising with local welfare and access organizations (16 per cent), running access competitions (6 per cent), running an awareness raising series of events (6 per cent), simulation exercises (10 per cent), inviting disabled speakers and experts (20 per cent), to giving handouts on literature references and information sources (10 per cent).

The definition of disability normally adopted by schools served as an approximate measure of the degree of access awareness. A broad interpretation of disability, which departed from the common misconception of disabled people as comprising only wheelchair users, suggested a high level of knowledge, whereas a missing answer to this question, the contrary. Indeed, as many as 11 schools representing 36 per cent of respondents failed to answer. Of those who did, only 2 replies referred to wheelchair users alone whilst a further 6 added visual impairments to the latter category. The 11 remaining schools applied a more wide-ranging definition, 10 of which included aural impairments, 10 elderly people, 4 mental handicap and 4 psychological/psychiatric disorders. However, only 16 per cent, that is 5 schools, extended their categories sufficiently by including children, women with prams and the economically disadvantaged, to embrace the principle of access for all. This leaves 25 schools, and possibly the additional 8 non-respondents, holding the now dated separatist approach to disability.

A third of schools responded negatively to the question, "Within the past 5 years, have any students undertaken a project which specifically focused on the design needs of disabled people?" The remaining two-thirds carried out studies which tended to fall into 4 groups: project work - 14 schools; live projects - 8; dissertations - 5; and research, just 2 schools. A selection of some of the most interesting project descriptions, using real briefs, serve not only as stimulating examples of the consideration and solution of the problem of physical differences, but also to underline the fundamental importance of this goal.

- "A climbing frame and other structures designed and built by second year students for a local school for the mentally/physically handicapped."
- "Housing for disabled persons by a student diagnosed as having multiple sclerosis who, between ending part 1 and part 2, became wheelchair confined."
- "A polytechnic-wide consciousness-raising week of events followed by a design project based on the school of architecture building and its access."
- "A 3rd year option focusing on the refurbishing of the students' union for improved use by disabled students."
- "Non visual aesthetics for blind and partially sighted people"
- "Light for partially sighted people, the design of a wheelchair for the third world, a

hospice."

A large proportion (56 per cent) of architecture departments felt unable to address access issues adequately. Of these departments, 7 remarked that this was because greater staff awareness was required, whilst 4 and 5 schools respectively, stated that more specialist projects and more specialist lectures and exercises were needed. A further 4 commented that consideration of 'users' should be extended to all courses as a primary concern. However it was not necessarily the schools with the least knowledge of access, who identified a need for further course development. A number of the more active, recognizing the complexity of the subject, noted areas requiring further attention. Some schools, with little to no consideration of access, had no concept of the need to become more user-responsive and thus of the need to develop appropriate courses.

Overall the results of the study indicate a piecemeal, inconsistent approach country-wide. The degree of consideration ascribed to barrier-free design was largely discretionary and dependant either on the specialist interests of the department, one particular lecturer or even the existence of disabled students. One school observed, "We have two deaf students going through our course (2nd year and final year), this makes us more aware than we might be of special needs across the curriculum." Schools also tended to be complacent about access, believing it sufficient that the minimal design criteria were being met by students, thereby neglecting to increase knowledge and so, quality of provision.

Assessment of the disability awareness of architectural students

Stage 3 of the RGIT project methodology was formulated on the pioneering work of Raymond Lifchez, University of California, who found that in order for design students to fully assimilate and express the needs of disabled people in spatial terms they had to be directed towards a full understanding through a program of educational techniques. The RGIT study aimed to evaluate architecture students awareness of the needs of disabled people, and to test out the effectiveness of a series of educational techniques, in a largely typical U.K. educational context (as shown by Stage 2 in the previous section), with little experience of design provision for disabled people.

The sample group initially comprised all final year postgraduate diploma students. 5th year students were chosen since not only would their work and attitudes at this late stage reflect the almost completed effects of the architectural training course but also their work would more closely approximate that of architects in practice, thereby permitting a more reliable comparison. A program of three educational interventions influenced by the work undertaken by Lifchez, was devised. Each technique was designed to familiarize students increasingly with the needs of building users.

A workshop: video and lecture on principles of universal design.
Feedback plenary.

Simulation exercises: on-site use of wheelchairs, crutches, bandages.
Feedback plenary.

Site visit: guided tour by disabled person of local shopping center.
Feedback plenary.

The first section leads from the more theoretical, indirect understanding, engendered by the workshop, to the second section necessitating the direct physical participation of the students, through to the third section culminating in a meeting with a disabled person and the opportunity to gain a more rounded appreciation of user requirements. The longitudinal experiment ran for six months throughout the academic year 1990/91. 35 students were pre-tested at the end of October 1990, prior to the implementation of the educational program. At the beginning of May 1991, all the students sat the post-test. Both the pre-test and the post-test were administered blind, and in controlled conditions. In order to ensure that the real purpose of the test was concealed, students were not informed of the program until the pre-test was over. It was hoped that the five month time lapse between the end of the program and the post-test would also discourage any associations, whilst at the same time testing memory retention of the program.

The pre- and post-tests comprised an A3 plan of a 1967 Sports-Community center and a 1973 Leisure/Community center, respectively. Initially the same plan was to have been applied in both test situations, however given the success of the first test evidenced by the degree of thoughtful, considered responses by the students, it was decided that it would be a counter-productive exercise to force them to repeat the experience. Efforts were made to match the plans for equivalent function, size, date and access provision.

Each student was asked to examine the plan of the buildings carefully and to identify what she/he considered to be the 10 main functional problems of the building, i.e.; the ability of the building to perform its intended purpose as public leisure or sports/community center in the 1990's. It was further suggested that the student write his/her answers down first, comment on them, and then rank them in order of importance. At the outset of the experiment, students were randomly divided into 4 groups. Groups 1, 2 and 3 were exposed to Section A only, Groups 2 and 3 to Sections A and B and group 3 to Sections A, B and C. Thus only Group 3 experienced all sections and Group 4 none by acting as a control. However, there was such a positive response on the part of the students to the simulation exercise, that all the students, who had been at the first technique, with the exception of three students, attended this section. Group 3 was therefore reduced to only 3 students. Seven students, for various reasons could not be included in the results; students who for example, were present at the pre-test but not the post-test or vice versa.

Group 1: 10 students = Section A, B and C
Group 2: 8 students = Section A and B
Group 3: 3 students = Section A
Group 4: 11 students = Control

The test forms were coded for the number and type of user considerations recorded - including physically disabled people, the elderly, children, families and the situationally disabled. Rating:

1 = General comments about access and circulation,
2 = Comments about disabled toilets, elevators, ramps etc,
3 = More subtle or detailed observations about provision in terms of access to swimming pool, changing facilities, spectator balcony etc.

The scores were based on the rank (1-10) of importance assigned by the student to the consideration, these were then subtracted from 11, and multiplied by the sum of the rating. A high score equating with a high degree of awareness. Comparison of the post-scores of the treated and control group using the Mann-Whitney significance test indicate a highly significant increase in awareness at 0.02 per cent on the part of the treated group. The pre-scores of the treated and control groups were also checked for any disparity, however, there was no significant difference.

Furthermore, the increase in the scores between the treated and the control group illustrated a significant increase of 0.04 per cent on the part of the treated group.

These results clearly demonstrate the effectiveness of the program in sensitizing students to a wider appreciation of user requirements. Figure 3 shows an awareness increase within the 3 treated groups. However, it also reveals correspondent growth within the control group. The possibility of the control group becoming informed via an informal network was anticipated at the outset of the experiment, given the close community of the year group. However, the decision was made to continue, as sampling all the students from one year was a way of ensuring that all had the same educational experiences. The 'information leak' was also viewed as an encouraging and positive by-product of the program.

The Figure shows that those students who had undertaken only two and not three techniques demonstrate the highest degree of awareness. Awareness levels tend to fall away after the third technique. Interestingly, analysis of the responses revealed that Group 1 students tended to be more general and less specific about points pertaining to access provision. One student, clearly knowledgeable about access, commented, "Access to the pool and theater is awful". However, in the section of the form for rough notes, he jotted, "stage area inaccessible for wheelchair users", this subtle observation could not be coded. It may be that once students attain a certain level of knowledge, they become more confident in their judgement and feel less of a need to justify their responses, the implicit message being 'of course access is bad, its much too complex an issue to go into here'. Thus it may be that the testing procedure was not sensitive enough to record a change in awareness at such a high level.

Conclusions

The survey of the access needs of disabled people indicates that, over the past decade, there has been a significant cultural shift towards their greater integration into the community. However, the design of key buildings has not kept pace with the changing demands and requirements of this group of users. Buildings such as post offices and banks show greatly increased usage due to the desire of disabled people to manage their own affairs. Unfortunately, they are seriously frustrated by their inability to gain ready access to almost all public buildings.

The survey results clearly indicate that most public buildings in the U.K., even buildings designed to conform to current design prescriptions, fail to meet the access needs of a significant proportion of the population. There is a lack of congruence between the designer's perception of need and actual need as expressed by disabled people. It is therefore obvious that there exists a failure to communicate the fundamental needs into functional designs, due essentially to a lack of awareness and responsiveness by designers.

Lack of design awareness may be a reflection of deficiencies in the education of designers. This study shows that of the 38 Schools of Architecture in the U.K., only eight have course documentation which specifically refer to the access requirements of disabled people. Overall, the approach adopted is piecemeal, inconsistent and largely discretionary. Until such time that the syllabus content within architectural education incorporates universal design as a requirement, there will remain a lack of real understanding of the concept, with a continuing functional failure of public buildings in particular.

A study of the access awareness final year (diploma) students suggests a very low appreciation of the needs of disabled people by these senior students, all of whom have experience in practice. Whilst a relatively simple and very short exposure of students to a controlled learning situation did

significantly increase their level of awareness, the theme of user accommodation should be supported not only by specialist projects but by a philosophy permeated through every course in the curriculum. However, further research is required to determine the longer term impact and explore further educational methods by which this objective may be achieved.

The results highlight the urgent need for building design education to address and satisfy in design terms the changing expectations of a more vociferous public and stringent body of legislation. Just as it became incumbent upon design schools to adopt a 'greener' more energy conscious approach within the curriculum so it is now with 'universal design'.

Anti-discrimination legislation as a basis for barrier-free design: How could the Americans with Disabilities Act be adapted for the U.K.?

Pauline Nee, London Borough Islington Architects Dept., United Kingdom

My experience is as a designer for a local authority in London and before that as a community worker. In autumn 1989 I spent three months in the USA looking at design for people with disabilities in that country. I am non-disabled myself so I do not speak on behalf of any disability group. I shall confine my presentation to the areas with which I am familiar and examine the relevance of legislation in producing accessible buildings. To summarize my position I feel that we in Britain can learn much from the U.S. experience. However I feel it would be wrong to confine this to an examination of their legislation. This positive legislation is a result of and response to the strong disability lobby and a developing philosophy on rights of access.

What I learnt in the U.S.

My stay in the U.S. proved to me that Americans are way ahead of the British in creating a barrier-free environment. Commentators on the contrast between the two countries have put this down to the differing political and cultural traditions. The importance of the individual and concepts of self-help are very much part of the American dream. This has lead to a demand by people with disabilities that they lead independent lives. Eliminating artificial barriers has always been a foremost demand. In Britain the attitude is different and provision for disabled persons is too often regarded as a charitable dispensation rather than an inalienable right. The story of bar owners who display 'Guide-dogs for the Blind' collection boxes while not allowing guide dogs in their pubs reflects a not untypical attitude.

The U.S. did not always have this positive attitude. During the last century some states had passed 'ugly laws' barring disabled people from public places on the basis that their presence was offensive and posed undue legal liabilities. By contrast, Britain took a positive approach, passing the Disabled Persons Employment Act at the end of World War II, to ensure troops of employment on their return from overseas. This act however was never seriously implemented. In 1970 and 1981 other acts were passed but as these encouraged rather than demanded barrier-free design, they had no significant impact on accessibility in the U.K. It was not until 1985 that mandatory legislation was incorporated into the Building Regulations and this is minimal in scope.

Since the 1960s the U.S., by comparison, has produced a significant and extensive body of legislation which has had a very real impact on the lives of people with disabilities. This legislation

has been backed up with extensive powers of enforcement and monitoring. In true American fashion, it has also lead to successful litigation. When I was in San Francisco a student at the University of California, Berkeley was awarded over £250,000 because she could not enter a newly renovated restaurant.

The disability lobby

I came away from the States convinced that we could learn important lessons from the disability lobby. Action which had lead to success included high profile campaigns; direct action; intensive networking across the country, incorporating independent living centers, pensioners' groups, enforcement agencies, architectural practices; and perhaps most importantly, leadership of the movement by people with disabilities.

We can learn from their philosophical and their pragmatic approach, the latter being they do not want separate facilities as these will not be attained or repaired if they serve a small proportion of the population.

The effect of legislation

Not least we can learn from American mistakes and make sure that we avoid them. It has a bearing on the subject matter of this seminar that many of the mistakes are related to the role of legislation. Legislation has created many of its own problems:

- Those agitating for legislation had to compromise with other vested interests so standards adopted by statute are invariably minimum standards.
- Designers have adopted these minimum standards and designed down to them.
- Those minimum standards have become a textbook for future generations of architects.

In essence, legislation falls far short of perfection if it does not win the hearts and minds of designers. If designers are not convinced of the need for access and feel their design is being compromised it will result in half-hearted accessibility. I empathized with the director of the Massachusetts Architectural Access Board who claimed, at a public meeting I attended, that architects had developed punk designs in order to make access an unacceptable aspiration. I saw very many ugly ramps, probably installed resentfully, during my stay in the U.S.

Legislation can also mean expensive - designing special features for a minority group. In U.S. trade literature, products complying with the standards are highlighted with the access symbol. I was told by many designers that the symbol signifies to them expensive and unattractive.

Universal design

So we can learn from U.S. mistakes but we can also learn from their changing philosophy and adopt the concept of 'universal design'. The development of language reflects the changing needs and aspirations of society. When the disability lobby got under way in the 1960s, it demanded 'design for people with disabilities'. In the 1970s the demand changed to 'a barrier-free environment' to reflect the notion that people were as handicapped by the built environment as by their individual disability.

Today the American disability lobby uses the term 'universal design' to reflect the notion that it is possible to design an environment which benefits a whole society rather than designing for a proportion of the population and adapting this with special features to cope with the physical limitations of the rest.

Universal design stresses that most people will at one time or another benefit from accessible design - children, parents with baby strollers, people recovering from an accident or anyone who is carrying a heavy bag, and of course the family, friends and associates of anyone with a disability. Following this philosophy one can think of designing for people with disabilities as an opportunity, not a restriction on creativity.

To conclude, as a designer, I think we need to go beyond legislation in creating an accessible environment. I am however aware that there is a growing demand from disability groups, trade unionists and others to pass strong anti-discrimination legislation and I would support the notion, based on our experience in Britain, that encouragement of good practice is not sufficient. In Britain we already have sex and race equality legislation enforced by the Equal Opportunities Commission and the Commission for Racial Equality. These have had some limited success. I believe that if we are to go along this path for people with disabilities, we can learn much from examining the extent and depth of American legislation and enforcement procedures. the detailed requirements encompassed in the ADA, as outlined by Marilyn Golden, would reflect a huge step forward in accessible provision.

Accessibility legislation in Byelorussia and the Byelorussian Society of the Disabled

Yuri Novikov, Minsk, Byelorussia

Founded in 1988, one of the main goals of the Byelorussian Society of the Handicapped has been to solve the problem of accessibility and to provide conditions for free movement of persons with disabilities and especially those who are using wheelchairs.

It is expected that one of the next sessions of the Byelorussian Parliament will adopt a draft law on social protection of disabled persons in Byelorussia. It will be a legislative provision of the steps aimed at elimination of social and physical barriers, preventing disabled persons from full participation. It will be aimed at the creation of environment and integration of disabled persons in public life as well.

In 1990 the Byelorussian Society of the Handicapped participated in developing new building requirements that were adopted by the Byelorussian State Committee on Construction. According to these norms it is foreseen that planning and designing of new settlements and reconstructing of already existing urban and rural settlements should be done regarding the provision of conditions for labor, educative and leisure activities of disabled persons, particularly those using wheelchairs.

In the first stage of solving this problem, the main accent will be on construction and reconstruction of separate, fully accessible housing complexes which will be inhabited by disabled persons but with maximum ability for them to use all public institutions, service and cultural facilities in the vicinity. Later on it is expected to expand this environment in the scale of the community and the whole city.

Attention should be paid to technical aids, allowing the disabled person the possibility to leave his apartment or house and visit public facilities. Moving in the streets and access to the public transport is a serious problem for disabled persons. That is why, according to the Construction Norms, all entrances to passage tunnels or bridges, or subway stations must be equipped with special paths, ramps or elevators. While planning new housing complexes, building organizations should consider accessible recreation and leisure areas, such as sports grounds.

Public buildings must be planned for people with disabilities as users and employees. Public buildings with more than one story must have elevators accessible to disabled people. Theaters, cinemas, concert-halls should have places for wheelchair users in the first or last row as well as entrances with elevators or ramps.

On the whole we may say that some sort of legislation on accessibility exists in Byelorussia but we can hardly say that this is solved. In fact, it is only the beginning.

Towards European requirements and guidelines for an accessible built environment: An analysis of the "European Manual" from the Nordic experience.

Hans Örnhall, Boverket, Sweden

Background

Since the beginning of the 1970s, the Nordic countries (Denmark, Finland, Iceland, Norway and Sweden) have been working together on guidelines for building regulations for accessibility. These guidelines state the functional requirements for accessible building. All buildings open to the public must be fully accessible, while working places and dwellings can have a standard of accessibility in accordance with the rules of the individual country. Before this meeting, representatives of Finland, Norway and Sweden have met to discuss the "European Manual".

The most important factor to be noticed is that our populations are growing older and becoming gradually more disabled in the environment. According to figures from OECD (Organization for Economic Cooperation and Development), Luxembourg and Sweden presently have the largest share of old people. As for the Swedish experience, at least 90 per cent of the elderly live in their own dwellings and take care of themselves with the assistance of, for example, municipal home help services.

Another factor to be observed is that, as in other European countries, we are building only new dwellings in a scale corresponding to about 1 per cent of the existing housing stock. As a result of this we should also discuss the question of guidelines or a manual for rebuilding in order to get an accessible society.

Critical remarks

To begin with we have the general point of view that, with the exception of impaired mobility, all disabilities have been too briefly described and dealt with in the manual. Impaired sight and impaired hearing are some examples. Another one is the allergy problem, which must not be

forgotten. We have especially noticed that the problems with allergy are growing in a welfare state.

There are also regional differences depending on the climate that must be taken into consideration. For example we are of the opinion that all slopes from 1:10 and steeper, when covered with ice or snow, are dangerous, even if they are short.

Before getting into details we would like to emphasize the important principle that future adaptation must be as easy as possible, which has not been taken into consideration in the guidelines for bathrooms. As for our experiences, guidelines should not contain design solutions.

The following aspects were mentioned in the Nordic discussions regarding some details in the manual:

- too many dangerous and doubtful solutions for stairs and ramps
- details about contrast and relief are missing
- space for stretchers are not shown
- unclear design of platform lifts
- the problem of the power needed for opening a door should be better explained
- revolving doors must be completed with accessible doors
- unrealistic measurement (1.3 m) for staircases in ordinary housing
- every accessible toilet must be equipped with a wash basin
- very local design of kitchens, bathrooms and toilets

Conclusion

Our opinion is that the question of accessibility inside Europe or inside the borders of the EC can not be solved through authorized handbooks or guidelines. We propose that an Interpretative Document (ID) related to the Construction Products Directive (CPD) and the Public Works Directive should be prepared by the EC. This has been done in the other parts of the building and planning area. If the Document follows the directives, it shall specify the essential requirements in one part and the characteristics of products, which can be exported, in a second part.

Moreover, I would like to mention that ECE has described the aspects of accessibility in the compendium "Model provisions for building regulations". In this compendium it is emphasized that the responsible authorities are to stipulate what kind of buildings must be accessible.

Finally, we would like to express that in the manual there is good information, especially in Part A. On the other hand, part B seems to be a result of several compromises. The manual is one more in the row of informative handbooks for architects and planners. However, if we intend to get a breakthrough for an accessible society, such a document must be short and clear. As mentioned above, it should be produced directly within EC. Suggested title "Accessibility in Use" (to be compared with "Safety in Use" TC4/014). A new EC legislation must also be creatively expressed in order to give possibilities to achieve a higher standard of accessibility today as well as in the future.

Creating accessibility in developing countries

Paul Parakattel, Kerala Rehab Institute for the Physically Affected, India

"Accessibility" has become a vital theme of discussion in the developed countries. It is becoming

an important issue in the developing countries too. Considerations on accessibility creation in developing countries has to be based on certain issues that are prevalent in these countries. Important among them are:

- economic backwardness
- false conceptions by society about disability and disabled persons
- less initiative on the part of government and voluntary agencies
- lack of organized movement of disabled persons
- over-population
- absence of accessibility legislation

The above-mentioned factors cause obstacles and restrictions for creating accessibility in developing countries. Therefore, attempts should be made to deal with these issues along with the program of creating accessibility in the built environment.

Disabled persons in a developing country also have to approach all places, public buildings, and be able to enter all public buildings and make use of all public facilities and environments. Such a need is more intense in the developing countries since no adequate public assistance is available for the daily living of persons with disabilities.

Developing countries face several other cardinal issues more vital than the creation of accessibility for disabled persons. How can you think of accessibility creation where you do not have enough roads, where the existing roads do not have footpaths? How can accessibility be an important theme in a country where around half of the population live under the poverty line? Accessibility may not be an important issue when you do not have wheelchairs and mobility is restricted even at home. Satisfaction of basic needs such as food, shelter and clothing are still to be achieved in our countries. But in spite of all that, accessibility is of manifold importance to us.

Accessibility creation in a developing country has to take the following points into consideration:

- cost effectiveness,
- use of locally available resources,
- correspond to the technical aids used,
- depend on local living conditions,
- style of the building,
- customs of the land,
- lessons from the developed countries.

Creating accessibility in developing countries has found new dimensions as a result of our research and study. Community Based Rehabilitation has become the rehabilitation strategy in the developed countries today. Deinstitutionalization is repeatedly demanded. This approach is aimed at the realization of the goals of "full participation" of persons with disabilities in social life and development, and of "equality". In developing countries, rehabilitation programs for disabled persons are new. But we have opted directly for the community-based rehabilitation approach for two reasons:

Firstly, we had the opportunity to learn from the West that community-based and family-based rehabilitation is the most ideal rehabilitation approach and we should not encourage institutionalization. If we opt for institutionalized rehabilitation programs we will be committing again the mistakes made by Western countries.

Secondly, institutionalization demands more financial investment and we cannot afford to invest that amount of money for rehabilitation programs. Therefore, we have already chosen the community-based rehabilitation approach. This approach has in turn helped in the creation of accessibility, which can be illustrated.

CBR has created awareness in the community regarding the cause of the people with disabilities. The activities that are being organized in the villages cause the creation of an accessible environment. In this approach a child with a disability stays at home where his/her presence urges the parents to make the home accessible for the child. The children with disabilities are taken to school and the constant presence of disabled students in school compels the authorities to create accessibility in the school. When people with disabilities are brought to the hospital, to the church, to the theater, etc. the concerned authorities will realize that these people should be provided with accessible environment. Thus we find that the CBR leads obviously to the creation of accessibility through the conscientiousness of the public.

More than 80 per cent of the people with disabilities in developing countries live in remote villages. Therefore, creation of accessibility in the rural areas of the developing countries is of prime importance.

Areas of adaptation

- transportation systems; buses, bus stops, trains
- pedestrian routes
- footpaths and roads
- entrance to the buildings
- doorways
- ramps
- staircases and steps
- handrails/ropes
- windows
- elevators
- sanitary controls
- electric controls
- floor surfaces
- bathroom and toilet
- kitchen area
- bed/cot/mat
- washing area

Models of accessibility creation

No single access legislation has been enacted in India. But certain general regulations have been made for physically disabled persons. For example, two seats are reserved on buses for persons with disabilities. Other regulations include: concession for travel; job reservation; special employment exchange; pension for disabled persons; scholarship scheme for disabled students; and seat reservation in universities.

In developing countries locally available resources should be used for cost effectivity. Villagers should try to create better roads from the present rough, rocky, sandy roads. Shopkeepers could be asked to build ramps to enter their shops with the offer to purchase articles from them. Ramps with

gentle slopes could be made of wood, dirt or rocks. Home adaptation should be made depending on age and the type and severity of disability. Hand rails may be fixed to walls and furniture, straw mats or rugs may be spread on the floor for the crawling disabled, floors should be smooth and firm, doorways should be extra wide, lavatories should be big enough for wheelchair users to turn around. These are all examples of creating accessibility for persons with disabilities.

I, myself, am operating community-based rehabilitation projects in 12 villages. We are trying to create accessibility in our project areas. You may be surprised to hear when I say that we have constructed steps to create accessibility. In our attempt to adapt the village school where our children with disabilities study, we had to construct steps along the side of the school building so that the disabled children could get out of the van and easily into the classrooms. For the sake of convenience, the children with disabilities are in the classes near to the steps constructed. They are provided with suitable seats in the classrooms. Toilet facilities are outside the school building and as a part of our adaptation, we constructed a new toilet adjacent to the classrooms for easy accessibility. It is our goal to make accessible all kindergartens, schools, and training centers where we are integrating the disabled children of our project areas.

One of the main problems for us to construct buildings without steps is the height of the basement of our buildings. We have heavy rains for more than five months of the year and the large amount of water stagnates around the building creating dampness in the walls of the building. Because of this problem, our buildings have higher basements. We asked our engineers to find a solution for this problem. They constructed a drainage system around the building so that the water could flow away, thus the dampness of the walls could be avoided. Another solution to the same problem is to give a damp-proof course for the basement, but this solution was found to be too costly.

Importance of accessibility legislation

Attempts to create accessibility in developing countries has to be supported by adequate legislation. In several developing countries no legislation regarding accessibility exists. Therefore, it is the prime duty of the governments to create necessary legislation to achieve accessibility. Voluntary organizations of people with disabilities and those for disabled persons, as well as other welfare organizations should take the initiative and mobilize public opinion to press the government authorities to enact legislation that would enforce and fund legally binding standards and regulations to improve accessibility for people with disabilities. They should make concrete suggestions and recommendations in this direction.

I have formed a Forum for Disabled Persons, including 63 institutions from different parts of our state. We hope to exercise pressure on the civil authorities so that adequate legislation would be enacted for accessibility creation and for other rehabilitation programs for persons with disabilities.

Creating and maintaining access to housing: Implementing access at the local level

Walter Park, Independent Housing Services, San Francisco, USA

This paper discusses some of the issues involved in creating accessible housing at the local level, a brief description of one advocacy agency, the interaction of national and local policies, practical problems in creating access, and concludes with a brief review of the U.S. Fair Housing

Amendments Act of 1988.

Independent Housing Services, Incorporated (IHSI) was founded in 1981, the International Year of Disabled Persons, to promote the availability of accessible housing for people with disabilities. IHSI provides a number of direct services locally to people with disabilities, seniors, and other people at high risk of homelessness. In order to succeed in these local goals, it must work with others at the state and national levels.

During its ten-year existence, IHSI staff have grown from three to ten. There have been two major changes in target population: first, we deliberately expanded the population to include any low-income household at high risk of homelessness. Secondly, clients with disabilities began to include a large, new group: people with AIDS, or who are HIV+, who have urgent needs. Independent Housing Services is incorporated as a non-profit organization, which allows it to receive tax-free grants from the government, private foundations, and individuals.

IHSI has received funding from the local Mayor's Office of Housing, the local Commission on Aging, the State Department of Housing, the U.S. Department of Housing and Urban Affairs (HUD), many foundations, and charitable contributions. In addition, the agency raises some money through professional fee work for developers and designers.

Needs

Independent Housing Services has deliberately chosen a multi-faceted approach to creating and maintaining housing opportunities. At a conference of people with disabilities which we sponsored with ACCESS California in Oakland (whose former director is conference participant Marilyn Golden), we asked attendees to rank the greatest barriers to achieving independent living situations in appropriate housing. The participants identified the three biggest problems as: lack of architectural access, discrimination, and affordability. However, the participants ranked them in the reverse order:

- affordability is paramount
- discrimination is the second obstacle
- architectural access is the third concern.

Independent Housing Services' program attacks all three problems. Its activities include:

Direct housing counseling/housing relocation services to low income clients. Many IHSI clients are at high risk of becoming homeless. They need to move into accessible or affordable housing, or need assistance in remaining in their current housing. San Francisco is a city which has been greatly 'gentrified' in the last fifteen years. When people who have lived in one place for many years are forced to move, they may suddenly face homelessness because they cannot afford housing comparable to the place they are leaving. In a city of 700,000, IHSI saw over 2300 housing counseling clients in 1990. Thousands more needed this service.

Advocacy and mediation with building owners and managers, government bureaucracies, and other agencies. Many people are not aware of their rights, do not have good documentation, etc. In some cases, we are able to enlist the assistance of low-cost attorneys to prevent an eviction or obtain an income benefit.

Home modifications for accessibility. Many local independent living centers operate programs to make minor modifications of existing housing to improve access. The IHSI program serves about 50 people a year to build small ramps, widen doorways, install grabbers, etc. A major problem with this program is that although homeowners often have adequate savings or the capacity to borrow to pay for these modifications, tenants are often dependent on scarce government grants. Many of our renter cases are not successfully concluded because there is no money to pay.

Design review/redesign. Under contract to the Mayor's office, IHSI reviews over 2,000 units of new construction or substantial rehabilitation projects each year. It might be assumed that professional architects would be able to implement accessibility standards without assistance, but that is not the case. Many are not aware of access requirements, others use a cookbook approach to accessible design that does not create usable spaces. These design review efforts lead to our next activity:

Architectural training and education. IHSI has conducted scores of training seminars and produced interpretive and educational materials for developers, designers, city planners, builders, financiers, and members of the disability and senior communities.

Architectural schools have not adequately presented accessibility concerns. By and large, architectural schools do not see it as their duty to teach the "code" or "standards". Thus access standards may never be presented. Further, principles of "universal design", or a "client-centered" design process are often not a part of the professional curriculum. Many architects come to us in an entirely defensive posture: "What do I have to do [for access] to stay out of trouble, to avoid litigation?" This is hardly a positive way to begin a design effort.

IHSI prefers to present access as a design problem to be solved, a challenge to the creativity of the designer. It is important to see that providing accessible design broadens the usefulness of a project, and widens its potential market. For government, it also reduces the "matching" costs of trying to link people with disabilities with a tiny fraction of existing units that now provide an accessible path of travel.

Affordability

According to a California survey of people with disabilities conducted in 1979, sixty-five per cent do not hold full-time jobs. Most are living on public benefits which, in California, are below the poverty level. For people with disabilities, affordability is paramount.

Discrimination

Discrimination is epidemic for people with disabilities. Old misconceptions are firmly in place. The stigma of disability remains a cold reality. A few years ago, a housing counselor at Independent Housing Services who was a deaf woman was looking for an apartment. Although profoundly deaf since adolescent, she could lip-read very well, and it is possible to hold a lengthy conversation with her and not realize she is deaf. After a long search for a new apartment, she found one she liked and could afford. She met with the landlord, they agreed on the details of the lease, and she said she would return the next morning with a check for the deposit, and to pick up the keys. The next day she told the manager that she was deaf. Suddenly, the apartment, "had been rented". The

landlord expressed his fear that in a fire (because the building had no visual fire alarm) she might be injured and become an insurance hazard. In fact, it is illegal in California for insurance companies to charge more for insurance based on disability. Like most people, however, she chose to find another apartment, and not to pursue a discrimination claim to move into a place where she did not feel welcome.

Our office has scores of reports of discrimination from our clients every year, but most do not pursue legal remedies.

Accessibility

The concept of residential access underwent a revolution twenty years ago. Before that the U.S. government had two approaches to accessible housing: a "quota" of ten per cent of units in Federally subsidized buildings would be fully accessible to people who use wheelchairs; or, some smaller projects would be designed so that all units would be fully accessible, thus ghettoizing people with disabilities.

The problem with these fully "accessible" units was that most were rented initially to non-disabled people. Because of the small number of these units, there was a matching problem when a person with disabilities came to the top of the waiting list: usually no unit was available. A building which we reviewed a few years ago was built with ten per cent of the units fully accessible. When it was rented, thirty per cent of the applicants, most of them elderly, needed access!

The newer approach is to design 100 per cent of the units where there is an accessible path of travel to be "adaptable". Thus, all new units at the ground floor, and those served by an elevator have the rudimentary features of access, and can later be "adapted" to the particular needs of their occupants. They do not necessarily include five-foot diameter clear floor space in the bathroom or kitchen, they do not have grab bars installed at time of construction and they do not contain many other architectural features useful to people with mobility limitations. However, they do contain an accessible path of travel, reinforcement for later grab bar installation at appropriate locations, and minimal floor clearances in the kitchen and bathroom. These features allow later "adaptation". Their crucial feature, however, is their universality. Because these features are found in all covered units, eventually a large stock of housing will be usable by anyone.

There are several legal implementations of these standards, which I shall discuss in a moment. But what has been our experience with acceptance of this concept by the building industry? In principle, building industry organizations have stated their approval. In practice, they and individual builders have offered fierce resistance to strong regulations mandating residential adaptability.

"Voluntary compliance"

For years, no accessibility was required, and our only power was persuasion. We learned during that time that "voluntary compliance" with accessibility standards is an oxymoron - an inherent contradiction. We always hoped that non-profit, community-based housing development corporations would nevertheless show a sensitivity to the needs of people with disabilities. That generally proved not to be the case. Projects sponsored by local government or non-profit corporations were often less accessible than those constructed by the for-profit, private market.

Why build accessible housing?

The developer's first two statements of opposition to providing access are invariably the same:

1) Nobody needs it.
2) It costs too much.

It is important to provide answers to these objections.

Demand

The lack of apparent demand for accessible housing in part reflects the very immobility of the population it is designed to serve. It is a self-fulfilling prophecy that people without access to transportation, employment, government buildings, medical offices, places of worship, assembly, and entertainment, will find it difficult to express their need for access to housing. Yet, the demand for usable and accessible housing has increased, not decreased in this century. The reasons for this include:

As medical technology has improved, the number of people living with disabilities has increased, because they no longer die of their disabling conditions. A classic example are those with heredity diabetes. In my own family, two generations ago many children died of diabetic starvation before they reached their twenty-first birthdays. Today, with insulin maintenance, their relatives are living long and productive lives, but often with the complications of heart disease, kidney disease, and amputations which produce disabling conditions.

As the world population ages, more elderly people are living with disabilities. At the turn of the century, the U.S. Census showed an average life expectancy of 47. By 1980, that was over 74! In the first half of the century, most of this increase in the U.S. was from improvements in infant mortality. But since 1950, most of this increase has occurred at the end of the lifespan. Today a 70 year old man in the U.S. has a life expectancy of over fourteen years.

There has been a revolution of expectations. In the U.S. the civil rights movements which began with ethnic minorities quickly encompassed women, gender minorities, and others, including people with disabilities. Once it was acceptable for a relative with a disability to be confined to a backroom, and to essentially become invisible. Now, the independent living movement has created the expectation that people with disabilities will enjoy full participation in all activities of daily living, employment, travel, and socialization. Economic productivity and personal fulfillment can only be realized when access to housing is widespread. People's physical conditions change. The average age of onset of disability in California is thirty-six. Although one study showed 10.5 per cent of the working age population to have a disability, fewer than five per cent of children have disabilities, similarly defined.

Yes, there is a need for housing accessibility. What about costs?

Costs

Various studies by U.S. HUD have estimated the costs of "adaptable" housing at about one-half of one per cent of new construction costs. The most recent HUD study was released 9 September 1990, as part of the process of adopting the Fair Housing Amendments Act of 1988 regulatory Guidelines. This study, done of many typical units in four suburban Washington, D.C. projects, showed an average marginal cost per unit of $287-$389. These units cost $75,000 to build.

Yet we have heard members of the California Building Industry Association and other builders claim that costs will be up to $10,000 per unit. They claim that meeting the needs of people with disabilities will make new construction affordable to no one. What is the basis for these claims? First, although widely published, they are not the result of scientific studies but are unsubstantiated "estimates". Secondly, after reviewing some Southern California projects, we have found that most of claimed costs have to do with an awkward re-working of old building plans. Stretching old plans to meet particular elements of new design requirements makes them more expensive than re-designing anew. It is time for some new designs. A relatively small investment in architectural costs will result in lower construction costs for access. Inevitably there are some transitional costs associated with any change in codes and regulations. With public accommodations we have seen these smooth out once suppliers begin to provide standard products and materials that meet access requirements.

Our experience with regulations

Following the phase of "voluntary compliance" - which produced no adaptable housing - California adopted adaptability requirements in 1985 into its state building code, "Title 24". They became effective a year later. The content of these requirements was similar to what has already been described: an accessible path of travel, usable doors and corridors, maneuvering space in the bathroom and kitchen, some lever hardware, and a few requirements on appliance controls and positioning. And a cost cap.

As a political compromise to achieve adoption of the regulations, the disability community agreed to the industry's proposal to create a per unit ceiling on marginal access costs. The ceiling was $600 per unit in 1982 construction dollars.

This created untold regulatory problems for building officials, who were not prepared to argue cost estimates with builders. Many costs were grossly inflated, but not challenged. The disability community had no capacity to review thousands of building permits to look for abuses. Standardized cost "laundry lists" were published, and often used even where local conditions resulted on lower costs than those listed. The cost cap allowed builders to pick and choose which features they would provide, despite a recommended "priority" list. Features that were easy to add, but provided little access became common. A classic claim under the cost cap was an expenditure in a project of $13,000 for visual striping for a stairway that led to otherwise inaccessible levels above the floor, but no provision of accessibility features whatsoever inside a single ground floor unit!

The cost cap approach was dead the day it was adopted, but it took three years to repeal it. At last in 1990, California had residential adaptability regulations without cost loopholes. For the first time, our office began to review plans that provided access to housing. The remaining problems with the California regulations were: poor scoping and poor enforcement.

The coverage of the California regulations includes new construction only. It includes projects with five or more units; no single family dwellings. Most importantly, it includes rental property, but excludes multi-family property owned as condominiums. In my city, San Francisco, over ninety per cent of new construction between 1985 and 1990 was condominiums. We were able to pass a local ordinance extending the state regulations to condominiums, but this has been the exception throughout the state.

The local enforcement situation has been one of benign neglect by building officials. They have not been as sensitive to the needs of people with disabilities as we would like. They have not been well trained. They have not felt much political pressure to strictly enforce the new regulations. After several years of pressure from disability groups, they are beginning to improve their enforcement.

The liable party for failure to comply, under our law, is the licensed architect, and the owner. The building official is not personally liable for official mistakes. In San Francisco, however, there was an investigation by the State Attorney General's office into a pattern and practice of failure to enforce the regulations. It was not until the disability community made political demands, however, that enforcement actually improved.

Federal requirements

While California advocates were negotiating with State housing officials to improve state regulations, others were working with Congress and HUD to create new Federal rights. After ten years of discussions and negotiations with the government, the building industry, and architects, the "Fair Housing Amendments Act of 1988 (FHAA) was signed into law in September, 1988. This created an important new tool for advocates attempting to create access to housing at the local level.

Briefly, the Fair Housing Amendments Act of 1988 is not a new building code, it is a civil rights act. It protects people with disabilities, whether physical or mental, and it protects families with children, who had no Federal protections before. It creates a new enforcement mechanism, the Administrative Law Judge, which allows people to seek justice without the expense of going to court. It allows HUD to use its own paid investigators to investigate a complaint, and to use its own lawyers to bring an action. It creates new penalties of $10,000 to $50,000 for those who disobey the law. It creates four rights:

- The right to be free of discrimination in sale or rental of nearly all housing.
- The right of reasonable accommodation. That is, the right to have policies, procedures, house rules, etc., which recognize that people with disabilities may need certain accommodations, such as a guide dog in an apartment complex that otherwise prohibits pets.
- The right of reasonable modification. Tenants may not be prohibited by their landlords from making minor modifications to their units in order to make them accessible. Common examples are a short ramp to the primary entry, door widening, or installation of grab bars at the tub or toilet.
- The right to "adaptable" design in newly constructed, covered multi-family housing. This

fourth right creates new design requirements for all new housing throughout the country.

In California, wherever the Federal requirement is more restrictive - provides better access - it is not mandatory; wherever the older state regulations are more restrictive, they remain in force. The new Federal requirements are detailed in two documents, the regulations, published in January, 1989, and in HUD's "Final Guidelines", published in March, 1991. Seven architectural elements are now required under the Federal law:

- Accessible route on the site, from the point(s) of entry to each residential building with covered units and to the public and common use areas, such as parking.
- Accessible public and common use areas. Includes parking, mailboxes, community or recreational facilities.
- Usable doors. Must have 32" clear opening dimension, and a minimal clear floor area on an accessible path of travel.
- Accessible route into and throughout each covered dwelling unit. Every corridor and every doorway must permit minimal access. The only exceptions are for some decks and patios, and for small sunken or raised functional areas (i.e., a sunken living room) where there is an alternate path of travel to other rooms.
- Accessible controls and outlets. All light switches, outlets, thermostats, intercoms, door buzzers and other controls and outlets must be no higher than 48" nor lower than 12" from the floor.
- Reinforcement for grab bars. It is not required to install the grab bars, but reinforcement must be constructed inside the walls at the places where they would later be added at the tub and/or shower, and toilet.
- Usable kitchens and bathrooms. Very minimal clear floor area requirements. In kitchens, only 40" is required between parallel kitchen counters in most cases. There must be a 30" x 48" clear floor space at the sink, stove and refrigerator. If the sink is located at the end of U-shape kitchen, it must be possible to roll under, or provide 60" in length to permit a parallel approach. In bathrooms, there must be a 30" x 48" clear floor space at the tub or shower, the lavatory, and the toilet.

The FHAA architectural Guidelines are intended to provide a minimal standard, not a lofty goal. Like all standards, once published, designers tend to view them as maxima, not minima. The crucial problem for local advocates is how to convert these Federal Standards into actual local construction.

Local implementation

At Independent Housing Services we have used a variety of methods to encourage and create local implementation of state and national requirements for access:

- Training and education. Most architects and designers do not leave design school with a solid background in access principles and techniques. And standards change. Therefore it is important to create or obtain good training materials, illustrations, photos of complying and non-complying projects and details, and interpretative text to clarify accessibility requirements.
- Local regulation. We have had to modify local laws to strengthen them and make them better fit our local conditions.
- Involvement of people with disabilities. We've conducted many training sessions for people with disabilities. They must know their rights in order to enforce them. Public

demonstrations and civil disobedience have been necessary to create public support. The many eyes and ears of people with disabilities can broaden the scope of access compliance more effectively than local officials.

- Legal sanctions. After investigation and conciliation, the U.S. Fair Housing Amendments Act allows either individuals, disability organizations, or the government to bring a "charge" against non-complying projects. Without the application of penalties for failure to provide access, owners, builders, and designers ignore access standards.
- Publicize successes. Awards and recognition of good design obviously motivates designers.

In San Francisco, it has required a ten-year effort by Independent Housing Services, our colleagues, and individuals with disabilities to begin to see local plans for new buildings in which access was carefully considered and included by design. The success of those efforts is beginning to provide environments that promote independent living.

Access legislation

D.P. Philippen, Institute T.L.P.e.V., Traben-Trarbach, Germany

Legislation on accessibility in general can only be realized if a 'barrier-free environment for all people' at comparable cost is feasible. Only if the environment is built and conceived to enable any one person, regardless of his or her personal ability or disability and without special-purpose construction, to live independent, self sustained, self determined and integrated within the community of all others, only then is significant accessible environment and technology realized.

The new German DIN 18025 Part 2 (part 1 is for the wheelchair users) is the most advanced building standard for a general concept of barrier-free environment. It is getting great political support and is on the way into legislation, becoming the foundation for a general building code. This building code will be preventive and adaptable to the individual situation, without the requirements of 'special housing'. 'All' will be accessible for all people.

The new standards can be an example as a joint-European effort and concept to solve problems with disabled and old age requirements in housing, environmental, and urban developments. This new set of regulations concentrates on integration by rendering multiples of a modular concept for any given and future situation of each individual person.

A major part is the basic and different ergonomics involved. No room sizes are specified. The standards define the space needed to use an individual object, e.g. door, toilet, cabinet etc. Such space requirements are presented in the form of "frames". These frames can be handled like a puzzle. The frames will not only be added on like a puzzle, they can be combined with each other with overlapping free space areas, as long as the individual space definition is not decreased.

The basic size of the space frame is a square of 120 cm x 120 cm within the direct living area, which, for specific 'wheelchair-homes' only (i.e., user with electric wheelchair) increases up to 150 cm x 150 cm in part two of the new standards. The free space areas defined by these frames further consider the way and from what side or from what position an object is being used. The transfer to a toilet is defined from one side position, from a frontal position and from an angular position.

All general areas in homes or multi-story housing are sized to this larger basic dimension of 150 cm x 150 cm, since everybody, no matter what type of mobility aid is used, shall find unrestricted access and independently make use of whatever facilities there are.

The basic ergonomics and space frame model is a development by the Institute T.L.P.e.V and has been field-tested over a period of 12 years. It is used in building codes by several countries. Only a few problem areas in these standards have a restricted definition; in the important part 2 of the Standard, it is a matter of elevators, making all levels of all houses accessible for everyone.

When considering existing buildings especially (which have to be changed in due time) the cost of demanding an elevator for each and every building would endanger the way to transfer these standards into legislative codes. Therefore the standards define that provisions have to be made, in the planning of any new building, that an elevator (110 cm x 140 cm floor space, with a 90 cm wide door) can be integrated at any given later time without the need of construction changes. Hence, the position and the space required by an elevator has to be included in every building.

An extension of the same concept has been launched for all public buildings, (DIN 18024 Part 2), for playgrounds and playing equipment (DIN 18034 and 7926), for a barrier-free concept of job sites, etc. applying the same basic requirements for free access and use by and for all persons.

Action taken to move federal and state legislation in Germany on this general barrier-free concept

It is not enough to just try and convince politicians that a need for legislation exists, or to simply inform them about solutions which are feasible to experts; a combination of action is needed. This action has to include a fair amount of pressure, documenting the presence of the size of the population involved. Only solutions should be presented. They have to be packaged in a language of simple interpretation and offer, in just a few sentences, leading slogans and words that can be handled by political motivated forces.

Instead of the questions politicians are confronted with, they should be educated to use applicable, easy to understand answers. In Germany the new DIN Standards are transferred into legislation supported by a resolution (signed by organizations and representatives of about 4 million citizens) and by an easy to handle slogan: 'barrier-free for all people'.

All interests of consumers, old and disabled people representing organizations, government persons in charge for social welfare in these fields, and just about any given self-help group in Germany, have been tied together into this resolution. It has been presented successfully on every given level of administration reaching from federal, down to city and local urban village administration.

But that is not enough. It has to be certified that general barrier-free housing does not increase the cost of housing to any great extent and that it will improve the quality and the sales value of homes without increasing costs. At the same time it will solve the problem of extra or special housing, which is no longer needed.

The solution offered will have to be applied to solve the matter of independently housing old people; to provide an applicable solution of a private and personal home, instead of institutional homes; and to secure independence in their own home through community-based services and rehabilitation instead of institutional care.

First, we forced state legislation by applying public pressure to support experimental building projects which would initiate and use the new standards in order to have a certifying comparison on building costs.

Secondly, we argued with the Federal Government in public to prove that making all housing barrier-free would not increase the cost of housing. This resulted in two grants by the Federal Government to investigate the real building cost for applying barrier-free housing. The results show that the difference in cost between traditional construction and the new type of barrier-free building construction and technology is negligible. The studies resulted in additional investments stated to be 3.01 to 3.2 per cent of total cost, which can be neglected since rearranging of financing and logistics in a building project, can very well compensate for this minor increase.

The first available results from experimental building projects show, for three different housing sizes (8, 16 and 64 apartments), a total average increase of 2.8 - 3.1 per cent (excluding elevator cost).

In two 3 and 4 story projects, elevators have actually been included, but in a way to serve more than one single building. The best solution combined an elevator to serve four buildings. Including the cost for the elevator, the total cost was raised by a factor of 6.3 per cent.

In addition to this, it is of the utmost importance that with new standards of this kind, which deal in part with matters not commonly known, different disabilities are explained and presented to architects in a way so that they will understand the new standards. It is not sufficient to only do this by publishing in trade magazines, etc. The new ways have to be presented in the form of seminars and workshops. Therefore, in Germany, before the new standards where published we traveled across the country and successfully offered seminars in different cities organized by the architectural organizations and in cooperation with local municipal administration.

Finally, each new set of standards involves other cross-referencing standards. We made contact to each commission of such standards and sold our idea of barrier-free environment. This prompted other expert groups to adapt whatever was controversial to the new barrier-free understanding. This was done for details in heating, plumbing, general utility, electrical installation, elevators etc.

Education

One additional point should be stressed. We do not have enough fully trained experts in this field of rehabilitation technology or rehabilitation engineering. The opportunities for such education are insufficient. We have the experience and curriculum to start lectures right now, but we are still looking for a country with open-minded universities to really start off on a full time course for rehabilitation engineering.

Experts are needed for rehabilitation and the development of barrier-free environments and technology. This is the missing link in engineering education. Germany might start with a new curriculum for a five-semester university study program, applicable for architects and engineers to master rehabilitation engineering closing this missing link in technical education.

The extensive curriculum includes an additional 6 - 8 month internship in rehabilitation centers, homes and clinical settings and contains a two-semester basic course on rehabilitation therapy and medicine. It will offer specialization for a choice of several professional directions including architecture, industrial and general engineering, product design, administration and social law, teaching etc. leading to a Masters Degree. So far, we are still in the process of discussion. Even with support of the Federal Government to finance the first five years with 50 per cent of all cost, nothing is finalized.

Summation

It is not enough to solve the problems, we have to use modern marketing to sell the solutions. We have to create the need in other peoples mind. We have to apply modern marketing methods and make use of a logistic for presentation, selling and brain-washing just like selling Coke or MacDonald's hamburgers, where everybody automatically thinks of those two names whenever the products are mentioned. We can not only depend on people reading, we have to explain, we have to demonstrate and transfer interdisciplinary knowledge across the line of professional boundaries.

Regulation of the non-handicapping environment in Hungary

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Introduction

Architecture is a creative activity to meet the requirements of man and society. Construction is successful or not successful to the extent that the built environment is able to meet all human needs. In designing the environment, average social requirements have become manifested, thus the quality of the built environment has been raised or decreased to an average level. The consequences are buildings constructed to the requirements of the "average man" who is 30 - 50 years old, 160 - 180 cm in height, and weighs 50 - 80 kg., does medium standard physical and mental work and meets standard principles and performance requirements.

In the future we have to develop our environment more carefully and consider special needs and the abilities of people who are disabled.

Previous designs by architects in Hungary have created daily problems for 2 - 2.5 million people of the country's population of 10.5 million. Included are 300-500 thousand physically disabled persons; children below the age of 12; persons over the age of 55-60, as well as those-who cannot fully utilize their environment due to illness, accident or temporary disability.

Goals of the Hungarian architects

What be should be the task of architects to meet the needs and requirements of disabled people? The objective is to provide disabled people with the possibility of participation, contribution, potential progress, and successful implementation. They should be given the possibility and not compensation! In this respect the task of architects is similar to the experts of medical rehabilitation or social workers who work to help people with disabilities to become able to utilize their capabilities to the maximum possible extent. Designing barrier-free buildings requires the adaptation of the existing environment so that:

- all locations within buildings, the premises and furnishings should be accessible
- it should be possible to enter the building, the premises in the usual way

- it should be possible to use the building, its premises, internal areas, furnishings and facilities.

Additionally, we Hungarian architects expect the environment (buildings and their parts) to accommodate physically disabled people for the function or task which the building/facilities were designed and meant to be used. "Utility" of the environment in this sense means, that five tasks are to be met:

#. Reachability

#. Availability

#. Usability

#. Recognizability

#. Safety

Existing legislation of non-handicapping environment in Hungary

The following regulations are meant to provide for the above non-handicapped environment in Hungary:

- National Building Regulation (OÉSZ) (provides for overall regulations)
- The Decree by the Minister of Interior on Fire Prevention, together with related special standards (fire prevention specification, issues related to escape from fire)
- The standards of public information symbols, regulating the symbol of wheelchair user as physically disabled, elderly people, and mother with child.

Investors, designers and the interested parties have much information at their disposal on non-handicapping environments, but such information can be had only on special request, and the specifications are not mandatory. Thus, in Hungary, the regulations related to non-handicapping environments cannot be regarded as being complete.

In the field of barrier-free environments, relations with researchers outside of Hungary have existed since 1981, from the "International Year of Disabled Persons". Knowing the works and results of research institutes, we can say that Hungarian research has, up to 1988, no individual result in non-handicapping environment and building planning. In the beginning of the 1980's we elaborated - taking into consideration the standards of other countries - several directives and planning references, principally in the field of wheelchair transport and traffic, for assuring place for wheelchairs. It was on the initiative of the conferences in 1981 for the IYDP that they started to develop regulations on designing non-handicapping environments. Prior to that work a number of analyses and comparative studies had been made, and in 1981 the first Technical Designing Guidelines (MTS 1981/4) were issued under the commission of the Technical Development Department of Ministry of Construction.

The first actual step in national regulation was the publication of Technical Instructions "Environmental Requirements of Physically Disabled People" (MI-156-83) by the Hungarian

Office of Standards. Experiences related in the above works, as well as the studies prepared around 1981, led to the modification of the National Building Regulation (OÉSZ) in 1986.

Fundamental research work in Hungary

In 1986 a research project began in this field at the Institute for Building Science with financial assistance from the National Scientific Research Foundation and the participation of the National Federation of Association of Physically Disabled People. In the years 1987-89 studies were made of 50 people using wheelchairs and of 24 people testing thermal comfort to investigate the problems of physically disabled people and comparing the differences between Hungarian and international standards.

In the beginning, this research work already had the possibility to compare our results with the recommendations and prescriptions of other countries. Examining the causes of the divergences, the following points were observed:

- In the current economic and social situation of Hungary, the primary aim is to resolve the provision, education and retraining of the most disabled persons. This can be realized primarily in the framework of institutes. The seriously disabled persons can be placed in these institutes.
- Starting from the Hungarian production capacities, we have to use more fixed aids and equipment because the manufacturing of different flexible solutions is not possible yet owing to the volume of the series.
- The greater basis area and equipment are due to the fact that there is a wide variety of wheelchairs used in Hungary, their dimensions and mechanical properties differing from those of other countries. Furthermore, the stock of Hungarian wheelchairs is very heterogeneous, due to the individual needs and possibilities. With this stock we cannot apply the good solutions of other countries. We found differences between the measurements of wheelchairs used in Hungary and wheelchairs produced and used in foreign countries. These differences existed not only in size but also in the materials and the weight, their conducting capacity and if they were collapsible.
- The Hungarian building industry is not so large that the best and most suitable materials and construction might always be used.
- There is a difference in the basic module for residential buildings: In Hungary we have a module of 15 cm, in other countries 10 cm are used.

In Hungarian integration and adaptation tasks we were obliged to take into consideration that our basic standards for apartments are 70-75 sq.m. Since these apartments are considered to be average size, you can understand the troubles we have to solve. Previously, the Hungarian conceptions for apartment projects have been inclined to plan minimal space for hygienic and other conveniences, assuring a greater useful space for living in the apartment. But nowadays we have to leave the needs of the so-called "average man" which requires new views and ideas in our planning work. The design should be based on the determination of the proper spaces for each function. This is what we rely upon today when we want to provide apartments according to demands not only for the elderly and disabled but for everybody. Of course, these demands are strongly influenced by the financial conditions both with the state and private home building.

The research project's main aims

Due to the above-mentioned reasons, we elaborated our research. We further developed and adapted to actual Hungarian circumstances, the methodology of research of function analysis as used by our friends at the Technical University of Lund (Sweden).

- The first aim of our research was to formulate under Hungarian (or socialist) circumstances a group of disabled persons who were able to use the built environment and to describe the characteristics of their activity.
- The second aim was for people with disabilities to describe how they use their environment, to determine their surface needs on the basis of testing. We wanted to observe basic movements, from which several movements (i.e., their requirement system) could be synthesized in a later phase.
- Thirdly, in evaluation of the test results we wanted to define how the foreign research results, norms and standards may be adapted to our circumstances, and what would be the standard solutions in Hungary.
- Finally, documentation was made of the investigated cases.

Conclusion

One of the most important parts of the vocational training is to give many good examples for the using of the built environment. Our aim with the rehabilitation is to provide a possibility for disabled persons to use and enjoy the objects surrounding them. We want to achieve this with the help of their active participation. Our aim with the adaptations of the environment is that, with minimum alterations, the utilization of buildings and their elements will be possible for all people. The study was followed by a further study of 24 apartments in which wheelchair users reside. To utilize the results of the above studies the POLI-Studio Architectural Research, Designing and Consulting Ltd. was established in 1990 and later, based on its success, a foundation called Access Hungary was launched.

The role of the Muscular Dystrophy Association in the creation of a barrier-free environment

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This paper will present some of the experience of The Muscular Dystrophy Association in the work on accessibility, from the user's point of view. The Muscular Dystrophy Association is one of the organizations of disabled persons bringing together people with muscular dystrophy and allied neuromuscular diseases which have, as a final consequence, a severe physical disability. One of the main activities in our work is the elimination of architectural barriers. This is carried out in cooperation with other organizations of physically disabled people.

In the process of creating an accessible environment, organizations of disabled persons have one of the most important roles. Why? Imagine our organizations as a tree. The trunk represents the organization itself, the roots are the members and/or the cause we work for. Branches and leaves of the tree are the rest of the world, to whom we have to present the needs of our members in such a

way that they become aware of all our problems. They must be relayed to government departments, professionals, the press, and to the public at large.

Since accessibility is a vital issue for persons with disabilities, it has to be one of the absolute priorities in the work of their associations too. The turning point in the attitudes of experts and scientists in our country concerning the problem of accessibility and the needs of disabled people was the Meeting on Architectural Barriers, organized by several associations of disabled persons in Zagreb, in 1977. The wheel was started in motion then. The proceedings of the meeting, which we published later with all presentations, conclusions, and particularly proposals for minimum standards from the point of view of disabled persons, have been of great significance.

The next step was to inform the public about the problem of barriers. A campaign was started through media and public relations, for we believe that psychological barriers caused by prejudices are in the core of all other barriers (social, physical, functional, etc.). Of course, it takes time to change social attitudes. First, people must be aware of your existence, otherwise the rest will be of no importance. Secondly, it takes time to create a picture in the minds of people about the real needs of disabled persons. Thirdly, your surrounding has to be convinced of the importance of those changes. Therefore, the process of changing attitudes consists of four steps: Awareness - Comprehension - Conviction - Action.

Continuing our action, we have addressed ourselves to the Federal Government and to the ministries of civil engineering, housing and public works of all Yugoslav republics, requesting changes in building regulations. In our requests, we explained the problems, defined our needs, provided information on positive experience from other countries, and submitted concrete proposals for new regulations. Certainly, this whole work would be impossible without the great assistance of architects, civil engineers and other experts collaborating with our organizations. As a result of all these efforts, the first legislation concerning accessibility appeared in Yugoslavia. I do not want to analyze it here, but will give offer a brief review.

Access legislation in Yugoslavia today exists on two levels: federal and republic. The Federal Bureau of Standards established a Working Group in 1985/86 with a task to make drafts of the first Yugoslav standards concerning spatial needs of disabled persons. Our Association was represented too in this Working Group. Finally, the first five Yugoslav standards on spatial needs of disabled persons in buildings and the environment were adopted, containing the following regulations for flat surface circulation areas:

- JUS U.A9. 201 - Access and passing space
- JUS U.A9. 202 - Pedestrian crossings zones
- JUS U.A9. 203 - Slope and height of curbstones
- JUS U.A9. 204 - Parking places
- JUS U.A9. 205 - Wheelchair turning places.

The next eleven standards - JUS U.A9. 206 to JUS U.A9. 216 were adopted at the beginning of 1990, and they contain regulations concerning accessible elements and spaces such as ramps (shapes and size), entrance to buildings and apartment housing, lobbies, maneuvering clearance at doors, etc. All of these sixteen standards are in accordance with the International Standard Organization Document, ISO/TR 9527/1987.

On republican levels, specific access regulations are contained in laws on spatial planning and land use, which were enacted in most of the Yugoslav republics during the 1980's. These laws stipulate detailed legislation on 'urban and technical conditions and standards preventing the creation of architectural and spatial barriers'.

In our organizations, we had believed that the passing of access legislation would bring about immediate changes in building practice. Unfortunately, we were soon to realize that there is a long way from passing regulations to their implementation in practice. Therefore we have decided to start a new campaign to speed up and enforce the implementation of legal regulations.

On the proposal of organizations of disabled persons, the Federal Committee of Health and Social Welfare adopted 'The Declaration on Building Environments Accessible to All' in 1989, and proclaimed that year as the 'Year of Fighting Architectural, Technical and Transportation Barriers' in Yugoslavia. Appeals were sent to all planners, builders and constructors to contribute to this goal. For that purpose, our associations had published a special leaflet too, informing the public about the problem and offering possible solutions.

Simultaneously, our organizations in various republics have prepared plans for their activities. Rather good results have been achieved in some of them, including Slovenia, Croatia and Serbia.

I would like now, as an example, to tell you about some of the experience from the Republic of Bosnia-Herzegovina. The main idea was to concentrate our efforts on the local level. We found a very good way to get our message across is to organize meetings on various professional levels in different cities. So we organized 'Round Tables on Architectural Barriers' in five regional centers (Zenica, Bania Luka, Doboi, Sarajevo and Tuzla) during two years (1989-90). Invited participants were people engaged in the decision making process, such as:

- local government,
- municipal councils,
- communal and housing committees,
- town planning and building committees,
- planning offices,
- architects, town planners, constructors, designers,
- mass media (press, radio and television).

These Round Tables always started with an introductory lecture defining the main problems and providing general information on the existing situation and current regulations concerning accessibility. After the introduction, a film made in that town was shown, with a person moving around in a wheelchair, and presenting the situation of accessibility in the town. (which was disastrous in all five towns.) The film is very important for it can accomplish more than a good speaker and is more convincing.

Following the film, a discussion took place on all the problems observed and how to solve them. The meetings usually ended with the establishment of a working group with the task to prepare short and long-term action plans for the elimination of barriers. The most impressive thing in all these meetings was the fact that people were absolutely surprised in watching the film, proving once again, unfortunately, that a general awareness of the problem does not exist. Of course, this is just the beginning and the activity should be continued. Nevertheless, I do hope that it can be useful as one of the examples of how organizations of disabled persons could influence, initiate and enforce the process of removing barriers.

In our country there is not an official regulatory agency which could enforce legislation concerning accessibility and particularly its implementation. This role has been taken over by organizations of disabled persons with the help of some professionals. Thus, the role of this organization in creating a barrier-free world is of the greatest significance, as it was stressed in the Resolution adopted by the CIB W84 in Prague, in 1987. Unfortunately, our organizations are not always able to accomplish all these activities for numerous reasons. To promote the efficiency of the environment

improvement process we must:

- be more aggressive;
- establish direct contacts with various decision makers;
- engage more voluntary workers and collaborators;
- find more money;
- put greater emphasis on tailoring our information to suit various groups that we want to reach (professionals, politicians, citizens' committees, etc.);
- have our own public relations officers;
- and last, but not least, secure continuous presence in media.

In spite of the present situation in our country, it is hoped our organizations will be able to fulfil some of these tasks in the future. 'Everybody is different - nobody is perfect!' Being disabled is not different from any other sort of difference. I believe that one day the world will be designed in such a way that we could prove this.

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The case for accessibility legislation in a market economy

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The political changes of the last few years in the countries of Eastern and Central Europe will have consequences for the social and economic life of their citizens far into the next century. One of the most pervasive changes in the lives and thinking of these nations will be in the division of responsibility between the collective on the one hand and the individual on the other. From a position that all areas of human life are the realm of politics and thus a legitimate arena for state intervention, the pendulum is about to move towards the other extreme that 'least government is best government', that the 'invisible hand of the market' will automatically put everything right and lead all sectors of society to a life of ease and affluence.

Given the mistrust against the efficiency of central planning and abuses of state power, will there be the tendency to look for easy answers by throwing out all central planning? In such a scenario what will happen to our field, the efforts to create better awareness of the needs of old and disabled persons in the built environment? Is there a place for standardization, for building codes and norms imposed on builders, planners and households from above?

In the present paper I attempt to provide a rationale for the existence of accessibility legislation in a market economy. Starting from the classical economic assumption about the perfect market I want to show that the market is not able to solve all problems, that there is a case for state intervention including accessibility legislation.

In textbooks on classical economics we can find the postulate that a society's total aggregate welfare will be maximized, if all individuals, consumers and producers, were to make decisions in their own best economic interest. In order for this postulate to hold, the classical economists needed to make the assumption of the 'perfect market'. The 'perfect market' is characterized by 'perfect competition'.

Among the assumptions of the 'perfect competition' are perfect information, smallness of each buyer or seller in relation to the size of the market, absence of artificial restraints and free entry into the market. Let us look at two of these assumptions in more detail.

Perfect information assumes that all economic agents have access to the same information at the same time. In the real world we know that access to information is very unevenly distributed. The country with the supposedly most capitalistic, free market economy - the United States - has probably the strictest government regulations concerning financial markets. Company employees are prohibited by law to make economic use of any "inside information" they might have.

Smallness of each actor in relationship of the market. While this is one of the most important assumptions of a "perfect market", in reality it is well documented that a market economy leads to increasing concentrations in production and marketing as an industry matures. An example for this is the automobile industry where the number of companies has been constantly decreasing over the years giving rise to larger and larger concerns. In order to keep up competition most 'capitalist' countries have had to establish anti-trust legislation including state agencies for prohibiting cartels.

This cursory discussion of some of the assumptions underlying market economies is intended to show that:

- a pure market economy does not exist anywhere,
- some state intervention is actually necessary in order to aid the market in moving closer to the ideal of 'perfect competition' in order to achieve higher efficiency.

So far we have only looked at the micro-economic level, that is the interplay of individual economic agents within an industry. As far as the macro-economic level is concerned, that is the aggregate functions of all households, producers and consumers, we can observe a similar tendency. Modern governments use their budgetary function, fiscal policy and control over the money supply in order to smooth out fluctuations in the level of aggregate economic activity with the aim of a more efficient employment of national resources over the long run. The more developed countries are characterized by an elaborate system of such central controls designed to stave off dramatic changes, such as runaway inflation and depression.

A comparison of various countries will show that the more highly developed countries - in the economic sense - have the largest array of policy instruments for state intervention. Recent theories of economic growth would go as far as claiming that the very reason the most "developed" countries have reached this position is precisely because of their long-standing history of state intervention and controls. For example, a well-functioning system of comprehensive legislation, courts and appeals, and police is one of the most fundamental requirements for flourishing economic activity. Such a system is needed to protect the rights of producers, consumers, sellers and buyers of goods and services, to allow them to make contracts and to guarantee ownership rights. This protection removes some of the uncertainties inherent in all investments and

encourages individuals and companies to lend or borrow and to commit resources over a long time for productive purposes.

Similarly, in many countries it is the function of the state to issue norms, to issue and coordinate industrial standardization, and to license professionals. State agencies usually are best fitted for this purpose because of their neutral and central position. Also, public agencies subjected to the political process are more trusted with these functions than private interests.

So far the purpose of my argumentation has been to show that some state intervention is very well compatible with a market economy and even beneficial for it. In the following I would like to take this reasoning a step further and discuss areas of economic activity where state intervention is not only a beneficial but an outright necessary ingredient in a market economy.

At the beginning of this paper we briefly discussed some of the assumptions of a perfect market. You may also remember that economists need these assumptions in order to show that a perfect market will lead to maximum aggregate welfare. Some of the most interesting economic literature has been devoted to identifying situations where it can be shown that the market will not be able to arrive at an optimum solution. This is the case in so-called market imperfections.

Most often market imperfections are due to externalities. Externalities arise when the action of one economic agent causes benefits or costs elsewhere for which no fee can be charged or compensation be collected. For example, the market itself does not have mechanisms which would allow an individual to claim compensation from the many cars which foul up the air which he or she has to breathe in this beautiful city. As a consequence, an increasing amount of people contract lung cancer which imposes suffering on the individual and high economic costs on society. Since there is no mechanism by which each individual car owner is made to pay for the costs his car causes, car owners continue to pollute. Installing catalyst systems in car engines that would reduce noxious emissions is a cost which car owners can avoid. The cost of these devices would be much smaller than the damage caused by pollution. Thus, from a total societal cost-benefit calculus allowing car owners to pollute the air is not an optimum solution. A market economy left to its own devices will not be able to improve the situation. Obviously, what is needed are regulations which force car owners to install these devices.

But is state intervention really necessary in this case? Why not appeal to car owners' common sense and they might install emission controls voluntarily! For each car owner it will pay to wait for other car owners to install the device. In this way he can enjoy the clean air without having to pay for the catalyst. This is often referred to as the 'free rider' problem.

Other examples for the free rider problem are police and fire protection, national defence or city planning. It is difficult to exclude somebody who is not paying for such public goods. Public goods in the economist's language are goods whose consumption by one person will not diminish the amount of the good available to another person. Consider a radio program. Anybody with a radio receiver will be able to listen to it. Whether a hundred or a million people listen, will not affect the quality of the reception nor its cost to the individual listener.

A similar public good is fire safety. In the middle ages whole cities were destroyed by a fire which started in a single house. Today, most countries have building and zoning codes that specify distances between houses and fire safety measures in construction. In addition, most communities have fire departments for active protection. All citizens will benefit from fire protection whether they pay for the costs of keeping a fire brigade and comply to the construction codes or not - as long as everybody else pays and complies. Thus, the only way to bring about fire protection is to make the codes compulsory and to levy taxes to finance the fire department. The market, if left to its own devices, would not be able to produce fire protection.

Accessibility is a related public good. Accessibility measures in a building will benefit all users. Old persons will have less accidents in staircases, if they are provided with the alternative of using elevators. Similarly, accessibility features will make a structure usable by disabled persons or reduce risks for them. Since buildings typically represent long term investments, accessibility and its benefits will accrue to several generations of users. But who should pay for accessible construction? There is no market mechanism by which those who enjoy the features can be made to pay. Thus the only way to enforce accessible construction is through state imposed norms as in the case of fire protection.

Similar to fire protection, investments in accessibility measures are highly profitable for society. The costs of accessible construction are low in relation to the expected returns. In Sweden, we have had building norms stipulating accessibility in newly constructed public buildings and workplaces since the 1960's and in new multi-family housing since 1977. The additional costs due to these measures have been estimated to be less than 1 per cent of the total cost. The returns, on the other hand, accrue among other things in the form of fewer accidents, hospital days, and institutional care as more old and disabled persons can live at home instead of having to move to old age homes or similar institutions. Also, in accessible communities persons with disabilities will contribute to the diversity of society and put their resources and talents to productive use like anybody else.

In this paper I used language and arguments that are standard in Western economic textbooks in order to show that there is a place for accessibility legislation in a market economy. There are other, non-economic arguments that point in the same direction. Handicapping environments constitute obstacles to integration and perpetuate the systematic discrimination of a segment of society. Today, pluralism and market economy are often equated with democracy. If this is true, then in a truly democratic society it will be impossible in the long run to exclude whole segments of the population. Apartheid cannot be maintained.

Built environment for disabled persons in the USSR: Needs and problems

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For a long period of time (from 1917 to 1985/86), no private initiative to assist disabled people has been put into operation; no charity organizations have been formed. The needs and problems of disabled people were a responsibility of the State (the Ministry of Social Affairs) which had a very limited financial capacity.

Such a formal attitude and official ideology regarding the problems of disabled people - the basic formula of which was that in the near future all the Soviet people would be harmonically developed and healthy - resulted in public consciousness which completely neglected the rights and interests of disabled persons. During those years the State had not given any financial support to any considerable program aimed at developing building standards in which the demands of disabled people are taken into account. This, in combination with the lack of enterprises producing facilities for people with physical difficulties, has brought us to illusive well-being: in the streets of our cities and towns one rarely meets a person on crutches or using a wheelchair.

In the last five years, during the Perestroika period, the movement for the rights of disabled people has been remarkably active. Gosstroy of the USSR started, for the first time, to work out the complex program directed at creating barrier-free environment in towns and within buildings. A

number of charity organizations and foundations, as well as organizations of disabled people have begun their work at different levels: state, republic, city, town, district, etc. But the process of solving the problems of disabled people is hindered because of the sluggishness of governmental institutions and the economic crisis facing the country. It is not by chance then that certain disabled people's organizations as well as private persons are taking active steps without waiting for the authorities to proceed regarding the needs and problems of disabled persons. For instance: the Ukrainian Organization of the Blind, initiated recommendations on building projects for people having weak sight; the author of the present report took part in the Project of the Rehabilitation Centre for children from Chernobyl, a collective work with professors of the Technical University, Berlin; the project of the university for disabled people is in work at the moment; technical recommendations for taking away barriers in order to create a barrier-free environment for wheelchair users has been elaborated, etc.

Experts dealing with the problem of the living environment for disabled persons are in acute necessity for cooperation with scientists and experts from other countries who have already gained great experience in this field. In my books, "Specialized Schools", "Educational-Medicinal Centres" and, in my latest book especially, "Architectural Environment for the Disabled and Old-Aged People", I strove for such cooperation in order to formulate major standards and give architectural-technical variants of realizing separate building elements which would promote the living situation of disabled persons, considering ages and types of diseases. These standards have an influence on both concrete building element constructions (entrances, staircases, apparels, elevators, etc.) and on the whole building structure, organization of room intercommunication, form organization, etc.

We can see an example in the specialized boarding schools for disabled children, which lately have been projected on the principle of the corridor system. Dull and formal school encirclement, long corridors, producing a negative psychological effect on children. What we suggest is the system of "study-living rooms", "large apartments", which include all necessary rooms: for medical care, study, recreation, and accommodation for children in smaller groups (8-12 children). The results of practical introduction of this system into specialized boarding schools confirmed all the benefits of the new system from educational, medical and economic points of view: migration scales of disabled children and personnel reduced; children got, for the first time in their lives, their own "home-cell" instead of barrack-like corridor section; and an opportunity to live within their own "families" under the care of medical-educational personnel.

The processes of creating and improving a material-technical basis for the living conditions of disabled people are impossible without applying scientific prognosis which, in turn, cannot be carried out without constant and continuing cooperation of experts from different countries. The information which we have an opportunity to gain at the seminar will be put to use in the USSR, both in elaborating norms regimenting the city environment, and in constructing concrete buildings for disabled persons.

The Nordic Committee on Disability: Existing legislation in the Nordic countries

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The Nordic Committee on Disability, for whom I work, is a cooperation body under the Nordic Council of Ministers. One basis for the Committee is the fact that the policies in the Nordic

countries concerning disabled people have many characteristics in common, different from many other countries. Let me just mention the most obvious, the general tax-financed welfare system, compared to many other countries where social insurances are connected to employment. One of the tasks of the Committee is to work for improved accessibility in society for persons with disabilities. As a part of this task, a preliminary study of how accessibility in the built environment and transportation is regulated in the Nordic countries was carried out during winter of 1991. The underlying question for the study was, "Are there any fields within the built environment and transportation, where Nordic cooperation is desirable and appropriate in order to improve accessibility?"
Accessibility can be regulated in several forms:

- laws, which in the Nordic countries are made by the Parliament
- mandatory regulations, made by government authorities, and which specify the laws
- recommendations or guidelines, made by authorities or organizations
- standards

The object of the study was divided into six fields:

1. Dwellings
2. Public governmental buildings, such as hospitals, post offices, schools, etc.
3. Public private buildings, such as shops, hotels, restaurants, cinemas, banks, sports grounds, etc.
4. Transportation terminals, e.g. airports, bus stops, railway stations,
5. Public vehicles, e.g. buses, commuter trains, intercity trains, etc.

6. Outdoor environment: stairs, footpaths, traffic lights, signposts, etc.

The first part of the study was an investigation of current regulation in the Nordic Countries. The following three questions were asked for every one of the six fields:

1. Does the law state explicitly that this field should be accessible for persons with disabilities?

2. Are there any binding regulations, made by government authorities, that specify more precisely the interpretation of the concept of accessibility?

3. Are there any advisory guidelines with user requirements, expressed in terms of functions and performance, or technical specification?

The answers are on the following table.

		Denmark	Finland	Iceland	Norway	Sweden
Dwellings	Law Regulation Guidelines	Y Y Y	Y N Y	N Partly Y	N Y Y	Y Y Y
Public Gov. Buildings	Law Regulation Guidelines	Y Y Y	Y Y Y	Y Y Y	N Y Y	Y Y Y
Public Private Buildings	Law Regulation Guidelines	Y Y Y	Y Y Y	Y N Y	N Y Y	Y Y Y
Public Vehicles	Law Regulation Guidelines	N N N	N N N	N N N	N N Y	Y Y Y
Transportation Terminals	Law Regulation Guidelines	Y Y Y	Y Y Y	N N N	N Partly Y	Y Y Y
Outdoor Environment	Law Regulation Guidelines	N N Y	N Partly Y	N N Y	N Y Y	Y Y Y

The table indicates that there is sufficient knowledge about how an accessible environment is to be designed. It can, however, be questioned whether hearing and cognitive impaired people have been adequately considered. Even if there are different opinions in details between the guidelines, the problem is not lack of knowledge. The problem is that the guidelines are not complied with; why? Some possible explanations are:

- ignorance and lack of awareness,
- technical and economic obstacles,
- decision-makers and industry do not give priority to accessibility, for example because persons with disabilities are too small a market. Accessibility is not regarded as big business, it is not even regarded as small business.
- the laws are too weak. There is no penalty for not complying with the regulations.

Accessibility legislation in the Nordic countries concerning, for example, design of buildings will be highly affected by EC directives and European official standards.

Denmark is a member of the European Community while the other Nordic countries are members of EFTA. An agreement between the EC and EFTA, becoming operative from January 1, 1993, is anticipated. Roughly, this means that the single market of the EC will be extended to the EFTA countries. As a consequence of this agreement, the Nordic EFTA countries have to adapt their concerned regulations to the corresponding regulations of the EC. The regulations in the EC countries are to a great extent determined by EC Directives and standards established by the European Standards bodies CEN/CENELEC and ETSI.

Building norms in the Nordic countries are adapted to the Nordic climate, culture and tradition and Nordic way of living which, to some extent differs from other countries. It is therefore of vital interest that the principles laid down in the regulations be preserved within the framework of the anticipated harmonization of the regulations in the EC and EFTA countries. From a Nordic point

of view joint influence on EC Directives and standards is of great importance.

In the World Program of Action concerning Disabled Persons, the United Nations state that public entities, non-governmental organizations, companies and individuals who operate services for the public, should make that service accessible for persons with disabilities. This is implemented fully in the United States by the ADA. If to this principle it is added that adaptation cost should be financed in the same way as other aspects of the service, the result is literally translated - in Swedish - as the principle of responsibility and financing. This principle is recognized in Sweden and Denmark and partly in the other Nordic countries. It is, however, not sufficiently known and applied.

Referring to the study and its proposals, a number of measures can be taken to improve the accessibility of the built environment, such as:

- Inform the market that disabled people are not a separate group. Rather, disability should be regarded as a temporary or permanent limitation of a person's functions, congenital or acquired. Anyone could be affected by a disability during some period in their lifetime. Consequently, accessibility improvements are beneficial to everyone.
- accessibility should be included in the education of architects and building engineers.
- make economic incentives, e.g. make accessibility a condition for favorable bank loans.
- coordination of Nordic specifications of accessibility characteristics of construction products, as a basis for participation in European and international standardization.
- coordination of Nordic functional requirements regarding the design and space of buildings, as a basis for influencing European harmonization work.
- more stringent legislation, e.g. penalty for not complying with the law. This implies that it is always made fully clear who is responsible for making the building accessible. In other words, the principle of responsibility and financing should gain increased momentum.

Regarding the outdoor environment, the situation is similar to what I said about buildings; there is sufficient knowledge which, however, is not sufficiently applied, for similar reasons. The ways of improvement are roughly the same. The design of the outdoor environment is, however, a concern for the municipalities and depends very much on the local situation. The possibilities of Nordic co-operation is much smaller than for buildings and transportation. The study was discussed in April 1991 by the board of the Nordic Committee on Disability and the following agenda was decided:

- Proposal of how a systematic Nordic influence on EC directives can be made.
- A more accurate analysis of the effects of the current accessibility legislation in the Nordic countries.
- Identify the fields where common Nordic functional requirements are most important, taking into account present and planned action within the EC.

A socio-physical study towards building barrier-free urban environment in Iran

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Introductory Note

A 5-year National Development plan of the country for the period 1989-1994, was approved with the allocation of expenditure at all spheres of construction and development. This includes "renovation of the overall urban environments towards the needs of the disabled". Organizations such as the Ministry of Housing and Urban Planning.(MHUP), the Municipalities of large cities such as Tehran and Isfahan, the Djanbazan Foundation, and different university faculties, embarked on different research programs.

This paper is part of a research study into the renovation of the existing urban environments, as a joint venture between the faculty of Architecture and Urban Planning of Shahid Beheshti, University of Tehran and the DBRE Research Center.

Description of the problem

Since not all areas of the urban environment in this country are rationally planned and designed, and urban laws and regulations are either non-existent or not effective enough to control the whole process of urban development, most of the cities face severe problems in their activity systems and their physical translation. Problems exist such as incorrect distribution of land-use throughout the cities and problems concerning the movement of people and cars and their interaction.

Formulation of objectives

The broad aim of the research study was to adapt the existing urban spaces according to local conditions (human and physical) suitable to the needs of disabled persons. Movement for pedestrians is sometimes impossible for the non-disabled besides having a disabling potential. On the other hand, most large cities in Iran, especially the capital, Tehran, have a developed and complex situation so that renovation on a large scale is not only difficult but sometimes impossible. Thus, the purpose of this study was to find solutions that are answerable to the following objectives:

- Combating the most critical and crucial problems.
- Finding solutions that can be easily and expediently implemented.
- Finding solutions that are feasible.
- Finding least technology and minimum expenditure solutions .
- Finding solutions suitable to the physical characteristics of the local population and to the walking-aids available in this country.
- Finding solutions that fit the aspirations and needs of the local disabled population.

Methodology

The study attempts to propose accessibility guidelines by conducting basic research into local conditions, constraints and potentialities. Different steps involved in achieving this purpose are summarized as follows:

- To select an area as a case to be studied.
- To describe the physical system and activity pattern in the area.
- To review the measures taken by the different organizations to remove barriers in the selected area.
- To suggest, within the framework of the set aims, the solutions for a barrier-free environment for disabled persons.

Selection of the case study

In order to select a case study, the first step was to find a province, then a city which had the highest number, proportion and density, of the disabled population.

Selecting the province
The results of a 1986 census of the population indicated that 0.9 per cent of the 49 million inhabitants have some kind of physical disablement. In order to classify the country's 24 provinces, two criteria were chosen:

- Disabled persons as a proportion of the province's total population,
- Density of disabled population in the province.

Classification of provinces against first criteria
Considering the proportion of the disabled population, we reach a five-fold clustering of the 24 provinces, Tehran province had the highest rank.

Classification of the provinces against second criteria
Selection of this criteria was based mainly on considering economic aspects of renovation while stressing the aim of economizing in renovation activities. This criteria has been given priority over the first one.

Selecting the province
Tehran Province, again, had the highest density of disabled persons.

Classification of Shahrestans (a lower level of administrative area)
Tehran province has 7 Shahrestans. According to the 1986 census, the population of this province was 8.7 million, 86.5 per cent of which were settled in urban areas. Similar to the method adopted above, from among 7 Shahrestans, Tehran Shahrestan had the highest number, proportion and density, of the disabled population.

Selection of the city
The city of Tehran which had 99.7 per cent of Tehran Shahrestan's total population and 90 per cent of Tehran Shahrestan's disabled population within its boundaries, was selected at this stage of the study.

Selecting a part of the city as the final case study
The purpose of this stage was to find an area within Tehran which was the focal point of disabled population's activities and land-uses required by the disabled population. To select an area within Tehran, a four-step method was adopted.

First step: Studying the activity pattern of disabled persons in Tehran.
Land-uses directly related to disabled people's needs were under the auspices of three different organizations.

Second step: To study the relative importance of activities.
In order to define the relative importance of the activity pattern repetition of the activities by the disabled population was considered, through analyzing the information gained from 134 people with disabilities (war disabled), who referred to the DBRE Research Center to receive prostheses, orthoses and rehabilitation services.

Third step: The final classification of disabled people's activities
Considering the classification obtained in step 1 and 2, disabled people's activities could be finally