Inclusive and Universal Design

Joseph Kwan*

Current Situation

In many of our cities in the Asian Pacific region, the urban environment still presents many physical barriers and challenges for the elderly, people with disabilities, the less fit and the frail. The external environment is less hospitable to wheelchair users and baby prams, without dropped kerbs, or curb-cuts that facilitate mobility for this group of users. More and more, the elderly and frail senior citizens rely on wheelchairs for mobility, pushed along by their family members. They are often halted along their travels with the existence of kerbs.

Other public facilities, such as the ubiquitous ATM machines and telephone booths are frequently designed that unintentionally exclude the use by certain groups of the community.

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Similarly, steps at entrances to developments, poorly constructed ramps, street gratings, and handrails are not only deterrents to access but create actual hazards to the well-being and safety of certain individuals.

Seemingly minor details such as the height of lift call buttons, the height of washroom basins and even door pulls become physical barriers to the mobility impaired and those with less hand dexterity.

The height of ATM machines and the use of touch screens often exclude the usage by wheelchair users and those with visual impairment.

The design of infrastructure also often leads to physical barriers, where a train terminal with only stairs would exclude some elderly and mothers with pram, where bus stops with raised platform at footpaths are not only barriers to access, but can be hazardous for bus stop users.

Many current modes of public transport remain inaccessible to many users, where high floor buses with several high steps at bus entrances prevent the use by wheelchair users, some crutch-users, the frail and weak elderly, as well as mothers with prams. Passengers carrying large pieces of luggage would also have difficulties negotiating these steps safely and efficiently. Likewise, many of our train systems are inaccessible to wheelchair users where the doorways are narrow, and the train car floors are sometimes 800mm above the platform level making access almost impossible for the frail elderly, pregnant women, small children and wheelchair users. Few taxis except for perhaps the “London Taxi” are designed to be user-friendly to users, including people using wheelchairs.

Universal Design

The concept of Universal Design seems to be the way forward to providing design solutions that cater to a wider range of users.

The seven principles of Universal Design are:

i) Equitable Use

ii) Flexibility in Use

iii) Simple and Intuitive Use

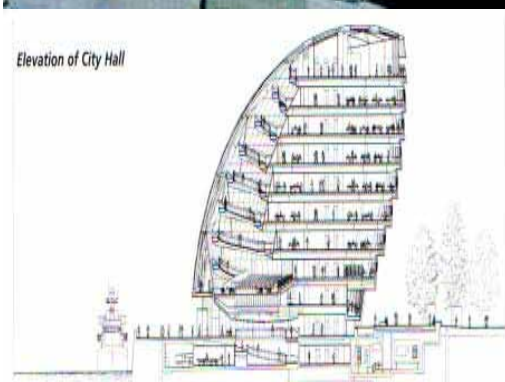
iv) Perceptible Information

v) Tolerance for Error

vi) Low Physical Effort

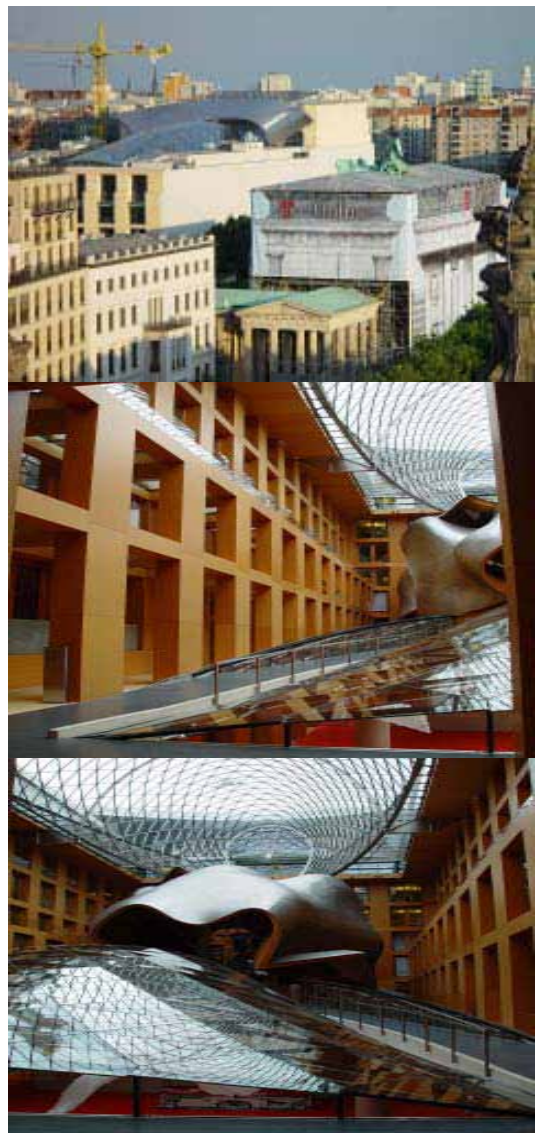
vii) Size and Space for Approach and Use

It is interesting to note that in the design of several significant projects by Norman Foster, Richard Mier and Frank Gehry, some of the principles of UD have been incorporated as major building elements in their designs. Foster's reconstruction of the Reichstag, the Parliament Building in Berlin and the London City Hall are both designed with spiral ramps as the architectural focus where all users irrespective of their ability or disability travel on one single ramp without the segregation of access into staircases, lifts or escalators. All visitors and users are therefore able to enjoy the same public spaces without discrimination or segregation.



Richard Mier's Getty Museum in Los Angeles takes a similar UD approach, where all museum visitors are provided with common ramp access without steps and stairs.

Frank Gehry's DZ Bank building, south of the Brandenburg Gate Square in Berlin also provides ramps to overcome level changes without having to resort to steps, which would invariably become barriers to wheelchair users.



The new system of public telephones throughout Berlin is universally designed with users in mind. The basic configuration can be transformed into various designs to suit the situational and environmental conditions. This telephone system is not only aesthetically pleasing but functions effectively to suit the elderly, children, shorter persons and wheelchair users under a variety of environmental situations.

This UD concept can also be seen in some Asia Pacific cities. For example, in Kuala Lumpur the public park beside the Petronas Towers, the drink fountains, the public toilets and even the mosque are designed to be usable and accessible to all, including wheelchair users. Pedestrian crossings in Yokohama and Fremantle are designed to include most pedestrians, including the blind and the low-vision, even cyclists. The external environment of new Yokohama is provided with dropped-kerbs, tactile guide paths, and audible traffic signals that facilitate access for all. Taxi stands, shopping malls and exhibition centres are designed to cater for most with “equitable use” and “flexibility in use” in mind.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ONE WAY








The Tokyo Forum and Kansai Airport in Osaka are both designed with features that are in line with UD concepts. Information is perceptibly easy to comprehend, circulation routes are simple and intuitive to use with alternatives of either lift or ramp access for the users to choose. The size and space for approach and use in most parts of these complex buildings are suitable for a wide range of users, including the elderly, people with luggage and parcels, the low-vision and the blind, as well as wheelchair users. Wayfinding for the intellectually handicapped is made easier with simplicity in design and the use of appropriate information and signage system.

Public transportation modes such as low-floor kneeling buses are becoming the norm in many urban settings. These buses cater to a large sector of the community where step-free and low-floor, the kneeling features, the wider doorways, the retractable ramp, colour contrasting grab-rails, the visual and audible information system, and the larger set-down space for wheelchairs, prams or luggage in the interior are all features requiring low physical efforts by the aged, parents with baby prams, passengers with luggage, the visually impaired as well as the mobility impaired.

The Future of Architecture

Buildings can no longer be designed to exclude. Buildings can no longer be designed to discriminate against persons who are physically challenged or less-abled. The built environment can no longer afford to be catering only for the young, fit and able. Future built environments must be universally designed to be inclusive of a wide population base.

The BIG-I International Communications Centre by architects Nikken Sekki at Sakai-shi, Osaka-fu, Japan characterizes buildings of the future where the architecture and the interiors are universally designed to be inclusive and not exclusive.

To begin with, the main entrance is wide, step-free, installed with automatic sliding doors. At the entrance lobby, the building floor plans and building directory are provided in different formats for the sighted, the low-vision and the blind. The building directory is presented with room layouts, colour-coded for ease of communication.

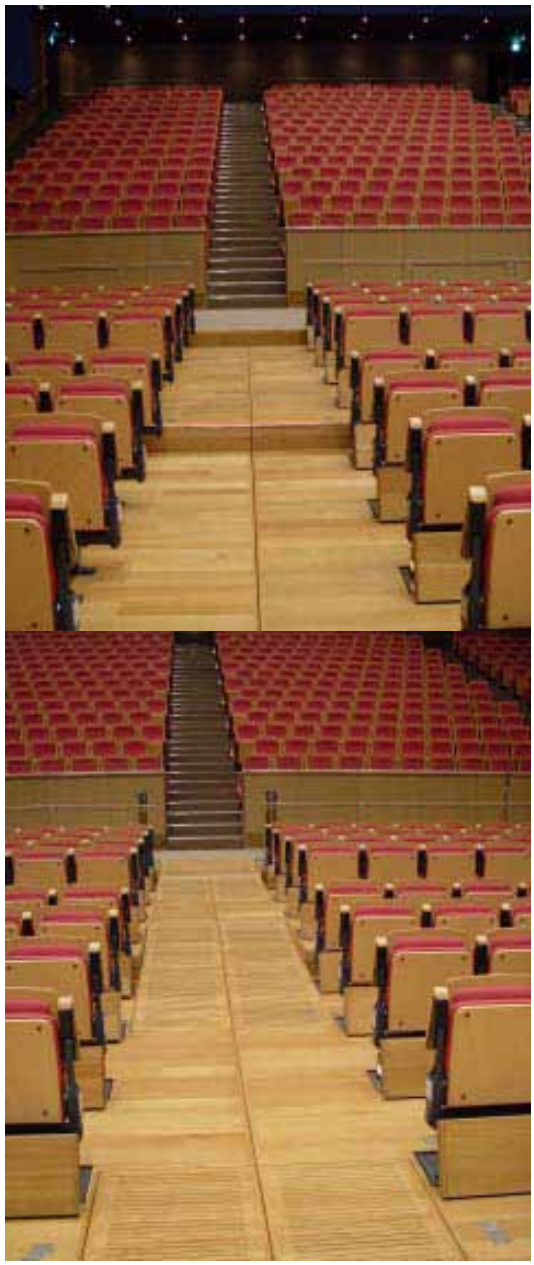
Floor levels and room numbers are in large typeface, room names and functional areas in multi-lingual and pictograms are used to denote facilities such as information centre, restaurant, rest rooms, lifts, public telephones and vending machines. Most information is provided in visual as well as tactile and braille format.

The information centre is designed to facilitate communication at the seated level. Lift call buttons are provided at both waist and skirting level, adequately large and legible for the low-vision; tactile floor tiles are installed to indicate locations of lift buttons, and information is provided in visual, audio and tactile format. A monitor is even installed to provide the same information in sign language. The essential call and floor buttons in lift interiors are provided for standing and wheelchair users.

Colour-coded and clear signage are installed at corners of corridors, with continuous handrails throughout. Visual and tactile/braille information maps are provided outside the rest rooms and toilets to assist the blind to wayfind within the rest rooms.

Rest room washbasins are easily accessible to wheelchair users with tactile tiles installed for the blind in front of washbasins, and a recess on the vanity bench top to hold walking sticks and canes. Toilet cubicle door latches are easy, simple and effortless to operate. Water closet flush and basin water taps are sensor operated, likewise room lighting to the disabled toilets are sensor operated.

The main auditorium is designed to be flexible in use, where one aisle is installed with low steps, while the other aisle can be adapted into a ramp to facilitate wheelchair users or those who prefer gradual ramps than steps. Seating numbers installed on the seat backs are provided in both visual, raised number and braille format. Vending machines throughout the Centre have all the essential information and instructions in braille format to facilitate the blind, while the recess created at the edge of the restaurant tables facilitates the placement of walking sticks, canes and crutches, and even for the hanging of handbags. \



Conclusion

The BIG-I Centre illustrates that a building can be sensitively designed to cater for a range of users. Built environments of such high quality demonstrate that through UD, environmental settings can be user-friendly and accessible without jeopardizing values, aesthetics, costs or function. It is with this concept in mind that the future generation of architecture will be designed to be inclusive, non-discriminatory, trans-generational, and trans-age related.

Future architects must confront the ageing issue and be ready to be aligned with the challenges and the social concerns of ageing, ability and disability, to provide built environments that are universally designed to benefit most, thereby promoting an Architecture for All for the 21st Century.

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Mr. Joseph Kwan is an architect who received his architectural training at the Queensland University of Technology (1976) and later studied a M.Sc. in Environmental Psychology at the University of Surrey (1979). He has practiced architecture in Brisbane, Australia and in London, England and was an architectural and environmental design consultant in Paris, France (1980-1984). He has been the Director of the Environmental Advisory Service of the RehabAid Society since 1987.

Mr. Kwan is a Member of the Hong Kong Government's Rehabilitation Advisory Committee's Sub-Committee on Access, a Member of the Transport Department's Working Group on Access to Public Transport by Disabled Persons, and a Member of the Advisory Committee on Barrier Free Access of the Buildings Department. He is also the Co-Convenor of the Ocean Park Disabled Advisory Committee and was a Resource Person to the Asia Training Centre on Aging (ATCOA) at the University of Chiang Mai, Thailand of HelpAge International, U.K.

He was a Consultant to the United Nations – Economic and Social Commission for Asia and the Pacific (UN-ESCAP), Social Development Division, Bangkok, Thailand, on the preparation of a Technical Guideline on the "Promotion of Non-Handicapping Environments for Disabled and Elderly Persons in the Asia – Pacific Region".

He is the UIA Region IV Director of Work Programme on "Architecture and the Disabled" since 1999.

Mr. Kwan is the author of a number of papers and articles on various aspects of designing for disability and has extensive lecture experiences in this field at the local, regional and international level.

He was a Recipient of the Excellence in Contribution to the Community Award of the 1999 QUT (Queensland University of Technology) Outstanding Alumni Award; The AIA (American Institute of Architects) Hong Kong Citation 2000 "in recognition of distinguished achievement as a community based consultancy service in promoting and implementing barrier-free accessible environments for the elderly and people with disabilities in Hong Kong"; and on 1st July 2001, he was awarded the "Medal of Honour" (MH) by the Hong Kong SAR Government in the Annual 2001 Honours "for his valuable contributions in improving a built environment that caters for the needs of people with disabilities".