Universal Design, A Methodological Approach


KEYNOTE. Tuesday June 17
Hubert Froyen, Hasselt University, Belgium
In the epistemological fault zone that designers are currently traversing, the Renaissance ideal of design 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.
The concept of Universal Design (UD) has gradually acquired global significance:

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

**Universal Design Paradigm**

‘..universal designing for the variety of real people in real situations..’

UD Research 2000

There is not yet a methodological framework to structure underlying scientific investigation, and to support related teaching and design practice.
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 Accessibillty, 2006)
- Member of Work Programme ‘Architecture for All’, of the International Union of Architects (UIA)
- Holder of the UD ‘Ron Mace Award, Designing for the 21st Century’ (Rio de Janeiro, 2004)
- ‘student of disability …,’ and ‘a born designer…’
The story of my camera

Award winning pocket digital camera (2003 IDEA Award)

My UD smartphone / camera
One-hand mixer tap

Swivel spout and pull-out spray, balanced hot and cold water supply
Rolling carry-on luggage

- ‘Flexibility in use’. The wide handle lets me hold the right corner with my left hand so I can walk beside the bag.
- ‘Low Physical Effort’. Convertible carry strap quickly attaches to top and bottom loops for carrying on back when needed.
- It has wide-axle retractable handles and large wheels that prevents the handle and bag from rotating.
- Wide handle provides a stable base for roof rack stowage, and also to rest briefcase and raincoat.
- Ergonomic padded grab handles on the top, side and bottom.
- ‘Criticality & Choice’
The Story of my Finnish Cutlery (1970)

It brings comfort & elegance in my daily life.

No stigma
Some elements for a specific ‘Universal Design Pattern’
- Knife facilitates rocking movements (serrated edge)
- Knife has broader base for finger pressure
- Handle of the fork is not round, allows for firm grip
- Outer tines of the fork have a sharper edge
- Spoon is OK
Lessons learned from my experiences

- The majority of crucial UD qualities (can)not mentioned in UN (2007) *Convention on the Rights of Persons with Disabilities*
- National laws and regulations don’t cover these matters (prescriptive)
- More specific empirical research on human dis-abilities to be done
- User-expertise is crucial in the analysis of ‘misfits’ (descriptive)
- Participation of user / experts in simulations and tests
- Integral quality control
- Universal Design education needed
- Beauty & elegance can overcome stigma
Prescriptive approach

Descriptive approach
- Performance based
- Architecture as a science-based art
- Emphasis on full creativity (not just requirements)
- Emphasis on multi-sensorial beauty & elegance
A ‘Prescriptive approach’, with laws and regulations, is of crucial importance in guaranteeing basic human accessibility rights but will not suffice… Critical thinking is required to draw rational inferences about design, from prescriptive rules that rather emphasize the How-it-should-be-done, but that don’t explain How-it-affects-users.

A ‘Descriptive approach’ in contrast, is rather performance based, it requires understanding, it honors architecture as a science-based art and puts emphasis on full creativity (not just requirements), and on multi-sensorial experience & elegance.
Overall methodological approach
UD Patterns + six complementary components

- Empirical Research
- Integral Quality Control
- UD Patterns
- Simulations
- User / Experts
- POE
Break down & analysis: ‘USERS’

THE ENABLER

A  DIFFICULTY INTERPRETING INFORMATION
B1  SEVERE LOSS OF SIGHT
B2  COMPLETE LOSS OF SIGHT
C  SEVERE LOSS OF HEARING
D  PREVALENCE OF POOR BALANCE
E  INCOORDINATION
F  LIMITATIONS OF STAMINA
G  DIFFICULTY MOVING HEAD
H  DIFFICULTY REACHING WITH ARMS
I  DIFFICULTY IN HANDLING AND FINGERING
J  LOSS OF UPPER EXTREMITY SKILLS
K  DIFFICULTY BENDING, KNEELING, ETC.
L  RELIANCE ON WALKING AIDS
M  INABILITY TO USE LOWER EXTREMITIES
N  EXTREMES OF SIZE AND WEIGHT

Break down & analysis: ‘BUILT ENVIRONMENT’

STAGES OF A TRAVEL CHAIN
Illustration by Jouko Kunnas (2003)

• Problem Definition (CONFLICTS)

- 0.0 Modal users (average, standard).
- 1.0 Users with neuromusculoskeletal and movement related functional limitations.
- 2.0 Users with sensory limitations.
- 3.0 Users with organic illness.
- 4.0 Users of exceptional size.
- 5.0 Users with mental health / psychological problems.

• Architectural / Technological solutions (RESOLUTIONS)
**Intuitive Accessibility**

Force4 Architects (DK)

- People with allergies
- Wheelchair users
- People with reading difficulties
- Obesity
- Walking – arm – hand problems
- Visually impaired people
- People with reading problems
- People with mental / psychological disabilities
Universal Design Patterns

*UD Patterns* provide relevant and well structured information about problems (CONFLICTS) experienced in handicap (disabling) situations by users, whether they have specific, permanent limitations or not, and related empirically supported Architectural / Morphological / Technological Solutions (RESOLUTIONS).
Human activity. Colostomy
Overall methodological approach
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Empirical Research

- **Problem Definition (CONFLICTS)**
  - 0.0 Modal users (average, standard).
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- **Architectural / Technological solutions (RESOLUTIONS)**
Simulations
Participation of user / experts

Post Occupancy Evaluation

Multi-Sensorial qualities of Architecture
Overall methodological approach
UD Patterns + six complementary components

- UD Patterns
- Integral Quality Control
- Empirical Research
- Simulations
- User / Experts
- POE
- UD Education
Education…

‘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’.


• One: ‘Palladio's Children’
Palladio's role model early on shaped our professional self-image
• Two: ‘Leaving the Field’
The concept of the 'field' as the unity of environmental form and its inhabitant agents.
• Three: ‘The Field Unknown’
In modern times, the field could no longer remain self-evident. Nor could it provide a credible source of inspiration. As a result, emancipation from everyday environment turned into troubling isolation.


Seven essays
Blindness and the Multi-Sensorial City
Collaboration between User / Experts, architects, anthropologists...

● Disability leads to a particular perception of the world. New potentials

● Collaboration between disabled and non-disabled yields counter global, homogenizing trends

● Walk towards unknown territory

Universal Design Living LAB
UD Woonlabo

Concept

The ‘UD Woonlabo’ accommodates 3 functions:

- Demonstration house
- Visitor Center
- Research Lab
Education for a changing role of the professional designer

Schema 3: Formal picture of Mental picture

Education for a changing role of the professional designer

“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
Three conclusions, all under the heading ‘Constructing a UD Culture’
Constructing a UD Culture  1/3

In the global social / academic / professional world

*Universal Design*, or Design for All, as a utopian construct, deeply rooted in human rights and in human search for comfort and elegance, echoes the motto of the French Revolution: Liberty, Equality, Fraternity and by virtue of its ‘unattainability’ entails a constant need for regeneration in mentality, culture, dynamics, processes, ethics and in values.
Constructing a UD Culture 2/3

Human-Centred, the anthropological question at the heart

At the beginning of the 21st Century, no longer the technical question (Which techniques to use ?), but the anthropological question should be central : ‘What human-made (social / physical / virtual) environments do we want, how accessible, usable and enjoyable by all, in all circumstances and in all stages of life..?’
Universal Design (co-)education

Universal Design entails a return to the real world, to immediacy and to personal experiences away from abstraction.

Educational setting as:
- Sensor
- Incubator
“If you ask me to draw a pear, that is not so difficult; but if you ask me to draw the background as well, I must know the whole world...”

THANK YOU