# Report of the Second International Expert Seminar on Building Non-Handicapping Environments: Renewal of Inner Cities

## Prague, October 15-17, 1987

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## The Old House

### Poem by Pavel Benes

The old worn house
Deteriorating gradually
Has finished to serve.

Away with it,
Who cares,
Time to scrap it!
New houses must be built.
New successors come,
Thousands of houses! An army of houses!

Time consumes the house like a cake.
Spring showers quench its thirst.
The walls cry,
Raising their cracked bodies to the sky.
They want to live, carry the roof,
Hear the sounds of
Happy babies,
Of arguing parents,
The joy of first successes
And of hushed love cries.

The old worn house
Has been forgotten.
Mice only, the patient listeners,
Listen patiently to its story.
Trees and shrubs, the green grave diggers
Weave a crypt of twigs and branches.

# Preface

Accessibility of the built environment for old and disabled citizens is a relatively new field for research and development which is illustrated by the fact that this area was recognized only recently as an independent subject within CIB. In many countries today consumers put increasing demands on legislation and standardization to safeguard accessibility of the built environment as a basic human and civil right. This development points out a rising need for information, training and continued education for the planning and building professions and requires more intensive research and development efforts.

The United Nations International Year of Disabled Persons in 1981 and the United Nations International Year of Shelter for the Homeless in 1987 have amply demonstrated the need for incorporating accessibility requirements at an early stage in the planning process regardless of a particular country’s development stage. The United Nations Expert Seminar in the evaluation of the midpoint of the United Nations Decade of Disabled Persons in Stockholm in August 1987 placed the highest priority on the need for equalization of opportunities of disabled persons where accessibility of the built environment is one of the most basic requirements. In this work the decisive role of disabled persons and their organizations was emphasized in the discussion of research and development needs, research strategy, results and implementation.

In 1983 CIB, the International Building Research and Documentation Council, established a Working Commission in the disability area. Professor Sven Thiberg was appointed Coordinator of the Working Commission which received the name "Building Concept for the Handicapped". The Commission’s secretariat was placed with the Department of Building Function Analysis, School of Architecture, The Royal Institute of Technology, Stockholm. Initial funding was provided by the the Swedish National Council for

Building Research.

CIB W84 aims can be summarized in three points:

> to raise the general level of expertise of and to stimulate interest in accessibility issues among the groups who influence shape and role of the physical environment,
>
> to contribute to R&D and international exchange within well defined areas of strategic importance that up to now have been neglected and are suitable for international exchange of experiences,
>
> to strengthen contacts, exchange and cooperation on a regional level by utilizing the benefits inherent in cultural and linguistic congruence.

The Working Commission's first Expert Seminar took place in Stockholm in April 1984. Among the outcomes of the Seminar were recommendations and priorities for the Commis-sion's future work. At the meeting CIB W84 changed its name to 'Building Non-Handicap-ping Environments'. The Seminar's proceedings are published in Report of the International Expert Seminar 'Building Concept for the Handicapped' in Stockholm, April 10-12, 1984, The Royal Institute of Technology, Department of Building Function Analysis, Stockholm.

The present document consists of the proceedings of the second Expert Seminar organized by CIB W84 in Prague on October 15-17, 1987 under the theme "Renewal of Inner Cities". This area had received highest priority at the 1984 Expert Seminar in Stockholm. Over 140 experts from 25 countries participated in the Prague Seminar presenting 40 papers. 30 of the participants were persons with disabilities. At the Seminar the newly formed CIB W84 Program Committee convened for the first time.
The Prague Seminar would not have been possible without our hosts, the Federal Committee, Union of Disabled People in the Czechoslovak Socialist Republic and its resourceful, dedicated and highly competent elected officers and staff. We express our gratitude and warmest appreciation especially to Ing Ales Chytka, CSc. who prepared the ground for the meeting and had the main responsibility for its successful organization.

It is with this stimulating background of growing interest, expectations and trust that CIB W84 is planning its future work. To utilize and build upon this good will requires great professional responsibility and commitment to 'Building Non-Handicapping Environments' on the part of the whole CIB W84 community of researchers, educators, planners, architects, builders and, most importantly, disabled people and their national and international organizations.

Sven Thiberg
Coordinator

Adolf D. Ratzka
Associate Coordinator

# Editor's Note

First a comment on language. In the present documentation expressions such as "invalids", "handicapped", "cripple" or "patients" "people suffering from", "afflicted with" have been replaced by "persons with disabilities" or "consumers". "Cripple" is

associated with disfigured beggars, "in-valid" with Latin origins literally means "worthless". "Handicapped" implies disadvantaged and, according to some sources, is derived from "hand-in-cap" and refers to beggars. Thus, everyday language depicts persons with disabilities as helpless, suffering victims dependent on the charitable instincts of others for their very survival.

Language both reveals and influences attitudes. Some disabled persons use these derogatory terms on purpose in order to highlight general attitudes and to point to the systemic discrimination that people with disabilities are exposed to. I chose to eliminate these denigrating expressions, since people cast in such negative images have great difficulties in defending their right to equal opportunities including accessibility in the built environment.

At the Seminar more papers and prepared statements were presented than were anticipated and more than could be included in the proceedings. The criteria for publishing were not easily arrived at and are certainly open to discussion. Papers were selected on the basis of quality and general interest. Presentations which did not address renewal of inner cities were not included.

Accessibility and the renewal of inner cities is a relatively new issue. Yet in many parts of the world where it has always been taken for granted that people with disabilities do not participate in the community, it is still not an issue at all. The resolutions adopted by the meeting reflect these realities. In the future work of CIB W84 it might be useful to refer to the resolutions again in order to make sure that all participants understand and share the same commitment to equal rights for all citizens and to avoid that future meetings have to establish this platform over and over again and, instead, can proceed directly to the means of how to guarantee equal rights to citizens with disabilities.

Adolf D. Ratzka

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 Federal Committee, Union of Disabled People of the Socialist Czechoslovak Republic, Prague

sponsored by
the Swedish National Council for Building Research, Stockholm, the Voluntary Fund for the United Nations Decade of Disabled Persons, Vienna and the Bureau for Action in Favour of Disabled Persons, Commission of the European Communities, Brussels

# 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 Union of Disabled People in the Czechoslovak Socialist Republic is an organization

of persons with all types of disability. The Union engages in social rehabilitation, owns and operates Braille printing presses, tape libraries, recreation centers and the manufacturing companies META and INTEGRA for providing job opportunities for 5Ê000 severely disabled persons and developing and producing assistive devices. The Union with over 200Ê000 members is the official voice and advocate of all disabled persons in the country. The Union closely cooperates with state authorities but is not controlled by them.

The Department of Building Function Analysis 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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Coordinator Professor Sven Thiberg
Associate Coordinator Adolf D. Ratzka, Ph.D.
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# Opening address

**Dr. Rudolf Hegenbart**

Ladies and gentlemen, comrades, dear friends,
On behalf of the Government of the Czech Socialist Republic and myself I welcome you to this Seminar on 'Building Non-Handicapping Environments in the renewal of inner cities.

This is a special topic for several reasons. For one, depending on the definition used, between 8 and 15 per cent of the population are disabled - a powerful group in sociological and economic terms. Further, efforts on the part of the authorities and the Union of Disabled People to eliminate architectural barriers are not only directed at persons with disabilities but also at old persons, children, pregnant women and other persons with impaired mobility. The needs of these groups have been articulated and put forth by the Union of Disabled People. The Government of the Czech Socialist Republic knows and deeply appreciates the work of the Union.

Our society's concern for people with disabilities is not limited to the elimination of architectural barriers. The CSSR government is engaged in monitoring the incidence of disability in the population and its causes, in running rehabilitation centers, in re-training disabled workers and in improving education and vocational rehabilitation of disabled children and youth.

Czechoslovakia is facing difficult problems, problems that have to do with changes in our economic system, the further development of our production system, the protection of the environment and future economic growth, as emphasized at the 17th Communist Party

Congress. We need great enthusiasm, optimism, will power and respect for life in order to solve these problems. I stress these attributes because people with disabilities use them all the time. It is my sincere wish that these properties that are so crucial to successful problem solving will influence this meeting and its results, results which contribute to creating conditions for a rich and beautiful life, a life worth living for all.

# Introduction to the Themes of the Seminar

**Adolf D. Ratzka**

The United Nations in their ’World Program of Action Concerning Disabled Persons’ define handicap as "a function of the relationship between disabled persons and their environments. It occurs when they encounter cultural, physical or social barriers which prevent their access to the various systems of society that are available to other citizens." Equalization of opportunities then means "the process through which the general system of society, such as the physical and cultural environment, housing and transportation, social and health services, educational and work opportunities, cultural and social life, including sports and recreational facilities, are made accessible to all."

This language makes it clear that handicap is not a medical or technical problem, but a political problem.
It is a political problem, because disabled people face systemic barriers which limit their opportunities for equality and full participation.

It is a political problem because in all countries disabled people as a group are worse off than the general population in terms of education, work opportunities, income and standard of living. As a disenfranchized group we are in the same situation as other minorities such as underprivileged ethnic and racial groups.

Disability is a political problem because different priorities and a different allocation of existing resources could eliminate most of these barriers.

Disability is a political problem because disabled people the world over are struggling to gain self-determination and the right to speak for themselves on all issues which are important to them.

We have come here to this seminar to consult with each other and to exchange experiences on how some of the physical barriers can be eliminated which today prevent our older and disabled citizens from full participation and equality in their communities. In this effort all professions have to unite: government officials, planners and architects, sociologists, economists and psychologists, teachers and researchers, and all those who have a concern for the built environment and its impact on its users. Above all we need disabled people and their organizations, since their expertise in this area matters most. This has also been recognized by the recent United Nations Expert Seminar on the Midterm Evaluation of the United Nations Decade of Disabled Persons. The United Nations meeting recommended that "in recognition of the fact that they have personal experience in the disability field, disabled people should participate in and should be represented at all United Nations expert group meetings on disability and all United Nations sponsored meetings at the regional and national levels".

During the Seminar we will approach our subject on several levels. We will discuss how the institutional framework such as existing legislation, accessibility standards and their enforcement, financing and subsidy instruments influence the outcome of reconstruction

and renovation of inner cities for older and disabled persons. Many countries have taken important steps to eliminate or reduce barriers to full participation. Legislation has in many cases been enacted to guarantee to disabled people the rights to schooling, employment and access to community facilities, to remove cultural and physical barriers and to proscribe discrimination against disabled persons.

We will present technological innovations used in reconstruction and renovation of buildings in the form of more efficient materials, methods, and technical solutions that can improve older and disabled persons' ability to live in the community and stay outside of institutions.

We will discuss the criteria and methodology needed to guide us in designing a built environment that is truly accessible for all - not just for the minority of young adults without small children whom our present cities seem to be built for.

For many individuals with disabilities accessible environments have to be supplemented by personal assistance services in order to enable them to live and work independently in the community. The challenge here lies in designing organizational solutions for such services which do not carry institutional traits but foster self-direction and independence and allow the same choices of residence and life-style that the general population enjoys.

In planning the Seminar we were surprised by the strong interest in accessibility issues on the part of disabled leaders, planners and architects from developing countries. In these countries accelerating rates of urbanization, advances in health care, increasing populations of older and disabled persons and the rising influence of organizations of people with disabilities are creating a growing awareness of accessibility issues. In order to accommodate this interest we added a workshop on accessibility in the Third World. Despite differences in economic resources and technical solutions between industrialized and developing countries there are strong similarities such as the low priority assigned to disability issues by governments and the general public, the tendencies towards segregating disabled persons through special solutions and institutions as well as the lack of consumer input in planning decisions. When it comes to disability rights and the requirements for equality and full participation for older and disabled citizens all countries seem more or less underdeveloped.

The man-made environment of today is the result of a multitude of incremental decisions of the past, decisions which reflect the social and political priorities at each point in time. Often we are told that the reason why our cities are largely inaccessible is because they are so old. Is it really old age itself or is it the fact that the needs of disabled people have been neglected in the past? For centuries we were not considered part of our communities. For centuries those of us who were allowed to survive were put up in asylums and kept in subhuman conditions. Even today many of us are incarcerated in institutions, shut off from ordinary life, robbed of opportunities to engage in education, meaningful work and cultural and political life. Even today planners and politicians in many countries build segregated housing facilities for people with disabilities and will proudly show these ghettoes to foreign visitors. Even today city planners will construct one accessible housing complex or shopping street and use this as an alibi for leaving the rest of the city inaccessible. In Stockholm, Sweden, for example, over 95% of the housing stock is inaccessible to people who cannot climb one or more steps. And Stockholm is probably one of the better places. When you get home, look around and you will see how the physical environment segregates and excludes citizens with disabilities from active participation in all aspects of life. Apartheid is rampant - not only in South Africa but in most countries on this globe.

People with disabilities are used to being told that it would be nice to have accessible

cities, but we cannot afford it. As one of the seminar participants puts it in his paper, inaccessible environments are less humane but cheaper. This attitude is widespread and reflects a very narrow and short-term definition of costs and benefits. For one, accessible new construction may not cost that much more. In Sweden, in new residential construction the additional cost of accessibility measures has been found to be less than one per cent on the average. On the other hand, once a structure is accessible it will remain so and yield benefits throughout its existence. These benefits include savings to the individual and the public in the form of fewer accidents and less need for institutions, since individuals who acquire a disability will not be forced to move to special residential care facilities. In a recent study I found that, if all such costs and benefits are considered, it is even economical to retrofit old housing structures with elevators in housing with as few as three floors in height and only nine apartments per elevator

Further, it is difficult to accept any economic argument when it is obvious that most countries can ’afford’ the armament race and similar disability-producing investments. The technological sophistication, resources and manpower presently invested by many nations in developing more efficient ways to kill and maim make the solutions presented in this Seminar to improve the accessibility of older and disabled persons appear like bicycle technology.

Finally, the cost issue is not relevant when it comes to human rights. To continue with the South African parallel, would it be acceptable to abolish Apartheid only when it ceases to be profitable for the white minority?

Disabled people cannot single-handedly change and reconstruct the built environment. We need allies in this effort, allies whom we can sensitize to our needs, who recognize that we are experts on matters concerning disability and who are ready to utilize this expertise in planning. This seminar, hopefully, can contribute to the formation of such alliances towards providing older and disabled people with the means to live and work in the community as equal citizens at their own terms in order to translate their right for self-determination into reality.

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## Introduction to the Seminar’s Discussions

Sven Thiberg

In order to put the discussion of the present seminar into perspective it might be useful to recall what happened at the first CIB W84 Seminar in Stockholm in 1984. The Stockholm meeting based mainly on Swedish presentations had the aim to formulate a starting platform for further work. It was a much smaller gathering than the Prague Seminar and rather traditional for CIB with a domination of professionals and government officials. In Stockholm two important steps were taken:

we changed the name of the Working Commission from "Building Concept for the Handicapped" to "Building Non-Handicapping Environments". It was more than a change of language.

we decided to involve the users, consumers in the words of the Commission, as equal partners in our work. The purpose was not to leave the professional responsibility for research or planning to them but to utilize their expertise for confronting ideas, results and strategies and to establish a forum for evaluation of the work of professionals for the

purpose of strengthening the user's situation.

One concrete outcome of the Stockholm meeting was a list of priorities for further activities within the Commission. In the preparations for this meeting "Renewal of Inner Cities" seemed an obvious area in urgent need for penetration. We intended to concentrate on a clearly defined problem in the built environment. Prague, this center of European culture and architectural tradition, seemed a very suitable place for such a discussion. Prague is an extraordinary example of the conflict between historical monument and modern life. But here we also found an active and progressive organization of the disabled people, the Federal Committee of the Union of Disabled People.

CIB's work consists of research, studies and documentation of all aspects of the built environment. CIB normally arranges meetings for professionals organized by professionals. CIB W84, too, has as its basic goal to deepen and widen the knowledge of the built environment through studies and research and to make this knowledge available and used through documentation and information.

But we are aware that the scientific community has a tendency to isolate itself from real life and to choose its issues more from a perspective of scientific pride than from urgent and practical needs of the people. For this reason we emphasize the basic question of the goals for research in our field by widening the problem from the "Building Concept for the Handicapped" to an issue of general adaptation of the built environment to all users in an equal society. Unfortunately, I have to say, this has to be repeated everywhere and every day, even if it sounds to some of us more like a political than a professional standpoint.

The contents of the papers mirror the state of the art. The inner city problems have not been on the top of the priority list up to now. Much emphasis is put on the design of new buildings, the equipment of the building and details within that framework. Inner city questions are wider than that. As battlefields for very strong economic forces and conflicting interests they not only meet past and present but also face market forces, administration and commerce as well as the consumers, the strong young newcomers to town and the old and often weak citizens.

We can choose to look upon this as problems or as a challenge, a chance for changes and the utilization of potential resources. To realize these opportunities strategies and methods have to be developed, planning on a regional and local level is needed, instruments to harness the strong economic and administrative forces have to be developed. While many of us have touched upon these areas in presentations and discussions, much more has to be done to get to the core of this area of research and application.

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## Summaries of Discussions in Workshops 1 - 6

Workshop 1 Institutional Factors

Workshop 1 addressed institutional factors, the influence of legislation, accessibility standards and their enforcement, financial and subsidy instruments on the outcome of reconstruction and renovation of inner cities and their consequences for old people and persons with disabilities.

Chair: Ms. Maja Könköllä, Finland
Rapporteur: Mr. John Penton, United Kingdom

Presentations were given by

JR Champagne, National Research Council of Canada
Title: "Canadian Action on Handicapping Environments"

M Vovk, Urban Planning Institute of SR Slovenia, Yugoslavia
Title: "Housing Renewal Investment within the System of Housing Management Investment"

M Fränti, Ministry of Environment, Finland
Title: "Building Legislation and Norms - the (only) way to achieve Non-Handicapping Environments"

H Weiss Lindencrona, Ministry of Housing and Physical Planning, Sweden
Title: "From Barrierfication towards Barrier-Freecation of Inner Cities"

K Strömberg, National Swedish Institute for Building Research, Sweden
Title: "The Swedish Program for Improving Accessibility: An Evaluation"

M Fox, ACROD/ Fox and Associates, Australia
Title: "Access Australia"

JR Champagne pointed to the absence of training of firefighters in techniques for evacuating disabled persons and the negative impact that this tends to have, although changed approaches are now emerging, particularly in relation to heritage buildings. M Vovk drew attention to the widening range of source funding for housing. M Fränti laid great emphasis on the need for enforceable legislation based on norms in consultation with disabled people and experts. Such legislation should be binding in new construction, but flexible in the case of renovation. H Weiss Lindencrona advocated five principles: the need to focus on inner cities, the need for more and better research, emphasis on renewal and adaptation with the need to work out compromises, the need to change attitudes and to identify the concept of real costs. If enforcement is to be acceptable, the application of standards must be underwritten by quality assurance. K Strömberg stressed the right of accessibility in the context of declining new construction activity and expansion of renewal programs. He also demonstrated that subsidies had little effect on the introduction of lifts in 3-storey housing in Sweden. M Fox placed the technical issues of accessibility in the broader context of the need to understand the relationship between legislation and public awareness, the importance of giving it a community basis, and the imperative of developing strategies for effective implementation.

The discussion in Workshop 1 can be summarized by the following statements:
Access should be seen in the broader context of the comprehensive environment including transport, buildings, public places, communications (including information and documentation) and equipment.

Specific recommendations regarding all aspects of buildings include:
There should be a basic statute in every country’s federal or state building legislation aiming to achieve non-handicapping environments, by taking into account the presence of disabled persons in public buildings, work places and housing. Legislation on design criteria should recognize and implement the human right of disabled people to a barrier-free environment and full and equal participation in society. Recognizing the particular expertise of disabled people in this work they and their organizations are to

directly participate in the establishment of barrier-free environmental design criteria.

Any such statute should be based upon norms, identified by the authorities of the respective countries which state the functional and numerical criteria for building design. While any such statute should be binding in relation to new construction, it should offer the scope for flexibility in the context of renovation, adaptation and extension.

For legislation to be effective it will require continual monitoring and re-evaluation together with the development of appropriate public awareness and promotional campaigns.

There is an urgent need to form more effective alliances - for instance between old citizens and persons with disabilities. Only by these means will it be recognized that it is normal for some persons to find it more difficult to manage their environment than others. This concern should be extended to inner cities in the developing world where increasing numbers of people with disabilities are being forced to compete in progressively more unsatisfactory conditions.

There is an urgent need for improvement in communications between architects and planners. Professional elitism is still a major contributing force in sustaining resistance to accessibility. Attention should be given to the training of architects and other environmental professionals.

Innovative approaches are needed in academic curricula and continuing education programs in order to ensure that designers respond to the needs of persons with the widest possible range of human characteristics. It is essential that this approach should be seen in the context of the development of valid, useful, universal concepts rather than as mere compliance with regulatory demands.

The definition of standards needs to be based on performance. In this way norms can be seen as tools for the designer, rather than as additional constraints. If design requirements are expressed in terms of specific performance, there would be much less resentment to disability issues on the part of architects and other designers. Models presented as examples of good practice tend to be a more acceptable approach to many designers.

Urgent attention needs to be paid to the concept of real costs. A redefinition of normal costs is needed to deal effectively with the all too frequently asserted argument that accessible design means additional costs. In this context historical experience is not a valid criterion for determining normal costs, since it is based upon exclusionary principles.

## Workshop 2 Technological Innovations

Technological innovations in reconstruction and renovation in the form of more efficient materials, methods, and technical solutions can improve accessibility and old and disabled persons’ ability to live outside of institutions.

Chair: Mr. Kalle Könkkölä, Finland
Rapporteur: Dr. Allan Morris, United Kingdom

Presentations were given by:

G Bull, Norwegian Building Research Institute, Norway
Title: "The Flexibility of Kitchen Fittings"

U Frehse, UAK City of Munich, Fed Rep Germany
Title: "Public Transportation for Everybody!"

LG Karlsson, Akantus AB, Sweden
Title: "Accessible Housing"

H Örnhall, National Board of Physical Planning and Building, Sweden
Title: "Improved Accessibility in Bathrooms"

K Vasek, Vítkovice-Transporta, Czechoslovakia
Title: "Lifting Platforms for Wheelchair Users"

The papers demonstrated important advances in technology designed to assist old and disabled persons in a variety of situations. G Bull reported on a study of kitchen equipment and its adaptability to various user groups including old persons whose ability to maintain an independent life in their own home depends to a large degree on how well they manage daily kitchen work. U Frehse demonstrated an accessible public bus now being tested in Munich, West Germany. This particular type because of its very low floor can accommodate users who otherwise would have difficulties in climbing steps such as parents with baby strollers, old persons and wheelchair users. LG Karlsson reported on new equipment and methods that are being developed in Sweden for retrofitting existing apartment houses with elevators. The solution entails sawing off and narrowing the staircase and inserting in the resulting free space the elevator shaft. In this way elevators spacious enough to accommodate wheelchair users can be installed without evacuating the tenants. H Örnhall described new equipment and methods for retrofitting bathrooms in old apartment houses such that old and disabled persons' possibilities of remaining in their familiar environment are considerably increased. K Vasek demonstrated a lifting platform which can be installed in private homes and public buildings.

The following points summarize the discussion in Workshop 2:

The participants agreed that money spent on technological research in this area can reap rich rewards for disabled people and the general public. Much of what is required in terms of level of technology is amazingly simple in nature. In view of the fast-growing numbers of old people and citizens with disabilities in most countries much greater resources must be channelled into ways by which they can live independently both in their homes and in public life. An economic argument could be made for a policy of subsidizing research and development of new technical solutions which enable people with disabilities to become more independent. The beneficiaries of such advances are not only individuals with disabilities, their families and friends but also fiscal bodies at various levels which realize savings in terms of reduced demand for institutional care facilities and special services. Such savings can best be internalized by the national government for which investments in this field, in the form of tax incentives or direct subsidies, carry high returns.

While educational efforts should be undertaken in order to raise the general public's awareness of the importance of appropriate technology in increasing the urban environment's accessibility to all citizens, it was felt that training should be made available to persons with disabilities themselves in order to assist them in formulating their needs and in providing input into the design and planning process.

The workshop's participants agreed that more research and development is called for in the area of how to incorporate features important for disabled users into standard products

intended for the general public rather than designing special systems exclusively marketed for the use by persons with disabilities. One of the most important criteria for good design should be usability by all.

Workshop 3 Design Criteria and Methods

Needs of old and disabled persons translated into design criteria for accessible inner city renewal.

Chair: Ms. Rachel Hurst, United Kingdom
Rapporteur: Dr. Jonathan Sime, United Kingdom

Presentations were given by:

PM Arsic, Architektura i Urbanizam, Yugoslavia
Title: "Architecture as a Brake or Architecture as a Stimulus"

AE Galkowski, Technical University Poznan, Poland
Title: "Architectural Design Promoting the Accommodation of Disabled and Old Citizens within Inner Cities"

P Gartshore, J Sime, BUSRU School of Architecture Portsmouth, United Kingdom
Title: "Life Safety in Public Buildings: Access and Egress for the Mobility Impaired"

S Kose, M Nakaohji, E Itoigawa, T Yashiro, T Takahashi, Building Research Institute, Japan
Title: "Development of Design Guidelines of Dwellings for the Aging Society: A Japanese Perspective"

S Köbsell, T Hilbert, WHO/Hauptgesundheitsamt Bremen, Fed Rep Germany
Title: "Housing and Traffic Planning for Wheelchair Users"

H Loeper, Institut für Gesundheitsbau, Germ Dem Rep
Title: "Planning and Building in the City: Towards an Accessible Environment for Disabled and Old Citizens"

T Polinszky, L Banhidi, O &ARING;lund, H Loeper,
Title: "What Happened in the Barrier-Free Environment Design in Hungary in the Eighties?"

A Wokoun, V SI, Czechoslovakia
Title: "Esthetic and Social Aspects of Architectural Barriers"

WW Wrightson, Barrier Free/NZ Crippled Children Society, New Zealand
Title: "Barrier Free Design: Safety for a Caring Community"

CA Yoshida, Kyoei Gakuen Junior College, Japan
Title: "Three Stages of Housing Methods for the Elderly Society"

The presentations reflected a broad range of concerns. P Arsic reported on a survey which demonstrated how inaccessible environments seriously limit mobility and quality of life for persons with disabilities. A Galkowski outlined the needs of all individuals including

persons with disabilities which the environment has to fulfill throughout the life cycle. P Gartshore and J Sime drew attention to the issue of egress in emergencies such as a fire. These problems are often used in barring persons with disabilities from using public buildings. They concluded that evacuation guidance documents are needed as a back-up to building standards and codes. Kose et al. provided a checklist of design specifications which when followed would allow old persons to live independently in the community. S Köbsell and T Hilbert showed how the lack of mandatory accessibility building codes in their community results in a supply of accessible housing of only 120 units while the demand is estimated at 1500 units. H Loeper emphasized the need for a comprehensive view in planning for all citizens. Accessibility in the built environment must be supplemented by a range of community-based services in order to enable old and disabled citizens to fully participate in the community. T Polinszky et al. reported on an international study on space requirements for the mobility of persons with disabilities. The study will include an investigation of whether persons with disabilities require special micro climates. A Wokoun confronted the 'purist's' esthetic view on heritage buildings with the demands for 'democratization' of monumental staircases. WW Wrightson pointed out that a building's accessibility must be seen in the wider context of transport systems, public or open spaces and adjacent buildings where the concept of the 'Accessible Journey' is the mechanism linking these components together. CA Yoshida described how the traditional Japanese home has to be modified in order to allow aging in place.

The discussion in Workshop 3 focused on the following points. While each speaker indicated that there is a growing, if minimal, awareness of the importance of barrier-free design in his or her country, there were differences in the degree to which disabled people are fully integrated into the community through design. Design solutions vary from schemes tailored to disabled people as a separate group (e.g. institutionalized or specialized residential accommodations) to more open access to a range of buildings and public spaces. A notable contrast is the progress in barrier-free legislation and design that has been made in New Zealand with its small population (some 3 million) and newer building stock, compared to European countries. It was also noted that disabled people had been active in promoting this effective access legislation.

The propagation of barrier-free design seems directly tied to general housing policy such as modern mass housing in large-scale residential blocks in Eastern European countries or, in recent years, in smaller scale housing schemes in Western European countries. The degree to which an emphasis on ensuring that everyone has a roof over their heads in reality extends to disabled people as active members of the community is a political, economic and architectural issue which has evidently not been sufficiently addressed or researched.

A number of speakers illustrated with slides and personal accounts common barriers to physical movement. It was clear that each country has a long way to go before there is widespread access to homes (whether in high or low-rise buildings) or before disabled people can move about the urban environment easily. While it was generally felt that disabled people should be accommodated into all new architectural schemes, there was little discussion of how, in practical terms, improvements through design, funding or legislation could be made in the old building stock to ameliorate the problems caused by physical barriers to movement. This remains a pressing but difficult issue to resolve.

The presentations were predominantly about the difficulties faced by wheelchair users. The discussion then was extended to include the problems of the visually impaired and hearing impaired as well.

In a number of countries (e.g. UK, Japan, USA) the introduction of barrier-free design has been seriously delayed by the issue of building safety or building egress. Disabled people are often denied access to a building because their safety cannot be assured. National codes and standards are needed to ensure safety within a building. A particular difficulty here, however, is the division between design standards or codes and evidence on evacuation procedures. These need to be articulated and more fully integrated.

The unprecedented high increase in the aging population in Japan highlighted the need for future planning to be based on projected population statistics to ensure that housing is available to all people whatever their age, disability or situation - a house should be a house for life.

There was also discussion on the very low priority given to disability issues, high costs being often used as an excuse for inaction. It was emphasized by the group that, if barrier-free design criteria were incorporated at the planning stage, the costs were minimal.

## Workshop 4 Case Studies of Inner City Renewal

Participants presented and analyzed examples of inner city renewal from various countries with respect to its effects on disabled and old persons.

Chair: Mr. Ron Chandran-Dudley, Singapore
Rapporteur: Mr. Michael Fox, Australia

Presentations were given by:

B Bratko, L Molek, Urban Planning Institute of SR Slovenia, Yugoslavia
Title: "The Town Center as a Residential Environment"

J Frederiksen, FIMITIC/Housing Transportation Technical Aids, Denmark
Title: "The Danish Experience: An Example from &ARING;rhus"

Z Jékely, G Molnár, Ministry of Building, Hungary
Title: "The Renewal of the Inner Districts of Budapest"

JJ Kroon, Netherlands
Title: "Opportunities for Obstacle-Free City Renovation in The Hague"

K Månsson, The Handicap Institute, Sweden
Title: "Housing Adaptations for Families with Mobility Impaired Children"
"Housing with Day and Night Service for the Severely Disabled in Sweden"

J Paulsson, Chalmers Institute of Technology, Sweden
Title: "Housing Renovation with Special Respect to Old and Disabled People"

M Sámová, Slovak Technical University of Architecture, Czechoslovakia
Title: "Renewal of the Inner City of Bratislava: Creating Non-Handicapping Environments for the Disabled"

B Bratko and L Molek presented work done in the town of Krsko, Yugoslavia - a small city with roots in the Middle Ages - where researchers invited and utilized citizen

participation in planning large-scale renovation measures. J Paulsson reported on housing rehabilitation in Gothenburg, Sweden. He emphasized that it is not only the result of these measures which is important but also how the results are achieved. The methods used for housing renovation typically cause the displacement of the current tenant generation - often predominantly old persons - and the destruction of their social support network. As a result many of the relocated old persons experience a decisive drop in their quality of life which can lead to institutionalization. K Månsson concentrated on the needs of disabled children and their families in terms of adaptations of the physical environment. She also gave an account of the changing Swedish view on the cluster housing solution for persons in need of personal assistance. JJ Kroon showed some interesting examples of how accessibility for mobility-impaired persons could be improved in such venerable historic monuments as the Dutch Parliament's ceremonial hall without visible changes in the building.

The discussion in Workshop 4 identified the following key items for action:

Identify and resolve the conflict between access and practicality particularly regarding monumental, historic and civic buildings without compromising architectural values or the quality of accessibility.

Ensure participation and liaison with relevant advocates, professionals and people with disabilities addressing all access issues.

Develop guidelines and programs for access to and within inner city areas to create a continuous system of access (i.e. including transport, public and private buildings and spaces, communications and equipment).

Bring about change through appropriate training, education and promotion of the attitudes of government and professionals to prepare a political access approach and by adopting the principle that access is fundamental to design.

Endorse the concept of aging in place by providing a range of housing and facilities which are accessible to people despite disability, aging and other changing requirements.

Develop an information exchange on access modification to existing buildings and environments and new construction providing basic access suitable for specific user requirements.

## Workshop 5 Personal Assistance Services for Disabled and Old Citizens

For old and disabled persons accessibility and self-directed personal assistance services are necessary conditions for independence, integrity and choice of residence.

Chair: Dr. Adolf D. Ratzka, Sweden
Rapporteur: Dr. Hana Hermanova, Denmark

Presentations were given by:

H Hermanova, WHO-Europe, Denmark

Title: "Importance of Environmental Assessment in Health Care of the Elderly and Disabled"

M von Heusinger, Fed Rep Germany
Title: "Support for Disabled Students: Establishing Personal Assistance Services"

S Köbsell, T Hilbert, WHO/Hauptgesundheitsamt Bremen, Fed Rep Germany
Title: "Personal Assistance Services for Disabled and Old Citizens in Bremen"

A Morris, D Fisher, M Del Valle Funes, Building Economics South Bank Poly, UK
Title: "Experiences in Developing an Expert System for the Adaptation of Existing Houses for Physically Handicapped People to Remain Independent"

AD Ratzka, Royal Institute of Technology, Sweden
Title: "Stockholm Independent Living (STIL): Consumer Power in Personal Assistance"

M Roselius, National Board of Social Welfare, Sweden
Title: "Towards an Independent Life"

O Sthen, Linköping Regional Hospital, Sweden
Title: "Better Housing! Now!"

H Hermanova developed a theoretical framework for an environmental assessment tool with the aim of establishing an information basis for improving the built environment for old and disabled citizens. M von Heusinger reported on the self-help group of disabled students at Hamburg University which is involved in improving the conditions of students with disabilities by furnishing libraries and other facilities with special equipment such as braille writers. S Köbsell and T Hilbert reported on self-help initiatives developed by the West German branch of the international Independent Living Movement where persons with disabilities counsel each other on such issues as their rights to services, independent living skills, and the psychological and political aspects of belonging to a disenfranchized minority. A Morris et al presented a computerized expert system for occupational therapists for assisting disabled consumers in adapting their homes. A Ratzka pointed out the need for self-directed organizational solutions for personal assistance services which do not carry institutional traits but empower consumers to control their own lives. As an example for such a scheme he described the employer model realized by STIL, Stockholm Independent Living. M Roselius reported on a Swedish research project whose aim is to identify the future requirements for allowing old and disabled persons to stay in their homes rather than moving them into institutions. O Sthen commenting on the immediate need for more accessible housing to allow aging in place suggested an exchange system where disabled persons on upper floors could swap apartments with non-disabled tenants on ground floors.

The discussion in Workshop 5 focused on the issues of independent living and the new philosophy supporting this movement as presented by the some of the disabled workshop participants. The discussion following the formal presentations was quite lively and concentrated on the feasibility of self-directed independent living schemes in the context of differing economic, political and cultural backgrounds in the various countries. Agreement was reached though on setting up independent living as a long term goal which might be achieved in the future step by step.

There was unanimous agreement that living in the community is the best option for old and disabled citizens and that resources should be shifted from institutions to

community-based facilities.

Some of the participants stressed the need for further research on the quality of life of old and disabled persons inside and outside of institutions. These experts also expressed skepticism about the ability of many disabled persons to be self-directed. Instead, they pointed out the need for support through informal and voluntary help schemes, in particular aiding the family of disabled persons, and the need for developing methodologies for cost-benefit analyses in this area. Also, surveys were suggested for ascertaining the needs of various diagnostic groups.

Vivid disagreement with these suggestions was voiced by most of the disabled workshop participants who questioned the need for surveys and comparative cost-benefit analyses of life in the community vs. an existence in institutions. Independent living in the community was seen by this group as a basic civil right which was not subject to cost-benefit considerations. Self-directed personal assistance was demanded as the most effective way to insure full and equal participation of many disabled people in the community. Instead of classifying disabled persons into those who are able to be self-directed and those who are not, these participants contended, training programs in independent living skills should be developed and made available, preferably by organizations of disabled people.

The following goals for the development of personal assistance schemes were outlined by these experts many of whom were users of such services themselves:

The consumer receiving public funding functions as employer of the assistants and organizes and administrates his or her own customized personal assistance according to individual needs.

Peer counselling and training services as well as consumer cooperatives are to be set up to facilitate the employer model for most consumers.

Personal assistance services through centralized public funding should enable consumers to realize the same degrees of freedom in travelling and residential mobility within the city and the country that the non-disabled population enjoys.

## Workshop 6 Accessibility Issues in Developing Countries

Accelerating rates of urbanization, advances in health care, increasing populations of old and disabled persons and the rising influence of consumer organizations are creating a growing awareness of accessibility issues in developing countries.

Chair: Mr. Khalfan H. Khalfan, Tanzania
Rapporteur: Mr. Bill W. Wrightson, New Zealand
Presentations were given by:

D Bai, Beijing Institute of Architectural Design, Peoples Rep China
Title: "Creating a Barrier-Free Environment in Beijing’s Main Streets"

SÖ Gür, N Kuloglu, School of Architecture, Turkey
Title: "The Hidden Dimension in the Renewal of the Central Park: A Case Study"

SQ Yang, TW Zhao, Beijing Institute of Municipal Engineering Design, Peoples Rep China
Title: "Environmental Design of Civil Engineering for the Disabled"

SQ Yang and TW Zhao reported on the development of guidelines for integrating the needs of disabled people in Chinese pedestrian and bicycle traffic. In order to increase the safety of physically disabled people on tricycles and of walking sight-impaired persons persons new types of intersections and traffic signals have to be designed. D Bai described the recent efforts on the part of the Beijing Municipality to make the largest and most popular shopping street accessible to persons with different disabilities. More than 20 stores, restaurants, theaters were made barrier-free together with side walks and intersections including parking places for tricycles - the popular form of transportation for disabled persons in China. The project has since served as model and encouragement for similar undertakings in Beijing and other cities. N Kuloglu and SÖ Gür used the case of the Central Park in Trabzon, Turkey to illustrate the limited awareness of accessibility issues among many planners and architects. The park had been remodeled without considerations for the concerns of persons with disabilities. The authors demonstrated how the park could be adapted and made accessible to the whole population with relatively simple measures.

The discussion in Workshop 6, not surprisingly, covered similar concerns as expressed in the other workshops implying that all countries are more or less underdeveloped when it comes to planning for the needs of persons with disabilities. Emphasis was placed on legislation. Recognizing the basic human rights, the group recommended that appropriate legislation ensuring environmental access for all disabled persons must be included in the statutes of all countries. In the drafting and implementation of any such access legislation disabled people themselves must have the right of participation in the consultative process.

The need was stressed for considering the concerns of accessibility for persons with disabilities as an integral part of all community services. Thus, in any program of environmental and building renewal access for disabled persons must be included. Financial considerations should not be allowed to function as the main barrier.

The participants agreed that all environmental planning must recognize the constant interdependence of the elements of transport systems, public or open spaces and buildings so that disabled persons can utilize all community facilities with a minimum of difficulty.

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# Invited Papers

Bratko & Molek, Renewal of Inner Cities for Persons with Disabilities
Bull, The Flexibility of Kitchen Fittings
Champagne, Canadian Action on Handicapping Environments
Demao, Creating A Barrier-free Environment in Beijing’s Main Streets
Frederiksen, Renewal of Inner Cities: An Example from Århus, Denmark
Frehse, Public Transportation Is for Everyone
Fränti, Building Legislation and Norms: The (Only) Way to Achieve Non-Handicapping Environments
Golden, Jackson and Margen, Accessibility Law Enforcement: Common Problems and One City’s Success
Kuloglu and Gür, The Hidden Dimension in the Renewal of the Central Park in Trabzon: A Case Study
Hermanova, Importance of Environmental Assessment in Health Care of Old and Disabled Persons

Hurst, The Macro Approach to Design and Planning: A Barrier-Free Environment for Disabled People is Barrier Free for All
Kose, Nakaohji, Itoigawa and Yashiro, Development of Design Guidelines of Dwellings for An Aging Society: A Japanese Perspective
Kroon, Opportunities for Barrier-Free Inner City Renovation in The Hague
Köbsell and Hilbert, Personal Assistance Services for the Disabled and Elderly in Bremen
Loeper, Guidelines for an Environmental Design Suitable for Old and Disabled Citizens in the German Democratic Republic
Morris and Fisher, An Expert System for the Use of Occupational Therapists in Making Proposals for Adaptions to Existing Houses
Örnhall, Improved Accessibility in Bathrooms
Tiberi, Palumbo, Nesi and Bozzetti, Removing Architectural Barriers: The Example of the University of Rome
Paulsson, Careful Housing Renewal: Notes on Housing Renovation in Sweden with Special Respect to Old and Disabled People
Ratzka, Consumer-Run Personal Assistance Services: The Example of STIL
Roselius, Towards an Independent Life
Samova, Renewal of the Inner City of Bratislava: Creating Non-Handicapping Environments for Persons with Disabilities
Sthen, Better Housing! Now!
Strömberg, Improving Accessibility in Flats in Sweden: How Effective Are Policy Instruments?
Weiss-Lindencrona, From ’Barrierfication’ towards the ’Barrier-Freecation’ of Inner Cities
Wokoun, Aesthetic and Social Aspects of Architectural Barriers
Wrightson, Barrier Free Design: Safety for a Caring Community
Yoshida, Three Stage Housing for Old Persons

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## Renewal of Inner Cities for Persons with Disabilities
## The Case of Krsko

Branka B. Bratko and Lenka Molek, Urban Planning Institute, Ljubljana, Yugoslavia

### Slovenia

Slovenia is the northern and economically most developed republic of Yugoslavia, as a result of its political-geographic position and historical past. At a population of 1.9 million Slovenia has 6,000 settlements; 50 towns with a population of 2,000 Ñ 40,000; only 2 towns with more than 100,000 inhabitants; more than two thirds of all settlements have up to 200 inhabitants. In the census year 1981, Slovenia had 585,780 dwellings of which 308,798 were in urban and 276,982 in rural settlements. From the entire housing stock, 184,254 dwellings were in social ownership and of these 86% were located in urban settlements. Approximately 20% of the housing stock is built before 1918 and an additional 10% before the year 1941.

### Renewal Planning

Today, about 170,000 housing units require major renovation. The estimates refer to the

housing stock built before 1918, to some units constructed shortly before World War II, and some dwellings erected during the period following the war up to 1960.

The specific system of socialist self management developed in Yugoslavia implies an active role of all planning processes, including those of urban planning, housing renewal, etc. within the overall system of societal planning. Societal planning is a process of simultaneous, continuous and integrated planning consisting of economic, social and physical aspects, each of which should play an equal part within the process.

Planning is organized on the local, republic and federal level. Principal objectives, criteria and policies of development are defined at the republic and federal level. Specific and detailed renewal programs are prepared at the local level where the specific situation of a town or neighborhood can be observed.

There are general long-term and more specific, intermediate-term development plans. Basic urban design guidelines for individual towns are part of municipal long-term plans. The proponents of planning, organized within self-managing entities Ñ enterprises and social organization Ñ are directly involved in the planning process. Some of the self-managing bodies are Self-Managing Communities and local governments.

It has become widely recognized that organized renewal should be accelerated in the period 1985-2000. More than 170,000 units call for such measures. This situation has resulted from years of lack of maintenance and modernization. The legal basis for renewal planning and its implementation stems from the last decade and needs revisions. A majority of already existing renewal programs are incompatible with the present institutional framework and are rather difficult to carry out in practice.

Research on creating an environment for people with disabilities through urban renewal is a wide field. It covers different environmental elements: physical, social, economic and cultural. One of the final results should be the elimination of architectural barriers to disabled people. The same priority should be given to the proper spatial organization of urban functions in correspondence with residential environments, and the participation of residents. The local and cultural identity of existing environments represents an important research element in the planning of barrier-free environments for inner city residents.

Urban renewal has to be planned in the wider context of Yugoslav "societal planning". At the same time local conditions have to be analyzed in detail. The essence of such an approach is to pursue the macro, medium and micro levels in a temporal, spatial and societal continuum. The unique aspect of renewal planning is that different levels and phases can be combined simultaneously which is generally not the case for other fields of planning.

Renewal planning aspects are not yet included in Yugoslav legislation. According to the legal requirements, professional planning work should begin and finish on a general level. General guidelines, however, do not offer sufficient information for detailed planning, simply because the planner is not able to investigate the areas nor their problems. Urban renovation and renewal are the key questions in urban planning on the local level. They are to be seen not only as technical or organizational but also as political and social questions.

In Yugoslavia comprehensive planning of economic, social and spatial development is used as basis for action, including urban renewal. The lack of proper guidelines, e.g. in the case of urban renewal, makes implementation difficult. Because present guidelines are too general, the responsibilities of the authorities, for example, for financing are not established. Urban renewal has to include several Self-Management Communities (for

Housing, Health Service, Culture, Social Security, etc.). In implementation, the long and medium term role is not well defined which means in this particular case, that partial renewal might be possible, but not complete renewal. For example, it is possible to renovate an apartment house or historical building, but not the surroundings, nor an entire inner city area.

In principle, the adaptation of the physical environment to the needs of disabled people is intended, but this is only a long term planning goal. In inner city renewal, there are no legal requirements to meet the needs of people with disabilities who are more numerous in inner cities than elsewhere. In comparison to foreign legislation and practice, this is a constraint. From the budgetary point of view such urban renewal is cheaper but inhumane.

Another problem which arises in urban renewal practice is the need for rational land use in inner cities given the lack of arable land in surrounding rural areas. In order to achieve this goal, small apartments were built and the aims of upgrading the existing environment were not met, such as more efficient land use, the classical task of preserving the cultural heritage, and creating barrier-free environments, in particular, for people with disabilities.

## Krsko: A Renewal Case Study

Krsko is a small town with a population of 8,500 located in the south eastern part of Slovenia along the Sava river. It is the administrative center for an area of 27,000 inhabitants. The town is an important industrial center of pulp and cellulose and has recently become the site of Yugoslavia’s first nuclear power plant. The surrounding area is a farming region in the lowlands, with vineyards in the hilly parts.

The town is a conurbation of a number of small urban and rural communities that merged in 1954. One of them is the old Krsko, the historical nucleus of the town, originally a Medieval settlement from the 15th century. Today, Krsko is an area of 23.5 ha with only 700 inhabitants, less than half of the former population. The town consists of 180 buildings with 270 dwellings - 72% of them were built prior to 1914, and 16% after 1945 - the local government administration, and some retail facilities including craft shops. Krsko is not on the official list of national cultural heritage objects.

Krsko has retained the characteristic open spaces of pre-industrial provincial towns. It has a compact complex of predominantly low-rise buildings. Recent renovation activity in the town core proved to be insufficient and was incongruous in design.

The objective of present renewal planning is primarily to improve the standard of housing and living, and to develop a new housing settlement within the constraints given by the lack of arable land and the proximity of the nuclear power plant. Approach, procedures and level of planning adopted in the renewal plans for Krsko differ to some extent from other projects. The renewal plan for the historical nucleus of Krsko was drawn up by the Urban Planning Institute of the Republic Slovenia.

## The Problems

The following are significant problems that had to be dealt with:

Structural and functional shortcomings,
Shortage of suitable land for new development,
Negative attitude of the population towards the nuclear power plant, resulting in increased

interest in the old urban core as a housing and living environment and as an area relatively distant from the plant,
Lack of adequate urban plans and designs,
Neglected and rapidly dilapidating urban core with substandard housing. The average population density is no more than 30 persons/ha and consists of a predominantly older population and lower income groups.
The large discrepancy in housing standards between the old and the new parts of town. A special requirement exists to adopt the living environment to the special needs of those groups.
There exists a difference between the official evaluation of cultural values and actual ones.
The need to link the historical core with other parts of the town in order to achieve better accessibility.

## The Renewal Planning Process

The renewal planning of the historical urban core in Krsko is part of comprehensive plans of the town. They were drawn up in 1980-1982 as part of the plan for the Krsko commune for the period 1981-1986. Urban development plans and those relevant to renewal have the character of long-term plans (until the year 2000), in terms of their physical elements.

Renewal plans include both quantitative and qualitative elements, requirements and criteria regarding design and renewal of the core. The plans are compatible with the town's physical, social and economic development programs and can serve as the basis for

decisions on priorities in renewal efforts and the ways and means to pool capital and labor (agreed upon between Self-Managing Local Governments, banks and enterprises), detailed physical planning documents (designs, landscaping programs, etc.), implementation of improvements.

The town inhabitants have taken part in the decision-making on the town's development in all important stages of the planning process. The results of field work, surveys, exhibitions, interviews, etc. are incorporated in the plans. Long-term plans are based on a detailed analysis of the situation and opportunities for future development of the area. The plans provide a general basis that can be expanded or adjusted to new conditions and requirements.

## Analysis

The problems of a historical core are so complex and interconnected in cause and effect, that they have to be identified and solved on the same level of complexity. Even relatively insignificant spatial interventions call for the cooperation of the residents as well as a comprehensive professional inquiry into the problems and the broader social factors. Common planning methods could not be used, because the law prescribes the cooperation of residents at the end of the planning process only, but not at the starting point.

The urban core was analyzed in its physical, social and cultural aspects. Spatial and structural features were studied, their present function, primarily from the point of view of the present residents, and the spatial and functional relationships between the core and other parts of the town. The purpose of the studies was to achieve equal development of all parts of the town, an appropriate distribution of functions, and good transport links between different parts of the town in the future in order to reduce unnecessary traffic through the core.

In the following, the humanistic approach and cultural analysis as a new way of incorporating residents in the planning process is presented.

## Cultural Analysis of Inner Cities

The main reasons for applying a humanistic approach and cultural analysis for planning purposes is to incorporate the needs of the inhabitants in the renewal project. From this starting point, and with the planning procedure described below, a special analysis rooted in ethnology was developed.

The cultural analysis for planning purposes involves horizontal, vertical and inter-temporal comparisons of the physical, spatial, social (including economic and political), and cultural factors of development. The relationship between man and space and man and environment are seen as the basis of culture in its anthropological sense. Cultural analysis has its regional and local implications. For the purpose of planning inner city renewal a regional approach was developed.

Among the cultural elements are
local, cultural and regional identity,
feasibility of development,
attitudes to present and future development,
attitudes and readiness for active participation,
attitudes towards changes in the physical, social and cultural environment.

A separate strategy of development was suggested for inner city renovation. Bearing in mind that 6% of inner city inhabitants are old persons and people with disabilities, programs to regenerate urban life and a physical, social and cultural renewal plan in the old town's nucleus were proposed. The main point of the suggested strategies was to incorporate special groups of citizens: people with disabilities, old persons and children, meeting their special needs in making the environment free of architectural barriers and ensuring accessibility of public services and places. Suggestions were made as to which houses were suitable for people with disabilities and how they were to be renovated.

In evaluating their living environment people use their perception, personal values, attitudes to the physical, social, cultural environment, and personal models of life. On the basis of that evaluation a map with recommendations for redevelopment of the inner city residential city areas was made. The assessment of the living environment is a result of combining evaluations of professionals and non-professional users. It was made to provide insight into development problems of the area and to suggest strategies for the further planning. A detailed list of recommendations for planners and architects preparing the renewal project was made. Recommendations included

design standards adapted to local requirements,
designation of private, semi-private and public spaces in housing and other areas,
ratios of open space per household space by social and cultural group. Special recommendations were made regarding the requirements of people with disabilities and old persons on housing quality,
location and standards for commercial and other services,
traffic arrangements including pedestrian zones.

The same evaluations and recommendations were also made for non-housing environments. The major fear of the residents is the problem of micro pollution by the nuclear power plant. In the recommendations special attention was paid to people with

disabilities and old persons. It was agreed that they should live in the usual home environment. Their apartments and relevant services were to be made barrier-free and should be placed near to the people that can help and support them - next to the senior citizens' home, as well as close to social and medical facilities.

### Results

The renewal plan arrived at the following results. The area can accommodate 1,550 people or 350 dwellings with an area of 34,000 m of housing space, whereby the following objectives are reached: restoration and preservation of quality of life and the environment of the area at an average population density of 66 persons/ha. 25%-30% of the town's long-term housing requirements may be satisfied in the historical core. The entire population, present and future, must be ensured more or less equal housing and environment standards. Specific needs of some population groups, such as older persons, people with disabilities, large families, single persons, low-income families will be taken into account. In the renewal of old houses, accessibility for disabled people has to be considered to some rational extent.

All buildings, except those constructed after 1962, require renewal measures such as seismic fortification of buildings,
modernization of plumbing and other utilities,
functional alterations for better utilization of available housing space such as adapting attics for housing.

New residential construction is feasible on specific locations along streets to round up blocks. In creating open areas, the ratio of 120 square meters of gardens and backyards to one apartment is applied. 130 new apartments can be built in new construction projects.

The plan also includes construction of a combined senior citizens' home with the capacity of 100-120 persons and a day center for the older residents of the historical core who wish to retain their households or live with their families.

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## The Flexibility of Kitchen Fittings

Grete Bull, Norwegian Building Research Institute

### Introduction

The study referred to in this paper is a survey of mass-produced kitchen fittings available in Norway in 1985/6. The practical aim of the study was to produce a descriptive catalogue to guide consumers and counsellors in the choice of products suitable for disabled people. In the course of the study, we found it necessary to go deeper into the history and background of current criteria for design and standardization of the products. We wanted to relate the information obtained in the survey to results from previous field studies of old and disabled persons living in their own homes.

### Background

During the last 30-40 years almost all kitchens have been constructed from

mass-produced standardized units. There are two kinds of kitchens: the normal type for people who can stand and walk, and the ’special’ kitchen for persons with disabilities. The special kitchen type has also become standardized. It is designed for wheelchair users who are expected to have strong arms, and be able to operate from the wheelchair without any assistance from anyone else. This type of person is hard to find.

In counselling individual clients, occupational therapists ask us for advice on where to find suitable products for the great number of people who have other disabilities. They tell us that there are no good products for the very tall or the very short person, or solutions to the problems of aching backs, sore feet or weak arms and hands. In planning for unknown users, especially in housing designed for old persons, architects often choose a ’special’ kitchen in the belief that it can be adapted to any ’special’ user.

In generalized planning of this kind, the likelihood of a misfit between kitchen and user is high. We have found support for this assumption in some recent studies. In many cases we have found kitchens intended for wheelchair users in homes where there is no need for it. There seems to be an automatic connection between the concepts of an apartment occupied by a disabled person and the special kitchen for wheelchair users. In many cases the disabled person does not do the cooking, or at least, not all of it. On the walking housewife or assistent the special kitchen can have a debilitating effect.

According to a Danish survey most users of adjustable kitchens do not know how to adjust heights, if it is possible at all. They also found that the constructions were not very strong. We have also seen how battered such kitchens can look after some time. In surveys of old people living at home we found that wall cupboards were mounted too high. As a consequence, users were forced to climb up on a chair to reach the shelves. In most kitchens, a work surface with seating was missing, and this caused problems for people who otherwise managed very well on their own. Most old housewives prefer the kitchen table to the standard level worktop as a work surface.

It has been pointed out that the international and Swedish standard kitchens are full of faults from an occupational health and ergonomics point of view. The reason for this may be that consumers, architects and therapists lack knowledge of what is available. It may also be an indication that the design of kitchens in general needs reconsideration.

Our general impression was that none of the kitchens on the market met the demands of all users, and especially users with the relatively minor impairment of being very tall or very short. Thus, we are not only concerned here with persons with disabilities as an exception to the norm; expressed by manufacturers as the 80%-20% rule, by which they distinguish between their standard and special ranges.

The majority of users have special needs. Currently, a lot of research is carried out on the needs of old persons. In other medical and paramedical fields, priority is given to prevention rather than cure, so it would seem to be reasonable to take time to consider the ergonomics of kitchens in general.

## A More Flexible Kitchen for All Users

Our study aimed at producing suggestions for new and better design specifications for kitchen fittings. We found the sharp division between fittings for the normal and special range confusing and unnecessary. Most users need flexibility. Perhaps an integrated range of adjustable products with supplementary technical aids is the answer. This would make it easier to make choices for unknown or changing tenants, and to adapt existing homes for disability, should the situation arise in the future.

Such a concept in kitchen design must also inevitably have a positive, integrating effect. The design of a special kitchen does not appeal to consumers. We often find, for example, the knee space covered by curtains, or disabled homemakers who choose a normal kitchen for aesthetic reasons.

## Study of Flexibility of Kitchen Fittings on the Norwegian Market

Products available on the Norwegian market are mainly produced within the country, or are of Swedish or Danish origin. A small percentage of the market is held by West German brands, usually in the higher price ranges. As we wanted to give a picture of the flexibility of the whole range of fittings available, we have also included the range of products and fittings designed and marketed as the special kitchen for persons with disabilities. Our sample of products consisted of 21 different product names made or marketed by 16 companies. As 4 of these companies make up 75% of the market in Norway including one company with the most widespread system of dealers and outlets, we consider that the sample is quite representative of what is available to the Norwegian consumer.

Producers/dealers were asked to answer a questionnaire about their products and the way in which they included planning advice in individual sales. We also asked them to give us examples of kitchens designed for persons with disabilities.

## Our Criterion Was Flexibility

We started out by defining the dimensions of flexibility that are important in ergonomic design. Flexibility is to be understood as a wide choice of alternatives. We were interested in certain qualities which may be different from those that the dealers would include in their concept of diversity. The following list of criteria for good design can be met by a number of choices from the whole range available on the market, and from within each brand’s range.

Choice of worktop height is the most important. The height of the work surface must be adjustable or variable, if the product is to be considered at all. The ease with which the user can change the height is important to some users, especially in households where different persons use the same kitchen, and in apartments where tenants change often. Range of operation is determined by the working position, the movement pattern of the chair and the condition of the arms and hands.

Independently adjustable or variable heights of wall cupboards are an asset to wheelchair users as well as short persons and those with a limited range due to working posture or impairments in hands and arms. In extreme cases, wall cupboards must be lowered to working height or left out altogether.

## Adjustment of Wall-Hung Cupboards

While most companies deliver wall cupboards with only one height, some offer different heights which makes it possible to lower some or all cupboards to the desired position. In the special kitchens, wall cupboards could not be adjusted independently of the worktop, with few exceptions.

## Foot and Knee Space under the Worktop

As shown by Gavel , there is not enough space for a relaxed standing position in a standard kitchen. Handles and splints will get in the way of knees and feet, especially if the user wants to shift position to take the strain off the back while working for some length of time in one place, or to use a chair for support in a half-sitting position. Gavel recommends a shallow cupboard with handles recessed at the most important work stations. Such cupboards are not available on the market at all. Improvisation, however, is possible by using standard wall cupboards under part of the worktop.

The standard kitchen allows for sitting work stations by omitting one or more cupboards. This is not a good solution, as the worktop is then generally too high, and a slide-out board under the worktop takes up too much floor space. Most people also find the resulting gap ugly. The space tends to get filled with things that should be stored elsewhere. The width of the gap is determined by the standard worktop width which should not be less than 80 cm. While this solution may be suitable as a single work station for persons using a chair on castors or a wheelchair, it cannot be recommended for a complete kitchen where the user does all the work from a sitting position.

Kitchens for persons with disabilities are constructed to allow a continuous open space under the worktop. Some brands have worktops which are too high and too thick to allow the knees of a person using a wheelchair to fit underneath. The knee space must be adaptable to the working position, and the movement pattern of the chair.

Our conclusion is that the open workstation - a place in the kitchen where one can sit or half sit while working - is still an unsolved problem.

## Choice of Dimensions for the Units

Standardization aims at reducing the number of different cupboard sizes to a minimum, in order to economize production and marketing. Most of the products in our sample offered a wide choice of dimensions, even among the medium-priced ranges, which were adequate for most planning needs.

More expensive brands, however, offered a wider choice. The most exclusive kitchens feature extra depth for worktops and special cupboards to fill the gap between worktop and wall-hung cupboards. This makes it possible to design work stations in the kitchen where most storage areas are within easy reach of the user. Shallow, tall cupboards are available in some companies’ lines.

## Interchangeability

Despite standardization of overall dimensions and certain technical specifications, the different brands of kitchen fittings are not interchangeable. Kitchens are marketed in packages. Sometimes even special brands of electrical equipment are included which seriously limits the consumer’s choice. Dealers do not encourage combinations for fear of competition. On the other hand, a number of companies have very recently introduced kitchens for persons with disabilities with the same designs as for their normal range. The products and fittings in these are interchangeable.

## Shelves, Drawers, Handles and Knobs

Drawers on steel runners with ball-bearings, special pull-out shelves, extra deep drawers for storage of groceries, pans, etc. are vailable in the more expensive ranges, but not in the cheaper brands used in state subsidized housing. These features can be very important to a great number of people whose disability is weakness in hands or arms or who have difficulties in bending down.

There is a limited choice of types of doors, and closing mechanisms suitable for people with disabilities. Only two companies deliver sliding doors. Most knobs and handles are too small for a weak hand to get a good grip.

## Fitting Technical Aids and Electrical Equipment

Most companies include high cabinets for ovens and refrigerators installed at the desired height which fit several brands. In most cases, people with disabilities have to make very careful choices when it comes to technical equipment. Experts recommend that dish-washers should be fitted in the same manner, but these are not made to fit cupboard spaces 60 cm wide. Only one of the kitchen companies has taken this into consideration. With all others, several cupboard spaces and single side walls have to be combined.

There was more flexibility built into the normal ranges of kitchen fittings than we expected to find. The main problem is that these possibilities are not used by planners or consumers. It is quite possible to make all kitchens more flexible, and to standardize details that make it possible to combine products. There is a lack of independent experts such as architects and occupational therapists with sufficient knowledge of available products who can advise disabled consumers on how to plan their kitchen.

## Current Trends in Kitchen Design

A more flexible concept of kitchen design for all users is certainly desirable. It may be time for a thorough revision of the standard dimensions and the popular concept of what a kitchen should look like. This is in line with some current market trends, the recent debate in trade magazines, and as shown at recent exhibitions. Standardization itself is presently questioned by some who maintain that it hampers innovation. Manufacturers, for example Bulthaup of West Germany, Norema and Huseby of Norway, are increasing their research efforts. The latter has just asked the Norwegian Building Institute to initiate a research and product development program. Two interior designers, Solheim and Solheim, recently finished a research and design project financed by a building research fund. Their main concept is the "the family kitchen" with a central adjustable work station where users face each other while working. In Malmö, exhibition BO-86 displayed a similar solution for small collectives. In the same exhibition, we found a kitchen with variable heights.

We have also been told that the use of computers in production of kitchen units will allow for much more flexibility than did traditional production by eliminating the need to minimize the number of different elements and to reduce the stock. Communication with the customers over the design in a computer may mean that an individually adapted kitchen may soon be a possibility for every household.

These examples show that designers and producers are ready to make changes, but will they find consumers who prefer a functional kitchen to the well-advertized, glossy image "perfect" kitchen? According to a large survey of kitchen renovations , most buyers of new kitchen fittings had really only changed the facade. Not one functional aspect was considered, and most of the previous lay-out of the kitchen was maintained. One producer

of built-in ovens tells us that the recommended high position in a tall cabinet hardly sells at all.

Kitchen design, its history and future, can be used as an example of a universal industrial product that has been researched for a number of years, but still does not come up to essential ergonomical standards. This raises the question of the validity of our testing methods. Another problem is how to translate individual users' functional requirements into a product that is distributed by the market. Here, regulations or norms alone will not suffice. We also need to study the effects of educating the consumer to recognize and articulate their demands.

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## Canadian Action on Handicapping Environments


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### General

The 1987 United Nations Human Settlements Conference in Vancouver, Canada, focused attention on human rights to shelter, employment, and goods and services without discrimination because of race, religion, color, sex, age or disability. Canada endorsed the United Nations' anti-discriminatory policy statement. Following this UN Human Rights declaration, positive action was taken by most countries to eliminate discriminatory practices against disabled persons. Canada and many other countries had begun developing accessibility standards even before the UN Conference. By 1981, the International Year of Disabled Persons, there were many reports of measurable progress. The International Year, however, made it quite evident that the world in general lacked a

sensitivity to the many and diverse obstacles in our built environment which are a hindrance to its use. This lack of awareness made it difficult to obtain clear definitions of environment and behavior issues that affect disabled persons. The solution to problems identified is often frustrated by the overlapping responsibilities of multi-tiered government and lack of consumer participation in the decision making process.

## Federal Action

### Shelter

The National Housing Act passed by the Canadian Government, in 1938 , made no provision for disabled persons. Extensive revisions in 1944 , made largely by war veterans still made no provision for disabled persons. It was taken for granted that disabled persons were to be cared for by health authorities and generally institutionalized. In the sixties, Canada Mortgage and Housing Corporation (CMHC), the national housing agency, began developing design guidelines for housing disabled persons. At the same time the National Research Council published a supplement to the National Building Code on building standards for disabled persons. It dealt exclusively with minimum accessibility criteria for mobility impaired persons. It was not until the fourth edition, in 1980, that there was any mention of the safety requirements of visually or hearing impaired persons. Research is currently being carried out to determine more accurately the minimum requirements of hearing impaired and sight impaired persons in life safety situations.

It is only in the last decade that disabled persons have seriously considered living independently and that de-institutionalization is becoming a reality. Most existing housing stock is not designed for disabled persons and this has made the transition difficult. The frost line in many regions being as deep as 1.8 meters, the necessity for deep foundations make it economical and logical to have a basement. In order to get natural light into the basement the ground floor is usually about one meter above grade, and steps are, therefore, a traditional design element. Retrofitting this type of housing to make it accessible for wheelchair users is a great challenge.

In Canada, none of the provinces, which are responsible for housing, have passed legislation that requires housing to be retrofitted for accessibility. CMHC, the national housing agency insures mortgage loans for housing built under the terms of the National Housing Act and it requires that at least 5% of multiple-unit housing be built as mobility units. It describes a mobility unit as one in which space is provided for maneuvering a wheelchair but in which there are no special fittings for physically or mentally impaired persons. Walls are re-enforced at strategic locations in bathrooms for later installation of grab bars should they be required. These units can then be adapted to the particular needs of a disabled occupant.

CMHC has produced design guidelines for housing disabled persons , for housing elderly persons , for nursing homes and for site development . It has also made special provisions in its Residential Rehabilitation Assistance Program (RRAP) for the special needs of disabled persons. Eligibility for loans and grants is dependent upon income as well as medical certification. The province of Quebec will add to the federal grant and so will the city of Montreal. In 1987 the Ontario Ministry of Housing amended its Home Renewal Program to include modifications required by disabled persons. Older cities in Ontario still have low-rise housing in core areas even though realty taxes are high. In most of these cities, infill housing is permitted to increase the density of residential accommodation. When building permits are issued for the renovation of older homes in

these areas the applicants are encouraged to take advantage of the Ontario Home Renewal Program for Disabled Persons. Other provinces have similar programs although few are so enriched. In the province of Alberta, the City of Calgary is concerned with the decrease in space for ground level activities. Consequently, several blocks in the core area have been designated as eligible for an increase in density (higher buildings), provided the developer incorporates park areas and/or contributes to the restoration of historical sites. This is done without legislation. A Heritage board advises the City Council. Another advisory committee advises City Council on the compliance of proposed renovations to accessibility standards.

All provinces have access to the federal Residential Rehabilitation Assistance Program (RRAP). This housing program has recently been amended to include the conversion of non-residential buildings to dwelling units for disabled persons. The province of Quebec has taken advantage of this program, particularly in the cities of Montreal and Quebec.

In the private sector the building industry has been very slow in providing accommodations for disabled persons. The assumptions that the cost of providing accessibility are prohibitive are not based on fact and are now being challenged. For example, a study done in the United States provided evidence that in large-scale apartment housing the accessibility features increased the cost by less than 0.5%. In Ottawa, 9 specially designed units in a project of 54 townhouses cost 8 - 10% more than the others but added only 0.5% to the overall project cost. The effect on rental scales is therefore negligible. Similarly, a CMHC report of 17 case studies indicated that, in most cases, the accessibility features added 0.39 - 0.53% to the building cost.

**Public Buildings**

There is little or no federal funding available for the renovation or upgrading of commercial or public facilities except those that are owned by the federal government.. Public Works Canada is the biggest landlord in Canada. In 1978 it allocated $35 million to make adaptations to its buildings to make them basically accessible over a 5-year program and succeeded in meeting this goal while spending only 93% of the budgeted amount. CMHC added a lift to its National Office building in 1984 to make the cafeteria accessible. Other parts of the building had been made accessible much earlier. There are still many deficiencies in federal government buildings but, generally, basic accessibility has been achieved.

The National Capital Commission (NCC) has jurisdiction over planning and development of federal government land and some buildings in the National Capital Region (Ottawa and district). Its Parks Division has upgraded parks and recreational facilities to make them accessible. Several heritage buildings, owned by the NCC, have undergone extensive renovation. Sprinklers were added to all rooms from which a safe evacuation could not be guaranteed.

**Public Transportation**

The IRC provided assistance to the Canadian Transport Commission in developing standards for retrofitting railroad stations and coaches to make them accessible to disabled passengers. Research is now being carried out in vehicle design and in technical aids for boarding trains. Transport Canada (TC) has updated its Barrier-Free Design Standards for airport terminals and has undertaken a compliance survey of 130 airports. The new standards are based on Public Works Canada standards, "Barrier-Free Design" , but they are more thorough, especially in the area of building requirements for hearing impaired

and visually impaired persons.

## Employment

Human rights legislation in Canada, introduced anti-discriminatory clauses in 1976 and these were refined in the decade that followed. Affirmative Action programs were developed to provide equal opportunities for employment in civil services and any work depending on government funding.

In 1980 a Parliamentary Committee was set up to examine issues and problems facing disabled Canadians and to recommend corrective measures. The Committee's report, entitled "Obstacles" was published in 1981. It contained 130 recommendations. Every year, departments of federal government are expected to report on their progress in responding to these recommendations. The 1986 response to improvements in the employment of disabled persons notes the following:

> a) that a Court Challenges Program is expanded to cover all equality-seeking sectors as of September 1985;
>
> b) there is agreement in principle that mentally disabled persons have the right to be enumerated to vote;
>
> c) the status and mandate of the parliamentary subcommittee on persons with disabilities was renewed;
>
> d) participation in the Declaration of the Decade of Disabled Persons was approved in December 1985;
>
> e) the Secretary of State established a permanent Status of Disabled Persons Secretariat;
>
> f) the Secretariat initiated a 5-year $16 million program of assistance to disabled persons' consumer organizations;
>
> g) the passing of employment equity legislation (Bill C.62) in June 1986, to promote the employment of disabled persons in the private sector.

## Goods

Disabled persons have complained that the lack of government funding for technical aids and care services forces them to deplete their income thereby reducing their purchasing power. Access to goods is often prohibited by handicapping environments or attitudes. Now, these problems can be challenged through human rights legislation.

## Services

All provinces have health insurance plans funded by federal and provincial health departments. Personal or attendant care is funded by Community and Social Services in most provinces and only limited service is provided. Health services are very seldom provided in residential environments. There are several independent living projects for disabled persons in Canada where rent is geared to income (a supplement is paid by

housing authorities) and personal care services are funded either by provincial departments of community and social services or by health departments.

Transportation is a service with facilities such as stations, stops and terminals. The right to transportation services is mandated by human rights legislation. The Ontario human rights code contained clauses that limited access to transportation for disabled persons but these have been amended by the enactment of the Equality Rights Statute Amendment Act, 1985, to conform to the Charter of Freedom and Rights. Other provincial codes are following suit. There is no accessibility standard for all transportation facilities. There are standards for VIA Rail (national) stations and terminals and standards for air terminals, but none for bus transportation facilities.

## Legislation

Federal and provincial legislation decrees that every Canadian has the right to equal treatment without discrimination with respect to services, goods and facilities. It does not define equal. 'Equal' is not equivalent to 'same' since adjustments are required to eliminate those elements that are a handicap to some persons, thereby creating inequality.

The National Housing Act, formulated in the thirties and later amended, made no specific provision for disabled persons but it was sufficiently flexible to allow the development of programs for special consumer groups.

The National Building Code is published by the National Research Council under the direction of the Associate Committee on the National Building Code. Authors are members of Standing Committees for various sections of the code. Membership of the Standing Committee on Barrier-Free Design is representative of the construction industry as well as disability groups. The National Building Code published a supplement in 1965 entitled Building Standards for the Handicapped. The fourth edition, published in 1980, was the last one, since building requirements for disabled persons are now incorporated in the main body of the code. The code is submitted for public comment and the Standing Committees examine recent research as well as public comment before making revisions. The next edition, which will be published in 1990, will contain more extensive prescriptions for accessibility to hearing impaired and visually impaired persons.

Since building comes under provincial jurisdiction, the National Building Code is only applicable to federal buildings. However, it is written in such a form that it can be adopted as a provincial or a municipal by-law. Most provinces have adopted the National Building Code as a provincial code or used it as a model to produce their own.

The Canadian Standards Association (CSA), a private sector organization which develops standards and provides certification and testing services, has formed a Technical Committee on Barrier-Free Design which had its first meeting on July 14, 1987. The purpose of this committee is to develop a standard on design and construction requirements to make the built environment accessible to and usable by persons with disabilities. Building codes will then have the option of extracting standards from their text wherever a reference can be made to a unified CSA standard. The codes will then deal more appropriately with the implementation of standards.

A considerable amount of research has been carried out by the National Research Council and other agencies in the standardization of handrails, guardrails, stair design, emergency evacuation requirements, wayfinding systems, communication systems and other accessibility features, but analyses are not far enough advanced to bring about changes in codes and standards. This has led to the development of design guidelines, some of which

have been adopted as interim standards. Some examples: the design guidelines published by Public Works Canada in 1985 were accepted by Treasury Board as the standard to be used in making federal buildings accessible; Transport Canada developed the PWA standard in more detail to create its own design standards for air terminals ; VIA-Rail Canada used the design guidelines prepared by the Canadian Transport Commission and the Institute for Research in Construction to establish its Barrier-Free Design Standards for rail terminals and VIA stations . Many government agencies have developed accessibility compliance checklists, most of them based on Building Practice Note 59 published by NRC.

**Status of Disabled Persons Secretariat**

In 1980, the federal government established the Special Parliamentary Committee on the Disabled and the Handicapped. Its members represented all political parties. This Committee prepared the report "Obstacles" for the International Year of Disabled Persons in 1981. The report recommended action to meet the many needs of disabled Canadians which were not being met by the public and private sectors. Follow-up reports have been published in subsequent years. In 1983 the Prime Minister appointed the Secretary of State as Minister responsible for the Status of Disabled Persons Secretariat in response to a recommendation of the Obstacles report. This position was re-affirmed in 1984 and became permanent in 1986. The Minister has committed Canada to the World Program of Action concerning disabled persons, and to participation in the United Nations Decade of Disabled Persons. A Declaration on the Decade of Disabled Persons was signed by the Prime Minister in December 1985. In 1986, the Secretariat allocated funds in the amount of $720,000 for the creation of the Walter Dinsdale Information Service Center at the University of Calgary. This agency is developing a databank of information on persons with disabilities and their needs.

**Statistics**

Early results of the June 1986 census reported a total population figure of 25,116,102 Canadians, not including those living in temporary residences or people outside the country. This was the first Canadian census that attempted to collect data on persons with disabilities. Data has not been fully analyzed but it is evident that there will be some gaps in the information. The Canadian Health and Disability Survey of 1983-84 had similar gaps. The latter found that 12.8% of the population over the age of 15 was disabled. The survey did not include mentally ill persons, children under 15 years of age, people who are temporarily disabled (because of broken bones, strained muscles, mental fatigue, etc.) and about 3% of the population, living in remote northern regions and not surveyed. The addition of children, mentally disabled persons, and northern populations to the 1986 census would bring the total number of disabled persons to 3,860,000 which is over 15% of the population (not including those who are temporarily disabled).

The accuracy of these figures cannot be confirmed but they would indicate that over 113,000 persons are permanently confined to wheelchairs; about one out of every 225 persons in Canada. Statistical information is not provided on the many other disabled persons who are not using wheelchairs and who require assistance in evacuating the upper floors of a building during a fire emergency or other disaster situation. Building codes and standards have addressed the issue of accessibility but the problems of emergency egress cannot all be solved by architectural changes.

**Emergency Evacuation**

The Institute for Research in Construction studied evacuation techniques for disabled persons in 1983 . Subsequent studies in Canada and the USA have revealed that firefighters are seldom trained in the application of these techniques. Some fire safety officials in both countries are advocating architectural changes such as areas of refuge on stair landings or adjacent to fire stairs. In some older heritage buildings there are sometimes areas that are acceptable with little or no adaptation. The problems in providing areas of refuge are door design, air handling and pressurization. These problems are currently being studied at the Institute for Research in Construction, National Research Council Canada. The study "Evacuation Techniques for Disabled Persons" was followed by the preparation of a manual of good practice for fire safety in homes for the elderly. Both these studies emphasize the need for continuous handrails in stairs. Size, shape and positioning of handrails in old buildings is not always appropriate. This is also stressed in the research work of Jake Pauls , Byron Johnson , John Archea , and Jonathan Sime . Canadian building code officials and standards agencies are paying closer attention to stair design and fire safety techniques in the current round of revisions to codes and standards.

**National Non-Government Organizations**

Many consumer organizations are playing an active role in the policy decision-making process at a national level. The most common interaction is through participation in planning and review committees for research and development projects initiated by various departments of government. Some of these organizations act at both national and provincial levels. These include the National Advisory Council on Aging, the Coalition of Provincial Organizations for the Handicapped, the Canadian Rehabilitation Council for the Disabled, the Canadian Paraplegic Association, the Multiple Sclerosis Society, the Canadian Co-Coordinating Council on Deafness, the Canadian Hard of Hearing Association and many others. Some are subsidized by governments; others are funded by private non-profit granting agencies such as United Way. All of these organizations are advocates of accessibility to our built environment for disabled persons while respecting the preservation of our existing cultural heritage.

Canada did not adhere to the terms of the "Unesco World Heritage Convention" of 1972 until July 1976 but, long before that, respect had been shown for certain heritage sites. The lack of legislative control, however, made it difficult to prevent some regrettable demolitions. Federal government buildings were protected by its Historic Sites Branch but the private sector was growing more frustrated by its lack of power to protect its heritage environment from destruction. The Heritage Canada Foundation was launched in 1973 in accordance with the provisions of the Canada Corporations Act. The federal government had perceived the urgent need of a national organization and moved quickly to help. Fortunately it was recognized that a preservation society would work best, if it were independent of government and thereby in a position to criticize government policies. The foundation is incorporated as a national charitable foundation. The foundation has developed an expertise in preservation technology and an educational capacity. It advises government and private industry. Local Architectural Conservation Advisory Committees have been established under the guidance of provincial chapters. These committees identify and evaluate heritage buildings and historical sites. They establish the degree of protection required by their architectural and design integrity, their urban setting, their landmark value and their historic importance.

**Regional Non-Government Organization**

All provinces now have historic preservation societies and some have some legislative

support. Provincial building codes generally do not apply to existing buildings until extensive renovations are undertaken. After many tragic fires, Quebec City now makes the installation of sprinklers mandatory in all buildings in the old city core (Lower Town). All remaining buildings in Lower Town have been designated heritage buildings although some are being de-classified upon advice from the historic preservation society. The Quebec Building Code also requires that public buildings be made accessible unless this realization causes undue hardship. Because Lower Town is very hilly it is usually assumed that the provision of accessibility will cause the owner an undue hardship. Consequently one seldom sees a person using a wheelchair in Lower Town. Many provinces have similar "undue hardship" clauses. Saskatchewan has a very stringent Accessibility Standard which was initiated by its Human Rights Commission but it was never adopted as law and there is no mechanism for implementation. Nevertheless it has been used to make about 70% of the provincial buildings accessible including Parliament Buildings, the Provincial Courthouse and other heritage public buildings.

The Quebec Ministry of Cultural Affairs had funded an advisory council for disabled persons (l'office des personnes handicapees du Quebec - OPHQ). The OPHQ is lobbying for greater accessibility in Quebec and Montreal core areas but has had little success to date in getting disabled persons beyond the front door of commercial establishments. On the other hand, virtually all government buildings are now accessible. This imbalance is expected to change fairly soon since the Canadian Charter of Rights and Freedom put into effect, in 1985, a clause guaranteeing that "every individual is equal before and under the law and has the right to equal protection and equal benefit of the law without discrimination based on .... mental or physical disability." One can argue that construction laws which disregard this clause are inconsistent with the spirit of the constitution.

The Ontario government has appointed a Minister for DisabledÊPersons. This Ministry funds the Ontario Advisory Council for Senior Citizens and the Ontario Advisory Council of Disabled Persons although these are not considered to be government bodies. These advisory councils research the needs of special user groups, consult with consumers at the grass-roots level and recommend policy changes to the Minister who then places these before the House of Commons for discussion. Both of these councils are influential in improving accessibility, for elderly and disabled persons, to shelter, employment, goods and services. In a recent report on transportation they have recommended that all modes of urban and inter-urban public transportation be made accessible by the year 2010.

Advocacy for barrier-free design is very recent in Canada. The IRC was the forerunner with its supplement to the National Building Code in 1965. The provinces started developing barrier-free design criteria about ten years later: Alberta in 1974; Ontario in 1975; Nova Scotia, Newfoundland, Quebec in 1978; Saskatchewan in 1979; Prince Edward Island, Yukon, Northwest Territories, British Columbia in 1980; Manitoba, New Brunswick in 1981. It is a new field of interest in a relatively new country. By 1990, building codes will have defined barrier-free design requirements fairly well for new buildings, and the problems of retrofitting will be addressed with more ardor. Provincial activity in most cases was initiated by non-government advocacy groups, quite often instigated or inspired by the IRC and CMHC in cross-country seminars throughout the seventies and early eighties.

**Local, Grass-Roots Organizations**

The influence of community volunteer groups should not be under-estimated. In Montreal, a group of disabled persons decided that they could live independently in their

own apartments, if they could obtain a guarantee of attendant care services. On a trial contract, the province provided the service and funded renovations to an eight-storey building where one bay was gutted to be replaced by a stack of eight wheelchair-accessible bathrooms so wheelchairs would not be "ghettoized" on one floor. The operation proved successful and subsequent phases have been built.

Simultaneously, in Ontario, there were pilot projects for independent living being initiated by volunteer groups in four cities. All were launched in 1976 on a three year contract. All were successful and have continued to expand. Similar experiences have been reported in all regions. Many of the independent living projects are in older buildings that were not designed with accessibility in mind.

There is a spin-off from these projects. The same, or other volunteer groups, have undertaken to pressure municipal authorities to provide accessible streets and to remove obstacles from the path of these newly independent citizens as they move about in the community to do business or for social and recreational functions. The city of Ottawa, for instance, has formed a Disabled Citizens' Advisory Committee which reports to City Council. Another volunteer group called Barrier-Free Environment Committee does accessibility compliance assessments of buildings, streets, recreational and other facilities and recommends changes to the owners or responsible administrators. Its reports have affected the design of national museums, the international airport, the provincial courtrooms, hospital and university buildings, city streets and parks. The volunteer committee draws expertise from IRC, PWC and other agencies.

IRC and the Ottawa Fire Department are collaborating with the Barrier-Free Environment Committee in investigating the problem of emergency egress in old buildings where space allocations do not meet today's building code requirements. There is a concern: that firefighters need better training in handling disabled persons in fire emergencies where elevators are not available for evacuation; and that stair designs limit maneuverability when assisting mobility impaired persons. Experts in Japan, Britain and USA are doing similar studies and an exchange of information is carried out through the Building Use and Safety Institute and the Environmental Design Research Institute. Together, these experts, with input from the grass-roots volunteer groups, are identifying areas of research to be done in building use and safety for disabled persons in emergency situations.

### Conclusions

Canada has made considerable progress in developing barrier-free environments since IRC's first edition of "Building Standards for the Handicapped" in 1965. Human Rights legislation now contains anti-discriminatory clauses which protect disabled persons, thereby providing opportunities for equal access to shelter, employment, goods and services. Federal and provincial departments of government are addressing the issue of accessibility to the built environment. Non-government organizations are playing an important role in identifying the issues and providing registries of people and buildings. The network includes local volunteer groups who assist government agencies in research and development. Areas of research are identified in emergency evacuation techniques for disabled persons and the resultant effects on building design.

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## Creating A Barrier-free Environment in Beijing's Main Streets

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China is a developing country with a tremendous population and the highest number of disabled persons and old people in the world. According to the 1982 census, there were about 890,000 people over the age of 60 living in Beijing, 8.6% of the city's population. It will top 10.6% in 1990 according to forecasts.

Disabled persons and old people raise a serious social problem, to which great concern has been shown by the whole society since 1949. The government has provided employment for persons with disabilities, and old age homes for single old people. Also, some universities and colleges have been opened to students with disabilities. In 1985, more than 14,000 factories and manufacturing enterprises employed 230,000 persons with disabilities in our country. Over 70% of the people with disabilities with working abilities were employed in urban areas. These factories and enterprises are exempted from income tax or a part of the business tax. There were 3,400 old age homes run by collectives in cities and towns, and more than 23,000 such homes in the countryside. These homes accommodated 300,000 single aged people. Over 950 nursing hostels run by the civil affairs departments housed some 70,000 single aged and disabled people as well as orphans and persons with mental disorders who were incapable of living by themselves. 40,600 blind, deaf and mute students had entered 380 special schools.

In November 1985 further steps were taken for people with disabilities, so that they could have the same chance to participate in social activities as other people. The Municipal Government of Beijing made a decision to eliminate architectural barriers in Wangfujing Street and three other main streets. Wangfujing is a famous shopping street in Beijing. Along its 800 meter front are more than 80 shops, restaurants and theaters with a maximum daily customer flow of 600,000. Before renovation, however, most of the shops could not be used by people with disabilities. Even the sidewalks were cluttered with insurmountable obstructions.

A sample investigation among people with disabilities in Beijing Municipality showed that 75% of them could not enter exhibition halls, 56% could not get into shops and book stores, 46% could not enter cinemas and 44% could not use parks. Obstructions are manifold: 47% of people with disabilities are blocked by entrance steps, 45% by narrow corridors, 40% by impassable sidewalks and 39% by staircases. A disabled girl felt very sad when she could not select her favorite dresses in stores by herself. Another disabled person said that he had never seen Wangfujing Street which is a must for every foreign visitor.

After considering their needs, the following steps were taken with consideration of China's practical conditions to make Wangfujing street barrier-free for people with disabilities.

The objects selected for renovation were Beijing Department Store, Xinhua Bookstore, Beijing Arts and Crafts Service Center, Lantian Clothing Store and Jixiang Theater, etc. Ramps were installed in the entrances of these key commercial and recreational buildings. The ramps have a 1:12 slope and a width of 1.4 - 2 meters. Different types of ramps were designed to suit the site conditions. In addition, lowered handrails were mounted on both sides, and surfaces of the ramps were paved with durable and non-skid materials. At the same time, toilets equipped with handrails were installed in one of the public toilets. These enable people with disabilities to go to some places on Wangfujing Street as they want.

Along the full length of the street, sidewalk curbs were remodeled into ramps, which have the same width as the sidewalks and a gradient of 3%. This creates an unobstructed

passage for wheelchair and crutch users as well as ordinary pedestrians. On the busiest intersection at the south end of the street, audio instruction boards were installed to help the visually impaired find their way. Braille signs were put up at bus stops.

During the renovation of this street special attention was paid to the particular means of traveling of people with disabilities in China today which is mostly by hand-maneuvered or sometimes motor-driven tricycles. They can be driven on the same street lanes used by bikers. But unlike wheelchairs, tricycles hardly fit into buildings due to their extra length and insufficient room for turning. Therefore transfer stations are required. On Wangfujing Street disabled drivers can park their tricycles in bicycle parking lots and change to wheelchairs with which they can continue their journey. These wheelchairs were donated by China Welfare Fund for the Disabled.

Through joint efforts, the project has been completed and put into service in May 1986. After control and approval, more than 20 stores, shops and theaters were found to have met the international barrier-free standard, and were bestowed the universal symbol of accessibility, attached to the front entrance. The renovation work was highly appreciated by people with disabilities. When they visited the renovated street, they were unable to hide their feelings of excitement at finally having the opportunity of taking part in some of the same social activities as other people.

Encouraged by the work in Wangfujing and the other three streets, many new projects in Beijing, including big department stores, hotels and cultural centers, are designed barrier-free. Meanwhile, in Shanghai, an investigation on how to satisfy the needs of people with disabilities has started. In Changzhou, Jiangsu Province, pilot projects of housing and neighborhood environment are under way to meet the particular requirements of old persons. In Shenzhen, the Special Economic Zone, regulations on barrier-free design have been applied. A new library, an indoor stadium, neighborhoods, parks and streets were designed for the convenience of people with disabilities. Existing arterial road intersections, public squares and some neighborhoods and housing units have been renovated as an experiment. We are confident that an extensive concern for the needs of people with disabilities and old persons will be created in our country hereafter.

As a result of this experimental work, some experiences have been gained concerning the primary steps of improving existing conditions of the inner city to meet the basic needs of people with disabilities:

**Site Selection**

In selecting the site of renovation, the main commercial centers in an older city should be under prior consideration. Commercial centers are usually located for easy access of residents. These are also the places where people with disabilities need to go. Then the targets of renovation are to be determined. Since it is impractical to make all the buildings barrier-free, the factors of necessity as well as possibility should be considered simultaneously. We focus our targets on remodeling the permanent department stores, Xinhua book stores and retail shops which are broad in scale and have a large assortment of commercial goods to meet diversified necessities of life. These stores and shops have spacious halls where business areas will not be affected after remodeling. Besides, there is enough room to add ramps in front of the entrances without hindering regular pedestrian traffic.

**Items Consideration**

A barrier-free environment is created by considering the whole street as an entity. First, roads and sidewalks should be renovated along with buildings to make destinations accessible. Second, buildings such as shops, theaters as well as public toilets, should be remodeled at the same time to satisfy different needs in one trip. Third, considerations should be given both to people with impaired mobility and sight impairments, since they have different requirements. For instance, on sidewalks, curbs are remodeled into ramps for the benefit of the former, and special tactile paving strips with embossed surface are provided for the latter.

### Citizen Participation

It is of prime importance to invite people with disabilities to participate in renovation design, solicit their opinions and satisfy their needs, and, at the same time, explain what cannot be done at present and attempt to come to an understanding.

### Fund Acquisition

In the light of the specific conditions in a developing country, joint efforts have been undertaken in our society's welfare work. The renovation of Wangfujing and the other three main shopping streets in Beijing were implemented smoothly and effectively by acquiring funds from three sources, i.e. the municipal government, authorized departments and grass-roots organizations.

### Specification Drafting

Barrier-free design specifications for buildings and streets are being drafted based on the experiences gained from our experimental work. The requirements for new, extended renovation projects are specified so that people with disabilities and old persons can have an equal right guaranteed by regulations to take part in social activities.

### Social Services

In creating an unobstructed environment all social factors are considered. People are mobilized to help old and disabled persons in overcoming obstacles in a fraternal spirit in case of inadequate material conditions. The Jixiang Theater is a good example. Since hand-driven tricycles cannot enter the auditorium and wheelchairs have not yet been provided for disabled visitors, the theater workers willingly help them and sometimes even carry them on their backs to their seats.

Under our restricted conditions the barrier-free environment of Wangfujing Street has not yet achieved perfection. Further improvement is needed for additional accommodations for leisure and recreation as well as the enjoyment of nature.

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## Renewal of Inner Cities: An Example from Århus, Denmark

John Frederiksen, Committee on Housing, Transportation and Technical Aids, Copenhagen

For many years the necessity of improving old housing has been pointed out regarding standard of fixtures, maintenance and the proximity of service facilities. Up to now, it has not been difficult to let sub-standard dwellings and owners have not been forced to make improvements. At the same time, the large number of sub-standard units has made it difficult for individual owners to make improvements, for example, in common areas which would require cooperation between several owners.These problems can only be solved through the joint efforts of owners and state authorities with the necessary financial arrangements.

Appraising the standard of dwellings is commonly carried out by inspecting technical installations, the state of maintenance, insulation and common areas. Here, appraisal can be extended to include availability of public transport, distance between buildings, noise levels, etc. Many dwellings have been built at a time when no building regulations existed. Often, apartment structures were built for income producing purposes with little attention to planning, placement with respect to each other, recreational areas, proximity of shops and other services.

As the quality of housing areas deteriorates, tenants with financial resources will leave the area for better and more modern housing. As a result, run-down apartment housing is to a great extent inhabited by lower-income groups such as immigrants, unskilled workers or single parents and retired people.

A number of problems, such as lack of accessibility, poor conditions and small rooms can be added to the list of deficiencies in the older housing stock. Ironically, persons with disabilities, that is, those tenants who are most dependent on the quality of their housing, often live under the worst conditions. The toilet might be of minimal size or is placed outside in the backyard or on another floor. Also, tenants might have to carry their own heating fuel. These condition are, of course, not only found in Denmark.

One way of improving housing has been to tear down old buildings and construct new apartment blocks in their place. Residential structures have often been replaced by large office buildings. However, many have reacted against such a solution to the problems of sub-standard housing, since older urban areas do have a number of qualities which are often not found in new structures. Furthermore, available resources and employment effects must be considered. These aspects concern almost all countries.

For many people including old and disabled persons, the inner city and its old buildings form the basis for their everyday experience. Many activities take place in these well-known environments such as public offices, shops, theaters, cinemas, libraries, and museums. If suitable housing was available, central areas would be attractive places to live. In the absence of good housing, however, many households are forced to relocate and move to new and unfamiliar neighborhoods which do not offer the same amenities. Future efforts should, therefore, not only concentrate on improving the general housing standard, but at the same time also attempt to make the dwellings suitable for old and disabled people who have the greatest need of improvements.

It is often difficult to cope with all the problems; dwellings are accessed only by staircases. Essential rooms such as the toilet and kitchen are often too small. In addition, bathroom facilities are missing or insufficient. However, such difficulties should not stop attempts to modernize the dwellings. In cases where it is possible to adapt housing for the disabled, it should be done. To a greater extent than now should retrofitting existing buildings with elevators be considered. This will also benefit other households such as families with small children or people who transport goods.

To demonstrate how the needs of old and disabled persons can be met in the renewal of

inner cities Danish disability organizations have cooperated in various projects. One of them is situated in &ARING;rhus, Fiskergade, in the center of the town, close to shopping mall, harbor, cathedral and other cultural facilities. Before renewal, the buildings lacked modern kitchen and bathroom fixtures and had very few common areas. There would be steps even on one and the same floor and useless basements. After renewal, all units are accessible for persons using wheelchairs, there are plenty of common areas. Town center and shopping mall can be easily reached.

The number of dwellings has been reduced from 43 to 32, mainly 2-room flats. Common hobby and social activity rooms are on the ground floor as well as a terrace with access to the shopping mall. Under the terrace there are a couple of parking levels. Access to and from individual apartments is via balcony passage and elevator.

The pilot project has demonstrated that even under very difficult circumstances housing and town renewal can meet the needs of old persons and people with disabilities. The renewal of this part of town also included changing traffic routes and adding parking spaces, modernizing lighting, installing accessible telephone booths, mail boxes, comfortable benches and orientation maps as well as making facilities such as shops, theaters and a concert hall accessible.

The renewal of Fiskergade is described in a report which addresses renewal problems and solutions also in a general context. The conclusion which can be drawn from this project is that improving accessibility within old housing units and improving accessibility about town must be and can be natural ingredients of future town renewal.

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## Public Transportation Is for Everyone

Uwe Frehse, Committee on Mobility, City of Munich, West Germany

### Introduction

The present paper describes how persons with disabilities who use manual or power wheelchairs can achieve a high degree of self-determined mobility which is a condition for realizing a person’s right to participate in community life. There is a scarcity of studies based on first-hand experience on personal mobility of disabled persons. As a user of a motorized wheelchair myself I have collected the material presented here during study visits in the San Francisco Bay area and Scandinavia as well as in my practical work with the committee on mobility of disabled persons of the City of Munich.

### The Municipal Committee on Mobility

Organized by the City of Munich according to basic democratic principles, the Municipal Committee on Mobility is attached to the Department of Social Welfare. According to the Committee’s bylaws, two delegates are a city councillor and a disabled person, both of whom are elected. The members of the committee reflect the interests and commitments of local organizations of disabled people and fight for their realization in local government decisions. Because of the committee’s status within the Social Welfare Department, the elected representatives of organizations of persons with disabilities represented in the committee can influence the decisions of municipal boards, such as the transportation authority, in order to protect the interests of their constituency in transportation planning,

e.g. the provision of elevators, ramps, accessible telephone booths and public rest rooms.

## Public Transportation

The supervision of public transportation lies in the hands of the state government. In the Federal Republic of Germany, every city is required by the constitution to grant equal rights to disabled and non-disabled citizens alike. Through the Public Transportation Act and the Disabled Persons Act, local governments are legally obliged to provide free special transport services to persons with extensive disabilities. The City of Munich receives also earmarked state grants to provide such services.

In Munich, transportation authorities in an effort to make public transportation more attractive have attempted to create a transportation system which not only caters to the needs of persons with extensive disabilities but also other citizens with temporary or permanent reduced mobility.

According to a 1984 survey by the Bavarian Ministry of Family, Labor and Transport, the number of citizens with reduced mobility amounts to about 55% of the total population. Thus, authorities today still fail to give adequate consideration to the needs of the majority of all citizens. Not only wheelchair users have problems using public transportation. Among people with reduced mobility are also parents with baby strollers, people carrying heavy luggage, older persons as well as persons with walking difficulties. In Munich, 15% of the population are over 65 and altogether 48,384 persons are mobility-impaired. A 1985 survey showed that there are 6,000 persons who use wheelchairs and thus have great difficulties in using public transportation. Ironically, it is for the provision of public transportation services for these groups that the City receives state grants via the Disability Act. According to the same study, one in four disabled people use at least one form of public transportation per day, compared with 15% of the non-disabled population.

A 1986 survey conducted in Lower Saxony showed that persons with disabilities make up 10% of public transport passengers on weekdays, and as much as 15-20% on weekends. This shows that a transport system able to accommodate persons using wheelchairs is be a step towards giving the system a wider appeal.

The number of persons with disabilities increases each year by about 2,000 due to traffic accidents. This growing part of the population calls for effective integration measures on the part of the authorities - simply for the reason that special facilities for as much as approximately 11.9% of the population are practically and economically not viable.

In 1986, the Munich City Council ordered the transport authorities to develop a public transportation system accessible to disabled citizens. In April 1987, a 3-axle low-floor bus with four entry/exit doors was presented by Auwärter/Neoplan, a West German bus manufacturer. The two entry/exit doors in the front are only 32 cm above street level. The foremost entry/exit door is equipped with a hydraulically driven ramp which can be lowered at every stop to facilitate comfortable and easy access for all passengers at only 16 cm above curb level. This means greater accessibility than other standard public busses today offer. Even the most advanced model of the Association of Public Transport Authorities expects passengers to climb up 70 cm to enter the bus.

For wheelchair users, the hydraulic ramp can be extended by an additional 20 cm which provides a step-free access from curb or street level.

Two spaces are provided inside the bus for baby carriages and persons using wheelchairs. A lateral partition and suitable protection bars eliminate the need for tie-downs and

provide a high degree of safety during travel. Such a vehicle serves not only the interests of wheelchair users, but provides comfortable and easy access for all passengers without altering the basic system of bus transportation.

The City of Munich intends to equip at least 50% of the municipal bus fleet with these facilities provided the test results are positive. According to a survey conducted for the Ministry of Labor, the extra costs for a wheelchair accessible transportation system amount to only 1-2% of the purchase price. Another cost consideration is that in such a system there are no additional labor costs as in paratranist systems exclusively for people with disabilities.

### Conclusion

The City of Munich is not the only West German municipality working for a public transportation system with wide appeal. There is also an experimental project in which the cities of Bremen, Berlin, Nuremberg and Wuppertal plan to use low-floor busses in regular city traffic.

A society that has declared its commitment to people with disabilities is under an obligation to reduce costly special-purpose services in favor of genuine integration measures. Here the cooperation of competent individuals and institutions is of paramount importance. Without the firm conviction of a great number of active persons that "public transportation is for everybody" we would still be waiting, in Munich, to be recognized as passengers of the transportation system.

The present report shows that local government politics require future-oriented planning for public transportation policy. The Municipal Committee on Mobility has done its share in this effort. In cities like Berkeley, California and Munich, West Germany general measures for improved environmental conditions have yielded encouraging results for the equalization of opportunities of citizens with disabilities - an achievement which special-purpose measures will never reach.

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## Building Legislation and Norms: The (Only) Way to Achieve Non-Handicapping Environments

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### Basic Facts about Finland

There is a basic statute in building legislation concerning public buildings, a so called "flexible statute" of judicial nature, dating from 1973 with the following text:

"In construction of premises designated for public use sufficient attention shall be given to planning such that these premises may also be used by persons whose mobility and ability to orientate is restricted due to age, infirmity or disability."

Based upon the above statute norms have been issued in the form of regulations and guidelines in the National Building Code of Finland. The two basic regulations of the Code, in Section F1, "Planning and Building Premises Designated for Public Use to Accommodate the Physically Disabled", read as follows:

## 2 Access to Premises

2.1 Regulations
For all premises designated for public use, there must be access by a passageway suitable for use by physically disabled persons. In cases where the premises in question are on different levels and functionally connected with each other by interior passageways meant for use by the public, these different premises must be connected by internal passageways which may be traversed by disabled persons in wheelchairs."

## 3 Internal Planning

3.1 Regulations
All premises intended for use by the general public shall be accessible to physically disabled persons.

Furthermore, the guidelines present detailed data including illustrations to be used in building design. The numerical dimensions have been taken to accommodate the most commonly used types of wheelchairs. (An unpublished translation of the Finnish Norms into English is available).

The binding requirement of designing and building according to the regulations, however, concerns only new buildings.

The flexible use of the regulation in renovation is stated in the Ministry’s circular from 1982:

If in an existing building the areas for public use are under complete reorganization involving rooms and passageways and if it is not possible to remove all barriers, accessibility in the building or at least to the offices of social services for the disabled should be arranged such that these services are located on the ground floor, if it is not reasonably possible to construct elevators between the floors containing areas for public use.

If during renovation areas for public use are created in a building, accessibility and use of such areas should be designed with the aim of achieving the accessibility standard required for newly constructed buildings.

In Finland there are no building statutes or norms requiring accessibility for disabled persons in housing. Since 1982 the needs of persons with physical disabilities must be taken into account to a certain extent in the construction of apartment buildings that receive state subsidies. If a residential building is four-storey or more, an elevator has to be installed that is large enough to accommodate a person using a wheelchair.

## Findings and Visions

All over Europe, our cities, especially the inner core areas, are being built and rebuilt. The greater part of new construction and renovation activity has been carried out, to the present day, for the non-disabled population, that is, those of us who are able and willing to climb stairs inside or outside public buildings, offices, shops or work places. Post-war residential construction was meant for "average" families of one generation only with indoor and outdoor facilities meant for non-disabled children. These apartments are built for people who willy nilly live in multi-storey buildings without elevators in suburban as well as inner city areas. The practice of increasing residential density in order to use land

as efficiently as possible forced its way into town planning and building design, disregarding almost totally the needs of old and disabled persons. What had happened to the heritage of functionalism with its low-rise housing, wide staircases and modern technical amenities like elevators!

Today, at the eleventh hour, we are literally caught by the rising demands of equality for all citizens. What is the proper way to plan the still vacant land and the structures that need renovation? Should we establish and enforce building legislation and norms aimed at creating non-handicapping environments? My personal opinion as a civil servant with over ten years of experience in this area is a resounding "yes" to legislation in the form of statutes and norms.

There has been legislation in technologically advanced countries concerning buildings and persons with disabilities since the 1960's and 1970's. In the Nordic countries Sweden is a forerunner and serves as an example for other European countries. Its statutes and norms include not only public buildings but also work places and, most importantly, housing to a certain extent. Finland lies far behind. Not until recently did we start to discuss the extension of the basic statute to the area of housing and work places. The first official proposal is expected to be ready by the end of 1987.

But even where legislation and norms exist, there is also violation of them. In Finland, disabled persons have been filing complaints with judicial authorities for more than ten years. Their complaints have mostly been about municipal buildings, city halls or sports facilities, and commercial buildings of two-storeys built without a single elevator. But in spite of this situation, I strongly believe in statutes and norms. If they had not existed for more than a decade in our country, our aims of creating non-handicapping public buildings would have been completely hopeless. We must also remember that in our European judicial system, a complaint cannot be filed without a proper statute to support the claim. I believe that complaints which have come to the notice of the general public lead to more positive attitudes, however negative the case itself may actually be. I also believe in norms as an aid to the architect who can refer to them, should questions of lowering building costs arise. Norms can also be of assistance, for example, in establishing the elevator as a crucial element in building design. The drawings and dimensions given in the guidelines by the authorities are necessary, as architects have a tendency to make up their own "good" solutions which are not always consistent with those needed by wheelchair users. Every now and then positive solutions emerge in new construction and gain publicity. The most recent example in Helsinki is the Municipal Library which received an award from the National Association for the Disabled.

## Proposal

I hereby call on the participants of this seminar to propose in the final resolutions that there should be a basic statute in every country's federal and/or state building legislation aimed at creating non-handicapping environments, by taking into consideration the needs of disabled persons in public buildings, work places and housing. The statute should be based on the rights of equality for all citizens.

In each country there should be norms based on this statute which state functional and numerical data for building design. Authorities should clearly refer to valid norms or data produced by organizations for the disabled or other experts in the field. Statute and norms should be binding with respect to new buildings, but reasonably flexible in renovation.

## Appendix

# Considerations of Special Groups in Construction Guidelines Issued by the Ministry of the Environment

## Situation Report March 1987

Within the sphere of activities covered by the Ministry of the Environment, the principle of considering the needs of old and disabled persons in town and construction planning including housing is established in the Construction Act, the Housing Production Act, and the Housing Renovation Act. The regulations in this legislation are, however, general in nature. In the Construction Act and the Housing Production Act, the general goal for the planning and construction of buildings and housing is that they shall be appropriate. No reference is made, however, to the needs of the various user groups.

Because the aims of legislation in this area can in practice be interpreted quite variably, the guidelines issued at the ministerial level and the national boards are, by necessity, flexible. While there are planning programs which include numerical values for individual details, the goal can also be achieved by general inspection for building permits in connection with the approval of loans or grants.

In Finland, guidelines from the authorities are effective only as intermediaries. Implementation depends on architects who are familiar with the practical requirements of special groups.

## Supervision of Planning and Construction

The purpose of master plans is to organize land use through zoning by assigning all areas to different purposes under consideration of the future development of the municipality. Zoning is the responsibility of the municipality. Thus, the town plan serves as an instrument for the public to achieve various, sometimes conflicting aims, such as health, safety and esthetics. The extent to which the needs of special groups are taken into account depends on the importance given to them by planners.

The Department of Planning and Construction in the Ministry issued guidelines for town planning and zoning in 1975 entitled "Principles of Environmental Planning" (Guidelines 2/1975). The guidelines attempt to reconcile the demands made on built environments. There are separate chapters on space requirements and location of health and social services, housing and special services for pensioners. The supply of commercial services available to old persons is also taken up.

When issuing building permits it is presently only possible to investigate the extent to which the needs of people with disabilities have been taken into account in public buildings and premises. The National Building Code of Finland which is prepared by the Planning and Construction Department includes Section F1 entitled "Planning and Building Premises Designated for Public Use to Accommodate the Needs of the Physically Disabled". These regulations and guidelines were issued in 1978 and revised in 1985. They include numerical values and detailed plans as a basis for architectural design and cover primarily the accessibility of the premises including movement on the site. Thus, there are regulations for the maximum gradient of ramps, elevator connections, etc. The basic unit for measurement in planning was the space required by a person using a wheelchair.

## Housing

Chief Architect Aino Virpi Maamies
National Board of Housing

The National Board of Housing issues from time to time revised guidelines for planning and state subsidies in the form of partial loans for residential new production and renovation.

In the planning regulations for new construction issued by the National Board of Housing, one of the special aims is to meet the needs of persons with disabilities, old citizens and children. Practical guidelines and detailed numerical values are specified to create obstacle-free access to yards and dwelling areas prescribing, for example, door widths for wheelchair access. In locating water outlets and drains, consideration has been given to possible future remodelling of personal hygiene areas for use by wheelchair users. Apartment buildings of four or more storeys in height have to have elevators with interior dimensions that will accommodate persons using wheelchairs.

In the planning regulations for renovation (A1.2 1985), the general aims include preservation and improvement of the quality of dwelling units, residential structures and environments. The regulations recommend the removal of architectural barriers and the installation of suitable elevators in residential buildings of five storeys or more and in lower buildings that are particularly meant for use by old and disabled persons.

In granting loans for housing for special groups, the National Board of Housing takes into consideration the physical layout of the loan object, the rental contract, accommodations for the staff, and the cleaning and maintenance of dwellings.

In new residential production for special groups, the physical layout should be that of a normal residence for individual or shared use. Each residential building should have clearly delineated areas appropriately designed for resting, living and dining. Each dwelling unit has to contain personal hygiene facilities, an area fitted with a window for the preparation of food and an outdoor sitting area. Communal dwellings may be built for no more than five persons. Each person living in a communal dwelling should have his/her own separate room, with a door that can be locked.

In the remodelling of old dwellings, those principles of new construction which apply should be followed.

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## Accessibility Law Enforcement: Common Problems and One City's Success

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### Introduction

If barrier-free design depended exclusively on the passage of laws, vast numbers of countries would already be full of buildings which are completely accessible to people

with disabilities. But the laws on the books in many cities, states, provinces, and countries are almost always poorly enforced and buildings remain inaccessible, sometimes even new ones which would be so inexpensive to build in an accessible fashion.

However, in the city of Oakland, California, in the United States, a partnership between the disabled community and city government has evolved which provides firm enforcement of state access laws and regulations which may be one of the best examples anywhere of conscientious enforcement of architectural accessibility in a major urban area. This success justifies a closer examination which can identify the conditions which were required to make Oakland a place where one can depend on new and remodeled buildings providing a high degree of accessibility.

The first part of this examination will look at the problems that generally occur which keep legal requirements from being carried out. Abstract and non-specific laws, poorly informed or overworked government enforcement personnel and design professionals, and lack of sophisticated pressure groups of disabled people in the community are all contributing factors. While many countries face the same problems, this analysis will focus on the United States, and more specifically, the state of California, as this is the geographical locale of the authors. Some source and anecdotal documentation will be given, though much of the analysis is derived from the experience of the authors in writing and interpreting access regulations and advocating for their enforcement for over ten years.

The second part will look at the reasons behind the firm enforcement of access laws and regulations within the city of Oakland, California, including an examination of the relationship between the City's enforcement personnel and an unusual City office which is a technical resource center on accessibility for people with disabilities, called Access California.

## Causes of Poor Enforcement

### The Development of Conflicting Access Laws and Regulations

Accessibility laws are sometimes limited in effectiveness due to multiple conflicting regulations. In the United States, for example, the first well-disseminated model accessibility guidelines were published in 1961, by the American National Standards Institute (ANSI). These standards provided minimum specifications for accessibility and usability of facilities. They did not specify which occupancy or building types should be covered nor did they discuss the extent to which facilites should be covered. While ANSI was recommended for adoption in state and local building codes, unless formally adopted by a political jurisdiction, these standards were guidelines only and had no force of law behind them.

In 1968, the United States Congress passed the Architectural Barriers Act which was the first concrete piece of federal legislation affirming disabled Americans' rights of access to federally funded public buildings and facilities. However, the effectiveness of this act was limited by the lack of any strong enforcement mechanism. To ensure compliance with the Architectural Barriers Act, Congress created the Architectural and Transportation Barriers and Compliance Board (ATBCB) in Section 502 of the Rehabilitation Act of 1973. A 1978 amendment to Section 502 added to the ATBCB's functions the responsibility to establish minimum guidelines and requirements for acessibility.

While federally funded facilities followed guidelines established by the ATBCB, most states incorporated the ANSI standards into their building codes, regulations, and state

barrier laws; some states wrote their own standards or adopted other codes. Consequently, several different local, state and federal laws and standards on accessible design can apply within a single jurisdiction. For example, one standard may cover buildings owned by the federal goverment another may cover private facilities. While the creation of these standards were positive steps, they could not, by themselves, ensure the consistent accessibility of facilities.

Today, all U.S. states have accessibility laws , yet among states, provisions vary greatly. The majority of states require access to buildings open to the public, but some only require publicly-funded buildings being accessible; others have requirements for new structures only. Some states have not adopted minimum accessibility standards, thereby leaving wide discretion in compliance with access laws; others have not made compliance with accessibility standards mandatory.

**Problems of Weak, Poorly Written, and Vague Standards**

Accessibility standards vary. The best contain definite enforcement mechanisms as well as scope provisions (meaning they clearly define the types of buildings and situations in which the standards should be applied, e.g., apply to publicly-funded or new buildings only). More commonly, though, accessibility standards are weak or poorly written, resulting in less accessibility than the standards intend. A number of problems can be identified:

1. standards frequently lack a defined scope, thereby leaving to individual jurisdictions discretion as to where the standards should be applied;
2. poorly written standards can conflict with other building codes;
3. standards often allow granting of waivers, without providing strict criteria for granting them, so detailed and exhaustive statutory sections are offset by waivers;
4. standards are often ambiguous;
5. nearly all have inadequate administrative mechanisms for implementation and enforcement; and
6. disabled experts are rarely consulted as part of the process.

Examples of the effects of the above mentioned problems will serve to illustrate the difficulties created by weak or poorly written standards. ANSI is a good example of accessibility standards lacking scope provisions. The State of Connecticut adopted the ANSI standards, but consistency in the accessibility of facilities could be obtained only if additional regulations were incorporated specifiying types of buildings covered and the applicability of the standards. Yet Connecticut ran into another problem when it attempted to expand the scope of its access regulations. As the Disability Rag reported, "While a 1984 Connecticut law requires all ramp garages to have entrances at least 9-1/2 feet high to accommodate vans with lifts, the Connecticut building code exempts garages from having to comply with access regualtions" . Consequently, an attempt to broaden the scope of the state’s accessibility standards failed because discrepancies between state building codes and state access laws resulted.

The state of Kentucky attempted to strengthen its access requirements and end code confusion in 1980 by passing a sweeping law on architectural access which made changes part of the building code itself. Yet Kentucky also allowed for generous waiver provisions, and exempted condominiums and small businesses altogether, resulting in less accessibility than had been the case before the changes.

While the state of California is known to have one of the best legal frameworks for

carrying out access requirements (see second part of this paper) , its building regulations still contain many weaknesses. Like Connecticut's regulations, California's Title 24 Regulaions for the Accommodation of the Disabled in Public Accommodations, too, can conflict with other state regulations. For example, Title 24 specifies a maximum pressure which should be required to open a door, but the State Fire Marshall regulations require that a higher pressure be used when a door constitutes a fire wall.

Like Kentucky and many other states, California's access regulations also contain provisions for waivers or exceptions from access requirements. Title 24 gives local building officials the power to grant exceptions from access requirements, if the applicant can sufficiently demonstrate that compliance would constitute an unreasonable hardship. Title 24 also contains a term called equivalent facilitation, a means by which access requirements can be waived, if a reasonable portion of what is inaccessible is provided at an accessible location or in some other fashion. Though Title 24 offers some guidelines about how to make these decisions, the guidelines are fairly abstract, inviting great inconsistency of interpretation. Conscientious building officials would, for example, use these provisions to allow a builder to construct an additional set of fully accessible restrooms if remodeling existing ones would be unreasonably expensive. Or, in a situation where there is insufficient space to provide a front-door ramp to a remodeled building, a side or back-door ramp could be permitted, if the side or back entrance is remodeled to appear as a primary entrance, with equivalent lighting, decorations, etc. But a lenient or ignorant building official might determine that ramping one step would consitute an unreasonable hardship, if ramping space is limited, and consequently exempt the building from having to provide an accessible entrance. Or an inspector might decide that in a restaurant with seating capacity for 100, equivalent facilitation would be obtained, if only one table was accessible. Provisions for equivalent facilitation and granting of waivers have led to inconsistent, arbitrary enforcement of access regualtions in California.

California's Title 24 is a relatively comprehensive document which, unlike ANSI, contains broad scope provisions detailing occupany types affected. But it has some ambiguous areas. Thus, while Title 24 requires that recreation areas shall be accessible to the disabled, it fails to detail specifications for meeting these criteria. Consequently, individual building officials must make determination as to what constitutes usability of facilities, resulting in uneven enforcement of access provisions.

Also, Title 24 is a performance-type code that, unlike prescriptive codes which stipulate exact requirements that must be met, leaves the means of meeting requirements to the discretion of architects, builders, and product manufacturers, with results having to be proven to code enforcement officials' satisfaction. This means that unless enforcement officials are well-versed in access regulations and conscientiously enforce these regulations, less access may be achieved than Title 24 intends.

**Problems with Enforcement Mechanisms**

Concomitant with inadequacies in access laws and standards comes a related stumbling block - inadequacies with enforcement mechanisms. Municipal code enforcement is notorious for graft and corruption. When building inspectors routinely trade permits for bribes, no regulations will be enforced well. But even when the enforcement process is relatively clean, access regulations in particular often go unenforced. A number of problems can be identified here: difficulties created by weakness in access regulations, poorly informed building officials and departments, overworked inspectors, lack of funds for proper enforcement, poor inspector attitudes concerning disability and access requirements, political considerations, and permit system loopholes.

In California in 1970, the Office of the State Architect (OSA) was directed to write access regulations. Yet unlike other state offices charged with writing regulations, the OSA was given no authority to audit local building departments and, thereby, ensure compliance. Without state auditing authority, local building departments are left to their own knowledge and discretion in interpreting access regulations.

Consequently, enforcement in the state is uneven with some jurisdictions firmly enforcing the access regulations and others poorly enforcing them. The California Asscoiation of Building Officials attempts to educate inspectors in the complex and often-changing access regulations, but a lot of jurisdictions have staffs of only 1, 2, or 3, and it is difficult for them to keep up with changes in the regulations.

In general, inspectors are poorly informed regarding the architectural needs of people with disabilities and enforce poorly in this area out of ignorance. Especially poorly-informed are long-term building officials who were on the job many years before the access codes existed. Often these old-time officials have not learned the accessibility regulations because it has not been their job historically to enforce them.

Building officials face problems other than a lack of education when it comes to the enforcement of access regulations. Inspectors are often overworked and may not be able to adequately enforce all of the regulations they are charged with. In such an environment, inspectors may have to make decisions about which regulations to enforce rigorously and which to let slide. Since accessibility regulations are unique in the realm of building codes in that they are relatively new, and seek to socially integrate a disenfranchised group of people into the mainstream of society rather than to ensure structurally sound building practices, inspectors may elect to ignore accessibility codes and concentrate on others.

Another problem that hinders successful enforcement of access laws is lack of funding. In California, Title 24 designated city building departments as enforcing authorities of state access regulations, but no funding provisions were included to ensure that adequate staff would be hired. Title 24 operates on the premise that building officials will be informed, but without funding, inspectors are left to their own knowledge and initiative to adequately learn the regulations; uneven enforcement of state access regulations is the end result.

Another hinderance to strict enforcement of access regulations stems from building inspector attitudes. As mentioned previously, some building inspectors fail to familiarize themselves with the access laws because it has not been their job historically to enforce them. Others are hampered by their lack of understanding of people with disabilities. If they assume that certain activities are "off limits" for the disabled, or that every disabled person will be accompanied by a non-disabled helper, these stereo-types will become concretized in an inaccessible environment. Still other building officials are against the enforcement of access regulations because of public pressure. They believe their job is difficult enough without having to convince architects and builders that they need to construct accessible buildings. Consequently, inspectors dislike these regulations because they believe that the regulations put them in a no-win situations: either builders or disabled people are upset by inspector decisions and quite often both groups end up angry with the building officials.

Enforcement officials are subject to a city’s political climate as well. Inspectors may know the regulations and believe in conscientious enforcement of them, but the overall city government may have different priorities. One northern Californian building official was known to enforce accessibility regualtions loosely when he worked for one city, but stringently in other cities where he worked both before and after, due to the overall political differences in the cities.

Even where building departments are conscientious and informed about access regulations, other enforcement personnel can hinder compliance. The Disability Rag reported on a Cocoa Beach, Florida situation where, "despite laws requring access, an about-to-open Hilton hotel had virtually no wheelchair accessibility on the first floor" . When the city building department was questioned about the situation, they were surprised. "They'd seen Hilton's blueprints and refused to OK them....What happened? Hilton had bypassed the Building Department's refusal by getting a waiver from the city attorney, and gone ahead with their inaccessible building anyway."

Finally, when discussing the reasons behind poor enforcement, it is important to look at the building permit process. In California, building code regulations (including accessibility requirements) are levied at the time a building is constructed or renovated. Individuals wishing to do improvements are required to take out a building permit. A contractor, architect or developer submits architectural drawings to the local building department which illustrate the work to be done. Proposed projects are then reviewed by a plan check engineer, building inspector, or permit technician to see, if the building code requirements have been met. If the plans look satisfactory, a permit is issued and the contractor proceeds with the work.

At various stages during the construction phase, field inspections are made by the building inspector. Upon completion of the project, a final inspection is conducted. If all code requirements are met, the building permit is signed by the building official and the improved space is ready for occupancy.

In theory, there are several points in the permit process in which any accessibility code violations can be caught and corrected. This sytem can work quite effectively when all staff involved have a sound knowledge of the accessibility requirements.

The system falters, if any of the players involved are unfamiliar with or have a lax attitude towards accessibility. A set of plans may be perfect in every respect but when the project is finally built the contractor may have made mistakes on the access features. The field inspector may be unfamiliar with the access requirements, overworked, or have an "I don't care" attitude, and give the project his or her final approval.

Another problem with the permit process has to do with the variance evaluation system. California's Title 24, as described above, allows exceptions from the accessibility requirements, if an unreasonable degree of hardship in meeting these requirements can be demonstrated. One criterion relates to cost. In attempting to circumvent the access requirements, developers will often inflate the cost of the accessibility features or deflate the total construction cost. Unless the building department is familiar with the true cost of accessibility modifications, these attempts are sometimes successful.

Accessibility is sometimes defeated after construction takes place. For example, a developer takes out a permit to remodel a restaurant. Because of physical constraints, it may be very difficult or expensive to provide an accessibile path of travel from the main entry. The restaurant requests an exception to allow a side door to be the accessible entry. Two weeks later, this door is locked by the management, or blocked by tables.

There are other pitfalls in the permit process. For example, an office building may be completed and the permit granted. But before opening, a new carpet is installed (not requiring a permit) over a soft, thick rubber pad, which is inaccessible to some wheelchair users. Accessible parking is another example. Restriping a private parking lot does not require a building permit. A building or facility may be totally accessible on the interior, but have no accessible parking in the new lot adjacent to the building.

Designers or developers who are familiar with the accessibility regulations will sometimes attempt to circumvent the requirements through semantics. For example, a proposed apartment building having requirements for accessible living units could instead be labeled "condominiums" (owner-occupied apartments) which have no access requirements. The building official now has no legal mandate to enforce accessibility. Once the building is completed, the developer could retain ownership and rent out the "condominiums".

Yet another way to circumvent the permit process is for the contractor to take out a building permit but never call for a final inspection. And of course, the most popular way to circumvent the process is to do the work illegally without applying for a permit at all.

All of the above factors contribute to the downfall of accessibility within the permit process. It takes a team of seasoned enforcement personnel to recognize these problems and prevent them.

**Poorly Informed Design Professionals**

Besides problems created by poorly written regulations and by faulty enforcement mechanisms, yet another obstacle to the creation of a barrier-free envrionment lies with design prfoessionals. Two central areas deserve attention here: lack of education and poor attitudes.

Design professionals normally receive no formal training in barrier-free design. Since few architecture schools teach classes on accessible design, design professionals remain ignorant of how a person who is disabled interacts with his or her environment.

Frank Bowe, writing in Handicapping America , paints an image of the average architect designing structures without giving much thought to what they create. He says that when 35 architectural groups were presented "with figures showing that ... buildings typically were accessible to .... disabled people, none of the architects could explain why the buildings were designed that way, except to say that this was how it had always been done" .

While lack of education in accessible design is a critical problem, attitudinal problems and misperceptions are just as severe. Ray Lifchez, professor of architecture at the University of California, Berkeley says that "most design professionals view access as a special interest or an afterthought" . Consequently, one often hears the question, why do we have to do this when no disabled person ever comes to this facility ? Even in California where relatively strong accessibility regualtions exist and where 3.9 million people in the state are disabled , the misperception continues that accessible buildings are for an isolated, inactive, insignificant segment of the population. Chuck Fleming, Chief of the Community Access and Rehabilitation Engineering Section, Department of Rehabilitation told of one reaction to a letter from his department reminding architects of California’s handicapped access requirements. Across the top was scrawled the following: "Isn’t all this handicapped stuff somewhat of an overkill ? Does the State have any time left over to handle the needs of the majority people ? Seems like we live in a minority-controlled society."

Commonly, architects see themselves as experts and fail to consult others when determining design criteria. Ray Lifchez suggests that many designers lack a subjective understanding of the needs of disabled people and consequently, they miss out on crucial details that make the difference between accessible and inaccessible design. For example, an architect might define an elevator where an assistant is needed to reach a high control

button as accessiible. But many disabled people desire independence of movement and non-reliance on others. Simply installing a lowered elevator panel would mean that disabled people traveling without an assistant could use it.

Many architects believe that access regulations are unreasonable, and the only reasonable solution is applying for exemption. In fact, a California Department of Housing and Community Development task force determined that, "most builders and architects don't realize how easy it is to comply. So they spend more money to avoid compliance." Yet studies have repeatedly shown that making facilities barrier-free adds less than 1% to the building cost, if it is implemented in the design stage.

Ultimately, the attitude of avoidance can be an expensive one. Builders of the Washington, D.C. Metro rail system found just how expensive an attitude can be. There, for the first known instance in American history, a public facility's opening was delayed because it was not accessible to disabled people. Washington's Metropolitan Area Transit Authority was forced to pay an additional 65 million (still only 1.6% of total cost! ) to make stations barrier-free after having original stations built without elevators. In the San Francisco Bay Area, a similar scenario took place. There the Bay Area Rapid Transit District had to pay an additional 16 million dollars to provide elevators after construction had begun. Accessible design makes sense, if planned from the beginning.

**Lack of Sophisticated Pressure Groups of Disabled Citizens**

One of the most important factors affecting access law enforcement has nothing to do with the enforcement process itself, but everything to do with its outcome - the presence or absence of sophisticated pressure groups of people with disablitities in the community who advocate vociferously and effectively for better enforcement. Ultimately, the process of enforcement is not a neutral one, but like other governmental processes, is political. In countries where governmental processes are at least partially influenceable by citizen pressure, such efforts often have a significant effect. In contrast, the lack of such pressure leaves the system to rely on many levels of ignorance and prejudice, from law-makers to government regulation-writers to design professionals to inspectors.

Examples of poor enforcement due to the lack of disabled community pressure abound, in city after city. The importance of this factor can best be illustrated by describing improvements that have been achieved when citizen pressure is present. In the state of California, two good examples are the statewide Community Access Network and the city of Los Angeles, described below. Two other Californian examples, the fight for strong statewide access regulations and the general situation in Oakland, will be described in the second part of this paper.

The Community Access Network, also known as CAN, is a network of disabled volunteers from different cities across the state who are coordinated and trained by the state of California Department of Rehabilitation to understand accessibility laws and regulations, and to educate and advocate for effective implementation. CAN began, during the administration of a liberal Californian governor, to implement a legislative mandate which instructs the Department of Rehabilitation to educate the public and work with local officials and designers to encourage and improve accessibility. In the current era, now that both the United States and California are more conservatively governed, the CAN program's existence can be politically justified in two ways: as an example of private volunteerism, and as a cost-effective measure in which the public education mandate described above can be fulfilled without the costly hiring of numerous staff. CAN volunteers perform at a variety of skill levels, and in some cases, make a significant impact on the local enforcement situation, through effective advocacy with local

government.

The story of vastly-improved enforcement efforts in Los Angeles, California due to community pressure is told in New World, journal of the Californian Association of the Physically Handicapped (CAPH). William Jordan, a disabled Los Angelean acting on behalf of his local CAPH orgnanization, began in 1981 to bring complaints about poor access code enforcement to the city of Los Angeles. For four years he experienced the frustration of meetings, letters, promises, more meetings, and little improvement which are familiar to many citizens attempting to affect large entrenched government processes. In 1986, Jordan and 3 fellow activists heightened their activity by appealing to the state's Attorney General, a liberal state official who had previously pledged some assistance and who had a disabled lawyer on staff to whom the matter was assigned. After nine months of extensive correspondence, which documented the innumerable detailed inspections made by the disabled volunteers, pressure from the Attorney General's Office, teamed with continued initiative from the disabled advocates, resulted in very significant change. Los Angeles has now agreed to spend 1.5 million dollars to add staff to work exclusively in access enforcement. This will be funded by an additional 10% charge on building permits for structures requiring access. In addition, numerous policy improvements have been instituted, including a policy that no final permits will be issued to any structure for which all aspects of access are not complete. The City has agreed to correct certain enforcement errors it made in any year since the particular access feature became a legal requirement. Time will tell how thoroughly Los Angeles' policy and funding changes will reverse its history of poor enforcement, but there is no question that disabled community pressure has made a significant difference.

In summary, access laws and regulations proliferate but generally go unenforced due to conflicting and weak legal standards, ignorance of architects and building inspectors, and administrative loopholes in the enforcement process. The second part of this paper will describe one city that has overcome these problems.

## Oakland, California, U.S.A.: An Enforcement Success Story

Oakland, California, a primarily working-class city of 350,000, has always played a secondary role economically and culturally to the star of Bay Area cities, San Francisco, Oakland's sister city across the San Francisco Bay. Though increasingly becoming a major urban center in its own right, Oakland has seldom been seen in a leadership role. However, in the area of enforcement of accessibility law, Oakland presents an unusual example of outstanding enforcement which combines several crucial interrelated qualities: a solid framework of strong state laws and regulations, a sophisticated and politically active disabled citizenry which has institutionalized itself within the structure of City government, and a rigorous enforcement process carried out by conscientious and well-trained personnel. The second half of this paper will examine the role played by each of these factors in Oakland's successful enforcement efforts.

## A Solid Framework of State Laws and Regulations - Thanks to Disabled Californians' Advocacy Efforts

The state of California has a legal and regulatory framework mandating accessibility in all non-residential structures when they are new or remodeled. Some access is mandated in new multi-unit residential structures as well. Though loopholes exist, California's legal framework is far better than that of most other U.S. states and most countries. Since 1968, due to the efforts of early disabled crusader Dick Wooten, the Californian Government Code has required all government-related structures to be built and

remodeled to be accessible to people with disabilities, and in 1970, the Californian Health and Safety Code mandated that similar standards be provided in privately-funded facilities. These laws grant authority to the Office of the State Architect to develop regulations specifiying the laws' exact architectural intent.

The development of these accessibility regulations was a fascinating example of interaction betwen state government, disabled community advocates, private builders, and building officials (also known as building inspectors, who enforce the building code for local government). California was lucky enough to have, during the late 70s, a liberal administration which had appointed a State Architect, Barry Wasserman, who was singularly committed to carrying out the full intent of his legislative mandate to develop regulations that would make the environment accessible to people with disabilities. The development process lasted from 1975 until 1982, involved 13 public hearings, and required a considerably complicated political balancing act among the various interest groups. Mr. Wasserman had to consider, but not be dictated to by, the interests of private builders and building officials, not only because they are powerful groups, but also because their cooperation would be crucial in the regulations' implementation. At the same time, he was lobbied heavily by, and gave serious consideration to, increasingly organized disabled community pressure. Part-way through the process, the disabled community formed a state-wide coalition, the Coalition for Strong Access Regualtions, to mobilize massive public testimony. Private builders responded by forming the Coalition for Reasonable Access (! !), and these groups slugged it out in public hearing after public hearing, and later, in negotiations. Solid pressure from the disabled community, combined with Mr. Wasserman's own committment to fulfilling the intent of the law, produced a final regulatory document which presents a fairly advanced perspective on some of the thornier questions in the accessibility field.

For example, a difficult question for code-makers is the issue of access to a remodeled area. If a second-floor conference room of a hotel is remodeled to be accessible to disabled people, but the hotel entrance and restrooms are not accessible, no genuine improvement has occurred. For this reason, the Californian regulations require that not only the remodeled area itself comply, but also the path of travel to the remodeled area must be made accessible (whether this pathway was originally to be remodeled or not) , and the key facilities serving the remodeled area (such as restrooms, telephones, and drinking fountains) must be made accessible as well.

As noted in the first part of this paper, the Californian accessibility regulations are far from a perfect regulatory document. Many other parts of the building code are decades old, and interpretation problems have been solved and re-codified as changes. The access regulations are relatively new and therefore contain numerous problems, some of which have been described. However, they are a good start, and if rigorously enforced, can produce a high level of accessibility.

Of course, the accessibility enforcement process is no stronger than its weakest link, and local enforcement efforts across California vary widely, as has been shown. More than strong state regulations are needed to account for the high-quality enforcement found in the city of Oakland. The local disabled community and its impact on the inspectional process has made the difference.

**The Disability Rights Movement, and Its Manifestation in City Government : Access California**

Oakland's trump card for successful enforcement could be its adjacency to the smaller city of Berkeley. Berkeley has a radical political history in general, and has been

particularly the home of one of the strongest disability advocacy communities to be found world-wide. Interestingly, the presence of the movement itself is not a sufficient condition for strong enforcement, as is evidenced by the fact that the City of Berkeley has not particularly distinguished itself in enforcement. But the disabled community's presence catalyzed a series of events in Oakland's city government leading to its current success.

The birth of Berkeley's disability movement is usually traced to the acceptance by the University of California at Berkeley of several severely disabled students in the early 60's. The University was forced to establish a program of services for these students. When the students graduated, they were no longer eligible for university services, and being enterprising frontier-forging types who, like most college graduates, were not about to return to a dependent living situation after experiencing the independence of campus life, they needed a community agency to provide the services that had been available to them on campus. Joining with like-minded others in the community, they established the Center for Independent Living (CIL) in 1972. It spent several struggling years, then grew to become a model program which has since been copied nationally and internationally.

The concept behind CIL was an agency directed and staffed primarily by disabled people and providing support services to enable disabled clients to live independently in the community. Services included assistance in finding jobs, finding personal assistants, dealing with government benefit programs, repairing wheelchairs, counseling, finding housing , etc. CIL gave birth to what has been called the independent living movement, an important part of the disability rights movement. And CIL's presence brought large numbers of severely disabled people to Berkeley. Their impact was clear even to a casual visitor. Berkeley became a place where it was not unusual to see people with severe physical disabilities shopping, working, owning businesses, dating, etc. Community acceptance grew and political achievements (such as the mid-70s' agreement by the City of Berkeley to place curb ramps at every corner city-wide) matured the community. Disabled Berkeley residents became focal state and national disability movement leaders, and their political skills grew. As the 70's passed, communities across the East Bay felt the spreading effects of Berkeley's disabled population, and a number of organizations and agencies were formed to respond to its needs. One of these organizations, Access California, has played an unusual and essential role in improving accessibility law enforcement in Oakland.

The term "Access California" was actually the name of a federally-funded state-wide demonstration project in which seven social service agencies in different Californian cities would receive small grants in order to make programs and facilities more accessible to disabled people. Some of the social service agencies were private non-profit organizations with government funds; others were actually part of city government, as in the case of both Oakland's and Berkeley's agencies.

Disability advocates at the Center for Independent Living learned of the potential grant and wanted to be involved; this began a thread of strong community involvement in the East Bay Access California program which continues until this day. The CIL advocates teamed up with an enterprising grant-writer with a background in rehabilitation from the City of Oakland Social Services Department who was interested in winning one of the grants for her agency. Knowing that lackluster Oakland had little chance of competing with Berkeley, the unusual and famous Mecca-of-the-Disabled next door, they convinced the City of Berkeley to join the team.

Access California (Oakland/Berkeley) opened its doors in February, 1979. Activities and services have included advocacy for greater accessibility in buildings and programs of local and state government and other organizations, training, technical asstistance in barrier-free design, publications, research, and housing rehabilitation. Though it has

always been a small program, Access California's staff has consistently included people with severe disabilities. Access California's Director , present since those early days, was recruited by the CIL advocates whose goal was to ensure the involvement of disabled people in the program in order to give it a disability rights direction. Thus, an unusual situation was created: a disability rights directed agency which was actually a part of City government but which owed its basic allegiance to the grassroots disability movement.

Logical questions arise about how such an agency could maintain its grassroots loyalty and still exist within government, and if it did so, how was it allowed to continue? Access California managed to walk this tightrope due to a number of factors. First of all, it was a relatively high profile program from the beginning, and once it established a good reputation, the City enjoyed the public relations results and viewed the program in a positive light. Second, Oakland is a relatively liberally-inclined city, due in part to its location in the Bay Aea, which is a politically progressive area, and also due to its demographic nature as a city primarily composed of working class people and people of color. Third, Access California staff quickly adopted political strategies which would ensure survival, advocating as strongly as possible, but not strongly enough to compromise the program's future.

Staff strategized that, since there were so many areas of improvement needed, if a political limit was reached in one area, they would turn their efforts to another area. Being part of City government lent the program sufficient authority to be quite effective in some areas. This was, of course, not always the case when the system that needed changing was a part of City government itself. Much of Access California's work with the City has therefore been gradual, and in some areas, limited by the political considerations described above. But in the area of improving the city's enforcement of accessibility laws, a happy marriage has resulted in which the legal authority of the City and the technical expertise of the program mutually reinforce each other, greatly increasing the effectiveness of each party.

**The Local Enforcement Process**

During the second year of Access California's operation, the City of Berkeley discontinued its funding and the program progressed under the exclusive aegis of Oakland. As the program gained technical expertise through the years and made inroads with various City departments through its advocacy efforts, extensive interaction developed with Inspectional Services, the department with authority over building code enforcement.

In Inspectional Services, Access California found a department that had the basic intent to enforce correctly, but, like many local enforcing agencies, was overworked, undertrained on accessibility, confused by too many codes, and lacked sufficient grounding and familiarity with the subject of access to take a strong stand with builders who exerted political pressure against having to comply. Access California conducted inspector training, and the ensuing mutual dialogue brought about a situation in which Inspectional Services would consult with Access California staff on non-routine enforcement questions, when the inspectors felt unsure about the intent of the regulations or the needs of a potential user. In particular, a strong relationship developed with James Barthman, Inspectional Services Director, and Calvin Wong, Supervisor of the Permit and Plan Checking Division. These two conscientious public servants became increasingly committed to strong access enforcement and to involving Access California in the process. Their role has been crucial to Oakland's success.

A mutually cooperative and trusting relationship was developing between the two

organizations which both considered beneficial. For Access California, which had attempted to work with many City departments and received enormous resistance because of the departments' unwillingness to make greater concessions, here was a horse of a different color. Here was a department which was also, in a sense, an advocate for acces -- it was mandated with enforcing the regulations, and wanted to enforce the regulations, but it needed assistance, it respected Access California's expertise, it appreciated (!) the help, and it usually took Access California's recommendations seriously. For Inspectional Services, Access California provided a source of expertise otherwise unavailable. By being a part of the City, Access California could be consulted without violating the builders' privacy and without establishing difficult-to-control community review procedures. Inspectional Services found Access California advocates reasonable in the sense of being willing to consider the practical implications of enforcement for the builders. And most importantly, in Access California, Inspectional Services had a source of expertise to depend on when making difficult interpretations, requiring judgement. This was valuable because builders are often unwilling and angry about having to comply with codes, especially new codes like the accessibility regulations which pose unfamiliar requirements. Before their cooperation with Access California, Inspectional Services was much more hesitant to insist on a strong code interpretation, if it required a builder to spend additional funds and was likely to bring significant complaints. With Access California around to blame, Inspectional Services could simply smile, point to their fellow departmental conspirator, and tell the builder that the interpretation was Access California's; " ..after all, they're the experts."

Of course, in actuality, Inspectional Services is the legally mandated enforcing authority, and if it disagrees with Access California's interpretation, it does not have to accept it. And occasionally it does disagree. But in general, this marriage of convenience removes political heat from Inspectional Services and provides Access California a valid role in the enforcement process plus the knowledge that enforcement is progressing well and the environment is becoming more accessible as a result. In this way, Access California is able to make a much vaster impact on far more individual buildings than their own advocacy efforts with the City, building by building, could ever provide. And they are able to impact a much larger sector: all the privately-funded facilities in Oakland, rather than just the government-owned facilities.

In 1983, the consulting process became formalized into a weekly meeting called the Access Review Committee (formerly called the Handicap Review Committee) or ARC. Each week, ARC meets to consider all requests for waivers from the accessibility code, as well as the non-routine decisions about which inspectors do not feel confident making a clear judgement based on the regulations. Present at these meetings are technical staff from Acces California, the Supervisor of the Permit and Plan Checking Division, and the relevant inspectors when their particular buildings are being considered. Examples of questions considered include how much accessibility should a builder be required to provide in a particular remodeling job (Oakland generally requires full accesibility up to 20% of the overall cost of the remodeling job), or what should the alternative configuration of a restroom be, if the ideal configuration would be prohibitively expensive (again, over 20% of the total remodeling cost). In addition to rendering individual decisions on building permits, the ARC meetings become a forum for training inspectors to apply the regulations and determining ongoing guidelines for the department to use. As inspectors become more familiar with the accessibility regulations, they become more and more capable of making routine decisions independently. As a result, Oakland probably has some of the most knowledgeable inspectors in the state. And Access California is only used when it is truly needed - in cases where special knowledgeable is required. Routine enforcement is done well at the level it should be done - by the inspectors on their own.

The access Review Committee is perhaps most unusual in that it functions through consensus. The enforcement authorities are not obligated in any way to accept the opinions of Access California. However, the opinions are earnestly sought, always considered and usually accepted. Interestingly, the law allows but does not require Californian cities to establish a formal board to provide the same function, containing both disabled citizens and private builders, but Oakland has not done it because the informal arrangement is preferred by both the enforcement authorities and the disabled community.

Builders whose remodeling jobs need to appear before the Access Review Committee must pay an extra fee, and this fee covers the time spent by the Access California staff. The fee reimburses not only the time spent in the Committee meetings, but follow-up time spent with the builder as well. In addition, Access California provides fee-for-service technical assistance services on accessible design, where Access California staff can review plans, assist with alternative designs, or even complete reports and original designs, if the client wishes. These follow-up services with builders play an important role in the Oakland process, because most cities' inspectors do not have time to educate builders and architects on barrier-free design, even when they understand it themselves. But in Oakland, builders and architects have an educational mechanism to which they can turn. In the same vein, Access California is also a storehouse for product information in the accessibility field. Builders and design professionals can receive recommendations on the best companies for ordering the appropriate grab bars, accessible water fountains, accessible showers, lifts, portable ramps, and other products, while design professionals and builders in other cities have no such resources.

Some examples of enforcement situations that have arisen in the Access Review Committee will illustrate the level of accessibility that has been achieved. In one example, a large corporation was remodeling its executive restrooms. The corporation argued that since none of its executives were disabled, the restrooms did not have to comply with the accessibility regulations. But the City denied the request for a waiver from the requirements, and the restrooms were made to comply. On the other side of the spectrum, small facilities performing relatively small remodeling jobs are required to consider accessibility as well, and again, they are required to spend up to 20% of the cost of the overall remodeling on accessibility, which is a higher figure than that used by many other cities.

Access for disabled employees is required by Californian code and taken seriously by the Oakland enforcers. The code requires that all areas of a facility be accessible, not only areas open to the public, so that disabled people can be hired as employees. One controversial situation involved a particular floor of a hospital where large high-technology computer and medical diagnostic machinery is housed, all of it up one step. Oakland required that this level be made accessible. In another situation at the Oakland Zoo, new animal facilities were required to be accessible due to the possibility of hiring disabled zookeepers, veterinarians, etc. Yet another employment situation involved a large parking structure with several small parking attendant booths. Oakland required at least one booth to be wheelchair accessible, though these booths are generally quite small and seldom accessible.

Places of public assembly are scrutinized closely by the Oakland enforcers because of their high public use. The Oakland Coliseum, a large sporting event and concert facility, constructed luxury boxes around its upper perimeter of seating, reachable only via narrow stairwells and completely impossible to make accessible. However, in return for granting a waiver for these luxury boxes, Oakland required the Coliseum to make a significant amount of its remaining seating accessible. Another situation involves movie theaters which have created additional separate theaters out of areas which previously were balconies. Because the California code does not require elevators in situations like these,

Oakland could not require them to be installed. Instead the City requires that these theaters rotate the movies so that each movie is shown at some point in an accessible location. Though these agreements are difficult to enforce, they are on record, and when a disabled person requests a film rotation, it can be required. A final example involves the use of wheelchair lifts as alternatives to ramps. Though legally allowed, Oakland's experience has been that lifts provide inferior access because they are seldom independently operable by the disabled user and because they often break down. For these reasons, Oakland has denied permit applicants the permission to install lifts in certain situations, on the basis that they do not provide the independent access required by the regulations.

Many cities fail to require of themselves the same standard of accessibility that they require of the private sector. Though it seems clearly unfair, it is so common that one must consider the internal and somewhat understandable reasons why this occurs so often. In California, tax reform and other economic restraints in recent years have created serious budget crises for municipalities. There is enormous pressure to cut costs, and the internal, more informal processes for City building projects often grant allowances on all kinds of code requirements. If the enforcing authority attempts to enforce stringently, s/he receives resistance not from an unknown builder but the middle manager s/he sees in the lobby of City Hall every day. The problem becomes more political, and often enforcement is not as strong. In spite of these pressures, Oakland has done its upmost, to require consistent code application regardless of whether the applicant is the City Architect, the City General Services Department, or a private builder. In one example, a new office was being built for a high-level city elected official, with a private restroom. It took persistent negotiation with certain city departments, but Inspectional Services succeeded in requiring that this restroom be made accessible.

In a slightly different situation, Oakland has been pressured to allow less stringent standards of the Oakland Housing Authority, which is a separate government body, funded by the federal government. Good enforcement has been difficult to achieve, but the Oakland enforcing authorities have invested considerable time, argument, and negotiation to obtain as much accessibility as possible.

Devoting this much time and attention to accessibility law enforcement amounts to a considerable committment on the part of the Inspectional Services. But time and attention are not the only costs. Also, the inspectional authorities receive a great deal of dissatisfaction from builders who do not want to conform to such high standards of code compliance. These builders often complain to City elected officials, for whom the strong enforcing authority can become a political liability. Even though the enforcing authority is carrying out the wishes of one strong segment of the community, the disabled, it is potentially displeasing to a much more politically powerful segment, the builders. The leadership of the enforcing department is subjected to a significant amount of flack from builders and sometimes from their own bosses in the administration of the City.

For example, a religious facility in Oakland constructed a ramp which was much steeper than the code requires and had poor railings. When the inspectors refused a permit, the facility made contact with its district's city council representative who used her influence to defend the facility against having to rebuild the ramp at that time. There have been similar occurrences with small businesses complaining to the City Manager or even to state legislators. One restaurant received permission to construct an inaccessible mezzanine as long as a significant portion of the main floor tables were accessible, but then wanted to lower the entire main floor and was not willing to construct a ramp to this level. This situation, which would have received a simple "no" in response to its waiver request under normal circumstances, became much more complicated and politicized because of the owner's appeal to a higher political authority who then applied pressure to Oakland's elected officials to waive the access requirements.

To their credit, the enforcing department's general position has remained strongly inclined towards good enforcement, even in situations like these. The department seeks support from the disabled community when necessary to back up its positions. And though occasionally, politically sensitive projects must be granted permits despite a somewhat lower standard of accessibility, even these facilities are much more accessible than they would otherwise be without the general committment to access which Oakland has developed.

While there is no simple way to formally compare Oakland's enforcement efforts with those of other Californian cities, one can infer Oakland's reputation as a tough enforcer from the remarks and behaviors of builders who experience the enforcement practices of many different cities. One builder in particular queried the Inspectional Services Director about why he had to provide certain accessibility features, saying that he had not been forced to provide them in Los Angeles and they are "the toughest enforcer in the state." Oakland's Director responded , "Then you can consider Oakland the toughest in the state, because you have to do it here" .

In conclusion, Oakland's success in enforcement of accessibility laws capitalizes on some lucky resources Oakland has: the strong legal structure of the state of California and the strong advocacy-minded disabled populace of the Oakland-Berkeley area. This disabled populace planted a seed which has born fruit within the Oakland government structure: a program which is committed to the local disability movement's concerns, Access California. And Access California found the city's code enforcement authority, the Inspectional Services Department, to be a conscientious and trainable partner. Access California's assistance has enabled Inspectional Services to develop the expertise and committment necessary for strong enforcement. The two organizations have an ongoing working relationship which has resulted in consistent application of the intent of the accessibility code for several years. Inevitably, the many problems that beset all access enforcement efforts also create certain difficulties for the forces struggling towards good enforcement in Oakland. Nevertheless, Oakland demonstrates that consistent strong enforcement is possible. Oakland's disabled residents enjoy a situation which most other disabled people still face as a challenge: they can depend upon the successful implementation of laws designed to make their environment accessible.

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## The Hidden Dimension in the Renewal of the Central Park in Trabzon: A Case Study

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Only a handful architects and researchers in Turkey are taking the needs of the disabled population into consideration in the design of the physical environment. Their direct influence on the building of the actual environment is, however, very limited because of a lack of bureaucratic links between research and implementation.

### Case Study

The renewal of the Central Park in Trabzon, a middle-sized town at the Eastern Black Sea coast, is a case in point. The park has been the hub of Trabzon, ever since the times when this city played a central role as a highway transportation center linking Asia and Europe. Although today highway transportation has lost its previous importance to faster modes

of transport, the park itself has retained its central function in the town. Here, people from the surrounding hinterlands and villages doing their business in the town gather and disperse. The park serves as a center for rest, recreation and communication for the local population.

Recognized its contribution to the community life of the area, the park was redesigned and renewed at the beginning of this financial year by the municipality of Trabzon. The authors of this paper were unaware of the design process and had no opportunity to intervene in its implementation for bureaucratic reasons. After completion of the renewal work we studied the park from the viewpoint of accessibility for persons with disabilities. The present paper is the report that emerged from our study and we sincerely regret that we did not intervene earlier, since the park in its present form is totally inaccessible to wheelchair users. Furthermore, because of the lack of fixed furniture in the park, persons with sight-impairments find it difficult to use. We have prepared recommendations at several levels, redesigned several locations in the park and made provisions for fixed furniture.

## Observation, Measurement and Recommendations

As a primary issue, we studied the accessibility of the park itself first. The Central Park is ringed by one-way traffic, with the bus stops located on the northern side. At first, we proposed ramps with an appropriate gradient to make the bus stops accessible to wheelchair users. We soon realized, however, that too much space was needed. To achieve this gradient space would have to be taken at the expense of either the pavement or the street. As a consequence, the ramps would directly interfere with either pedestrian or vehicular traffic. On the north side, traffic is already overloaded and we decided instead to propose a special bus stop for people with disabilities on the south side of the park . Located near the park on this side, there also are small accessible shops.

Secondly, we spoke with the staff from the municipality bus service. The municipality owns a certain type of bus which could most easily be converted to the use by persons with disabilities (type MAN SL 200). Because of its low initial step, it can be adapted to accommodate most wheelchairs.

Measurement of the rest rooms indicated that they were largely inaccessible to persons with disabilities. For one, they are located on a raised slab 20 cm in height which is impossible for most wheelchair riders to negotiate. In its place, we proposed a concrete ramp.

We studied the available rest room designs and recommended one suitable for persons with disabilities. We also produced some designs of our own and eventually chose one which needed the least space for ramps. While this particular solution involves the most extensive interior alterations, it results in the least modifications of the surrounding park. All interior walls would need to be torn down to create one wheelchair accessible toilet in both sexes' rest rooms. The existing door width is 63 cm allowing many manual wheelchair sizes to pass through. In our proposal, doors at the main entrance and the special rest rooms are 90 cm wide. The toilets themselves are 80 cm high and require no change. But the washbasins need to be dismantled and re-attached to the new interior walls at an accessible height.

For persons with sight-impairments we suggested signal systems for the walkways. From our previous studies we had learned that sight-impaired persons face orientation difficulties when furniture is not fixed. We recommended, therefore, that a certain area of the park be reserved for persons with sight impairments, and produced easily realizable

fixed furniture designs.

We also examined the surface material which we deemed unsafe for non-disabled women wearing high-heeled shoes. After measuring the distance between the paving slabs, we decided that it would not cause any great problems for persons with disabilities.

The final report from our study has been submitted to the mayor or Trabzon. Any positive effects it might have would confirm our belief that through determination and reasoning one can effect changes for the better both in the attitudes of decision-makers and in the physical environment.

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## Importance of Environmental Assessment in Health Care of Old and Disabled Persons


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### Introduction

The World Health Organization launched a worldwide policy "Health for All by the Year 2000", aimed at enabling everybody to lead socially and economically productive lives by the end of this century. The old and the disabled, who are often deprived of full enjoyment of life, are the groups given particular attention in this movement. The WHO Regional Office for Europe has a modified strategy for Health for All, supported by 38 regional targets. One of the targets (Target 3) bearing the slogan "Better opportunities for disabled persons" aims at the equalization of opportunities for disabled persons and their full participation.

To support the monitoring process, a list of regional indicators has been proposed to measure progress in the European Region towards health for all and more specifically towards the attainment of the regional targets. Many of the proposed indicators are already part of health information systems in most countries. Data on others may be missing. Some indicators call for special data collection through sample surveys, some indicators require development of basic methodologies for data collection. The field of disablements (regardless of age) is one of the areas where relevant information is missing.

## Information Strategy

The World Health Organization developed an experimental International Classification of Impairments, Disabilities and Handicaps (WHO, Geneva 1980). The underlying concept of this classification of impairment (at organ level), disability (at functional level) and handicap (at social level - disadvantage for the individual) has been found useful. The environment, both physical and social, determines the degree of disability and, almost entirely, the extent of the handicap. Methodologies currently available usually assess the affected individual only, and do not take into account the parameters of the physical and social environments.

## System "Man-Environment" - Social Homeostasis

Every human being, in health and/or in disease, is a personality determined by the environment in which he or she grows up and lives. Only the person, who adapts to the requirements of the environment, is independent. In other words, there is a system of balance between the needs of a person and the requirements of his/her physical and social environment, identified as "social homeostasis"

If a person is unable to respond to the requirements of the environment due to disease or disability, the system deteriorates (crisis). Both components, man and environment, are in a permanent state of change and development. A methodology assessing this dynamic coexistence has not yet been developed.

## Assessments in General

In order to assess the disablement of an individual, a whole series of information is needed, in particular:

a) About the individual:
- State of health (clinical).
  State of health as reflected in the functioning of systems important for independent life (e.g. intellectual, vision, hearing, speech, mobility).

b) Performance of activities of daily living (interaction man-environment) .
c) Socio-economic circumstances.
d) Environmental constraints (interior and exterior of household).

Only after collecting this information can interventions or compensations be suggested. Points a, b, and c will not be discussed in this paper, as they are covered by many others. Attention will be given to the blank spot, identification of environmental constraints.

## Physical Environment in General

A new discipline, ecology and ecological psychology, has evolved in the last decade. It tries to interpret environmental influences upon human lives.

Every individual has close ties with the environment. The environment of an infant is reduced to a few square meters. Personality development is accompanied by a broader environmental exploration and the home becomes a refuge. This situation persists up until the age of 70-74. After this age the functional capacities of a person deteriorate due to the aging process. The environment is reduced to a few square meters again. The environment can be stimulus, source of orientation and security, but also enemy.

## Physical Macro-Environment and Micro-environment

Availability of services, particularly shops and transport, are important characteristics of the macro-environment and influence activities of daily living. Simple standard guidelines on the assessment of the exterior of the household in urban and rural areas are missing in most schemes.

The interior of the household is getting more attention. The following information is usually available:

> Type of residence such as rental apartment, own house, single or shared accommodation. Living in and maintaining one's own house can exceed the functional abilities of a disabled or old person. A big apartment or house brings a lot of work. Too small an apartment or shared accommodation could lead to a loss of privacy.
>
> Electricity, mainstream water, indoor toilet are recognized as vital for the existence of an individual in a given environment. Bathroom, telephone, refrigerator have become just as vital during the second half of the 20th century.
>
> Heating should be given great attention. Central heating enables survival in households of very disabled people.
>
> Lifts are vital for persons with mobility problems, internal diseases, cardiovascular or respiratory conditions, etc. A disabled person could easily become a prisoner in his own home if a lift is not available!

Examples of threatening factors of macro- and micro-environments are

Macro-environment:

> steep streets, poor surface, high steps, no ramps, busy crossings with heavy traffic, flight of stairs without railings, poor lighting , noise.

Micro-environment:

> poor lighting, high humidity, dust, slippery floors, thresholds, poor electrical installations, inadequate storage of food. Too much space, too little space. Vital equipment missing.

## Some Suggestions for Future Action

The implementation of the slogan "Better Opportunities for Disabled Persons" has to be

supported by an adequate information base. Important information is generated by assessing health and functional status of the disabled/old client, ADL performance, and physical and social environment.

While there are many evaluation schemes of the functioning of the old and/or disabled person, there are literally no schemes for assessing the physical environment. Simple guidelines for evaluating the macro-and micro-environment should be offered to providers of health and social services in the near future.

Methods for interpreting the interaction between the individual and his environment have to be developed. (A checklist of environmental components, to be taken into account is attached in the appendix for discussion). Creating a simple standard tool in environmental assessment universally applicable in most Member states remains one of the important tasks for the near future.

**Appendix: Checklist of Environmental Components Important in Assessing Disability**

Physical environment - household interior:

Residence - owner, tenant
Type of residence
Number of persons per room
Cold water
Electricity
Indoor toilet
Gas
Heating - central, electrical, gas, coal
Refrigerator
Bathroom - cold/hot water, shower, bath
Telephone.

Physical environment - household exterior:

Steps/flights of stairs
Lift
Shopping - within walking distance (5-15 minutes)
Neighbor/family on same floor

Social environment - essential information

Ability to handle income
Social environment (neutral, friendly, supportive, hostile, overprotective)
Assistance available for cleaning, shopping, laundry, meals
Frequency of assistance

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## The Macro Approach to Design and Planning: A Barrier-Free Environment for Disabled People is Barrier Free for All

Rachel Hurst, Greenwich Association of Disabled People, United Kingdom

Historically, disabled people have either had to conform to their environment or be segregated within it or outside it. If you had a mobility impairment and could not get out of your home the solution was that you stayed where you were. It was not considered the duty of society to provide for what were considered 'special needs'. If your impairment was so severe that you could not exist within your home then society imposed the solution of life in an institution. This inevitable segregation meant that disabled people did not appear to exist - they were an invisible population and seemingly a very small population.

But this invisible population was never as small as it seemed and has increased dramatically. Life expectancy in developed countries has increased from 47 years in 1900 to 74 years in 1980. As the population of the elderly increases so does the prevalence of disease and disability. The introduction of sulphonomides and then penicillin and antibiotics greatly improved the chances of survival. In developing regions it is estimated that one child in ten is born with or acquires a physical, sensory or mental impairment. In 1975 the number of disabled people in the world was estimated at 12.3 percent of the total population. By the year 2000 the number is estimated to reach 13.5 percent.

As the numbers increased society began to recognize its obligations to disabled people, particularly to those who were disabled by war. But disabled people's needs were identified by professionals and based on the individual's impairment. The solutions were segregative and expensive: rehabilitation hospitals, long-stay institutions, day centers, sheltered workshops. The aids industry flourished; many of the aids were merely highly priced adaptations of existing equipment such as lever taps and doorknobs. None of these provisions required any major attitudinal or structural change by society itself. It was the disabled person who had to be adapted.

Then in the 1960's disabled people, gaining strength from other civil rights movements, articulated their right to full and equal participation in society. They moved away from the medical model of disability and laid the burden of their segregation and isolation firmly in the lap of society itself. They demanded acceptance as equal members of society with equal rights. In some countries these rights were acknowledged and enshrined in legislation. This has gone a long way to ensuring a more accessible environment enabling more disabled people to participate and gain greater acceptance as part of that society.

But where do we go from here? Accepting that ten percent or more of the world population is disabled, that there is an ever increasing ageing population, accepting also that disabled people have an equal right to participation in and access to society, how do we ensure a barrier free environment? Adaptations and alterations to existing buildings are inevitable and can be expensive. But most physical barriers can be avoided at little or no cost if they are considered at the planning stage. Policy-makers in design and planning need to automatically incorporate the access needs of disabled people in their overall strategies.

This will, of course, require major re-thinking on the part of planners, architects and legislators. Radical innovations will need to be made to the training of professionals concerned. And building laws and regulations at all levels will have to reflect this incorporation of disabled people's needs into the norm of planning and design policies.

There are many illustrations of how this can easily and cost-effectively be done: standardized appropriate door-widths and entrances, adequate space in front of doors, well-designed and appropriately located handles, switches and buttons and properly sited, distinct and understandable signing. The use of steps in many places is quite unnecessary, ramps of proper gradients not only help those in wheelchairs and the visually impaired but are easier for cyclists and people pushing shopping baskets and prams. Although in

many developing countries wheelchairs are not available to disabled people it is to be hoped that in the future they will be. Therefore universal design criteria regarding space requirements need to be based on accessibility for wheelchairs which then make the space accessible and hazard-free to all people, with or without mobility aids. Stepped entrances may exist for aesthetic reasons or to prevent flooding, but there are alternative methods of dealing with the problem of excessive rain which do not provide barriers for mobility impaired people. Most of these design features cost no more than traditional methods, they just need to be incorporated at the beginning of the design process.

The macro approach to future planning policies will have opponents. In countries where building land is scarce and expensive there will be many cries that the changes in policies required to incorporate the needs of people in wheelchairs are prodigal of space and the needs of the majority must be met through the provision of more compact buildings. But are the needs of the majority in fact being met by small rooms, high-rise blocks and endless stairs? Experience has shown that overcrowded, high-rise tenement blocks cause ill-health, isolation and an inevitable increase in the number of disabled people. Many people who have houses or flats with two or three small rooms are quite likely to knock the walls down and make one large room! Is the planner's concept of what the majority needs and wants not just the result of tradition and expediency?

In developed countries where custom and practice have to an extent become part of building regulations and laws it may seem difficult to ensure that the environment is barrier free. When difficulties arise it will be said that they cannot be overcome without high costs. But that excuse has to be looked at very carefully. A change of attitudes and a shift in priorities are more likely to dissipate the problem than the expenditure of large sums of money.

In providing for the needs of the majority it has to be remembered that nearly everyone is disabled at some time in their life or has someone who is disabled living with them. If the built environment already has a basic accessibility the problems thrown up by impairment are considerably lessened and do not involve a segregation or removal from society. Incorporating the needs of disabled people as a basic criteria for design and planning isolates no one. It provides a more manageable and freer environment for everyone.

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## Development of Design Guidelines of Dwellings for An Aging Society: A Japanese Perspective

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### Introduction

The Japanese society is aging at an amazing speed. Within only 25 years, the percentage of people 65 and over in the total population will increase from 7% in 1970 to 14%, whereas in other countries this is taking 50 years or longer. It is most important to provide a residential environment adapted to the aged population including housing designed to meet the preferences of old persons and their requirements which grow as their functional abilities decrease.

"Design Guidelines of Dwellings for An Aging Society," presented here, is a summary

of various guidebooks on housing for an aging society which have been published in Japan. The guidelines are intended to present both a general policy and detailed design features for dwelling units and equipment. It is hoped that they will be used by local governments in promoting appropriate housing development measures, both public and private.

## Aging Trends and Housing Conditions

The National Census Survey in 1985 showed that there are 12.4 million people 65 or older in Japan, 10.2% of the population. Estimates by the National Population Institute of the Ministry of Health and Welfare suggest that old people will be more than 23% of the total population by 2025. It is also estimated that at that time the group 75 or older will be larger than the group between 65 and 74.

The trend toward an older population differs from region to region in Japan. In general, it shows earlier in the country and spreads to the larger cities. Along with population structure, family structure is also changing rapidly. Households are rapidly becoming smaller. At present, about 70% of the elderly live with younger relatives, but in 2025 about 50% of the elderly will live independently.

In general, old persons tend to have their own houses. This is less prevalent in cities, however, where houses are also smaller. Household size seems to affect housing conditions as well. Multi-generation families, i.e. old persons living with their children and grandchildren, tend to live in their own houses, while independent old persons tend to live in privately-owned rental housing. Those living in rented housing move frequently. Very few houses are designed and built for use by old persons who thus encounter various inconveniences in their day-to-day living.

## The Concept of Housing for Old Persons

In an aged society, old people are not special. To eliminate difficulties for them, residential environments should be designed with the concept of normalization. What we here term housing for old persons is housing designed to fit an aged society. It is built to assist old persons with reduced physical and mental abilities, to be adjustable to different forms of living, and to be easily adapted as needs for equipment and facilities increase. Adaptation should be both easy and economically feasible.

## Supply and Demand for Housing for Old Persons

Estimates of housing needs for the aged society suggest that in the year 2020 there will be more than 18 million households with one or more senior citizens, and that more than 9 million new dwelling units will be needed over the next 35 years to cover this increase - 260,000 per year. This is a large increase in comparison to the previous estimate of a total 1.2 to 1.3 million new housing units per year. It will be quite difficult to provide housing for all old persons through new construction alone, and renovation of existing housing stock is quite important. In promoting such a housing supply, publicly constructed rental housing, Housing and Urban Development Corporation and Housing Loan Corporation (HLC) supported housing will play an important role. In addition, private residential construction will have to be actively guided by the government if it is to be adapted to an aged society.

## Typology of Housing for Old People

In the following, several basic requirements for housing for old people are categorized. What matters here is physical condition, family conditions and social conditions.

## Physical Condition

The degree of functional impairment due to aging can be represented in several ways. If daily activities are taken as a measure, the abilities of old persons can be divided into 9 levels grouped into three categories: healthy and independent; partially dependent; and dependent, as shown in Fig.1. Respective care needs are shown in Fig. 2. Regarding care needs it would seem that most of the old people are partially dependent or dependent, but in reality more than 90% are independent. They may become partially impaired, but they die before they become severely dependent.

Fig. 1. Degree of Functional Impairment and Daily Activity Area

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I Physically independent
1 Full utilization of transport facilities
2 Partial utilization of transport facilities, walking distance maintained, sometimes enlarged
3 Only selective use of transport facilities, walking distance shortened
4 Transport facilities almost abandoned, walking distance further shortened
5 Daily activity area almost limited to dwellings incl. garden but living independently

II Partially physically dependent
6 Daily activity area within house, meals in one's own room, almost independent, mobility within house partially impaired

III Physically dependent
7 Personal hygiene with assistance
8 Personal hygiene in own room, bathing frequency greatly reduced, intensive assistance
9 Almost bed-bound

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Fig. 2. Degree of Functional Impairment and Care Needs

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Levels 1 2 3 4 5 6 7 8 9

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- no special care needed -
- residential care on call
- personal care
- nursing care
- medical care

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## Family Conditions

Whether old persons live with family members who can assist them in their daily lives, and whether they are economically independent, will determine their requirements for social services and housing. Multi-generation families and single or married old people who need public housing come under the subject of direct public housing measures.

**Social Conditions**

From the social point of view, three levels of measures are desirable: support for independent old persons; support for semi-dependent old persons; and support for dependent old persons. Existing measures in Japan can be categorized as shown in Fig. 3.

Fig. 3. Existing Social Measures for Old Persons in Japan

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Levels 1 2 3 4 5 6 7 8 9

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Living with - pension
the family - National Health Service

- public housing policy
Loan through HLC
HUDC Housing
public rental housing

Day centers
Visiting day services
Care for confused persons
Old persons only
- pension
- National Health Service

Public rental housing
Nursing home
Special nursing home

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**Housing Systems**

Existing housing solutions for old persons can be classified as either ordinary or institutional housing. The trend is toward ordinary housing, because institutionalization requires extensive resources of money and manpower. For ordinary housing, measures for services on call, physical standards of remodeling, and transportation systems are needed. To realize these, adaptable housing must be available. Special housing for old persons with residential care service is now being developed in Japan. It is called the "Silver Housing Plan" and demand is expected to be very high. This is the first attempt of the two government departments, the Ministry of Health and Welfare and the Ministry of Construction, in a joint policy for our aging society.

**Basic Requirements of Dwellings for An Aging Society**

Table 1 lists some basic requirements to be considered in buildings for odl persons with various degrees of functional impairment.

Table 1. Basic Requirements of Housing for Old Persons

| Levels | Daily Activity Requirements |
|---|---|
| Physically independent | |
| 1 | public transportation environment conducive to social participation<br>safety in traffic and street environment |
| 2 | walking + public<br>transportation domestic safety |
| 3 | walking distance easy vertical movement |
| 4 | short walking distances easy horizontal movement without unnecessary height differences |
| 5 | in and around<br>dwellings comfort, functionality |
| Partially physically dependent | |
| 6 | inside dwellings ease of operation, evacuation safety |
| Physically dependent | |
| 7 | inside dwellings,<br>assistance needs residential care |
| 8 | extensive assistance<br>needs personal care |
| 9 | almost bed-bound nursing care |

**Independent Old Persons**

It is necessary to provide a secure environment for independent living. Since the functional ability of these old persons is expected to deteriorate with time, site selection, traffic safety and a safe outdoor environment should be given careful consideration. At later stages their mobility will become more restricted, and stairs and steps can become barriers.

**Semi-Dependent Old Persons**

Most daily activities will be carried out at home, and careful planning and detailed design are necessary. The house should be comfortable, equipment should be easy to operate, and there should be safe means of evacuation in case of emergency.

## Dependent Old Persons

Houses should be designed to facilitate care services at various levels. It will sometimes be difficult to introduce into ordinary houses new equipment for special needs -- horizontal lifts, for example.

## Housing for Old Persons and Care Services

Old persons who need constant care will occupy an entire room, even though they might not be confined to bed. The room will be exclusively for their use, and may have to be larger than usual and located in the house with special consideration given to circulation patterns. It may be necessary to introduce additional equipment. Appropriate siting of special housing for old persons and the relationship between rooms and staff offices should also be considered.

As shown above, the housing requirements of old persons change as their degree of impairment increases. It is therefore desirable to draw up several kinds of design guidelines. Problems related to construction methods must be solved in order to adapt existing dwelling units for use by old people. Further research in this area is needed. The "Project on the Improvement of Residential Environment for the Aging Society," which is to run for five years starting in 1987, may make valuable contributions here.

## Design Guidelines for Dwellings for An Aging Society

If old persons are to fully enjoy a good residential environment, the following aspects have to be considered: site planning, communal facility planning, block planning, and housing unit design. Of these, dwelling unit design has been studied most intensively, and the result is presented here.

The points to be considered in housing for old persons are basically similar to those for ordinary housing. Safety should be given more emphasis, however, because old persons are more vulnerable to accident injuries. Two checklists have been compiled on basic requirements common to buildings and housing units and specific points to be considered in rooms and spaces within flats.

In principle, the guidelines are meant for elderly people who are nearly independent in their daily activities within their dwelling. They may be functionally impaired to some extent (at stage 6, or partially at stage 7), but they require little assistance from others. Here follow some comments on the guidelines, starting with an explanation of the concept.

Basic requirements for the design of houses:

> Safety, function, comfort and economy must be considered
>
> Adaptability with increasing age must be considered. The design should be acceptable to both old and younger occupants.
>
> A special room should be designated for old persons, if the size of the house permits.

## Room Layout

Room layout can be varied according to the composition of the family. If the house contains family members other than old persons, the priority of the room or space used by the old person should be considered, and should be planned to avoid inconvenience to all family members. Special attention should be given to the possibility to adapt to changing needs as the old person grows older. Additional equipment may be necessary and extra space may be needed for intensive care service.

## Entrance and Exit

The type of door selected and the way the sill is designed are important. Safety and ease of use are basic points. A sliding door may be a good solution, as it does not get in the user's way, but the threshold must be level with the adjacent floor. Wheelchair use should be taken into account. The door should be wide enough, and there should be provision for storing an outdoor wheelchair. The Japanese do not wear shoes indoors, and a wheelchair for indoor use is different from one for outdoor use -- many old persons only use a wheelchair outdoors.

## Corridors and Circulation

If wheelchair use is anticipated, it should be remembered that existing chairs require a minimum clearance of 80 cm (though a smaller chair might be suitable for indoor use). Old people with functional impairment of their upper extremities may not be able to use a manual wheelchair. If they can use one, they can perhaps also manage to move about in the house using only handrails.

## Stairs

Existing stairs are too steep for old persons. The steps should be wider, and their rise lower. Handrails are a necessity.

## Floor Treatment

Falls on level ground are one of the most important causes of accidental death in Japanese homes. Tripping and slipping should be avoided by careful planning and selection of materials. Small differences in level (such as door sills) should be avoided. Floor material should be chosen to soften the impact of a fall.

**Room Environment** Natural lighting and ventilation are important. Mechanical and electrical equipment should be only supplementary. An emergency exit should be available.

**Living Room** The living room and other rooms for common use should be designed so that family members do not disturb each other. Good circulation patterns are important in planning. It is often a sensible solution to provide a direct exit from the old person's room by way of the garden.

## Sanitary Facilities

Differences in floor height between bathroom, toilet and corridor -- including door sills -- should be eliminated to avoid the danger of tripping. The risk for slipping should be minimized. Sharp corners and other features that increase the danger of a fall should be avoided. Handrails should be provided. The Japanese are accustomed to immersing themselves in a tub of warm water. To make bathing easier, the height of the tub needs to be reconsidered. Fixtures should be safe and easy to operate -- the lever type is advisable. The toilet should be equipped with handrails (both horizontal and vertical).

## Kitchen

The kitchen should be designed to minimize the risk for burns or scalds. Electrical cooking appliances, perhaps microwave ovens, are good choices. The height of the kitchen cabinets and workspaces should be considered if the kitchen has multiple users.

## Reception and Recreation Spaces

Visitors are very important for old people. The dwelling should be designed so that visitors may easily be invited inside without disrupting the rest of the family. Watching TV is a common activity, and since old people tend to be hard of hearing earphones or a hearing aid can be provided. The old person’s room should have good sound insulation, so others will not be disturbed. The room should also have easy and private access to the outside.

## Adaptability

Housing designed for old persons should be planned for easy adaptation as they grow older and their condition deteriorates. It will seldom be necessary to introduce a horizontal transfer lift, however, and it may not be necessary to prepare every house for such a measure. But some sort of remodeling should be taken into consideration. Some equipment may require structural reinforcement of floors or walls.

## Maintenance

Houses and equipment need maintenance. Careful attention must be given to design, so that maintenance is easy and economical. Ease of daily cleaning should also be considered.

## Introduction of Advanced Technology

Some products of advanced technology, such as electronic monitoring or surveillance devices, are sure to be introduced into old persons’ homes.

## Concluding Remarks

To put these guidelines into practice, central and local governments must take measures to see that they are implemented. Some of the recommendations have already been communicated to local governments in form of a memorandum. The memorandum

guarantees partial financial support from the central government for specific renovations of existing public rental housing. Other measures are still under consideration and will be introduced in due course. The Development Project mentioned earlier is also expected to contribute to progress in this area.

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## Opportunities for Barrier-Free Inner City Renovation in The Hague

J. J. Kroon, Gravenhage, Netherlands

The Hague with 450,000 inhabitants is very similar to many other European cities when it comes to the problems of its disabled citizens. Most buildings lie above ground level without elevators. The city has many old buildings that are difficult to adapt; parking space is insufficient, public transport is only for non-disabled people. These problems will grow, as the number of old people increases.

Inner city renewal, extensively supported by the municipality, still offers little for people with disabilities. The reasons given are that other basic objectives would have to be sacrificed, if architectural barriers for people with disabilities were to be eliminated. If this was true, every effort at barrier-free design would be doomed to failure.

In this presentation three typical cases are reviewed, to see if there is any basis for the thesis that architectural objectives are in principle incompatible with barrier-free design.

### Ridderzaal

Each year the Queen opens Parliament in the Ridderzaal. If she used a wheelchair, she would have to be carried inside. The entire complex, dating from the Middle Ages, of which the Ridderzaal is a part, is inaccessible to people with disabilities, notwithstanding innumerous daily visitors and frequent use of the building for a great number of events. One of the few initiatives in The Hague, to meet the needs of people with disabilities, was taken by the owner of the Ridderzaal complex, the State. The Ministry of Works and Buildings gave a tentative order, to investigate to what extent this and four other heritage buildings can be made accessible for people with disabilities including wheelchair users.

It is now generally accepted that new buildings can be designed accessible for wheelchair users, without extra cost. The modification of existing structures, especially heritage buildings, on the other hand practically always implies additional costs. There is another and altogether different problem, however, that often carries more weight than the cost argument: in the eyes of public and authorities alike a heritage building is untouchable. For this reason it is often extremely difficult to make changes or additions acceptable to the public at large on behalf of people with disabilities. It is not unlikely that this reaction has some connection to current architectural views, which, even in new buildings, give little room for people with disabilities. More on this subject later.

By adapting heritage buildings, the fact that they are seldom untouchable in every aspect has to be utilized. Often such buildings have less conspicuous areas which can be adapted. A less sensitive area is to be found, for example, under the stairs to the main entrance of the Ridderzaal. The stairway itself need not be altered, but in the open space under the stairs a vertical scissor-lift would not be noticed. Therefore everybody, including wheelchair users, could enter the Ridderzaal by the royal route.

In the same manner, it is possible to make the halls on all floors of the building accessible, without harming real heritage space. The discussion about what should be considered ’real heritage’ and what is ’less sensitive’ has not yet reached a conclusion.

In the middle of the city center of The Hague, a fairly large area has been laid open for important new public buildings, amongst which are a concert hall and a dance theater. These halls are united in one block, with common lobbies. The needs of people with disabilities are met as far as stipulated in the building code. (The regulations concerning the needs of people with disabilities apply to public buildings only, not to private homes.) Disabled visitors are able to park their cars on specially allotted parking places and can easily enter halls and lobbies where there also are accessible toilets.

The question arises, why all parties involved have not done more than to keep strictly to the building regulations. The architects of the Concert Hall are well known. More than once they have shown great ingenuity. But it appears that ingenuity is put out of action once people with disabilities are concerned. As a result, disabled visitors have to be satisfied with a seat in one of the side corridors, outside the area designated for the rest of the audience. Architects of this rank should be more than capable to prevent such situations. They could also have come up with a solution to offer people with disabilities the opportunity to sit next to a non-disabled companion, which is not the case at present.

Since it cannot possibly be due to the lack of capability that these architects have not developed these facilities, then it must be due to their architectural objectives. The next and last example of city renovation in The Hague will show more detailed data about a possible conflict between architectural objectives and the interests of people with disabilities.

**De Katerstraat**

De Katerstraat is a new street in an old neighborhood. This little street differs from all the other city renovations in The Hague, because it is unanimously appreciated by the authorities and the public. It includes 56 houses, 4 communal dwellings and some shops. It is the show piece of the local authorities and functions as a national example in the field of residential construction in inner city renovation. Here too, capable architects have been at work. One of them granted me an interview, in which he made it clear that the architects had considered the needs of people with disabilities. However, as it later turned out, they could not be accommodated - other goals were of greater importance. The architects came to the conclusion that they would have to sacrifice too much of their goals if they were to take into account the interests of people with disabilities.

For De Katerstraat, the architects had the following seven goals:

1. low rents
2. the maximum number of 4-room houses - besides houses with 2 and 3 rooms - to make a stable population possible.
3. building height, parcel-measurements and scale, in line with the neighborhood. The result are buildings with three floors; narrow and small houses; some flats with 1 1/2 floors;
4. building entrances towards the street to increase social interaction and control; no balconies, but instead front entrances; each entrance leads to only two flats on each floor.
5. maximum privacy for the balconies, terraces and small gardens located in the rear,
6. underground parking for a maximum number of housing units on the land and

an unobstructed view from the homes,
7. a pleasant, lively small street, offering a fine spatial effect.

The architects have shown great ingenuity in reaching these rather difficult goals. They have succeeded and assumed, that because of their success, the houses are unsuitable for people with disabilities. The assumption can be tested by investigating whether the project, if designed barrier-free for disabled people, would still satisfy the above goals of the architects. The architects have given me permission for this test, for which I am duly grateful.

In spite of many barriers, there are favorable conditions for the adaptation of De Katerstraat to wheelchair users: the underground parking garage and the fact that half of the houses are on ground level. The street level houses can be adapted to wheelchair users with minor floor plan changes. There appears to be enough room to install a small elevator within the homes, should the need arise. Such elevators can be individually subsidized and thus need not be included in construction costs.

The flats on upper floors can be made accessible by constructing a central corridor on the second floor on each of the four quadrants of the plan. In the revised floor plan, each central corridor leads to a landing with a staircase and an elevator shaft in which, if necessary, an elevator can be installed. If this is the case, these elevators can also be used by the four communal houses. At the other end of each central corridor, an emergency exit could be made. The four staircases, elevator shafts and emergency exits extend down to the parking level.

The apartments on the upper floors can be adapted to wheelchair use in a similar way as is suggested for the flats at street level. Instead of an elevator inside the house, room can be found for a lifting platform that can accommodate a person using a wheelchair.

**What about the Architectural Goals?**

1. Construction costs will not increase. The costs of the elevator shafts will be compensated by the fact that fewer staircases are necessary. The extra space on the first floor, necessary for the central corridors, is offset by the space won through elimination of the entrances.
2. No change.
3. The measurements of the houses remain the same.
4. Not all the entrances to the houses are situated on the street. In the revised plan, the entrances to the 28 upper flats are situated in the central corridors, which terminate in common entrances at street level. Summing up, the difference is as follows. In the existing plan: 60 entrances to houses (individual and communal) at street level, of which 28 are two and two combined. In the revised plan: 36 home entrances at street level.
5. The rear of the houses is not changed.
6. Underground parking can remain almost the same.
7. Spatial effect and vivacity are also guaranteed in the revised plan.

Six of the seven goals will thus remain feasible and one to a large extent.

In the case of De Katerstraat, a perfect example of city renovation in general, it is clear that if allowances are made for people with disabilities, these do no particularly hamper the architectural goals. With these goals in mind, including low rents, it should therefore be possible to renovate cities in such a way that people with disabilities can remain in their own neighborhood and have the same choices in the housing market as everybody else.

# Personal Assistance Services for the Disabled and Elderly in Bremen

Svantje Köbsell, Selbstbestimmtes Leben, Bremen, Fed Rep Germany
Thomas Hilbert, Hauptgesundheitsamt, Bremen, Fed Rep Germany

## Finance

Disabled people in the Federal Republic of Germany have, in principle, the right to receive cash payments from the social services office to pay for their personal assistance. The amount is means-tested and the number of assistance hours is determined by a medical doctor. While the law places priority on community-based services, the amount granted may not exceed the costs of residential care facilities.

There is also a federal program which grants DM 812 per month to disabled people who fulfill special criteria (e.g., without use of three or more limbs, double amputees, spinal chord injuries) and earn less than a certain income. The monthly grant is supposed to be used for such special needs as special clothing, laundry, a larger apartments, etc. The program can also cover the costs of personal assistance.

## The Provision of Personal Assistance Services in Bremen

Bremen with a population of 530,000 is the smallest federal state in the Federal Republic of Germany and is situated in the North. The agencies for personal assistants in Bremen are the so-called social service centers run by large charity organizations such as the Red Cross. These centers have existed since the early seventies and can be found in all parts of the city. The clients, the majority of which are old persons, receive assistant referral.and counseling on many subjects.

In the Federal Republic of Germany, most personal assistance work is done by conscientious objectors. Young men have the right to refuse to do military service, and instead undertake some civil service which lasts 20 months. Civil service is mostly carried out in hospitals and institutions for old and disabled persons. The social service centers can refer conscientious objectors on a short-term basis, for example, for window cleaning for someone who cannot do this himself. Persons with extensive disabilities are eligible for two of these young men as their personal assistants. In fact, for people with limited incomes who need a great deal of assistance, this is practically the only way to live outside of an institution. Conscientious objectors are free of charge to eligible persons, whereas assistants regularly employed by the consumer himself demand proper wages including social security costs which makes this alternative very expensive.

This solution, however, is not without problems. Women, for example, who do not wish to be assisted by young men, often find it prohibitively expensive to hire female assistants whom they would have to pay market wages. Another disadvantage is the regular turnover of assistants every 20 months, when their service is over. Also, both sides often have no real choice in the matter; the young men do not voluntarily take on the work and are under the surveillance of the military. In addition, old people often experience the increasing age difference between them and their assistants as a problem.

Though the majority of the clients are old persons, the staff of these centers are increasingly burdened with the issue of independent living for younger disabled people.

Often, they have very little time for each client.and are unable to provide qualified counselling for people in difficult situations. Their main work consists of assistant referral. Thus, persons planning to move out of institutions and into the community overtax the resources of the centers. These clients may not only need assistants, but also an accessible apartment, money to live on and a good deal of counselling and support. Often, people who have lived in an institution for longer periods have not learned essential independent living skills. They need someone to accompany them to the various agencies, help them find an apartment and file applications for assistance. And most importantly, these people who are often told that they are incapable of living in the community need someone who supports them in their belief that they can manage a life outside of an institution.

It is a common experience among independent living initiatives that disabled people are far more credible and effective as counsellors than non-disabled experts. The role-model of a peer who has come a bit longer on the way to independence is far more encouraging than regular counselling, as disability is an experience that cannot be imparted through words but must be experienced.

Based on this recognition and the ideology of the Independent Living Movement, that is the belief that all people with disabilities can live independently given the right conditions, a group of disabled people started a counselling center for disabled people called "Selbstbestimmt Leben" (Self-Determined Living). The center offers comprehensive counselling to disabled people and their relatives on all aspects of disability including personal assistance. This includes support in filing applications with the social services office as well as talking over personal problems concerning the disability. The main principle in the center's work is to do everything together with the client, rather than for the client, as is done in traditional service agencies. Thus, the client can retain control of decisions concerning him instead of being incapacitated by patronizing structures and maintains or re-acquires the ability of running his or her own life.

Apart from working with individual clients the center's main task is peer advocacy. We discuss the problems of being disabled in and by this society and try to effect changes in attitudes as well as laws. For nearly ten years we have publicly debated special transportation for disabled people vs. accessible public transport systems. Recently a decision was made by the Bremen public transport authorities that the next busses to be bought would be accessible. We have drawn attention to the special situation of disabled women - a double disability, being disabled and a woman!. Further, we raised consciousness about the problems of genetic counselling, the value of disabled life vs. eugenics. Recently, we started an exchange program with disabled people from the United States.

In our work, as well as in the work of the service centers, it is obvious that there are still many people with disabilities who live with insufficient and unsuitable personal assistance. Many of them simply resign, move into nursing homes or remain totally dependent on relatives instead of taking up the challenge of independent living. There are different reasons for this: some individuals, especially older people, are too proud to apply for support at the social services office because they consider personal assistance paid by the public not as a right but as charity. Others who own their home or earn just above the maximum income to be eligible for assistance services do not have sufficient earnings to pay for personal assistance themselves.

The main problem we face in our work is still lack of knowledge of their rights and possibilities on the part of the consumers and the social services office's failure to give out complete and sufficient information which would enable disabled people to take full advantage of their rights. Much work remains to be done to better the situation of disabled

people in Bremen.

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## Guidelines for an Environmental Design Suitable for Old and Disabled Citizens in the German Democratic Republic.

Herwig Loeper, Institute on Construction and Health, German Democratic Republic

Services for old citizens and efforts for the integration of persons with disabilities in social life are laid down in the constitution of the GDR and in the social and rehabilitation laws.

Since the beginning of the 1970's, numerous newly built and reconstructed flats have been provided through the state housing program, and more than 80,000 flats for old persons and approximately 3,000 flats for wheelchair users have been constructed. 30,000 places in apartment buildings as well as 60,000 places in old people's homes have been provided according to state planning and projecting guidelines.

In 1985 there were in the GDR per 1,000 inhabitants altogether:

4.7 flats specially designed for elderly and disabled people
0.2 integrated flats for wheelchair users
1.8 places in specially designed apartment buildings for the elderly and handicapped
0.12 places in sheltered homes for disabled adults
2.7 places in homes for elderly people
5.4 places in nursing homes and clinics
0.04 places in geriatric day nursing homes

The numbers above refer to a population of 16.7 million of which 16.6% are old age pensioners.

In addition, a variety of measures have been taken to contribute to an environment suitable for old and disabled people, especially in new residential areas, since the beginning of the 1980's.

Life for old citizens and persons with disabilities today is often dominated by the alternative of either having a household of one's own and assistance through the family or living in an institution. Loss of independence and the move to an institution are often due to inadequacy of sanitary and heating equipment in flats of old buildings as well as lack of suitable public transportation and high demands on one's mobility in new suburbs.

With the shift of construction away from extensive residential suburbs towards inner city housing and from new construction to reconstruction and modernization of old buildings, the advantages of modern housing comfort can be combined with the developed infrastructure of inner cities. In this way favorable conditions for an independent life and social integration of old and disabled citizens can be accomplished.

Residential care facilities and their growing costs can be contained only in places where the most important elements of environmental design for old and disabled citizens are successfully realized. These elements include:

sheltered employment and leisure facilities

medical, educational, occupational and social rehabilitation facilities
day-centers and visiting nurses programs
community-based services
emergency call facilities
accessible streets, public transportation and public buildings

A varied local and regional supply of housing and services can only be achieved by a variety of smaller units which may not always result in the most effective use of existing resources. New financing and organization models are therefore necessary. Construction activity and services should not primarily be oriented on bed capacities and a high degree of specialization but must be aimed at local conditions as well as multi-functionality and social integration. The traditional separation of services for old persons and for people with disabilities must be overcome and there should be close links with other services, the health system and public institutions.

While in recent years the bulk of new flats and related services have been built in outlying areas of larger cities in the GDR, rural areas and smaller towns are only seldom equipped with the necessary care capacities and facilities. International experience shows that the efficiency of large institutions is limited, especially in small towns and villages because of deficiencies in the infrastructure which can hardly be compensated in a socially and economically effective way. For this reason, the aim must be to adapt more flats and public buildings to the specific needs of old and disabled persons, and to increase the supply and flexibility of public services. Special centers in cities could then concentrate on the remaining highly specialized care services.

For these reasons, it seems advantageous to establish a network of small service units when building new dwelling units or renewing existing residential quarters and buildings. These units should be closely linked with the large centers and should themselves take over coordinating and advisory functions. At the same time, they should offer basic services such as meals and day centers. Furthermore, they can serve old, disabled and non-disabled people as centers for communication, self-help and leisure.

Since only few households of old and disabled people are equipped with telephones, the need for services can be brought to the attention of these units either by the clients themselves, in case they are ambulatory, or their family and neighbors. The small care units can organize and deliver the following services with the help of contractors: factory cafeterias and restaurants could deliver meals, craftsmen could take domestic orders, outpatient clinics supply medical care, and social and voluntary organizations and groups can encourage social and cultural activities. In this way, more services could be provided for the needs of old and disabled citizens without large additional investments.

In the GDR, community-based services are to a great extent carried out by volunteers from the "People’s Solidarity" organization. Such services can be delivered more efficiently, if businesses, factories and other social groups and organizations are involved. For the future, it is feasible as well as desirable that the work of volunteers, factories, businesses and other institutions for the "People’s Solidarity" get financial support from the state, similar to Norway. In this country construction of adapted flats for old and disabled people are subsidized by the state. Promotion schemes of this kind do not only contribute to the improvement of the living conditions and the integration of old and disabled people, but they are also an investment in social security and social welfare of all citizens.

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## An Expert System for the Use of Occupational Therapists in Making

# Proposals for Adaptions to Existing Houses

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## Expert System

It is the function of occupational therapists to make recommendations for the adaptation of existing houses to help physically-disabled occupiers remain independent in their homes. The authors are in the final stage of developing an expert system for assisting occupational therapists in their work of making recommendations for the adaptation of existing houses. The purpose of our expert system is to assist prior to the making of those recommendations.

## The Problem Which the Expert System Alleviates

An occupational therapist makes her recommendations as a medical auxiliary. Her expertise is in the alleviation of disability in the home. Alongside the occupational therapist a building expert is needed, who will appreciate whether what is proposed to be done is possible in terms of the existing building.

A building expert can by no means always be on hand when the occupational therapist is deciding on her recommendations however. The occupational therapist will often make her recommendation without due guidance on feasibility from the building standpoint. The building dimension of the problem will only receive expert consideration at some time afterwards.

If the recommendation made is then judged impractical by the building expert, delay and frustration will result while a new recommendation is worked up. It is of importance that this should be avoided: physically disabled people already have much to contend with and time may be short due to progressive disease and short life-expectancy.

The expert system we have developed contributes towards overcoming this problem of possible delay. The occupational therapist needs to know whether her proposals are likely to be feasible: so that if they are not she can amend her proposals before involving the building expert. Our purpose is to give her necessary insight so that her proposals are more likely to be suitable for the building first time round.

Our expert system helps the occupational therapist appreciate whether there are any structural or spatial limitations in the house, or legal limitations, which are likely to rule out the adaptations she has in mind. This will guide her in the proposals she makes and improve her interaction with the building expert whose task it will be to prepare the scheme of alterations and oversee the construction work.

Figure 1. Adaptations to houses: professional expertise.

| **occupational therapist** | **building person** |
|---|---|
| Expert in "aids and adaptations for compensating disability in the home" | Expert in the implications for the building of the proposed aids and adaptations...."can the existing building take them?" |

The expert system helps an occupational therapist appreciate whether her proposals for

adaptation are likely to be feasible from the point of view of the form of construction of the existing building.

## Note on the Process of Developing the Expert System

An existing expert system shell ESP-ADVISOR was utilized at the first stage of our work. This shell proved a good start from which to organize the expert knowledge about buildings which the occupational therapist would be consulting. There were limitations to ESP-ADVISOR found which necessitated moving on the develop a purpose-written expert system program of our own.

There was thus a distinct second phase to our work in which we developed our own system. The main programming language used was BASIC. However, since the expert system outputs advice in the form of text it proved convenient to use a word-processor, Wordstar, to format this text. A separate program converts the Wordstar files into a form in which they can be included in the expert system. This combination of programming in BASIC and the facility of ready-made word-processing, suits our purpose well.

The system we are developing is menu driven and the user is afforded complete flexibility to proceed backwards and forwards within the package, exploring the territory, returning if necessary for a repeat-consultation of a particular aspect. The scope of the expert system is indicated in an Appendix to this paper.

## Capturing an Expert's Expertise

The way in which an expert uses his expertise in carrying out his expert function is only partly understood. The process is subtle and complex, not uniform. By observation over a number of years, however, important features of the process have been identified.

There are two features that appear consistently in experts' armories of problem-solving techniques. An expert
1. takes short-cuts by using rules-of-thumb (heuristics) and
2. knows what question to ask next, depending upon answers that have been given to previous questions: he is able to beam the search towards an answer. An expert will reach the point which is at issue, quite often, after only a few questions.

Using rules-of-thumb and knowing what question to ask next are close to being essentials of an expert system. Our expert system, thus, leads to conclusions by adopting rules-of-thumb used by a building expert while also adopting his pattern of reasoning. Illustrations of these features are given in Figure 2.

Figure 2. Building expert at work (text abridged)

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asks..... What do you want?

O.T..... A suspended stirrup-grip

asks..... What is the ceiling structure made of?

advises... on how to find out

O.T..... Concrete

Thinks*.. best not to try drilling that; disturb the reinforcement; may even be prestressed

says..... let's think of fixing to walls (a steel support-rail across the room)

asks.... are the walls 11 cm thick** or more?

* deciding where to go from here
** rule-of-thumb

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**Expert System Medium Feasible**

As a matter of good fortune, our subject matter and purpose lend themselves to the medium of expert systems. This is the case due to a number of reasons. The following aspects of our context and purpose have been significant ones in enabling us to produce an effective working expert system:

consensus\knowledge: there is a good level of consensus among building experts as to the issues involved in the subject area of the expert system

subject area explicit in character: the issues involved are readily identifiable in the main, with common-sense or 'surface' knowledge a sufficiently small element not to diminish confidence in the expert system

the expert system's focus: rather than coming to definite conclusions, our focus is on helping our client to reach her own conclusions

ranking and rating between this is reserved for the user, outside the expert system.

different solutions: The focus of the expert system is on the identification of alternatives each of which is possible.

cross-relationships between these do not normally occur in our subject matter. In our different parts of a solution:context situations do not change according to what has gone before: provision made to overcome handicap in one part of the dwelling does not normally knock-on to alter the implications for provision elsewhere within the dwelling.

**Usage and Dissemination**

We are optimistic that our expert system will be used by many occupational therapists. Seminars, to become conversant with the expert system, will be held over the months to come.

**Appendix: Scope and Arrangement of the Expert System**

The arrangement of the program is in sections as follows:

> General matters: this section provides information relating to the layout of the house.
>
> Once-only items: a section comprising one-off items - for example, a lift.
>
> Possibly-repetitive items: these are items which may come up on several occasions as an Occupational therapist progresses from one room to another in making her assessment.
>
> Details: this section comprises notes on regulations and construction in greater detail than in the other sections.
>
> External approaches: a section concerning the approach to the house from the street.
>
> Drainage: items comprising the construction, disturbance and protection of drains.

Each of the above sections is divided into items. On entering into any of the sections an index of items is given from which the user makes selections.

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## Improved Accessibility in Bathrooms

Hans Örnhall, National Board of Planning, Sweden

The Swedish Council for Building Research sponsors a project entitled "Renovating Bathrooms in 48 Hours". The project follows in the footsteps of the Swedish project on retrofit elevator technology and uses the same approach.

Second only to the problem of stairs and absence of elevators is the problem of inaccessible bathrooms. About three quarters of the bathrooms in the multi-family building stock in Sweden, built between 1945 and 1970, measure 1.6 m by 1.9 m. One of the aims in renovating a bathroom or retrofitting an old apartment house with an elevator is that residents do not need to move out during the retrofit work. A project group formulated criteria for a competition between manufacturers, contractors and installation firms for submitting proposals on how to renovate ordinary apartment bathrooms. The object of the competition was an ordinary three-storey building containing six flats owned by a non-profit housing company in Helsingborg in Southern Sweden.

Competitors had to meet the following mandatory requirements: Work had to be completed within 48 hours. No extension of the bathroom area was allowed. Bathrooms had to be accessible for wheelchair users. The bathtub had to be removable.

Desirable features were: installations that are easy to clean and to replace; quality that equals that of conventional solutions; space for a small laundry machine; passages of at least 75 cm; future leakages had to be easily detectable.

Two contractors cooperating with the two largest manufacturers of sanitary fittings in Sweden turned in the best proposals. They were quite similar to each other. Both had studied their solutions from several aspects in mock-ups, particularly in respect to accessibility. The two winners were awarded the contract for renovating 6 bathrooms each. The work was completed in October 1987 and will now be analyzed.

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## Removing Architectural Barriers: The Example of the University of Rome

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### General Principles

In 1981, the United Nations International Year of Disabled Persons, the Dean of the University of Rome established a working group with the task of collecting documentation and information on problems experienced by persons with disabilities, contacting institutions and organizations of disabled people, and of making specific proposals to the University.

The formation of the working group was a sign of the procrastination of our University regarding the problems of students with disabilities, but it was also an indication of the administration's willingness to establish a new course of action. While the University was, at that time, very involved in the subject of disability, both in research and teaching, especially in the School of Social Work and Special Education specific action for the disabled students was virtually non-existent.

The proposals of the working group aimed at the complete integration of the disabled into academic life. This included encouraging disabled students with high school diplomas to attend the University by eliminating the tremendous number of difficulties which have hindered many disabled people from achieving higher education. A census taken in the 1982-83 academic year showed that only about ten out of more than 100,000 students had some disability. Most of these students were blind or had motor disabilities. The reason for the small number was that many otherwise qualified students could not continue higher education because of the University administration's apathy regarding the needs of disabled students.

The first problem for disabled students is transportation to and from the university for which they normally have to rely on the help of relatives or friends. As a result of requests by the University administration to the municipal authorities, transportation in special paratransit vehicles and reserved parking on University grounds is now available. On entering the university area disabled students can be met by personal assistants. These persons are conscientious objectors doing their alternative civil service in this way under a trilateral agreement between the University, the Ministry of Defence, and the Institute for the Right to Academic Study (Istituto per il Diritto allo Studio Universitario) of the Lazio Region. The CO's, trained by rehabilitation experts, escort disabled students to lectures, exams, meetings with professors, etc. Attempts have been made to reduce architectural barriers, which we will examine later on, and to facilitate, wherever possible, access to teaching areas without the help of an assistant. The system was at first limited to a few disabled people and CO's. Today about twenty CO's and more than twenty disabled students are involved which proves that persons with disabilities demand higher education

once practical difficulties are eliminated by architectural changes and appropriate services. Blind students, with the assistance of CO's, organized a tape library with recordings of text books for some of the main courses. Assistive devices of various kinds such as lecture-room recorders, special furniture and accessible telephones complete the measures to assist students with disabilities.

The intention today is to eliminate the need for special arrangements for individual disabled students by making general adaptations which increase accessibility for all. In this, the data base of the Help Information and Evaluation Service (S.I.V.A.) in Milan has been useful which collects information on all international innovations in the area of assisting persons with disabilities in daily life. With the help of this information source, it is hoped that the University will be able to provide the best equipment for improving disabled students' physical as well as learning situation.

The results of last year's action cannot be said to be overwhelmingly successful, but they give some reason to be satisfied and convinced that our university is at least heading in the right direction.

## Information, Training and Results

One of the main interests of the working group was the removal of architectural barriers. The targets were: to eliminate obstacles to the free movement of disabled students whilst observing building regulations; to initiate gradual adaptation, where possible, of existing structures to this end; to gain a better understanding of the technical aspects of the problem; and to inform the public both within and outside the university by appropriate action in a number of directions.

Investigations and subsequent program of action towards these targets were entrusted to a group of experts, co-coordinated by Dr. Roberto Palumbo, and financed by the University Board of Directors. A report of the group's work was published and sent to many institutions and organizations working directly or indirectly in the field of disability at the national, regional and local level. The report is a critical and thoughtful look at the problem and contains a list of recommendations for action aimed at contributing, albeit in a piecemeal way, to the removal of some of the obstacles which exclude a significant sector of student and non-student population.

The work documented in the report consisted of:

- identifying the main architectural barriers on the university campus and its periphery,
- setting up criteria and priorities for their step-by-step removal based on their strategic importance and on economic considerations,
- providing technical documentation in the form of a handbook which is to facilitate the work of the Technical Department of the University and can be used in university courses on such problems,
- contributing to the general understanding and awareness of the exclusion of persons with disabilities through architectural barriers and emphasizing the importance of their removal.

In informing a wider public, a video program and a travelling exhibition were produced which received the attention of some broadcasting networks and other media.

The working group, made up mainly of researchers from the School of Architecture and the students who conducted the surveys, was complemented by experts from regional government offices and local health departments (Unita Sanitarie Locali) in order to stress the need for cooperation and sharing of experience between university and public administrations. The working group, together with the experts, organized courses on the subject of architectural barriers for officers of the Municipality of Rome in charge of building permits.

Our research and the adaptations that resulted from it were technical in nature and, as such, cannot solve the much more complex problem of integrating disabled people into academic life. It is also for technical reasons that not all requests for removal of architectural barriers in university buildings can be granted. However, the limited targets for our study seem to have been reached, and are a first contribution in finding a solution to this problem.

## Experimental Research

The survey conducted by the working group pointed out some difficulties in applying existing regulations and questioned the credibility and legitimacy of some of the standards contained in the regulations. In many cases, design specifications seemed too wide or inadequate in other respects. Specifically, regarding safety issues in the use of fixtures and equipment, Italian national regulations seemed to be based on a critical examination of foreign regulations rather than on objective evaluations and experimental analysis of disabled people's needs and capabilities.

For this reason, the working group planned to critically re-examine current regulations and their technical specifications. The opportunity for this arose in connection with the edition of some regional laws in 1982 that made funds available to public institutions for renovation work aimed at removing architectural barriers and for experimental research. The Lazio Regional Board asked the Department of Industrial Design and Building Production, University of Rome to conduct a study of the acceptable minimum dimensions for accessibility and mobility of people using wheelchairs in renovating existing buildings.

National regulations for the elimination of architectural barriers are rather new for Italy and are contained in Presidential Decree 384/78 of 1978 that covers new construction but not existing buildings. Instead, the legislator decided to wait for further investigations, preferably at regional level, that should take into account local characteristics and limitations.

In our study, we look at a building's performance. Any evaluation of quality must be based on a comparison between performance and the needs of the users. User requirements are related to a wide range of situations, such as the need for social integration, the need of maintaining one's own identity and the need for security and safety. Applying these needs to the use of a building they translate into the possibility of entering the building, of moving freely within it and of experiencing security in using the building. These requirements can be optimally met in new buildings. In the renovation of existing buildings, however, there are a number of problems due to structure, location, distribution and image that do not allow the use of rigid and undifferentiated standards.

In our research we systematically analyzed a hypothetical building by defining performance criteria and identifying the building's shortcomings and necessary alterations. The performance criteria are the central element of the study. To define them,

experimental tools and methods had to be used such as field studies, room and situation simulations, the use of prototypes, testing by various user categories and the critical evaluation of Italian and foreign technical specifications.

The working group followed the prevailing trend of avoiding standards that consist of single values only and, instead, decided to establish value ranges. The results are flexible specifications for finding solutions which are compatible with stringent evaluations of costs and benefits. The resulting specifications allow a competent designer discretion in establishing the optimal ratio between costs and benefits.

(A summary of the dimensional requirements and a sample survey form are available from the authors.)

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## Careful Housing Renewal: Notes on Housing Renovation in Sweden with Special Respect to Old and Disabled People

Jan Paulsson, Chalmers University of Technology, Sweden

### Historical Notes

For several decades, housing shortage and overcrowding was the overshadowing housing problem in Sweden. People moving from sparsely populated regions to urban areas necessitated the construction of housing, mainly rental apartments in large numbers in the expanding cities. The most important target group for housing planning from the 1930's to the 1950's were low-income households with many children. Housing production became increasingly industrialized during the 1950's and 1960's. The construction boom culminated in the so-called "Million Program". One million new housing units were built over ten years during the period 1965 to 1974. Although the substantially increased building stock represented a considerable step forward, the consequence of the high pace of production, use of new building materials, and inadequate/insufficient follow-up of the results of production, etc. was a housing stock of varying quality.

Right now we are in the introductory phase of a new large national program - the National Housing Improvement Program (ROT) - which is to be implemented over a period of ten years, 1984-1993, and which will include repairs, renovations and additions to the large housing stock mentioned above which is currently referred to as the Old (up to 1930's) and the Semi-Old (built during the 1940's, 1950's and 1960's) Building Stock. A major program goal is to provide everyone with housing that is well-maintained, has modern equipment and fulfills requirements of good accessibility. Energy-saving measures are to be intensified, the standard of living is to be equalized and integrated and better use is to be made of the existing capacity within the building sector. The program gives building owners an opportunity to correct the original deficiencies in planning, rectify deterioration and neglected maintenance, and adapt the buildings to present and future needs.

The Million Program was a quantitative program. Its objective was to produce as much housing as quickly as possible. The National Housing Improvement Program is a qualitative program. Its objective is to raise the technical and functional standard as well as to reduce energy and management costs. The overriding and long-term goals of the improvement program and the need to enact general measures to rectify deterioration and neglected maintenance are often relatively easily assessed. It is much more difficult to get a clear picture of the local conditions in terms of the positive and negative features of the

particular house/building and neighborhood. What improvement measures are needed and how should they be ranked in priority?

## Housing Stock and Population

Older buildings account for a large part of existing housing. In Sweden there are about 900,000 flats, and 40% of all flats are in blocks built during the 1930's, 1940's and 1950's. These dwellings must be regarded as a valuable resource even though a lot of heat is lost through the walls, the balconies rust and sometimes even collapse, staircases and lack of space make them unsuitable for disabled persons, and lead to poor working conditions for refuse collectors and caretakers.

A large part of our older housing is now in need of technical and functional improvement. Old people and the physically disabled, living in Old and Semi-Old areas, are very much affected by these measures. It is therefore important to take the people concerned into consideration when choosing solutions and working methods. Research and development in this area is receiving high priority in Sweden just now.

The Old and Semi-Old neighborhoods are no longer mainly family neighborhoods. The present population consist of mainly old people in single-person households. It is important that the housing and its immediate environment is adapted to these categories of residents. The needs of old and disabled persons of accessibility and adequate standard as well as of common spaces and meeting points are entirely different today. At the same time, it is important to strive towards a population base of varying age groups and family sizes.

## The Situation for Old and Disabled User Groups

The number of pensioners over 65 years of age will increase in Sweden until some time in the next century. Particularly striking, however, is the increase in the proportion of people over 80 years of age, precisely the group towards which the social services for old citizens are primarily directed. In response to that trend fairly extensive research and development work has been done during the past decade. At the same time, the objectives and forms of assistance that society provides have become matters of urgent importance.

Many old people live in old parts of towns and cities. They have often chosen to remain in the area in which they lived when they were working - perhaps in the same place where they lived as newly married and where their children grew up. Their homes are full of memories, and memories mean a lot to old people. Old people like talking about the time when they were working and about their families. The home is intimately connected with those times. The photos of their children and grandchildren and ornaments and furniture accumulated over the years constantly remind them of the past. Their memories are not just connected with their own homes but also with the whole environment - streets and shops, neighbors and familiar faces.

The Old and Semi-Old neighborhoods have functioned over several decades. A local subculture has grown, social networks have developed, people have created rules and traditions in their lifestyles. People's - particularly the older generation's - security and identity is strongly bound to the local environment in which they live. It is important for the housing improvement process to develop a sensitivity to and awareness of these conditions.

## Basic Concepts

Buildings and the built environment in general are among man's most important resources for activities, social life and community development. The built environment often means obstacles and limits to large groups of people. Disabilities in some respects imply that people develop new resources and abilities in other respects. Process and design in the development of the built environment can promote or reduce the possibilities for people to use their resources and potentials.

The processes in which the built environment is designed and constructed do not give people opportunities to participate or to influence and thereby improve their situation. Work methods have to be developed in pace with progress in other disciplines and changes in attitudes and assessments in the community. User-oriented studies focusing on processes and specific minority groups are a way to develop general knowledge of great importance.

The design of buildings and the built environment is today of immediate interest, in new buildings as well as in the renovation and renewal of older buildings. Several groups of people today live in unsatisfactory circumstances. The old institutions - large and segregated housing and nursing homes - are now phased out. New care forms and models for housing have to be developed in the local environment. The housing environment and housing districts can be developed to better correspond to the situation and needs of the different user groups.

More and more importance is now attached to the well-being of the tenants when buildings are designed, constructed, renovated, adapted for different uses and put to use. Interaction between planners/architects and different categories of users is a condition for good development and renewal of the environment. Methods for user participation have to developed. The experiences from different experiments have to be systematized. Design and process must be regarded as a whole.

The resource perspective implies that all people are regarded as a community resource. These resources can be found in both individuals' capacities and experiences and in their social commitment. The majority of old people are both healthy and strong. In the past they had all kinds of positions in the community. Now they are often prevented from having an outlet for their energy and commitment. It is important to take care of and make use of the resources of old persons in every situation in which they wish to participate. Planning and design of the environment must aim at the release of people's resources - figuratively speaking, to open doors to new possibilities and alternatives.

The activity hypothesis implies that people, not least old and disabled persons, do better if they continue to be physically and intellectually active. A lack of activities and duties can even be destructive. Almost any skill can be learned and healthy people of any age, with dedicated practice, can achieve good results. An experienced and trained 70 year old will be quicker and sharper for a given skill than an inexperienced and untrained 20 year old. Regular daily activity, both physical and intellectual, is the best method of keeping healthy for old people.

The lifestyle hypothesis is based on the assumption that most people, and again not least old and disabled persons, have developed their individual resources into habits, interests and skills - an individual lifestyle. Examples of important activity areas are living habits, social relationships, work, household, etc. The conclusion of the lifestyle hypothesis is that it is important not to inhibit people from pursuing their interests. Planning and design must promote the continuity of individual lifestyles.

Aging in place, the possibilities for old people to continue to reside in their own familiar environment, is a basic goal of community planning in Sweden today.

In housing renewal it is not always possible to achive the same conditions as new construction. It is important to respect the positive features of existing conditions and to change the negative. Thorough analysis of the current situation and detailed knowledge of the buildings and populations is basic to housing renewal. A careful approach to both people and buildings/environments is the general approach, developed in different ways in the processes and design measures in housing renewal.

In some dwellings or blocks it may be easy to implement high standards of accessibility and usability, even for persons with extensive mobility disabilities who use space-craving technical aids and/or personal assistance. In others it may not. Then, the area concept is an important approach. The housing area or district should be considered as a basic entity. Within each area there should be accessible and usable dwellings for all 'special needs', i.e. flats for a broad cross-section of the population. Today, the municipalities in Sweden are working on area programs which form the basis for the implementation of future housing renewal programs.

## Three Housing Renewal Studies

### Kortedala: A Study of a Neighborhood in Gothenburg from the 1950's

Causes of Relocation: Positive and Negative Features of Kortedala.

Aging in place - the continued residency of the old population - is a basic goal for physical and social planning in Sweden today. The basic concept of this study is that people who relocate or move often have given thorough consideration to their housing situation, have formulated opinions and are aware of the advantages and disadvantages of the area. By shedding light on the causes for moving, a clearer picture can be obtained of the housing's and neighborhood's positive and negative characteristics as well as which improvements are urgent and/or imperative.

This study used a mailed questionnaire and the replies have been analyzed by computer and manually. The reasons why people move are most complex. There may be "individual" reasons, the social environment, reasons of health and the bad accessibility and usability of the environment, the process of renovation.

The replies in the study gave a rich and complex picture of an urban neighborhood. Considerable space has been allotted to human problems, since we have focused on the views and experiences of the households that have moved. However, these views and experiences should also be the basis for planning the renewal. In addition, suggestions for improvements were presented to be implemented in the area from the point of view of middle-aged and old people. Most of these proposals are obvious, realistic and constitute a good basis for starting the renewal work.

### Sanna - Preserved and Renewed

Housing Renewal in the Sandarna District of Gothenburg: Multi-Family Housing from the Early 1940's.

The planning of the Sanna district in Gothenburg, situated on the heights west of Kungsladugard, started in 1936. Construction was carried out in 1939-45. The goal was to erect as much housing as possible as quickly as possible. The buildings are typical

rectangular four floor slabs in functionalist style, of high standard for that time.

In 1982, a renewal and renovation project started in a part of Sanna owned by Poseidon AB, the largest municipal housing company in Gothenburg. The company was to start the renewal of its 1940's building stock and Sanna was the first trial area. The Swedish Council for Building Research approved funds for experimental activities and the project was to take special note of the housing and living conditions of old residents. Researchers at the Department for Housing Design were charged with the responsibility for program work, participation activities and research contributions on design and process problems in housing renovation.

The Sanna project is one in a series of experimental projects; perhaps the one that has been most well-developed all round and carried out with the most consistency. It has provided a lot of experience, as well as its general academic interest. Renovation was completed at the end of 1986. A reprint of an article describing the project in English is available from the author.

**Growing Old in Single-Family Housing**
Problems and Potentials for Improvement: A Study of the Utby District of Gothenburg.

In general, half of the Swedish population lives in single-family, detached or semi-detached houses. The majority of these units are located in rural areas, but many are also found in villages and towns. Houses are often owned by the inhabitants. Single-family neighborhoods are mostly uniform. There are very few different house types or forms of ownership, such as cooperatively owned or rental units, integrated into these neighborhoods.

About half of the population 65 and older, lives in single-family houses. In this project we have surveyed the problems and potentials for improving the prospects of staying for old people living in single-family houses, and other important aspects of single-family housing conditions in Sweden. An extension to this project is a case study of the Utby district in Gothenburg. In this neighborhood, construction began in 1937, when the popular movement of owner-built single-family houses was strong and received support by the municipalities and the state. The area was further expanded during the 1940's - 1960's. The district is in many ways representative of single-family housing conditions. While the problems of old people living in single-family housing are just as important as those of old apartment tenants, they have not yet been properly examined.

**Discussion**

What we have learned sofar is that planning and design of renovation as a whole must be based on a thorough analysis of the current situation in the area concerned. This necessitates a detailed knowledge of both buildings and populations. The analysis must include many factors, not the least the viewpoints of the people living in the area.

The planning and production routines must be sensitive and flexible. Disabled and old people often have special needs regarding the structural changes as such and how they are affected. The input of the inhabitants must be regarded as a natural feature of the planning process.

There are technical solutions to most accessibility and usability problems, even in older buildings. Certain requirements may be difficult or impossible to realize in an individual dwelling or block. In such cases, the area concept, i.e. that the area should be considered

as an entity, is important. Within each area there should be flats that can be reached without having to climb stairs, that can be adapted to the special needs of particular categories of people. In the same way, each area should provide flats for a broad cross-section of the population. If a new building is to be erected in an old area of the town, it may be appropriate to apply stricter standards there. The problems are particularly great when several property owners are involved.

The fundamental problem is how to carry out improvements in older urban areas such that the residents, particularly disabled and elderly people, can go on living there and age in place, and that the improvements really serve the people who need them. We have to develop analytical methods and make programs to adapt, complete and renovate locally for future needs in old districts of our towns and cities, and to manage the alternatives and resources, human and material, which are at hand. And, as far as we can see, what is good for disabled and old persons, is good for everyone else too.

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## Consumer-Run Personal Assistance Services: The Example of STIL

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With increasing standard of living and medical advances in most countries the population aged 65 and older is on the increase. Given the low residential mobility which we can observe in many cities there is a clear correlation between age of building stock and age of residents. The possibilities for "aging in place", however, as desirable it may appear to most persons who do not want to give up their familiar geographic and social environment as they get older, are limited.

The incidence of physical and sensory disabilities increases with age. As a consequence, the shape of the built environment with its accessible and inaccessible features, assumes the role of an allocation mechanism which determines who can stay and who has to move

to a more accessible housing unit and neighborhood, perhaps, even to a residential institution. Inner city renewal therefore has a decisive influence on the housing choices and quality of life for inner city residents.

Accessible inner city renewal by itself, however, is not a sufficient condition for aging in place for inner city residents. Many persons with disabilities need not only accessible environments but also personal assistance services to compensate their functional disabilities. These services may include such activities as assistance with personal hygiene, household chores, assistance at work and while travelling, sign language interpretation or reading services. Thus, in addition to the presence or lack of accessibility in the built environment, the quantity and quality of personal assistance services in a given community also act as mechanism which either enables people to continue to live in their familiar environment or forces them to move to residential institutions.

In most countries, it is safe to say, organized community-based personal assistance services do not exist. There, it will be up to the individual's family to provide such services. Persons in need of such services without family will have to spend their lives in segregated housing facilities, if there are any. The resulting fear of loss of physical independence, of dependency on one's relatives and the threat of being shut off in an institution away from family and friends characterizes the situation of old and disabled people in many cultures and is often considered an inevitable and even natural part of the human condition.

Even in the few countries where community-based personal assistance services do exist, integrity, respect and self-determination of the consumer of such services may not be guaranteed.
Services may be limited in quantitative terms providing an insufficient amount of hours which results in a restricted life with hardly any options, only mere survival.

Another limitation often overlooked in the debate on personal assistance services and alternative solutions for old and disabled people in general is the quality of services. While there are many different dimensions to quality, the most important ones to consumers who demand the right to the same opportunities that the general population enjoys are control and self-direction. These variables are directly related to such issues as organizational set-up, division of responsibility and, ultimately, power. In most personal assistance schemes that I know the services are run by centrally located social workers who work for a public or charity agency. They are usually responsible for hiring and firing the assistants, their training and scheduling. Consumers have to pass means tests and needs assessments. Their input is limited to filing complaints. Thus, the way the services are organized often relegates consumers to the role of passive objects who cannot decide who is to work for them, at what times, with what activities and how. Under these circumstances consumers are made to feel powerless, are robbed of opportunities to take responsibility and initiative and, finally, will be seen by their surroundings -and most likely by themselves- as helpless people who are unable to "take care" of themselves. Thus, this wide-spread prejudice against people with disabilities is often the result of a self-fulfilling prophecy.

In this context it should be pointed out that the impact of community-based personal assistance schemes on life-style, image and self-image of the consumer, in the worst case, can approach residential institutions. Institutions need not consist of brick and mortar. Consumers of such services can be exposed to ambulatory institutions even in their own home, if somebody else makes all the decisions.

Given the importance of the organizational set-up of personal assistance services for consumers' ability to lead self-directed lives with equal opportunities in the community it

is surprising that so little attention has been paid to this variable. Literature and public debate focus on financing instruments, needs assessments and recruitment problems of workers. If quality of services is discussed at all, then mainly in terms of workers' training.

Only relatively recently have organizations of disabled people themselves begun to discover the importance of how services are organized. Representatives of the Independent Living Movement , the international civil rights movement of people with disabilities, were the first to demand de-professionalization and the right to organize and run services themselves. To initiated observers this development was no surprise, as the leaders of the movement -in contrast to traditional disability and charity organizations- were predominantly individuals in need of personal assistance themselves. In the following, the Swedish STIL-project, one way to organize personal assistance services according to Independent Living principles, will be presented.

STIL, the Stockholm group for Independent Living, considers itself part of the international Independent Living network. In order to guarantee self-determination in the organization only persons who need personal assistance have voting rights in STIL. Also, all of the office staff - except for a secretary - are people who need personal assistance. Thus, the organization has created opportunities for gainful employment and important training for persons who have great difficulties on the Swedish labor market. STIL was founded in 1984 with the expressed goal of improving personal assistance services in Sweden. Since January 1987 STIL has operated its demonstration project which the organization intends to be able to introduce as a permanent option after the end of the project period in 1990.

The most important feature of STIL's personal assistance scheme is that the consumers are the employers of their assistants. STIL claims that only the employer status results in the maximum control over this key service. Participants in the STIL-project have formed a cooperative that has the formal employer function. As employers, each of the participants in the project is responsible for hiring his or her assistants. Participants advertize and interview job applicants and make the hiring and firing decisions. The cooperative assists with paper work and expedites payment of salaries, withholding of taxes and similar administrative tasks. STIL organizes courses and workshops on such topics as to how to hire and schedule assistants and how to use personal assistance in the most efficient way.

The money to pay for assistants and administrative costs comes from the municipal government. In Sweden the municipalities are responsible for providing personal assistance which is provided either in the form of semi-institutional cluster housing or, much more commonly, by the municipal home help service. Cluster housing means that up to 15 disabled persons live in their own apartments among non-disabled people in the same housing complex where they have 24 hour a day access to a common staff. In the municipal home help service social workers send municipal workers to the homes of disabled persons where they work on an hourly basis. In providing these services the municipality has a certain average cost per hour produced. Each participant in the STIL project gets this cost per hour multiplied by the number of hours that he or she is entitled to.

The STIL project is popular with the municipal government, since it relieves them from much administrative work. For the project participants the changes in quality of life have been dramatic. Before, they were dependent on their social workers' attitudes and skills in finding and scheduling assistants. Before, members had up to 67 different persons during one months who were to work for them with often very intimate tasks. 67 different persons to instruct over and over again !

Also, in the cluster housing settings and the municipal home help service consumers' lives are limited by many written and unwritten rules. As in any other institution, consumers of these municipal services have to adapt their needs to the needs of the service provider. As employers project participants now have full freedom in adapting the service to their individual needs. The former objects have become subjects.

Before, personal assistance, for all practical purposes, was only available in the consumer's home thereby effectively keeping him under house arrest. Today, project participants can take their assistants along to work and on travel. Two project participants spent the winter months in California and Tenerifa. This is now possible, because participants can take along assistants, pay them full wages, travel and hotel costs with project money -at no extra cost to the municipality. These two members were hopelessly stuck and very unhappy in cluster housing situations only a year ago.

The STIL-project seems to have great potential in enabling persons in need of personal assistance to get closer to the goal of equal opportunities. STIL has shown that, regardless of extent of needs, there is no justification for keeping people in institutions and paternalistic dependency.

It should be emphasized that this particular model is only one of many conceivable ways of organizing such services. Choice is the key to independent living. The research and development work necessary now is to develop and test a multitude of such solutions with the aim of enabling the individual consumer to custom-design his or her individual system which solves his or her individual needs and thereby affording the consumer the same degrees of freedom on the housing market and in other areas that the general population enjoys.

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## Towards an Independent Life

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The purpose of our study is to describe and analyze the conditions that enable more people with chronic or temporary functional impairments to live at home. Community-based services together with the contributions of relatives guarantee this possibility today. The major question remaining is what type of personal assistance and care will be available in the future. Planning for care and personal assistance demands better information about the people who are dependent on it.

Our study focuses on the structure of needs. We have to know how need and consumption of care and personal assistance vary among different groups of people, which needs are general and which specific.

A first look at the results of existing studies reveals that our knowledge in this area is very incomplete. The statistics are inadequate and difficult to use as a basis for planning. There is hardly any systematic information about the groups of people who use in-home support services and home health care, nor about how these services are distributed among the groups. How do they vary with regard to socio-economic and cultural background? What are their needs today and what factors influence the consumption of services and care? More information is required in order to answer these and other questions such as: which needs are important and which of them are met today, what are the reasons for the unmet needs of specific groups, are there regional differences, what are

the future needs and what measures need to be taken to meet them? These are the types of questions to which we want to find answers in our studies.

## Background

There is a very lively political debate in Sweden at the present time concerning the future of old age homes. The discussion is carried in the daily mass media and is related to explicit official goals and priorities, i.e. health care in general and care of the elderly, the disabled, the chronically ill and mentally impaired people in particular should be given in the individual's home, according to their wishes and condition. The goal implies the gradual phase-out but also improvement of existing institutions.

Old persons and younger people with different kinds of functional impairment or disease generally live in their own home, e.g. 92% of all retired people. In the last few years, quite a few measures have been taken to make a more independent way of life possible. Many dwellings have been modernized, accessibility has been improved and different types of dwellings have been developed. During the last decade, services intended directly for old and disabled citizens have been considerably extended. Among the organizational efforts, collaboration between local authorities and county councils deserves special mention.

Present goals and legislation aim at the gradual dismantling of institutions. Statistically, this process affects about 49,000 people who today live in old age homes; 50,000 patients in long term care hospitals; 21,000 in psychiatric hospitals and over 7,000 mentally impaired persons.

The conditions for these 130,000 people who live in different kinds of institutions have been described by the National Board of Health and Welfare as part of an extensive study of the environment and living conditions in the country's institutions. The study further reinforces the efforts being made towards more independent lifestyles and demonstrates that institutional care has many drawbacks, particularly with regard to self-determination and integrity.

A few facts from the study are:

- 1/3 of all persons in the study use a wheelchair (43,000 persons)
- almost 90% of the patients in long term care need assistance in going to bed (45,000 persons)
- more than 50% of these are put to bed before 7 p.m. (27,000 persons)
- less than 5% of all patients living in institutions can, as a rule, choose what to eat (5,000 persons)
- about 25,000 patients/residents of institutions cannot decide themselves when to take a bath or shower, even though they do not require assistance
- 60% do not have their own furniture
- more than 40,000 live in institutions where less than half of the patients, in some cases none at all, have relatives or friends who visit them
- 60% of all institutions were built before 1970; more than 40% built before 1960. Old age homes are the oldest.

The changes that have taken place during the last decade can be summed up as follows:

- fewer people from all groups live in institutions
- more open, flexible forms of care and alternatives to institutional care have been developed in the form of small-scale local hospitals, day centers and home health care

- personal assistance has been reduced overall, but at the same time concentrated on people with extensive needs for care and assistance

There exist considerable regional variations caused, for example, by different demographic structures and different traditions in providing care and assisting people. Financial resources are also very unevenly distributed. Regional and local analyses must be developed in order to shed light on the complexity of the present situation which the efforts towards providing more open forms of living and care are now facing.

**Personal Assistance**

Together with the provision of dwellings and home health care, the capacity and quality of personal assistance is of the greatest importance in achieving the goal of independence for people with disabilities.

Personal assistance is, according to present legislation, offered to people with different kinds of functional impairment. It comprises help with household work as well as personal care. It also serves other purposes such as activation, rehabilitation, social contact and a sense of security. About 20% of all retired people (65 years +) receive some kind of personal assistance; almost half of this group are 80 years or older. Only 5% in the age group 65 and younger use such services. The need for personal assistance is greatest among those in the higher age brackets. 44% of all those aged 80 or more years receive personal assistance.

Of all those who receive personal assistance, about 15-20% (50,000) are considered to be in great need of help. Most of these also probably receive home health care.

A great amount of all assistance is given by relatives or close friends. Different estimates show that this "inofficial" assistance and care is two or three times greater than that rendered by institutions and authorities. According to periodical surveys on living conditions in Sweden (ULF) most older persons (84% in the 65-84 age group) know somebody who can give them assistance when they are temporarily ill. This applies also to people 85 and older.

The total number of persons who receive assistance has been reduced since the late 1970’s. The reduction applies mainly to the 65-79 age group. However, more people in the highest age group (80 years +) have received assistance during this period. Most commonly, assistance is provided once a week, while the trend is to concentrate on people with a considerable need for help. There is no simple way to explain the reduction in the number of people receiving personal assistance. Part of the explanation may be that the authorities have become stricter in determining who needs assistance.

Unfortunately it is not possible to describe how assistance is distributed among different categories of consumers. Age and sex are the only categories which we have statistics on.We cannot answer any of the following central questions: what is the total output and consumption of care and assistance for different categories; which groups receive what type of care and assistance; and to what extent are the needs and desires of the consumers satisfied?

Today we lack information on individuals, and thus we lack a comprehensive view. To a certain extent, our study will fill this gap.

Today we know for certain that one of the effects of de-institutionalization has been that the personal assistance staff sees new groups of people with a serious needs: the

chronically ill, the mentally ill, the mentally impaired and other people with extensive disabilities. The new groups put new demands on the whole organization, but more specifically, on the individuals working in it; in this case, the home helper. It is generally accepted that personal assistance staff must receive further training in order to cope with its new and future role. This future role presupposes also that primary health care will be developed to provide care in the home. Services must be developed to provide help and care around the clock, such as emergency telephone services, etc. Discussion among planners and politicians is called for, regarding these changing circumstances and the subsequent quality of assistance and care.

The role played by relatives must also be observed. Efforts towards more open forms of care and living have put new demands on relatives' contributions. Basically what is required is a change in attitude by all parties concerned.

Finally, an important circumstance. Sweden is a country with a high proportion of old people, i.e. about 1.5 million people (17-18%) are 65 or older. The number of very old individuals among these is increasing rapidly. At the same time, there is an insufficient supply of staff to deliver assistance services. This illustrates the complexity of the problem. How do we cope with these realities? To what extent is it possible to achieve our social goals under these circumstances? How can we avoid competition among different groups for limited resources? What do we know about the desires and needs of the individual?

It is necessary to take the step from national and regional analyses to the individual level in order to reveal the problems and decide on the most appropriate measures to take. Our project proposal is based on the development and trends described above.

## Theoretical Framework

Before presenting the proposed projects, we would like to describe the theoretical framework within which they fit. We have chosen a perspective related to the individual. In our model an individual's chances of leading an independent life are influenced by a host of variables. These chances, in turn, are in actual fact closely related to a person's own independence and integrity. The variables are mutually related in many ways. The following list is, naturally, not exhaustive, but it contains the factors we consider to be important and which we will examine.

Thus, an individual's chances of leading an independent life are assumed to depend partly on his/her own resources - current and previous - and partly on the resources that exist in the neighborhood. Health and an individual's physical and mental capacity are some of the most important individual resources for an independent life. The social network of the individual can also in many cases be decisive in achieving an independent way of life. Behind these fairly self-explanatory factors there is, we believe, a whole set of what we call background factors: age, sex and socio-economic and cultural background of the individual, and last but not least, the personality of the individual as expressed in terms of attitudes and demands.

It can be assumed, for instance, that the demands and competence of an old person are, to a great extent, dependent on the type of occupation this person had before his/her retirement. "The most important factor ought to be the type of work: to what extent it has been a skilled or professional occupation and/or housework, which demand particular skills etc., and to what extent it has involved a high degree of control and autonomy". One can therefore assume that "a high degree of autonomy in one's occupation or a high social position lead to increased or maintained resources, and a low consumption of medical and

social care. This may, however, lead to a high consumption of personal assistance of a simple nature, for example help with cleaning. A low degree of autonomy and low social position lead to shrinking resources and a high consumption of care, personal assistance and care in the form of social and psychological support."

Cultural background can greatly influence how people regard their way of life and their attitudes towards any assistance they receive from relatives and authorities. Cultural differences may arise between people born and brought up in different countries, between people from different parts of Sweden, between city dwellers and those with roots in an agrarian society and between people who have been dependent on care for many years and those who are "newcomers". Differences may also arise between men and women.

Cultural background also affects the health and the social network of the individual. It also directly influences opinions and ideas about relationships between relatives and friends, and to what extent one is inclined to rely on public support on becoming old and sick, how one views assistance and care received and to what extent one is inclined to influence one's own situation.

In our model, the importance of the individual's resources has been schematically outlined. The part of the model which deals with individuals' resources shows that both health and social network act directly but are in their turn dependent on the person's socio-economic and cultural background, which in its turn influences an individual's ability to cope with an independent life, both directly and indirectly.

Among the resources surrounding the individual is the dwelling - its size and standard - and also its suitability in relation to the physical and mental capacity of the individual. The immediate environment of the dwelling and further, the characteristics of the neighborhood are also important factors when judging the likelihood of an individual being able to cope with an independent life.

Finally, an individual's possibilities for independent living will be dependent upon the whole output of services provided by local authorities and county councils: personal assistance, transportation services, home health care, various kinds of financial assistance, etc. These variables should be viewed against the background of other activities, services and planning (physical, social, economic, cultural) provided by the authorities. The political profile and local traditions should also be mentioned here.

With the model as a basis we will continue to specify our questions and look for the critical factors or combinations of them and, further, to seek the means of compensating for them.

## Method

The model can be seen as a basis for formulating possible subprojects regarding the conditions for an independent life. We plan to proceed in four stages aimed at shedding light on different parts of the model. Subproject 4, which is a crucial part of the overall project, covers the whole of the model. Each subproject differs in method and disposition.

Subproject 1 Community-based social services
The aim here is to achieve a uniform and systematic description of the present situation concerning output and consumption of the social services provided by local authorities and county councils. A survey of existing statistics and studies will show how assistance and care functions in different parts of the country, what its volume and capacity are, and what the cost is for the individual. If possible, development tendencies will also be

described. The survey will provide a basis for the analysis of information from other subprojects.

At this point we are collecting the data. Some has already been published, for example, in a report on the health of the Swedish population.

Subproject 2 Neighborhood
Here, we wish to give examples of both good and unsatisfactory residential environments for the needs of the groups studied. A number of residential areas will be mapped, especially those with a high proportion of old residents or with institutions in the neighborhood.

A number of examples already exist. In the next stage, social analyses of the neighborhoods and the plans and goals of the local authorities will be carried out.

Subproject 3 Possibilities of an independent life for selected groups - a case study
This subproject is partly a prestudy for a larger interview study (subproject 4) and partly a more thorough analysis of the questions surrounding the resources and needs of different people, and how these needs are met by the community-based social services. A very important aim is to shed light on the role of relatives and the role that pressure groups play today in individual cases.

Finally, we will attempt to identify the problems which exist for all parties concerned. Suitable methods here are in-depth interviews and observations.

Subproject 4 Possibilities of an independent life for different groups
Our aim with this general study is, with the resources of the individuals as a starting point, to shed light on the needs of different groups and the consumption of assistance and care relative to different lifestyles. This project has a wide approach and is in fact a study on living conditions, with a special focus on health and care.

Such a survey should be based on interviews with a sample of 4,000 - 5,000 people of all ages.

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## Renewal of the Inner City of Bratislava: Creating Non-Handicapping Environments for Persons with Disabilities

Maria Samova, Slovak Technical University, Bratislava, Czechoslovakia

The architect as creator of the architectural environment is faced with the task of satisfying different interests, relationships and requirements that are frequently contradictory. He or she has to overcome not only architectural problems such as design, composition and fitting a project into the broader context of town planning but also problems which may hinder the work according to his or her own ideas. The problems may include questions of economy, usability, operations, supplies, etc. The architect is a representative of his or her profession, and at this interdisciplinary level is responsible for the work as irreplaceable author of the concept.

Developed societies have given humanization of the environment a high priority. In trying to comply with this principle and give it form in our architectural activities, we are faced

with the question of how to create a barrier-free environment, from the architectural concept down to the architectural details.

As an architect affiliated with the Faculty of Architecture at the Slovak Technical University in Bratislava, I am responsible for teaching architectural creation, including typology, that allows for the needs of disabled persons. This involves primarily courses in Typology of Dwellings and Civic Buildings and studio work on the same subjects. Students meet the subject of architectural barriers in their first year of study, and teachers keep stressing this problem throughout the five years of their training. Our graduates should therefore be well prepared, with both knowledge and specific training, to create a barrier-free environment. How they will apply these principles depends on what kind of persons they are. Regulation No. 53/1985 issued by the State Board for Progress in Science, Technology and Capital Investment has established a legal basis for the planning, preparation and authorization of construction and the use of buildings by disabled persons. The future will show whether these guidelines will be universally respected.

Industrialization and technical progress in the 19th and particularly in the 20th century have led to rapid growth of urban areas, as documented by data published by the United Nations. In 1800, only 3% of the world's population were living in towns; in 1900 the figure was 49% and in 1975 39%, and by the year 2000 50% of the world's population is expected to be urban.

The development of urban areas in Czechoslovakia as well as the growth of Bratislava, the capital of the Slovak Socialist Republic, follow this trend resulting not only in a growing urban population and new construction at the urban edge, but also in new demands on the city cores themselves. Urban cores determine the importance and the nature of towns, but their structure, functional arrangement and operational relations make it difficult for them to react to new and changing social demands. Inner city problems are urgent in Bratislava. The Board of the Chief Architect has therefore undertaken studies to analyze the central urban zone.

In town planning the urban core is seen as a variable urban formation able to respond to new, changing demands on land use, and giving the inhabitants optimum accessibility by turning the urban center into a point of convergence for the town's communication systems. The space in the center should be designed on a human scale in order to create attractive pedestrian zones and to meet human demands for an optimum environment. These requirements also include a barrier-free architectural environment.

People visit the urban center for cultural and educational activities, entertainment, shopping, and visits to offices and service facilities. Each urban center has a specific atmosphere that attracts people. Yet in Bratislava, persons with physical disabilities cannot participate in cultural events. They cannot visit any of the 5 theaters, attend concerts at the concert hall or go to exhibitions and movie theaters, since these buildings offer considerable difficulty of access. A similar situation is encountered when people with disabilities seek education, medical care, go shopping or visit offices. To improve the situation, the usual architectural approach to renewal of urban centers should be corrected at three levels:

At the town planning level, by creating adequate urban interiors and pedestrian zones with barrier-free access to buildings, parking, etc.

In reconstructing historical buildings and extending existing buildings. All entrances, corridors, lobbies, rest rooms and other main spaces in buildings should be reconsidered in the light of the widely known principles of barrier-free design.

At the level of architectural detail. Attention should be given not only to design and function, but also to interior details, since these vitally affect the success or failure of the architect's work.

Since my sphere of interest is primarily architectural typology of civic buildings, most of this presentation will concern the new construction projects planned for the Bratislava inner city.

The first project is the new Slovak National Theater. In designing the entrance, the architects have used the overall concept of 'welcoming hands' symbolized by two symmetrical ramps providing access to persons with disabilities. This element has been deliberately employed to make the design architecturally effective. All public spaces are accessible to persons with disabilities through a series of ramps, elevators and links between spaces and functions. It is possible to drive into the building by car and park close to the elevators. All the foyer levels are interlinked by elevators. Social facilities are dimensioned for wheelchair use and will be equipped with the necessary technical aids. Controls will be located at suitable height. The theater auditoria have reserved places for persons with disabilities. The staff sector also has spaces where persons with disabilities can move freely and perform some activities. The building is now under construction. Hopefully, the result will meet our expectations for use of the building by persons with disabilities.

Another project under preparation in central Bratislava is unique for its extent and the new use of a historical building. It concerns the reconstruction and the new function of the former Market Hall. Bratislava needs revitalization with activities of cultural and social importance. The capacity of the new facility is 768 seats, planned for up to 1,000 visitors per hour. The around-the-clock use multiplies the capacity of the spaces.

The basement of the building will contain cinema, poetry/coffee house, studio and exposition hall. The ground floor will be a central courtyard with a basilica-like illumination from a high nave decorated by the original steel lattice structure which becomes an organizing element in the interior. It fulfills the function of central communication and rest space. Greenery, water and light create conditions for a new urban space consisting of a roofed mall with small boutiques, pubs and confectioneries. The first floor continues the original concept of an open gallery around the central hall. It will contain playrooms, reading rooms, lecture and meeting halls.

Upon closer inspection, however, we can see that persons with disabilities will have difficulties in utilizing this leisure-time facility. Vertical movement within the building should not present problems, since there are elevators. However, no places have been reserved for wheelchair users in the cinema nor are the restrooms designed for the needs of this group. The project should be made barrier-free so that the facilities of our town are not extended by attractive but undemocratic work.

A similar situation can be observed in the reconstruction of Reduta, a traditional gathering place for music lovers. Concerts and other performances are the object of lively public interest. The architecture alone will determine whether the performing arts can also be enjoyed by persons with disabilities. All levels of the project should be completed with this in mind.

When an urban center is to be renovated, it must also contain housing. The Board of the Chief Architect required housing to be included in the building complex. Unfortunately, apartments, shops, and restaurants in this building have not been designed barrier-free. The same applies for apartment buildings in several other central streets. Is this perhaps a reflection of subconscious efforts on the part of architects to establish antiquated and

unwanted segregation? Perhaps only the rehabilitation and renewal of architects may bring about complete accessibility in Bratislava.

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## Better Housing! Now!

Orvar Sthen, Linköping Regional Hospital, Sweden

When we discuss the renewal of inner cities we must bear in mind that we are discussing a very time-consuming process. The building of "non-handicapping environments" may well be a topic which concerns mainly the next generation. But it is possible even in the present to combine long-range and short-range ideas so as to give the present generation non-handicapping environments. I believe that it is very important for our seminar to find such solutions and this statement is a proposal for a short-range idea which can affect many old and disabled persons. It is feasible now and can be done at low cost.

The combination of long-range and short-range ideas is not only a way of giving the present generation some non-handicapping environments. If we start today by carrying out practical, low cost ideas which can be accomplished in a short period of time, we build at the same time a platform for discussions in our communities about further development of non-handicapping environments, which cost more, and take a longer time to realize. People always understand a need in the community better if they can watch practical results being achieved. The platform for discussion for further developments is built in people's minds in this way. So if you really want a scheme for building non-handicapping environments I am convinced that you must include short-range ideas in this scheme - also for the psychological reasons I have mentioned here.

My statement "Better Housing! Now!" is based on many years of practical experience.

In Linköping, Sweden, we started modern, advanced home care in 1962. It meant that patients who normally would have been treated in institutions for long-term care, were instead sent back to their homes. We had patients who had lived in institutions for 20 years who were sent back to their homes and were able to cope if they received modern, advanced care. So we have had 25 years experience of such work and in our city we now have 150 patients, living in their homes instead of an institution.

What did this modern, advanced care give the patients?

> They were entitled to home-visits by all the professionals they needed, including doctors, nurses, therapists of various kinds etc.
>
> Their flats were renovated to suit their needs.
>
> The patients were promised that they could return to the institution immediately if they wished. This was important for the patients' confidence, but has not been used very often.

When we renovated the flats we put in the technical aids each patient required. We found that we could arrange the flat to suit the patient in almost all cases.

But we found that there was one deficiency which we could seldom alter. If the patient could not manage stairs we could only consider installation of a lift in the building.

Installation of a lift is normally an expensive and time-consuming process. Many patients could not live in their flats on account of stairs and had to move to an institution. This meant that they had to give up most of their social network in the neighborhood.

In some such cases we received help from the municipal authorities in the following way. If a neighbor in the building wanted to exchange his ground-floor flat for the patient's flat, this could be done. It was easy, cost the community nothing and allowed the patient to stay where he\she had a social network.

Why not systematize this idea? It could be done in several different ways. Here are two examples:

> If the town has a housing office, the authorities could make it known that old and disabled people who cannot manage stairs to their flat are to be given priority for vacant ground-floor flats in their neighborhood, if the housing office gets their present flat in exchange. Landlords say that old people already try to get ground-floor flats. Most other tenants want to get flats on upper floors and an official announcement as mentioned above should not raise any objections from the general population.
>
> Another method can be used in towns where no housing office exists. The authorities can make it known that they will organize the exchange of flats for old and disabled people who want ground-floor flats. People who have ground-floor flats should be invited directly to participate in this exchange. Probably many people living on the ground-floor would be interested. Upper floors are generally considered to be more attractive. Widows and widowers among senior citizens might be interested in getting smaller flats than the one in which they have lived with their spouse.

In my opinion it is obvious that the methods proposed here are easy to realize. They require only some administrative costs. They can be accomplished today. In Sweden between a quarter and a third of the adult population are either disabled or over the age of 65. This is firm evidence for the proposal's importance. It is a matter of increased confidence for a large section of the population.

Few can have any objections to such a scheme and a greater part of the population would also, as a result, become more aware of the needs of old and disabled persons.

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## Improving Accessibility in Flats in Sweden: How Effective Are Policy Instruments?

Knut Strömberg, National Institute for Building Research, Sweden

### The Program for Improving Accessibility

### Building Code Requirements

Sweden has probably the most far-reaching requirements for residential accessibility in the world today. The standards for newly constructed housing were included in the Building Code in 1978, and require that all ground floors be accessible to persons using

wheelchairs, that elevators should be installed in all multi-unit apartment buildings with more than two floors, that housing units be accessible for visitors using wheelchairs and be easily convertible for the permanent residence of persons with disabilities.

The same requirements apply to the renovation of older multi-unit apartment buildings. However, here the municipal building committees can grant exemptions, if the costs are very high, or if enforcement of the requirements is unsuitable for technical or aesthetic reasons. Exemptions have been granted rather often, especially in the case of three-storey apartment buildings where it is difficult for the property owners to recoup the extra investment in accessibility.

Accessibility requirements are always met for newly constructed housing, but since the greater part of the present housing stock was built before the norms were enacted, accessibility problems are still common. The installation of elevators is usually the most expensive and technically most involved aspect of housing renovation and, for these reasons, has become a hot issue in the renovation debate.

## Accessibility of the Present Housing Stock

There are about 3.6 million housing units in Sweden of which 2 million are in multi-unit apartment buildings and the rest in detached or semi-detached housing.

Nearly half of all housing units were built after 1960. During the 1970’s, there was extensive new construction, many older areas were demolished and rebuilt completely. Construction activity reached its peak in 1970, and then rapidly decreased. The demand for new housing units fell off, leaving a growing number of empty flats in the most recent constructed areas. The time had come to turn to the existing housing stock. In the mid 1970’s, extensive renovation began.

Since most housing units were constructed before 1978 when accessibility requirements were added to the Building Code, most three and four-storey apartment buildings do not have elevators. Today, nearly 1 million housing units in such structures do not meet current accessibility requirements for this reason.

However, the installation of elevators in all of these apartment buildings would not completely solve the problem of accessibility, as almost 75% of them also have entrances with architectural barriers - usually in the form of small flights of steps. There are also accessibility problems inside the apartments themselves. Narrow doorways and small toilets make movement indoors very difficult for persons with disabilities, while steps and hilly grounds create difficulties in the surrounding outdoor area.

## New policy instruments

In 1984, a national program for upgrading the housing stock over a period of ten years was initiated. An important goal of the program is to improve accessibility in renovated buildings as expressed by the statement: "Independent of age or disability, everyone has the right to housing that fulfills the requirements of accessibility".

This goal was later complemented and made more precise in other policy decisions, such that everyone, independent of the need for assistance or special care, has the right to an environment which does not limit his/her ability to actively participate in society. One of the main purposes of improving accessibility is to enable persons with disabilities to continue living in their own homes thereby reducing the demand for institutional care.

## Elevator Installation Subsidies

In order to facilitate the implementation of the Housing Improvement Program, parliament initiated a state subsidy to cover up to 30% of the costs of elevator installation in three-storey apartment buildings, if the municipality contributed 20% and the owner the rest. This move was meant to remove the economic motives for granting exemptions described above. The state subsidy fund was SEK 100 million annually for a period of three years. Since the average cost of installing an elevator is approximately SEK 400,000 - 500,000, the funds correspond to the installation of about 700 elevators per year. Should the amount not suffice for the applications received, priority would be given to municipalities which have an acceptable long-term accessibility plan for the whole housing area.

## Accessibility Plans

The responsibility for establishing an accessibility plan rests with the municipal authorities. However, such plans are new and only recommended, not required, by the National Building Code. They are meant to provide the base for local decisions on accessibility goals, the granting of building permits, subsidies and exemptions from accessibility requirements. Normally, however, municipal authorities cannot enforce their plans, as the property owner alone has the right to decide whether an apartment building will be renovated or not.

## Housing Improvement Loans

The attractive state housing loans at below-market interest rate (presently about 2.5% as compared to 12.5% for ordinary bank loans) and long repayment terms constitute an effective economic incentive to housing improvement. Without the loans it would be virtually impossible to renovate apartment buildings without raising current rent levels. Rents are negotiated by the Tenants Association and the property owner. When a property owner applies for a building permit to renovate an apartment building, he/she is asked by the authorities to include the installation of an elevator in the renovation plans. If the owner fails to heed this request, a state housing loan may be denied, making the project economically not viable. However, it should be noted that the municipality cannot force the property owner to renovate a given apartment building; the owner can decide instead to take no action, if he/she finds that reasonable returns on investment via rents are not likely.

The Housing Improvement Program was politically very popular when it was introduced. However, the question remains whether the political statement about everyone’s right to accessible housing has had any real effects.

## Results So Far

The Housing Improvement Program has been in existence for three of its planned ten years. It is, of course, too early to evaluate the program as a whole, but we can take a look at what has happened to date.

## Improvement of the Housing Stock

A steadily growing number of apartment buildings has been renovated since 1978 - six years before the program started. The total number of renovated apartment buildings has increased from barely 7,000 in 1978, to approximately 26,000 in 1986, the third year of the program. The figures include apartment buildings of three storeys or less which increased from about 4,000 in 1978 to nearly 16,000 in 1986. The increase in the number of renovated apartment buildings was greatest during 1985, one year after the start of the program.

The same tendencies can be seen in the installation of elevators, with a steady growth since 1978. Apartment buildings which which were retrofitted with elevators in connection with renovation increased in number from about 3,000 to 6,000 during the first three years of the program. The figures do not include apartment buildings where improvement was in the form of elevators only but include apartment buildings with three storeys or less which were equipped with elevators, from around 800 in 1984 to approximately 2,800 by 1986.

The proportion of apartment buildings which did not have elevators when renovation began was between 80-90% for each year, during the twelve year period shown, with a slight decrease in later years. The totals include all renovated housing units completed during each year. During the same period, the proportion of housing units that were equipped with elevators while renovated increased from about 5% in 1975 to about 25% in 1986.

The number of elevators installed as a proportion of the total number of renovated housing units increased during this period. For lower apartment buildings, however, only 25% of housing units gained better accessibility through renovation by the end of the period.

## Variations among Municipalities

Exemptions from the requirements of the building code can be granted by the municipal building committees. There are great discrepancies between municipalities in granting such exemptions. We can use Gothenburg and Malmö, the second and third largest cities in Sweden, as examples. In Gothenburg, no elevators were installed in connection with the renovation of three-storey apartment buildings, and in four-storey apartment buildings only every second housing unit was improved in this way. At the same time, in Malmö, elevators were installed to serve almost every renovated housing unit in multi-storey apartment buildings.

## Use of Policy Instruments

The main policy instruments for carrying out the program are accessibility plans, building code regulations, state housing loans for renovation and the limited state/municipal grants for elevator installation. Municipalities also have some powers in the allocation of renovated and accessible housing units to those in need of them.

## Accessibility Plans

There are 284 municipalities in Sweden. Many of these are very small and have no high-rise buildings at all. Because of the great differences among the municipalities, there are varying needs for accessibility planning. Most of the municipalities, three years after the initiation of the program, have not made any plans for improving accessibility and,

most probably, will not make any.

Some municipalities have made inventories of the accessibility situation. Most of these record the housing stock and the presence of elevators and architectural barriers. Some have also made surveys of inhabitants including such variables as age distribution, need for and presence of services, etc. From this data, some municipalities have developed an index showing where the greatest needs are in comparison to actual accessibility in the area.

Some municipalities have taken political decisions on acceptable long-term accessibility and how to achieve it. However, the term "acceptable" can, apparently, be interpreted in a remarkably large number of ways. Even the decisions taken, to be found in official documents, differ widely. In relatively similar conditions, one municipality can decide that 22% of the housing units in multi-storey buildings should be made accessible, while another puts the figure at 85% for the same period of time.

Available documents alone give us no clues as to why interpretations are so different. Variations appear to be unrelated to political majority or size of municipality. The most probable explanation is that this type of planning is so new that it has not yet found its proper form and conventions. Another explanation might be that the investigation is based on the years before other new laws for planning and building came into force.

Few municipalities have engaged in accessibility planning policy in any way, and fewer still have developed policy instruments to reach the goals of such planning. Most have a passive attitude; they simply wait for property owners to take the initiative for renovation, then they decide with the help of inventories or a plan whether to demand the installation of an elevator before granting building permits, state housing loans and the municipal part of the elevator installation subsidy.

With the intention of finding some good examples of accessibility planning, a study was made of several municipalities which were selected on the basis of a higher than average percentage of housing units in three-storey apartment buildings after renovation. After examining planning documents of about 40 municipalities with the best statistical records, we found that some of those which had succeeded in getting the highest numbers and greatest proportions of elevators installed during renovation had, surprisingly, no accessibility planning at all nor had they granted any subsidies for the installations!

The explanation for this can be found in a very active cooperation between and within the municipality’s different departments, making it possible to coordinate measures. Another effective measure appeared to be setting an acceptable price ceiling for applications for state housing loans. This helps to keep the market price for residential buildings down so that the property owner can afford to install an elevator and still recoup the investment without raising rents. This has been the practice in Malmö which had a very good record of elevator installation during renovation.

A contrasting example is the municipality of Gothenburg. There, extensive area planning is carried out in cooperation with town planners, social workers, property owners and tenants. However, no policy decisions about acceptable accessibility standards have been made as yet, as the politicians are waiting for the plan to be completed and analyzed. In Gothenburg, no elevators have been installed in three-storey buildings.

**Building Code**

From the above figures, we can see that a very high proportion of three-storey apartment

buildings was granted exemption from the elevator requirement of the building code: nearly 90% during the first year and 75% during the third year of the program. Four-storey apartment buildings were granted exemptions at the rate of 30%. This means that municipal building committees make decisions about exemptions which result in wide discrepancies in accessibility standards among the municipalities.

**Renovation Loans**

As far as statistics show, no renovation project has been carried out without state housing loans. We can infer from this that such loans are a necessary condition for renovation.

**Elevator Installation Grants**

In 1984, the first year of the program, about SEK 8 million were granted for the installation of 62 elevators to serve a total of 750 apartments. During 1985, 187 elevators were installed at a total subsidy cost of SEK 28 million serving 2,300 apartments. In the third and final year of the subsidy program 500 elevators were installed serving about 5,000 apartments at a subsidy cost of SEK 70 million. Thus, of the total SEK 300 million that were originally set aside for elevator installation subsidies during the three years, only a third has been used. Only about 750 elevators serving about 8,000 apartments were subsidized.

**Housing Distribution**

According to the conditions of state housing loans, municipalities have the power to allocate renovated housing units which are not claimed by the pre-renovation tenant. This policy instrument is meant to allot renovated and accessible apartments to those who need them. According to a survey , almost two-thirds of the original tenants move permanently to other housing units at the onset of major renovation such as elevator installation. This means, potentially, a great number of accessible housing units for tenants who need accessibility.

In most Swedish municipalities there are municipal housing offices many of whom have special waiting lists for service houses , but few have made use of the powers described above in the statute for state housing loans. Of the Swedish 284 municipalities, only five have waiting lists for renovated accessible apartments for mobility-impaired tenants.

**Conclusions**

"Independent of age or disability, everyone has a right to housing that fulfills the requirements of accessibility" (Swedish Bill of Parliament, December 12, 1983). The right described in the bill does not constitute an obligation on the part of the state. There is a long road between political statements and realization. The Housing Improvement Program has been in operation for three years - is it succeeding?

**Evaluation**

It is always difficult to evaluate the effects of politically initiated programs. One reason is the obvious question: what would have happened without the program? Construction without such a program might have been directed towards new buildings. Thus, all

structures would have been accessible in accordance with current requirements.

Another question is how to distinguish the effects of the program from the effects of other factors. The building sector is used to a large extent as a regulator of the Swedish economy, and politicians therefore fairly regularly decide on new programs. The national economy is affected to a large degree by the international economic climate, interest rates, the labor market situation etc. This has been rather drastically demonstrated by recent government action which severely limited renovation activity in favor of new construction in the two largest cities because of current heavy demands for housing in these areas.

Yet another question is: what are the criteria for success? The underlying motives in the introduction to the proposal for the program are twofold. For one, there is the social aspect: as many individuals as possible should be able to live as long as possible in their own homes and familiar environments, despite age and/or disability. There is the economic motive: expenditures for hospital and nursing home care should be kept down for those who have difficulties with stairs or use wheelchairs. However, these motives must be seen in the light of the low construction activity and consequent high unemployment in the building sector at that time. There are, therefore, different measures of success for different agents!

We can observe that the housing stock is slowly getting more accessible through the installation of elevators but we have no firm indications that the accessible units are going to those who most need them.

**Results of the Program**

Is it because of the program's policy instruments that the housing stock is gradually becoming more accessible? The requirements in the building code have been in force for over ten years, but are not instrumental in the program. Planning and financing through state loans and subsidies are.

Accessibility planning, in itself, is no guarantee for the enforcment of the building code requirements. As clearly demonstrated in the case of Malmö, good results are possible without any such planning, by simple enforcement of accessibility requirements. However, there is some value to accessibility planning as a consciousness-raising process for all parties involved: accessibility concerns not just installation of elevators, but the more general problems of living and working in "handicapping" environments. We can draw at least one conclusion: effective cooperation among different municipal departments is important in achieving accessibility goals.

State housing loans, grants and subsidies also appear to be crucial factors in the program. Without these financial instruments, property owners would find it almost impossible to recoup their investment in renovation given existing property values and rent control. Property values are determined by expected rental income, rents are controlled in line with the use value of apartments. Thus, the market will eventually adapt to whatever accessibility requirements and conditions on finance exist, as the use value includes such amenities as accessibility. This will make it possible to carry the cost of installing elevators.

If the number of installed elevators and the improvement of the general physical environment can be taken as criteria, the first years of the program augur well for the achievement of its goals. However, it would take about 40 years to renovate the remaining housing stock at the present rate. Even after that time, approximately 700,000 housing units would still not be accessible to wheelchair users, as it is highly unlikely that

apartment buildings which were renovated now or within the last few years without retrofit elevators will be equipped with elevators during the remaining years of the program.

If availability of accessible housing is to be taken as criterion, i.e. the opportunities citizens have of claiming their declared right to accessible housing, then the conclusion must be drawn that the program has not been greatly successful. In the final analysis, it is the individual property owner who decides over alterations to increase accessibility. In this manner, accessibility is spread randomly, and often not available to those who need it most. The ’welfare’ of the welfare state is not being directed at those who need it. If, on the other hand, municipalities began using their powers of allocating apartments that were renovated with state loans, this situation could be avoided. A first step would be to establish waiting lists at municipal housing offices for households who need accessible apartments - a measure easy to administer that would surely lead to more optimal use of resources in both the short and long term.

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## From ’Barrierfication’ towards the ’Barrier-Freecation’ of Inner Cities

Hanne Weiss-Lindencrona, Ministry of Housing and Physical Planning, Sweden

### Cities

Throughout history cities have always awakened strong emotions in people. Cities have been seen as bases for employment and economic well-being for the individual and as centers of creativity. They have, however, also been regarded as dens of iniquity, and as being the sources of physical and psychological ill-health. Cities have always attracted, charmed and frightened; they have both drawn people and repelled them. And countless accounts in literature bear witness to the fact that this is how it has been both in different epoques and in different cultures.

The central parts of cities frequently form their hearts. They become the economic, social and cultural centers for a region or a whole country. If the motto "Full Participation and Equality" from the 1981 United Nations International Year of Disabled Persons is to be taken seriously, then the city, the inner city, must exist for everyone and be accessible to everyone.

At the same time, however, there is no doubt whatsoever that cities, with their intense traffic, their high tempo and their multiplicity of activities and happenings, do in fact handicap people. They do this partly in a very concrete fashion, such as traffic accidents, and partly because cities make big demands on people, both mentally and physically. It is the pace and the intensive stream of information, together with the physical environment, which has developed over a number of different epoques, that in various ways combine to create barriers to the use of inner cities. Cities are therefore capable of handicapping a large number of people who in other environments would in no way be regarded as being disabled.

### Renewal of Inner Cities

The inner areas of European cities have been subjected to drastic changes during the last 50 years, and, of course, many European cities suffered very badly during World War II.

The increase in the number of private cars, the restructuring of the retail trade and the inroad of office buildings and office accommodation are examples of some of the factors which have led to these changes. Furthermore, a large amount of old housing accommodation has been swept away in these areas. Demolition and new building was the solution in many places. But this trend has now turned, as is visible today in a new and widespread interest in our building heritage and its cultural, social and economic values. The remaining housing in the border zones around the inner cities was previously allowed to degenerate into slums. The process of urban renewal over the last decade brought with it a regeneration and refurbishment of these areas, but the improvement in housing conditions which was achieved did not, however, benefit the people who had lived in these run-down areas prior to the work of urban renewal.

Today, in the 1980's, cities are experiencing a renaissance, and people who moved out into rural areas during the "green wave" of the 1970's, now once again want to live in cities, including families with children. An attempt is being made to maintain a city culture. In professional planning and architectural circles, there is talk of developing a form of architecture - or an environmental, psychological way of looking at cities - which will help to create a more human form of urban planning. However, much of the work and thought in this area is characterized by the fact that analyses of the interplay between people and cities have seldom been based on the possibilities, needs and demands of people with many different forms of physical disabilities. This must be regarded as an important area of research for those interested in the field of disability.

Many countries are now considered to be moving into what has been called the "information society". It is, of course, still too early to have a clear picture of what this will entail, but there are, of course, theories. For example, one theory is that in the future we will have a number of metropolis-like cities forming creativity centers, where (it is assumed) the highly educated intelligentsia will live. But even the more sparsely built areas outside the cities will have a place in this new form of society. Thanks to the new information technology, many different types of work can be decentralized, and can even be carried out in people's homes. It is, however, feared that the middle-sized towns and cities will be badly hit by this new development.

Among the many question marks in connection with this development is which groups in society will suffer in the process. In my opinion, this is a field which, in terms of research and development work, must also include sociologists and social psychologists. And furthermore, it is clearly of particular interest to us to illuminate the consequences of this development for the different disability groups.

## How to Make Inner Cities Accessible

In order to simplify the discussion regarding the accessibility of inner cities, I now intend to go into the question of accessibility in its more tangible forms, i.e., using pavements, streets and public transport, and being able to enter and move around in different types of buildings. If current trends continue, changes in the inner cities will consist mainly of renovation and modernization of existing buildings and environments, although there will of course be some new construction. Renewal of inner cities is therefore not solely a question of renovation and improvement. It also calls for an overall way of looking at the contents, activities, planning and design of cities; a way of looking which must also include new construction. Unfortunately, we often see results which take the form of a 'barrierfication', i.e. the creation of obstacles, instead of what is the real goal regarding accessibility, i.e the 'barrier-freecation' of inner cities.

Swedish local authorities have by tradition a major responsibility both for physical

planning and for the housing stock. Practically all residential construction is government subsidized. For this reason it might be interesting at this point to describe how our different policy instruments cooperate with each other; what carrots and sticks are available in the Swedish model in making the physical environment accessible.

Since the late 1960's, accessibility regulations and requirements for public buildings, places of work and dwellings have been successfully introduced into Swedish building legislation. On the whole, the standards have been relatively successful in new construction. In renewal and renovation it has proved difficult to apply the accessibility requirements. Local authorities have frequently been prepared to grant exemptions from requirements in individual building projects, particularly in connection with the installation of elevators. A new Planning and Building Act came into force on July 1, 1987. The new legislation places more emphasis on questions of accessibility for the disabled than the old one did. For example, it is now required that attention be given to accessibility as early as during the initial planning phase of a building project. It is also required that the outdoor environment be able to be used by people with impaired mobility or impaired orientation capacity. The new act also entails increased decentralization in the planning process, and last, but by no means least, reduces local authorities' possibilities to grant exemptions.

Building legislation in Sweden covers all types of buildings regardless of ownership, form of financing or tenant contract. Sweden has a state mortgage system which covers more or less all residential construction. Here, we can observe tightened requirements to enforce elevator installation. Together, the new Planning and Building Act and the state mortgage system will contribute to a drop in property prices for buildings without elevators. As a consequence, elevator installation will be a more common part of residential renovation than it is now. The government has also set aside funds for both central government and local authority subsidies for retrofit elevators in old three-storey multi-family housing and for the development of elevators primarily intended for retrofit installation in lower apartment blocks.

The Swedish model contains a third steering mechanism for the housing market. Residential rents are controlled and based on use value and must be in line with rents established in negotiations between the Tenants' Association and non-profit housing companies. In other words, rents are not related to production costs. These two groups' evaluations of accessibility, i.e. how much the Tenants' Association considers accessibility to be worth from case to case, will in time become as decisive as production costs and subsidies in owners' evaluations of the economic feasibility of renovation projects.

## Problems in 'Barrier-Freecation'

For many years now Sweden has had an integrated society as a political goal, and has successively developed policy instruments for reaching this goal. However, in spite of the fact that Sweden is a rich country by international standards, we still face a number of problems when it comes to the practical implementation of the goal of full participation and equality.

## The Physical Environment

Inner cities have a cultural meaning for the people who live or work in them. They also represent very considerable capital values. Therefore, changes must be carried out with care. We can neither demolish these areas nor flatten out their contours in order to build the new and accessible society.

Undeniably, we face a conflict of interests between cultural conservation and accessibility for people with disabilities. I have heard people in the field of cultural and historical building conservation scornfully refer to disabled people and the fire department as obstacles in the way of the conservation of heritage buildings. Statements of this type deserve as little sympathy as do uncompromising demands for accessibility in all buildings. The basic principle of accessibility must naturally be asserted in every individual case, but its application must be adapted to the building's cultural, architectural and technical conditions.

In my opinion we know rather a lot about the problems which people with different disabilities face in the physical environment. What we now need are examples of good and economically acceptable solutions. I would, however, like to make an exception in this context for people who have different forms of allergies. Here, we need considerably more knowledge about the relationship between individual and environment and the resulting ill-health.

When a building reaches final completion, its accessibility is given.. But, as in the case of many other construction characteristics, accessibility can be destroyed by inadequate service and maintenance. The qualities and characteristics of all parts of the physical environment must be maintained during their entire life-span. More expertise in this field is therefore of great importance, if proper service and maintenance of the different physical elements involved in accessibility are to be guaranteed.

**Economic and Financial Relationships**

The costs involved in making existing buildings accessible are in many cases a very real obstacle. Ignorance and lack of imagination among many of those involved in the building process frequently result in unnecessarily high costs. Furthermore, other aspects of renovation and modernization are often given higher priority than accessibility, with the result that there is no room for accessibility features in cost calculations. Often, it is what people imagine the costs to be that is the biggest obstacle. We must put an end to the myth that accessibility results in high building costs.

In residential construction cost is not the only factor in calculating returns on a particular investment. As mentioned earlier, rents and government subsidies are also important considerations. But there are other ways of looking at the question of costs than construction costs. In a broader, societal calculation, there are a number of intricately related cost-benefit items. For example, if people can live in their own homes longer than was previously possible, demand for residential institutions will be reduced. On the other hand, aging in place puts additional demands on home-help and special transport services for old and disabled people. Accessible environments, indoors and outdoors, and availability of support services also influence the need for home-help and special transport services.

We need to increase our knowledge about the relationship between these different factors. In Sweden, we have another aspect which enters overall economic evaluations of this type, the division of economic responsibility between central government, local authorities and county councils. Under this division, even if a particular measure would be favorable in national economic terms, resulting costs and benefits accrue to different bodies. I imagine that the majority of taxpayers are somewhat baffled by the lack of overall perspective which this can entail.

A common problem in this type of calculation is how to evaluate the gains of the

individual in terms of personal integrity, self-respect, feeling of security or maintained social networks. These benefits are some of the reasons behind the desire for a home of one's own and to keep it as long as one wishes.

## Decentralization and Citizen Participation

The new Planning and Building Act is part of a decentralization process in decision-making, mainly from central to local government, and an effort to increase citizen participation. The political rational is clearly formulated: decisions made in participation with those affected are a better guarantee for quality and real change than decisions made by the anonymous state. Unimaginative and rigid application of government regulations in the physical environment results in changes which are far from "careful", neither for users or the buildings, nor for national or personal economy.

On the other hand, persons with disabilities fear that an increase in local authority responsibility together with an increase in citizen participation will make it difficult for minority groups to make their voices heard. Specifically, there is fear that less consideration will be given to questions of accessibility. This is, of course, an expression of distrust in the will and determination of the local authorities and in disabled people's capability of informing the public and making demands. The future will show whether the distrust is justified.

A broad legislative reform such as the new Planning and Building Act must, of course, be evaluated over a period of time in a number of criteria including the treatment of accessibility issues by local authorities. This represents a major responsibility for researchers and government authorities. Here, local disability organizations have an important role.

## Implementation

Quality control in construction is currently a fashionable concept in Sweden, the reasons being numerous complaints about faulty construction work, particularly in buildings from the 1960's and 1970's. Dampness and mould, defective heating, rotting window frames and leaking roofs are examples of some very tangible problems which annually cost huge sums to repair. I feel, however, that the concern of the building industry for these problems indicates a willingness to take on more responsibility for quality in construction which might make regulations in this field unnecessary.

The concept of quality control must, of course, be expanded in order to cover other aspects. It is a question of getting the product the buyer has ordered, a product which meets the requirements which were stipulated during the various phases of the building process. A knowledge of the whole process is important in achieving accessibility. Minor faults in the final product can jeopardize good intentions and large financial investments. It is also important that researchers in the area of disability play their part in identifying critical phases in the whole process, from the planning stage to the administration of the completed building, and pointing out who makes which strategic decisions on accessibility.

More clarity in documents, legibility and intelligibility, are called for, if disability organizations are to have the means to influence accessibility decisions. With the increase in citizen participation in the planning and building process these issues will receive more attention. Information must be presented that enables people with different forms of disabilities to participate in this process.

### Attitudes

Human settlements are result and expression of the social, cultural and economic characteristics of a given society. They also reflect the ways in which different societies regard persons with disabilities. Discriminatory attitudes constitute one of the main obstacles to the integration of people with disabilities into society. Attitudes towards people with disabilities vary greatly from society to society and are strongly linked to social and cultural factors. In some societies, people with disabilities are expelled or abandoned. In others, the disabled person's family is condemned as well.

In my opinion, discriminatory attitudes are to a great extent based on ignorance. For many years now disability groups in Sweden have very actively spread information on different forms of disability, their consequences for the individual and society, and the implications for planning and design of the physical environment. As those who work with these questions know, it takes time to bring about changes in people's attitudes. The disability organizations are very aware of this fact. They also know that strength, perseverance, and conviction is required in increasing awareness and sharing their problems with everyone involved in planning, building and administration and the general public. The manifestation of positive attitudes, in words and action, is relatively easy in a society which is enjoying a period of economic expansion. The seriousness of intention behind the slogans of solidarity are best put to the test at times when "savings" is the key-word.

The physical environment can have an indirect influence on people's attitudes to persons with disabilities. With improved accessibility, people with different disabilities will be more visible, on underground trains, at work, as classmates and neighbors and will be regarded as part of the community.

### Knowledge = Research?

I have already pointed out the need for knowledge in the different areas. However, this should not necessarily be taken to mean that such knowledge does not already exist, but that information on the existence of such knowledge may not have reached the people who need it.

In Sweden, as of July 1, 1987 the responsibility for the overall planning of disability research rests with a research committee. The basic elements of disability research lie in many different disciplines, and its applications and financial sources are also widespread. Purely from a point of view of research policy, it would be interesting to know if any similar form of coordinated responsibility exists in other countries. It is, of course, too early to be able to carry out any form of evaluation of this Swedish initiative, and we will have to return to this subject at a later CIB seminar.

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## Aesthetic and Social Aspects of Architectural Barriers

Dr. Ala Wokoun, Prague, Czechoslovakia

As a graduate aesthetician and also a paraplegic who uses partly a wheelchair and partly crutches, I would like to give my personal view on some architectural problems in the renewal of inner cities.

## Democratization of Staircases

Stairs are always a limitation for people with paralyzed legs. Because of hundreds of terribly steep stairs on the Mayan pyramids, I could never have been either a high priest or a meritorious human sacrifice to the Mayan gods. Lower, shorter staircases in front of mediaeval cathedrals were a little more democratic. Here, paralyzed beggars were allowed to sit at the sides.

Monumental staircases were built in front of many noble palaces, but later also in front of museums and universities. It was said that such stairs which had once uplifted souls to gods and high-born personages, now helped to uplift the minds of men to higher scientific aims. No doubt, young people full of energy experience an aesthetic uplifting to greater knowledge or a lofty career. Staircases were also built in front of public buildings of democratic governments. But people using crutches and wheelchairs have never been aesthetically or otherwise uplifted by staircases leading to knowledge or their rights. People with disabilities could be said to confirm the fact of aesthetic relativity, because stairs are simply barriers for them that discriminate against them not legally, but physically.

Some disabled people can manage stairs, given that they at least have suitable handrails. But many staircases in front of public buildings were built without handrails, even though frailer persons may need to grip a railing. According to aesthetic subjectivity, architects found narrow handrails aesthetically displeasing for monumental staircases, and only few of them have tried to develop aesthetic (or inconspicuous) practical handrails as well.

Democratization means accessibility for all. One can increase the democracy of a staircase with a suitable railing, but for wheelchair users, it is just as undemocratic, unless there is a ramp as an alternative. Czechoslovakian Public Notice no. 53/1985 prescribes the architectural accessibility of new and reconstructed buildings for wheelchair users. Nevertheless, many old buildings with only monumental staircases remain. Protectors of monuments and stylistic purity do not like aesthetically displeasing ramps and handrails and will, at best, grudgingly agree to a railing on one side only, although some people with supporting orthopaedic apparatuses, need a railing on the other side. If a side entrance without stairs for wheelchair users is not possible, a ramp as an aesthetic compromise is desirable in such cases. Aesthetic or stylistic purity is nearly impossible in any case: old architecture is frequently littered with people in modern dress and their modern tourist coaches stand nearby to add to the stylistic intrusion. And it is easier for a non-disabled friend of architecture to bear an aesthetic compromise than for a disabled persons to bear the stairs as well as the irony of being excluded from entering an important public building, with an elevator inside.

## Socially Repellent Benches

On some wide pavements in city centers, we find simple benches; low horizontal benches without backrests. Old and disabled people who have lost muscle "springs" in their knees or who use high crutches cannot sit down or stand up without the support of their hands against the bench or chair. If benches are too low and without backs, this is impossible for them to do. Old and disabled people with weak back muscles also sit uncomfortably and bent on benches without backs (who doesn’t?). Why do some architects find only low benches aesthetically pleasing where the knees support the chin, when, at the same time, they like high stools in bars? Why do some architects condemn benches with backs to obscurity? Why, oh why do they find them so aesthetically displeasing? But low benches

without backs are socially repellent when they exclude the high percentage of old and disabled inhabitants of large towns and cities.

### Hygienic Ditches and Tiles against the Disabled

Water moats around mediaeval castles were understandable. Nowadays, shallow moats are built around bathing pools. These are understandable too - hygienically - as protection for the pool water from people with dirty feet. But if the moats around pools are the only passage from changerooms and showers to the pool, such moats discriminate against even the cleanest disabled persons using wheelchairs, indispensable orthopaedic apparatuses on their legs, or amputees who cannot walk without prosthetic compensation. Furthermore, a person using crutches cannot risk the consequences of slipping and sliding on their crutches in the moat or on the wet tiles in front and in back of the moat, even if the crutches are fitted with non-slip rubber stops. These people who are excluded from pools by such moats, are those who need the free movement possible in pools more than other citizens. Water in pools is an anti-gravity paradise for persons with paralyzed limbs. At least one of the public pools in every town should be accessible to persons using wheelchairs and crutches.

People whose walking is unstable know some other common slippery situations. While children look forward to skating across ice-covered ground, old and disabled persons fear winter and its slippery roads and pavements. Even a pleasant, smiling cleaning woman becomes a dangerous witch as she cheerily waves her wet mop over smooth floors. People using crutches sometimes envy dogs for their natural rights, when they find themselves excluded from public rest rooms whose smooth wet tiles have become ice-rinks. These people are also not fond of the new pseudo-mediaeval paving which are used today to replace asphalt streets between buildings in old restored city centers, even though it conforms wonderfully to the basic aesthetic law of contrasts: adjacent plain and decorated surfaces, rough and smooth, etc.

The application of this aesthetic law, when restoring old areas of towns and cities, should be in harmony with the aesthetic relativity and practical needs of persons with disabilities, and not, as is apparent today, an aesthetic compromise between disabled and non-disabled people.

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## Barrier Free Design: Safety for a Caring Community

Bill Wrightson, New Zealand Disabled Persons Assembly

### The Successful NZ Lobby for Access Provision

Our proposition in this paper is that barrier free design with its philosophy, conceptual framework and design detail represents a community design base for ease of use and accident prevention across the whole of the built environment.

We first formally addressed the issue of access to public buildings in NZ in 1967 at a public meeting of governmental, local authority, voluntary and commercial agencies and professional practitioners. A planned strategy to be pursued from that point was identified. We were to proceed along three specific paths:

Develop legislation and regulation.

Introduce education programmes.

Provide technical information.

The responsibility fell to disability lobbyists and the voluntary welfare sector to target their lobbying and programme activities at:

Policy makers in government and local authority.
Professional practitioners and policy implementors.
The general public - media and education institutions.

With the initiative from the voluntary welfare sector, our first access code (NZ Standard 4121 Part I) was published in 1971. A second document (Part II), on signage, followed in 1975. The Code was recommendatory, it had no compulsion, but visible results were achieved with the appearance of wheelchair accessible toilets (especially in airport terminals) and kerb ramps. Legislative back-up was needed to mandate the recommendatory approach of the Code.

In 1975 the Disabled Persons Community Welfare Act was passed. Section 25 of this act requires that every new public building or major reconstruction must provide "reasonable and adequate" access for disabled people to visit or work in the building.

From 1975 the International Symbol of Access began to appear as a response to the Code(s) and as a tool to increase public awareness. The extensive outdoor life and mobility which New Zealanders enjoy and take for granted now became a possibility for people with mobility impairments. Wheelchair users had been "given permission" to be seen in public. A change in attitude had begun and the disability groups became more visible. As a wheelchair user I was now expected, by my non-disabled friends, to go "out" more regularly to watch rugby games, to visit restaurants and take holidays with my wife and children.

**Education and Enforcement**

The lobby impetus of the mid 1970s was sustained - a nationwide network of local disability groups was set up to monitor progress. The voluntary welfare sector began educating architects through design award competitions and the launch of the Barrier Free Programme in 1979.

Initiated by the NZ Crippled Children Society in association with the Ministry of Works and Development and the Department of Social Welfare, the Barrier Free Programme introduced the need to plan for the whole community by including design requirements for disability groups as a top priority in the design and construction process.

We have received widespread international endorsement of the the high quality of the technical and promotional material the Barrier Free Programme has produced. We welcome with pride the acclaimation our efforts have received over a sustained period. I commend this material to you and encourage you to come and view it.

The disability voice continued to press for legislative mechanism to enforce the DPCW Act requirement. In 1980 New Zealand’s 240 local authorities were given the power and responsibility, by an amendment to the Local Government Act, to withhold building permit approval for plans which did not comply with the DPCW Act.

It was now time to review progress in relation to the original strategy. New Zealand's advantage of being a small, youthful, earthquake-prone nation has meant change a building replacement has been achieved to date with a minimum of real resistance.

Some outstanding individual examples of intergrated architectural and environmental planning have been produced. Wellington, our capital city, has undergone complete renewal of its inner city environment. Dramatically upgraded earthquake requirements have resulted in New Zealand's best central city access provision for disabled people. Shopping malls, parking buildings, theatres and cinemas, restaurants and sports stadiums are now part of an intergrated network.

## A New Code: NZS 4121:1985

The successes were encouraging but there was still a prevalence of misunderstanding, ignorance and procrastination over definition of the phrase "reasonable and adequate".

A new access code was required. The voluntary welfare sector through New Zealand Crippled Children Society initiated redraft of the standard with strong support from the Standards Asscoation of New Zealand, the Department of Social Welfare and a newly formed agency presenting the whole of the disability sector in NZ (the Disabled Persons Assembly).

This new Code NZS 4121:1985 was launched by our Minister of Social Welfare in December 1985. Replacing the original NZS 4121 Parts I and II, the new code has had a dramatic impact. Architects suddenly discovered that "reasonable and adequate" access meant a great deal more than ramps, wide doors and funny toilets - ground surfaces, floor coverings, lift design and visibility factors all had to be considered as part of the encompassing concept of the "Access Route".

Property developers resisted the code. They said its requirements for lifts in two storey buildings over a certain floor area meant substantial extra cost. In terms of overall cost to the building industry this was insignificant - the solution for new lift design options is being pursued as a compromise for the smaller building.

Designers have been challenged by the new code. Their response has been favourable. Change is occurring faster than at any point in the past. The NZ disability sector must continue its monitoring and support role. The proposed appearance of a completely new national building code must ensure an improved level of access provision for NZ.

## From Access Rights to Accident Prevention

Since 1985 the Barrier Free Programme in NZ has concentrated on the area of design for accident prevention. To expand the planned achievements outlined in the previous section an updated strategy was adopted:

With the same target groups and directions identified from the outset, functional use of the built environment based on rights of access became the priority.

The generalised focus on the built environment was refined, to a specific emphasis using the private home as a model.

## Rationale

Physical access to the built environment is a basic human right. Rehabilitation International in its "Charter for the ’80s" proclaim under Fundamental Concept 38 that "people with disabilities have a right to use all structures intended for general public use". Deficiences in environmental planning have created the special need to ensure maintenance of rights through remedial legislative provision. The enemy is the planner. He or she can design you "in" or design you "out" of community participation.

It is already well established that every member of the community will have difficulty with the functional use of the built environment during their lifetime. Traditional thinking has always designed and constructed our physical surroundings with the emphasis on "the structure" - its appearance, construction methods and materials. Genuine consideration for safety, convenience and ease of use for the whole spectrum of social usage has a very low priority on the planner’s and designer’s check list. In the final analysis the built environment is for all people to use and, once completed, the structure will stand for a long time.

Buildings must never be erected solely as monuments to their designer or owner. Physical structures which will generally outlive their designer and original owner must ensure, in their original construction, accessibility to a community who will continue to use them. Environments designed with little consideration for function can continue maiming people for years after their designer has died.

## Conceptual Framework

The building must never be designed in isolation from the other two basic components of environmental planning. Good environmental design recognises the inter-relationship of:

- transport systems (including the private motor car)
- public or open spaces.
- buildings.

We identify the "accessible journey" as the mechanism which links these components. Critical points of transaction occur in the "accessible journey" where the components merge. Good design includes detail and construction supervision of elements like:

location of parking spaces
connection between parking and building - ground surfaces, kerb ramps, landing areas,
handrails and entrance thresholds
interior circulation - doors, corridors, floor coverings, lifts and toilet facilities.

These items are vital to ensure smooth transition between components at the critical points. They also provide the basic design detail for the "accessible journey" and a design base for functional use of the built environment.

## A Model for Safe Functional Design

A model for safe functional design was presented in NZ with a programme called Safe House ’86. A series of seminars and a display home were enthusiastically supported by the Accident Compensation Corporation, the Health Department, the Housing Corporation of NZ and a private housing construction company. The Victoria University

School of Architecture also showed interest in the concept. A masters student presented a design package for home safety combining security, fire prevention and design principles for accident prevention.

ACC statistics for 1984 identified 19% of its compensation payouts for home accidents compared with only 12% for road accidents. The proportionate difference between the two is expected to get wider. Health statistics show a greater and more rapidly increasing cost to the community (approaching $NZ100 million) for home accidents than from any other cause.

Professional groups attending the Safe House ’86 seminars endorsed the potential for significant monetary savings to the community if basic concepts of barrier free design are introduced as standard practice into the private home. Design principles relating vehicle access directly to floor level and entrances, the detailing of level thresholds, kitchen layout and storage location and the construction of wet area showers are some examples with the potential to reduce the risk of personal injury by accident in the home.

The largest home building operation in NZ, the Government’s Housing Corporation, has already adopted "Safe House" principles in their "Granny Flat" design. A private home construction company in NZ (Marshall Homes) are using the "Safe House" design concept as their major marketing thrust. The NZ Standards Association are considering a new code of practice for "safe" housing design as a result of the Safe House ’86 programme. Support for the model has been very encouraging. Future endorsement by popular demand will be the ultimate gauge of acceptability for the proposal presented here. However the need for researched evidence to validate the theory remains a priority.

## Summary

We have now traced NZ’s planned 20 year progress in developing a barrier free environment. It is significant that the initiative to reach the current level of thinking and development has come from a minority user group rather than the professional educators, researchers and practitioners. The sustained level of achievement is attributed to the determination and perseverance of a few dedicated and informed individuals backed by a growing number of professionals.

We must acknowledge the vital support and co-operation of the agencies and organisations mentioned in the paper. Their assistance with the provision of enlightened personnel at critical stages has demonstrated how New Zealanders can maintain a team effort over an extended period for the good of the community.

We seek ongoing close liaison with people throughout the world embarking on or making progress with similar initiatives.

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## Environmental Design and Civil Engineering for Persons with Disabilities

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### Introduction

In order to meet the travel needs of persons with disabilities and to lessen the difficulties which they encounter in streets, it is necessary to improve environmental conditions to ensure their convenience and safety. In this paper, we investigate and discuss appropriate measures in street construction under special consideration of Chinese urban traffic conditions. We have thoroughly studied the design principles and technical requirements for bicycle lanes, sidewalks and pedestrian crossings as well as overpasses and tunnels for pedestrians, in order to specify accessibility guidelines.

### Barrier-Free Street Design

In China, most urban inhabitants travel by bicycle or bus. There are special lanes for bicycles and some major intersections are designed to separate bicycle from motor traffic.

Chinese citizens with disabilities use hand-driven or motorized tricycles which can ride on

bicycle lanes. By taking the tricycle, persons with mobility impairments can meet their various needs, such as go to work, attend school, and take part in various social activities. They can cross streets conveniently, travel by themselves and avoid the difficulties involved in taking the bus.

Since Chinese cities have bikeways, bicycle lane design must take into consideration the performance of hand-driven tricycles. For this reason, the bikeway's maximum gradient should be 2.5%. This maximum gradient is suitable only for flat and near-flat terrain of cities and towns. In mountainous areas, the maximum gradient is 3.5%, but the length of the maximum gradient should not exceed 80 m. Where the topography is very hilly, the performance of motor tricycles should be the guideline with a maximum gradient of 7%.

Arterial and secondary trunk roads, feeder roads and residential streets should be considered without exception as focal points for persons with disabilities in environmental design. Only streets constructed with the gradients mentioned above can be considered barrier-free. In city planning, the department of public utilities, the governmental department and disability organizations cooperate in order to effectively serve the interests of persons with disabilities.

## Designing Sidewalks and Pedestrian Crossings for People with Disabilities

Sidewalks and pedestrian crossings are thoroughfares for daily activity. In China, even though the standard of facilities for persons with disabilities is inferior, the engineering design standard of sidewalks and pedestrian crossings must be satisfactory.

Sidewalks and pedestrian crossings must meet the differing demands of persons with disabilities.

For the convenience of persons with disabilities, the curb height at intersections should be lowered, and an access ramp provided for pedestrian crossings. The gradient of the access ramp is less than 2%.

The sidewalk's width is designed according to the peak hour volume of pedestrian traffic for a capacity of 1800-2000 p/h.m. The minimum width of the sidewalk is 2.5 m. In commercial districts, docks and railway stations, the width is never less than 4 m.

In designing pedestrian crossings, not only the needs of persons using tricycles or wheelchairs have to be considered but also the convenience and safety of people with sight impairments. Sight-impaired people depend upon their tactile sense to recognize the street and its position . For their convenience, the sidewalk's inside curb must be 10 cm higher than street level.

The width of the pedestrian crossing depends upon peak hour volume which is approximately 2000 - 2400 p/h.m.

Curbs at the pedestrian crosswalks must be lowered. A slope of 1 in 20 should not be exceeded.

If a street has two separators, the separator at the pedestrian crossing must be cut off, so that persons with disabilities can cross freely.

At pedestrian crossings, no barriers such as trees, electrical poles, rain water drains, etc. are permissible.

For the safety of sight-impaired pedestrians audio signals should be installed. When a button is pushed, the signal changes to green and a sound is emitted. The warning time must be sufficient for the pedestrian to safely reach the other side of the street. Without pushing the button, no sound is emitted in order to reduce urban noise.

Audio signals should be set up at zebra crossings. A protecting handrail should be placed next to the signal in order to hinder accidental access into the street. The duration of the green signal is based on the normal walking speed of a blind person, 0.9 - 1.2 m/sec.

At intersections and pedestrian crossings, curb height must be lowered to 2 cm or less. This is a help for persons using tricycles and wheelchairs. It also reduces the accumulation of rain water. The lowered section of the curb must connect with the abutting curb by a smooth slope.

In order to assist persons with impaired vision to distinguish which way the walking direction lies at the pedestrian crossing, the crosswalk should be paved with tactile square bricks in a yellow color. Such a crosswalk should be paved by two kinds of bricks for tactile feeling - one for the walking direction and the other for 'stop'.

### Designing Pedestrian Overpasses and Tunnels

Since traffic volume and speed increase daily, pedestrian overpasses and tunnels are necessary in order to improve street environment. In Chinese cities the construction of pedestrian overpasses and tunnels is developing rapidly. If barrier-free design is not made mandatory, many new difficulties will arise for persons with disabilities. For their convenience and safety, careful research on related facilities must be carried out by engineers.

While many special bikeways have been constructed for disabled people for crossing streets with hand-tricycles, pedestrian overpasses and tunnels are mainly for disabled persons who walk using canes and crutches.

The minimum width of the steps is 30 cm, maximum step rise is 15 cm. After the maximum of 12 steps there must be a landing for resting with a width of 1.5 m.

The width of overpass bridge and sidewalk tunnel must satisfy the capacity of 1800 -2000 p/h.m. In crowded areas, 1400 p/h.m. is used.

In order to the meet the needs of persons with disabilities, handrails must be installed on overpasses and on tunnel walls. This aids persons with disabilities in climbing and resting protecting them from falling.

Handrails are installed at 90 cm above walking level and must be 30 cm longer than the stairs.

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## Three Stage Housing for Old Persons

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### International Trends

During the International Year of Disabled Persons in 1981, the United Nations issued international standards with the declaration ’access for all’. These are guidelines for "developing a physical environment without architectural barriers for old and disabled persons and for developing cities where everyone can live without handicap".

In the field of barrier-free design, we cannot ignore the world authorities Dr. T.J.Nugent in the United States and Mr. S.Goldsmith in the United Kingdom. Mention must also be made of the International Center on Technical Aids, Housing and Transportation (ICTA) in Sweden whose main task is to collect and disseminate information on technical aids, environmental and transport facilities for people with disabilities with special regard to mobility impaired persons.

The concept of ’access for all’ became law in the United States where buildings receiving federal subsidies must provide access to all people. In the United Kingdom, the term ’mobility’ used in the sense to improve the mobility for physically disabled persons, also appears in the recommendations for the renovation and renewal of buildings and cities. The United Nations held a world conference on the problems of the aged in 1982, after the International Year of Disabled Persons. At the conference it was proposed that old persons should not be seen as burden but as valuable assets to society. To this end, a resolution was adopted calling for strengthening in-home support services to allow old persons to remain independent and self-reliant in the local community as long as possible. Populations statistics indicate that Japan will turn into an aged society at an unprecedented fast pace, and a call for developing responses to this question has been made recently.

## Aging and Physical Functions

Previously, residential facilities specially designated for old and disabled people were built in segregated environments outside our communities. These areas were often called "colonies" and tended to be idealized. However, after the passage of a half century, the shortcomings of this isolation policy have become clear worldwide. As a consequence, today, under the concept of integration, there are an increasing number of plans to make general adaptations in our communities to enable old and disabled citizens to continue to live amongst others in the community.

In adapting architecture to the needs of old persons, the decline in mental and physical functions due to aging is an important factor. Man does not suddenly grow old after reaching the age of 65; the process of decline begins already in the middle 20’s. For example, vision reaches the peak at around the age of 20, and enters the range of far-sightedness by the age of 40. Hearing is best at age 24 and declines at a rate of 1 dB per year. By the time people are 65, they have lost, on the average, about 40 dB. The sense of balance deteriorates; people fall more easily and get more often dizzy while standing as they get older. The time people can stand on one leg with their eyes closed in their 40’s is one-half of the time in their 20’s, and on-third by the time they reach their 60’s. In general, as people grow old, their cells shrink, and their connecting tissues become transformed.

Since a home can only be called a true home, when one can live one’s entire life in it, houses should be easily modifiable as the resident becomes older. In the following, criteria for housing will be developed that can respond to the decline in human mental and physical functions.

## Hazards in the Home

When we look at safety in buildings statistics show that common accidents in daily life such as tripping and falling cause far more deaths than emergencies such as fires and earthquakes; to be exact, they cause six times more deaths. While architects' responsibility for safety in emergencies is under discussion, the question tends to be overlooked as to where the responsibility lies for ordinary accidents such as falls.

In terms of age, an overwhelming number of home accident victims are infants and old persons which leads us to believe that existing dwellings are generally designed for a man (not a woman) in the prime of life and at the peak of his physical fitness. As a consequence, such housing may in many ways be unsuitable for persons whose physical abilities are below those of healthy men.

In this connection the resolution should be recalled which was passed by the United Nations Expert Group Meeting on Barrier Free Design held in 1974. Under the title "The Challenge to Mythical Mr. Average", it stated that "the time has come to reexamine the design of buildings which has been devoted exclusively to the average man up to this point". In Japan, the recommendation has won the support of many persons including architects.

According to a survey on the incident of accidents, they mainly occur on the floor, at entrances and staircases. In these places, accidents involving injuries occur more often in private residences than in office buildings. Accidental injuries can therefore be considered man-made, that is, they are caused, to a significant extent, by a lack of adequate consideration and care on the part of architects.

**Focusing on Mobility**

Human beings evolve from crawling to walking, from dependence to independence. In order to continue to live into old age with dignity, one of the first requirements is that the old person can go on his own where he wants to and when he wants to. Internationally, this is called 'mobility'. Even though this seems to be simple and self-evident, the design of dwellings, public buildings and mass transportation up to now has allowed only younger and non-disabled persons to enjoy these facilities. For example, while those who can easily lift up their leg walk over a threshold unimpeded, old persons have difficulties in bending their ankles 90 degrees. Thus, even though they may think that they lifted their foot high enough, it gets caught on the threshold, and they trip. They are likely to break a bone in the accident, and require hospitalization.

These hazardous level differences are found everywhere, especially in Japanese traditional style houses. The concept of 'partitioning' (shikiru) is very old and has been important when entering somebody else's territory. 'Shikii' (threshold) is the symbol of this concept. In figurative speech, for example, "stepping over the threshold", means to become a member of the family; "the threshold feels high", is used to connote psychological difficulties in visiting somebody. Invariably, there are level differences at entrances to buildings and rooms in Japan.

Furthermore, because the Japanese traditional 3-foot module for the pillar interval has been reduced to 'apartment size', there are now many narrow passageways and doors. This means that when a person carries another person on the back or when a person uses a wheel chair, there are many entrances that the person cannot pass through on the way to toilet, bathroom, or hallway, all of which are necessary for daily activities.

Thus, even though at first glance existing dwellings appear to be fit for anyone, at closer observation they contain all sorts of dangerous traps which hamper the mobility of

infants, old people and disabled persons. They cause tripping, slipping, and falling, leading to injury or even death.

In most Western countries recommendations exist for considerations of mobility to be included in the architectural plans from the very beginning. When the residents acquire a disability, the house can be remodeled at relatively small cost. This measure can be considered the starting point for designing housing in which one can live one's entire life with a sense of security.

In this connection, S.Goldsmith presented three conditions for mobility planning in a paper entitled 'Mobility Houses' in 1970. They read as follows:

> First condition
> A person must be able to pass through the front door without tripping. That is, he or she can enter and leave without having to overcome level differences. If there is a staircase, it should have handrails.
>
> Second condition
> Interior hallways and entrances including doors to toilet and bathroom should have an effective width of at least 85 cm. In this way, even when a person has difficulties in moving about and needs assistance, uses a crutch or a wheelchair, he can pass through them.
>
> Third condition
> No level differences must exist between different rooms. In Japanese architecture it is common to have level differences or thresholds between hallway and a Japanese-style room, between dressing rooms and bathrooms to facilitate drainage, or to partition different floor finishings. Since such obstacles can be fatal for old persons, ingenuity should be exercised in using appropriate floor materials to eliminate level differences.

The three conditions can be applied to any type of planning. They do not interfere with the freedom of architectural design and can be readily incorporated into all types of dwellings. In dwellings where people can live a whole life long the absence of the three greatest barriers causing accidents in ordinary houses, i.e. staircases, narrow entrances and slippery floors, should be expected.

## Life Cycles and Housing Stages

Sociology offers various definition of the onset of old age: the marriage of the oldest child, marriage of the youngest child, or mandatory retirement. Housing design should respond to the life cycles. To this end, we need not only flexibility in space, but also flexibility in housing structure which should even include the eventuality that a resident cannot leave the bed.

The housing plan incorporating these design features is divided into three or four stages in Western countries. In Japan, a 4-level concept was proposed in the Ministry of International Trade and Industry's New Housing Development Project III entitled "Development of Care System Technology for the Aged and the Disabled" .

Since then, the Osaka Prefecture has developed the MAI 3-Stage Housing Method, and started its construction. Shimane Prefecture with the highest percentage of old people in Japan has adopted this 3-Stage Housing Method applying it not only to a small number of special types of housing but also to standard housing. As a result, "model housing estates

for the aging era" were adopted by the Ministry of Construction which, in turn, led to the development of the "Silver House Plan" by the Ministry of Construction. In the 3-Stage Housing Method, the function of care has been added to the housing function by incorporating the possibility of installing equipment and facilities which make independence and care possible.

The 3-Stage Housing Method consists of the following stages:

- The first stage is mobility (M) (housing for everyone)
- The second stage is adjustability (A) (equipped to make adjustments possible.)
- The third stage is intensive care (I). (equipped with facilities for intensive care.)

Using the initial letters of the key words, it is called housing geared for aging based on the MAI House 3-Stage Housing Method.

### Development of Housing Equipment

The New Housing Development Project III "Development of Care System Technology for the Aged and the Disabled" (under the Ministry of International Trade and Industry), has developed over the last six years 12 types of housing components and equipment that correspond to these three stages at an expenditure of Y200 million. The products include door frames without sills and thresholds, bathroom units for the first stage; wash basin and toilet adjustable in height, a kitchen system, and elevator for the second stage. For the third stage, an environmental control system which facilitates care and horizontal transfer equipment.

The first prototype of this housing with special considerations for people with disabilities was built in 1983. After an evaluation period, the second model was built in 1984, and the third in 1985. After step by step improvement, a mass-distribution model is now available for purchase.
The prototypes were evaluated in meetings with disabled consumers, rehabilitation workers, and engineers as well as key media personalities.

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## Resolutions Adopted by the CIB W84 Expert Seminar in Prague

Inner cities have always been centers of human interaction. Constantly changing economic needs require physical adaptation to new functions. These changes present opportunities for increasing the accessibility of these environments to all citizens.

Rapid urbanization and increases in the population of old and disabled persons are global phenomena. A large part of these citizens live in inner cities. For this population accessibility is of decisive importance for exercising their basic civil right to equality and full participation.

Inner cities represent interconnected systems of functions such as housing, administration, commerce, culture, recreation and transportation including street network, parking facilities, pedestrian areas and mass transit. Accessibility to the built environment, therefore, has to be defined not only as access to single elements of the system but the uninterrupted access between all elements within the system. In the face of the diverging demands put on inner cities it is of paramount importance that accessibility is guaranteed by an over-all plan based on a system of laws, regulations, enforcement and monitoring

procedures. The competent use of these instruments requires a highly developed professionalism and consumer input as well as a high awareness on the part of the public.

Based on these considerations the CIB W84 Expert Seminar has adopted the following resolutions:

**Resolutions directed to national and local governments**

1. We, the participants of the CIB W84 Expert Seminar consisting of both non-disabled and disabled persons, cannot accept anything else but the goal of a barrier-free environment and free movement within it for all. Accessibility must be enforced by national legislation.

2. Legal instruments should be developed to ensure accessibility both in new construction and in renovating, upgrading and expanding existing urban environments.

3. In recognition of their experience disabled people and their organizations should be actively involved at all levels in drafting, monitoring, and enforcing legal instruments for the planning and building process.

4. Public funds should be allocated for the development and maintenance of these instruments.

5. Governments shall provide funding for consumer organizations to allow them to build up their expertise in this area and to participate in the decision making and implementation of these instruments.

6. Recognizing the long-term benefits of accessible environments for all, governments should subsidize the development of products and methods that improve accessibility.

These resolutions are in accordance with the "United Nations World Program of Action Concerning Disabled Persons" that has been adopted by all member governments.

**Resolutions directed to architects, the planning professions, builders and educators in these fields**

7. Practicing architects, planners and builders should view accessibility as basic planning requirement and not as limitation. This view should be an integral part of professional training.

8. Instead of using the arguments of diminished esthetic values and high costs as an excuse for non-action, architects, planners and builders should consider accessibility as a basic civil right and ensure its implementation.

9. In order to stimulate professional interest in this field teaching materials should be developed showing good examples of accessible solutions that do not compromise esthetic or historic values nor the right to equal access. Planners, architects and builders must cooperate in their professional work with organizations of disabled people.

**Resolutions directed to researchers**

10. Research on accessibility in the built environment should encompass also the environment-society interface with its functional, social, cultural, psychological and economic aspects.

11. Research projects in this area which develop and evaluate legal instruments and their efficient enforcement, planning and design processes, consumer input, professional training and the social, cultural, psychological and economic effects should be given high priority.

**Resolutions directed to consumer organizations**

12. Consumer organizations should be aware of the political role of the planning and building process. In order to better realize their goals consumer organizations should actively involve themselves in the political and planing process and improve their technical expertise in this field.

13. Recognizing that developing countries have particular problems, we identify the urgent need for the transmission of information between disabled people of different countries and experience exchange between professionals concerned with disability issues. To ensure appropriate services all environmental planning must recognize available technologies.

**Resolutions regarding services that supplement the physical environment**

The W84 Expert Seminar in recognizing the superior quality of living in the community as opposed to an existence in institutions advises that investments in institutions are to be phased out and be replaced by services that allow old and disabled citizens a life in the community with equality and full participation. These services include financial subsidies, counselling and personal assistance in activities of daily life, work and leisure. By defining their own needs disabled people have articulated a new philosophy of personal assistance services which allow for choice, independence and the realization of equal rights. Recognizing the differences among countries in terms of available resources and culture, the W84 Expert Seminar adopts the following resolutions as long-term goals for personal assistance services:

14. Governments, preferably at the national level, should take the responsibility for adopting and financing national personal assistance policies in consultation with consumer organizations.

15. Services are to be organized in a way that gives the individual consumer the same opportunities on the housing and labor market as the general population.

16.Services should be organized in a way that enables the individual consumer to exercise maximum control over all aspects of the management of his or her personal assistance including hiring and firing decisions, preferably by being employer of the assistants. Peer counselling and support as well as consumer cooperatives are means to empower most disabled persons to acquire the necessary skills.

## CIB W84's Future Direction

At the CIB W84 Program Committee meeting in Prague directions for the future work of the Commission were discussed. The Committee members agreed that accessibility of the built environment for old and disabled citizens is a relatively new field for research and development. In many countries consumers put increasing demands on legislation and standardization to safeguard accessibility of the built environment as a basic human and civil right. This development points out a rising need for information, training and continuing education for the planning and building professions and requires increasing efforts in research and development work.

The United Nations International Year of Persons with Disabilities in 1981 and the International Year of Shelter for the Homeless in 1987 have amply demonstrated the need for incorporating accessibility requirements at an early stage in the planning process regardless of a particular country's development stage. The United Nations Expert Seminar on the evaluation of the midpoint of the United Nations Decade of Persons with disabilities in Stockholm in August 1987 placed the highest priority on the need for equalization of opportunities of disabled persons where accessibility of the built environment is one of the most basic requirements. The recent United Nations activities have served to stimulate interest in international exchange of experiences and to create a rising awareness of the benefits of cooperation across all borders.

In trying to meet this interest the CIB W84 Program Committee identified a series of possible projects. Funding for these activities is presently applied for from CIB W84's sponsor, the Swedish National Council for Building Research. The time schedule should be such that the completed projects are reported on at a planned plenary meeting and seminar in 1990.

### Planned Projects

### CIB W84 Newsletter

The secretariat is planning to publish twice a year a 4-page newsletter. The newsletter is to report on on-going activities within the CIB W84 area, to serve as a link between researchers and to recruit interested individuals and institutions to the CIB W84 community. Depending on available space recent research results will be abstracted. An initial edition of 2,000 copies is planned for 1988.

### CIB W84 Examples of Accessible Inner City Renewal Projects

At the Prague Seminar a number of interesting accessible inner cities renewal and renovation projects were presented. The discussions showed that problems can arise in renovating old inner city structures as a result of the often conflicting aims of preserving cultural and historic values on the one hand and accessibility for old and disabled citizens on the other hand. In the experts' opinion there is a great need for informative and inspiring examples of good accessible solutions.

The collection of examples will consist of some of the case studies presented at the Prague Seminar as well as several other carefully documented interesting existing projects which can be secured through CIB W84 contacts with architects and institutions in various countries. It is desirable to select projects from different countries and present

examples from housing, public spaces and transportation systems. The report consisting of richly illustrated and detailed presentations including an introductory essay will be published in English and is scheduled for completion by W84's next meeting in 1990.

## CIB W84 Workshop: Accessibility Norms for Public Buildings

The United Nations World Program of Action for Persons with disabilities emphasizes the right of disability organizations to participate in the planning process and the formulation of the laws and rules which govern it. On the international level it is mainly DPI, Disabled Peoples International, that has this watchdog function. In order for these organizations to work effectively they need to build up their own independent expertise.

At the regional and international level existing national building norms and standards are undergoing harmonization efforts with the aim of arriving at uniform international standards. In this work the input from disability organizations is often underrepresented owing to a lack of technical expertise. At the Prague Seminar it was suggested that CIB W84 should organize a workshop where representatives for DPI assisted by experts from CIB formulate international accessibility norms for public buildings which organizations of disabled people can use in order to influence standardization efforts.

## CIB W84 Workshop: International Standards for Accessibility Guides

Accessibility guides, i.e. information on the accessibility of buildings, transportation systems, etc. that enables individuals with disabilities to determine beforehand whether they can use a certain facility, are now available in many cities around the world. The reliability of such guides as well as their comparability could be considerably improved, if there existed a commonly accepted uniform international standard for structuring the information and defining accessibility. Such guides could be expected to greatly facilitate travel opportunities for persons with disabilities.

At the Prague Seminar the suggestion was made that CIB W84 take the initiative in organizing a workshop with the purpose of establishing international standards for accessibility guides.

## CIB W84 Regional Seminar for the Asia and Pacific Region

While planning for the Prague Seminar the CIB W84 Secretariat received registrations from over 40 experts and representatives of disability organizations from developing countries. Only 3 persons, however, were able to participate on account of the high travel costs.

There is a growing interest in accessibility issues in developing countries the reasons being rapid urbanization, an increase in the old population and such disabling conditions as warfare, high accident rates and malnutrition. In recent years organizations of persons with disabilities have been gaining increasing strength in developing countries and their demands include research and planning measures for improving accessibility of the built environment. Literature and case studies in this area are almost non-existing. Efforts are required to identify research needs, to examine the transferability of existing knowledge and methods and to increase the awareness for accessibility issues among decision makers and planners.

CIB W84 in addressing these needs is planning a series of regional seminars in the

regions of the world with the aim of introducing accessibility issues to the political and scientific arena. The first seminar in this series is planned for Tokyo in September 1988 in cooperation with ICTA, the International Commission on Technical Aids, Building and Transportation in connection with Rehabilitation International's 16th World Congress.

### CIB W84 Regional Seminar for Latin America

In cooperation with DPI, Disabled Peoples International, CIB W84 is planning a regional seminar for the Latin American Region to take place in 1989. A suitable time and location will be in Bogota, Colombia in fall 1989 in connection with DPI's World Congress.

### CIB W84 Workshop on Training for Professional Architects, Planners and Builders

At the Prague Seminar participants emphasized the need for exchanging teaching methods and materials for improving the awareness and expertise of environmental professionals. It was suggested that interested members of the W84 community under the coordination of the Secretariat gather materials for a workshop on teaching methods to be held within two years.