Universal Design in Architecture, its application in practice.

em. prof. Hubert Froyen, M.Arch., Belgium
NDA / CEUD, RIAI, Dublin
Tuesday, 21st May 2013
em. prof. Hubert Froyen, M.Arch.

- Former student of prof. N.J. Habraken (TU/Eindhoven, NL), and prof. Christopher Alexander (UC Berkeley, US)
- em. prof. University of Hasselt, Faculty of Architecture / ArcK UD Research (Belgium)
- Co-Founder of the first Belgian Office for Accessibility (Hasselt, 1992)
- Vice chairman ENTER (Flemish Center of Expertise for Accessibility, 2006)
- Member of Work Programme ‘Architecture for All’, of the International Union of Architects (UIA)
- Holder of the ‘Ron Mace Award, Designing for the 21st Century’ (Rio de Janeiro, 2004)
- ‘student of disability …’ and ‘a born designer…’
Natural environments are mostly not inhabitable / liveable for human beings

Throughout history, people have constantly modified and adapted their existing physical environments, to make these more inhabitable and liveable. However, with the growing expansion of human-made environments, and with increasing complexity of new technologies, discrimination and exclusion of a diversity of users also becomes more eventual.
Ainsi, cette enquête révèle que "plus d'une personne sur quatre (26,4 % de la population générale, soit 11 840 208 individus) déclare avoir au moins une incapacité ou une limitation d'activité ou une reconnaissance de leur handicap". La diversité des populations observées "ébranle le mythe selon lequel il existerait une population handicapée suffisamment homogène pour justifier d'un traitement global, et montre au contraire que le handicap se conjuge au pluriel".

INSEE: enquête HID (Handicaps-incapacités-dépendance), 400 enquêteurs, 800 énumérateurs, 50.000 entretiens.

LE MONDE • ARTICLE PARU DANS L'EDITION DU 05.10.2002

INSEE (France): Institut National de la Statistique et des Études Économiques
HUMAN DIS-ABILITY.

*En-abling* versus *Dis-abling* environments

- Permanent functional limitations
- Temporary functional limitations
- Situational functional limitations

‘Architecturally Disabled’ (Goldsmith, 1997)
Disability elimination

- Personal Assistance
- Assistive technology
- Design for Special Needs
- Design for All / Universal Design

MORE CARE NEEDED, MORE STIGMA
MORE INDEPENDENCE, MORE DIGNITY
Diversity of Users..

New British Standard on managing inclusive design will help reach new markets, comply with recent legislation, and enhance brands

(...)

understand and respond to the needs of diverse users without stigma or limitations. These may include people who:

• have impaired vision and/or hearing (including colour blindness, etc.);
• are from different cultures (with different languages, values and/or customs);
• have language and/or speech impairments (resulting in difficulties with reading, comprehension and in expressing oneself);
• have physical limitations (whether due to temporary or permanent reductions in strength, movement and/or co-ordination; allergies, sensitivity to electromagnetic radiation, MCS, Multi-Chemical-Sensitivity, etc.);
• are of different ages;
• have varying cognitive abilities;
• have different dietary requirements for medical reasons or through choice;
• have different requirements because of their gender.
<table>
<thead>
<tr>
<th>DOM - SUN</th>
<th>LUN - MON</th>
<th>MAR - TUE</th>
<th>MER - WED</th>
<th>GIO - THU</th>
<th>DON - FRI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Kalender

Oma Klifman is 83 jaar oud en woont zelfstandig in Soest. Ze heeft vier kinderen en elf kleinkinderen. Ze is vergoeterigend en haar kalender is zowel haar dagboek als haar dagindeling.
EXPO 2000, Hannover (D)
Physical + Social + Virtual ENVIRONMENT
At the beginning of the 21st century, no longer the technical question (how?), but the anthropological question should be central: ‘what built environments do we want, how accessible, usable and enjoyable by all, in all circumstances and in all stages of life..?’
In the epistemological fault zone that designers are currently traversing, the Renaissance ideal of designing for the universal person is gradually being transformed into a post-modern goal of universal designing for the variety of real people in real situations.
Universal Design (UD)

The concept of *Universal Design* is about a new quality relationship between a diversity of users (old and young, strong and weak..) and human-made physical environments / objects.

UD goes beyond the mere provision of special features for various segments of the population; instead it emphasizes a creative and inclusive approach to make the mainstream built environment more sustainable and better for everyone (Better *Gestalt* quality).
THE PRINCIPLES OF UNIVERSAL DESIGN

1. EQUITABLE USE
   The design is useful and marketable to people with diverse abilities.

2. FLEXIBILITY IN USE
   The design accommodates a wide range of individual preferences and abilities.

3. SIMPLE AND INTUITIVE USE
   Use of the design is easy to understand, regardless of the user's experience, knowledge, language skills, or current concentration level.

4. PERCEPTIBLE INFORMATION
   The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

5. TOLERANCE FOR ERROR
   The design minimizes hazards and the adverse consequences of accidental or unintended actions.

6. LOW PHYSICAL EFFORT
   The design can be used efficiently and comfortably and with a minimum of fatigue.

7. SIZE AND SPACE FOR APPROACH AND USE
   Appropriate size and space is provided for approach, reach, manipulation, and use regardless of users' body size, postures, or mobility.

THE PRINCIPLES WERE COMPILED BY ADVOCATES OF UNIVERSAL DESIGN, IN ALPHABETICAL ORDER:

- Betty Sue Connell
- Mike Jones
- Pan Maia
- Jim Mueller
- Abir Mullick
- Elaine Drotos
- Jon Sanford
- Ed Steinfeld
- Melissa Story
- And Gregg Vanderheiden

NOTE:

The Principles of Universal Design are not intended to constitute all criteria for good design, only universally usable design. Certain other factors are important, such as aesthetics, cost, safety, gender and cultural appropriateness, and these aspects must also be taken into consideration when designing.

© Copyright 1997 NC State University, Center for Universal Design, College of Design.
Prescriptive Rules & Regulations for Accessibility, versus Performance-based *Universal Design* Paradigm
Fort Napoleon (Ostend, Belgium)

Photography: Daniël de Kievith, © Erfgoed Vlaanderen

Photography: Stefan Dewickere, © Erfgoed Vlaanderen
The concept of Universal Design (UD) has gradually acquired global significance:

● in the social field,
● in the academic,
● and in the professional field

There is not yet a methodological framework to structure underlying scientific investigation, and to support related teaching and design practice.

“Professor Froyen has written an extraordinary book that captures the history and context of the inclusive design movement internationally. He analyzes the opportunity for moving beyond the conceptual commitment to universal design and shares a strategy for tying Christopher Alexander's Pattern Language to user/expert engagement on a large scale that would deliver a greater diversity of ideas, forms and materials for the spectrum of man-made environments to be more inclusively designed.”

Institute for Human Centered Design
IHCD, Boston, USA)
Universal Design Living LAB
UD Woonlabo

Concept

The ‘UD Woonlabo’ accommodates 3 functions:

- Demonstration house
- Visitor Center
- Research Lab
Global UD Living Lab Project

Research Laboratory

Visitor Center

Demonstration house
UD Living Lab Project
Demonstration House
Entrance with platform lift
Living room, access kitchen, bathroom and bedroom
Kitchen
Continuous, adjustable worktop & cupboards
Kitchen
Ovens, Fridge, Cupboards, drawers and pantries
Domotics, Home Control
Domotics, Home Control
Wellness Bedroom
Accessible Toilet
Flexible lay out
Living Space & staircase
Staircase to upper floor
Upper floor apartment
Cooking stove & kitchen sink
Kitchen
Upper floor apartment
Tactile zone & handrail
Upper floor apartment
Bathroom & bedroom
# UD Housing Lab
Hasselt, Belgium

<table>
<thead>
<tr>
<th>Surfaces</th>
<th>Surf. m²</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Demonstration House</strong></td>
<td></td>
</tr>
<tr>
<td>Renovation</td>
<td>196,34</td>
</tr>
<tr>
<td>Extension</td>
<td>67,79</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>264,43</td>
</tr>
<tr>
<td><strong>Visitor Center</strong></td>
<td></td>
</tr>
<tr>
<td>Renovation</td>
<td>101,86</td>
</tr>
<tr>
<td>Extension</td>
<td>54,67</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>156,53</td>
</tr>
<tr>
<td><strong>General Total</strong></td>
<td>420,65</td>
</tr>
<tr>
<td><strong>Not included</strong></td>
<td></td>
</tr>
<tr>
<td>Basement</td>
<td>63,54</td>
</tr>
</tbody>
</table>
Visitor Center
Public Toilets & Changing Place
ROTÒ door & Changing Place toilet
UD Housing Lab
Hasselt, Belgium

• Mieke Nijs
  Coordinator UD Woonlabo (Living Lab)
  mieke.nijs@phl.be
  +32 (0)11 23 87 45

• www.woonlabo.be
Pedestrian bridge (Liège, Belgium)

Festival Arena in the Roman Quarry
St. Margarethen (A)
Musée du Louvre, Paris (F)

Musée du Louvre, Paris, 1989   arch: I.M.Pei

Foto's: Ria Ceyssens
CONCLUSION 1/3

End of the 20th century, architecture retreated from a former interest in the social sciences and in the needs of the diversity of users of the built environment, into its traditional domain as a profession concerned primarily with aesthetics (Milner and Edge, 1998) and with technology (Whitney, 2003)
CONCLUSION 2/3

*Universal Design* entails a return to the real world, to immediacy and to personal experiences away from abstraction. Together with digital architecture it can keep a certain balance between physical and virtual tools / artefacts.

Peter Anders (1997): **CYBRIDS** as integration of Physical and Cognitive Space in Architecture

CONCLUSION 3/3

The common recommendation for rethinking the human in a technology- and market-driven society, for addressing qualities of accessibility and usability for a widest possible spectrum of users of all ages, is education, particularly for urban planners and architects.


Definition of Sustainable Design...

American Institute of Architects (AIA) Committee on the Environment

Sustainability envisions the enduring prosperity of all living things.

Sustainable design seeks to create communities, buildings, and products that contribute to this vision.
Thanks you for your attention

Hubert.Froyen@phl.be