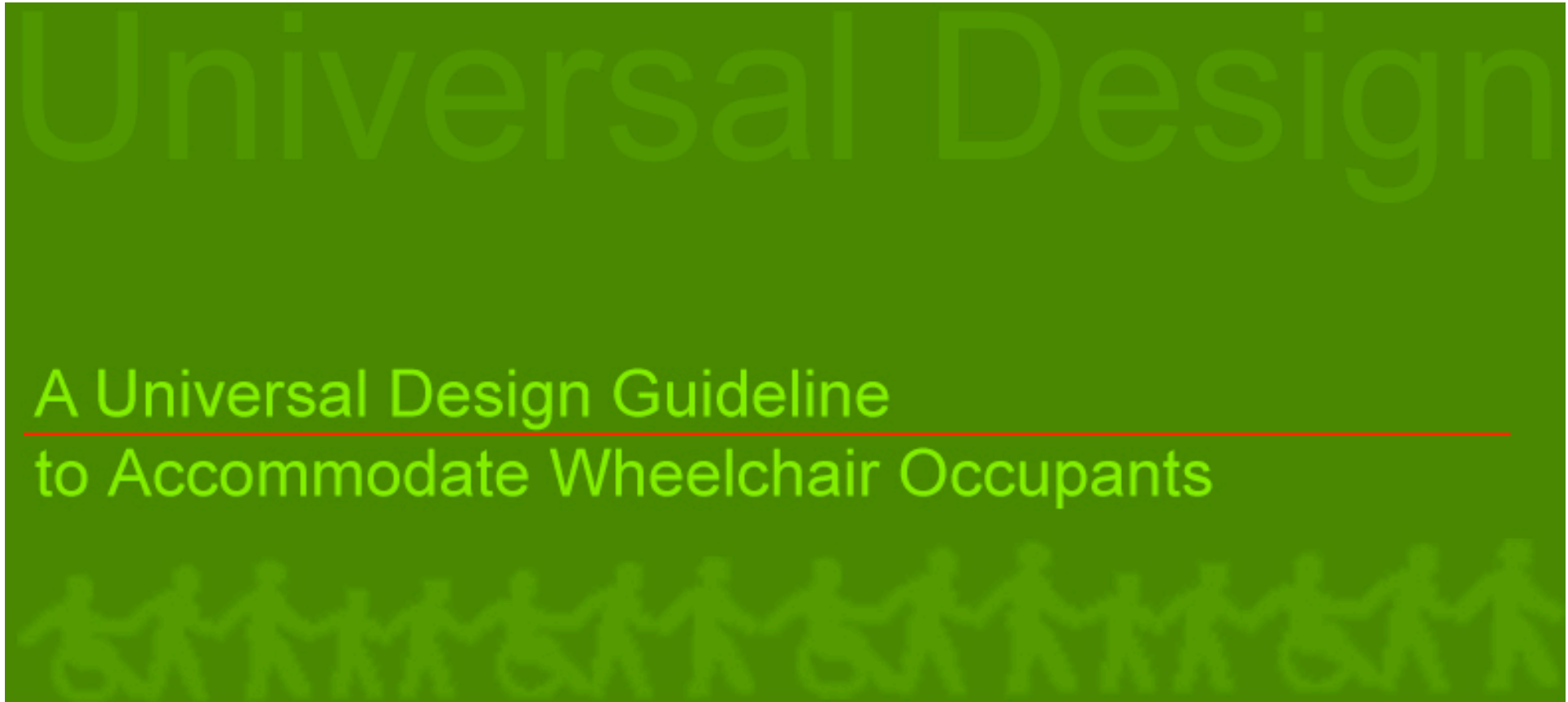


Universal Design and Visitability:
From Accessibility to Zoning Conference: 13-14 July 2006
The Ohio State University, USA



UNIVERSITY OF
NEWCASTLE UPON TYNE



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University of Newcastle upon Tyne, UK

Content

- **Personal Background**
- **Research Inspiration**

- **Objective of Research**
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- **Research Framework**

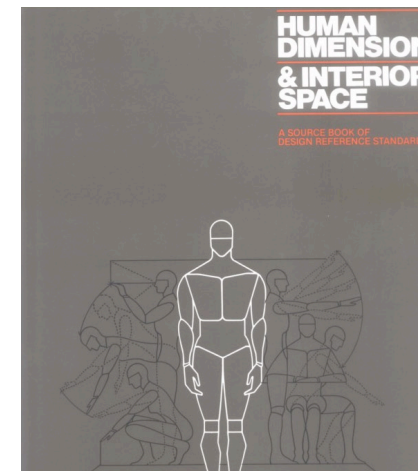
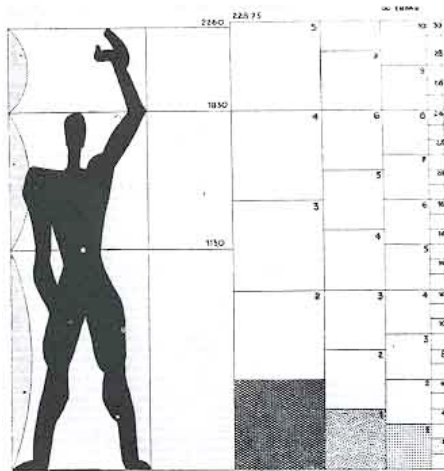
- **Research Method and Findings**
- **Conclusion**
- **Bibliography**
- **Discussion**

A Universal Design Guideline to Accommodate Wheelchair Occupants

Background: Personal Background

Educational Background; B.F.A. and M.A. majored in Interior Design

Working as a practitioner

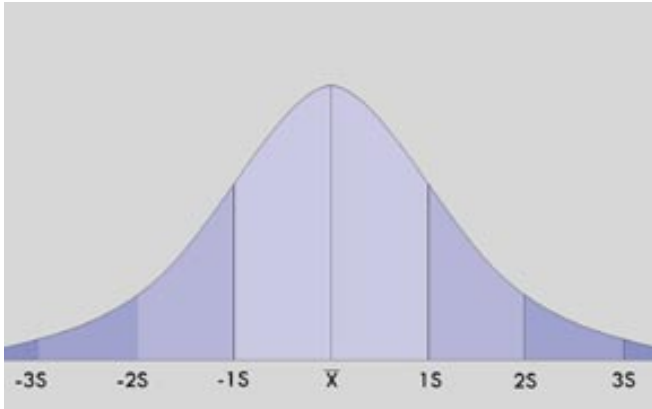


Le Corbusier: *Modulor* (1950) a: *Encyclopaedia Universalis*, 13, 654, Reference data for Human Dimension and Interior Space (1979)

Source: Online available www.xtec.es/.../credit/credit0/voc/htm/voc3.htm

A Universal Design Guideline to Accommodate Wheelchair Occupants

Background: Research Inspiration



Source: Online available: www.ap.buffalo.edu/idea/udny/Section1.htm

People come in a range of ages, sizes and abilities.



Disabilities and the built environment discipline in Thailand.

A Universal Design Guideline to Accommodate Wheelchair Occupants

Objective of Research

1. To advance the state of knowledge concerning environment-behavior studies in accordance with user participation paradigm
2. To explore living behavior, spatial configuration and need of physical environment in domestic space of wheelchair users

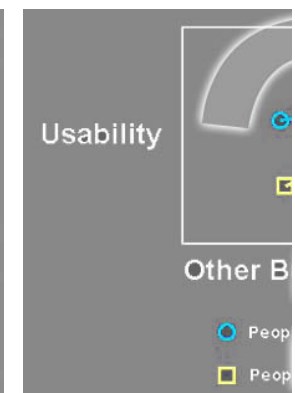
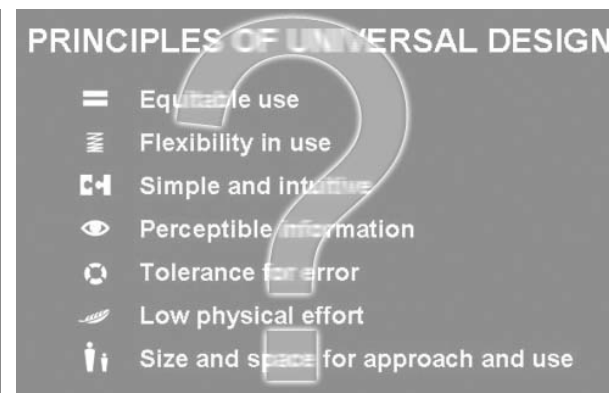
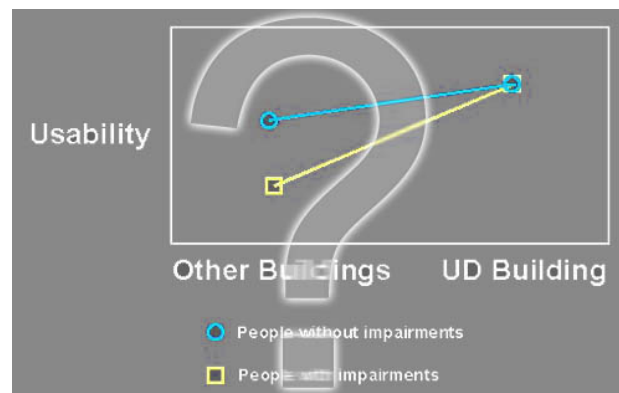
Objective of Research

3. To explore the novelty of research methodology by means of emerging subjective and objective field research
4. To purpose the optimal and practical Universal Design guideline for people with disabilities in accordance with the Thai context

Research Questions

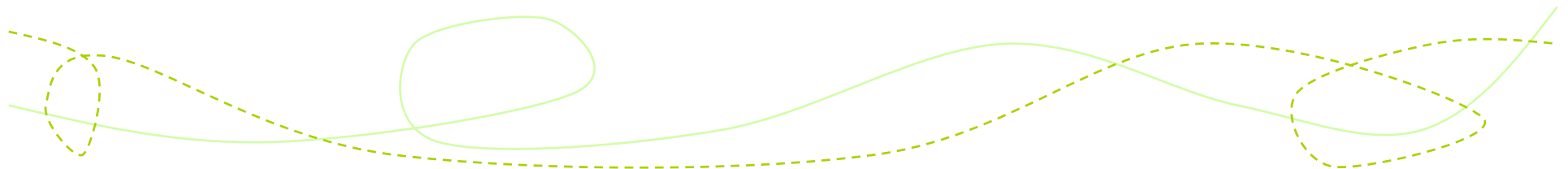
the design process of Universal design concept

- How people with disabilities live their lives in domestic space and what is the characteristic of spatial behavior in the Thai context?
- What is the proper spatial size and shape for Thai people with disabilities and to what extent their co-residents accept home modification?



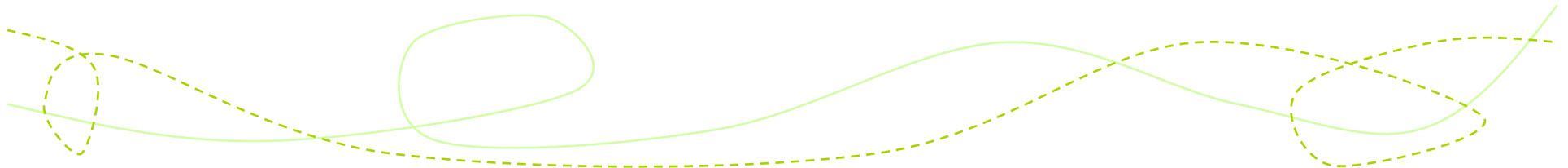
Term of Definition

- **People with disabilities:** In this study referred to people who has mobility difficulty and use wheelchair to circulate in living areas
- **Thai context:** referred to the distinction of physical and societal dimension such as socio-economic, socio-cultural aspect, human proportion and attitude toward disablement of Thai people

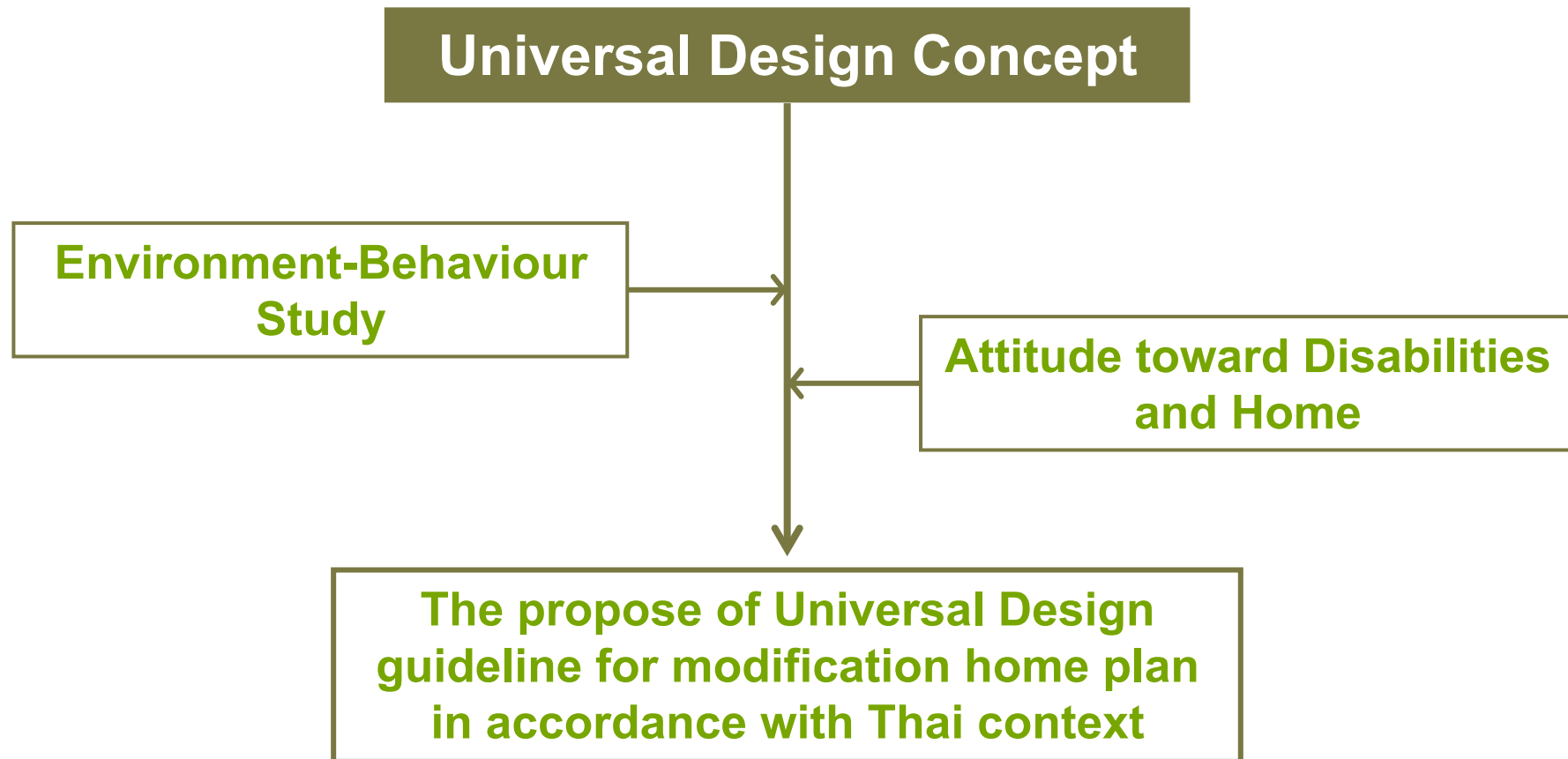


Term of Definition

- **Accommodation, Domestic space, Living area:** referred to built environments within living areas where people with disabilities and their co-residents live together
- **Environment-Behavior in living space:** referred to daily living activities of people with disabilities by using wheelchair, such activities comprised; circulate from place to place, transfer from wheelchair to furniture and do activities on wheelchair



Theoretical Framework



A Universal Design Guideline to Accommodate Wheelchair Occupants

Research Framework

This empirical research based on three lines of thoughts;

Universal Design model

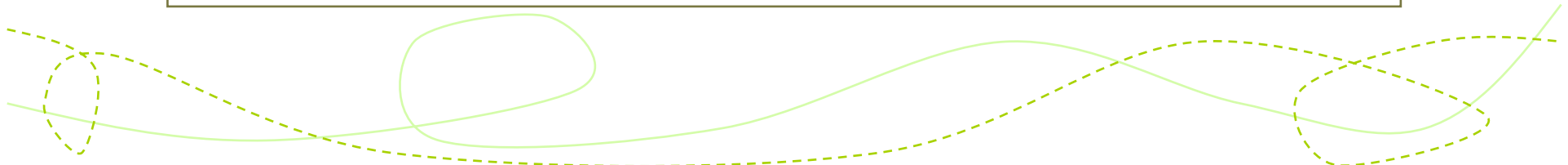
- Concerning with people with less ability to live with able people in the same built environment
- Aesthetic aspect of domestic spaces

Environment-behaviour study

- Using POE Post-Occupancy Evaluation experimental techniques toward an optimal environmental solution for people with disabilities
- Experiment to investigate wheelchairs' behaviour and spatial need

Attitude toward Disabilities and Home

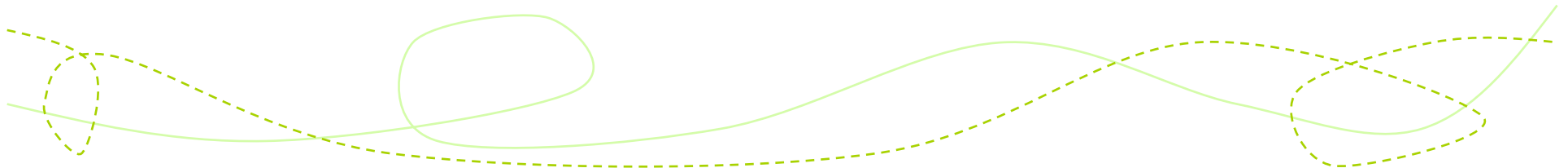
- The pattern of co-residential acceptance toward modification plan



Variables

Two types of variables were used in the framework;

- **Size and Spatial characteristics** of each area understudied vis-à-vis the pattern activities
- **Attitudes** of the people with disabilities and their co-residents toward the acceptance of the needed home modification



Research Method & Findings

Question 1: How people with disabilities live their lives in domestic spaces and what is the characteristic of spatial behavior in the Thai context?

The research schedule comprised 31 investigation cases;

- the spatial behavior of people with wheelchair were significantly dependent on the environmental conditions
- The variation in spatial arrangement also determined the sizes and shapes of the needed space

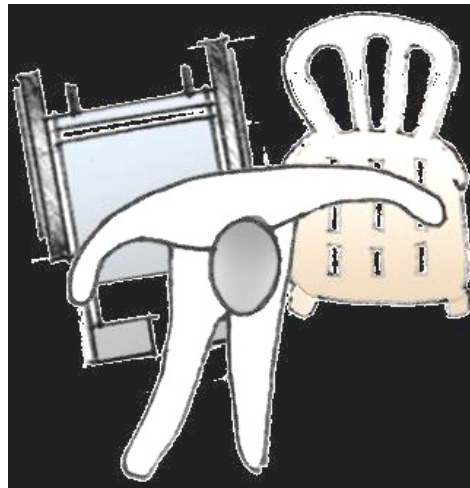


Research Findings

The research found 3 types of activities and spaces needed spatial modification to accommodate wheelchair usage, it consists of;



Circulation routes



Shifting of the subjects between their wheelchairs and other furniture

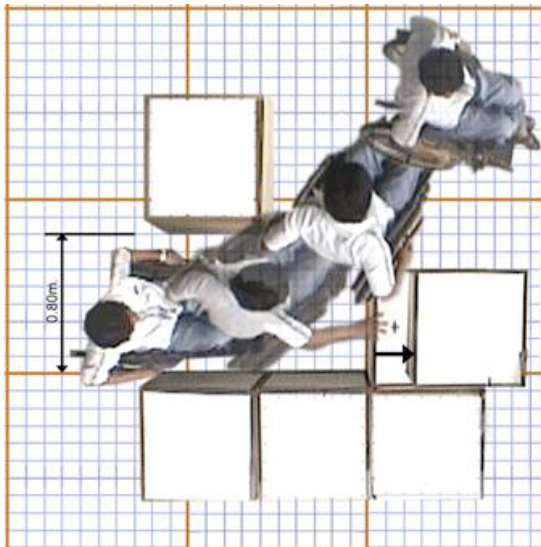


Daily activities while sitting on the wheelchair

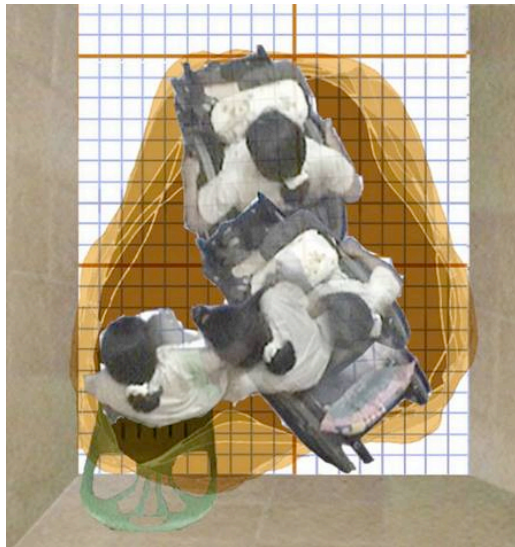
Research Method & Findings

Question 2: What is the proper spatial size and shape for Thai people with disabilities ?

Quasi-experiments in 78 cases to investigate optimal size and shape of areas to accommodate such activities



Circulating

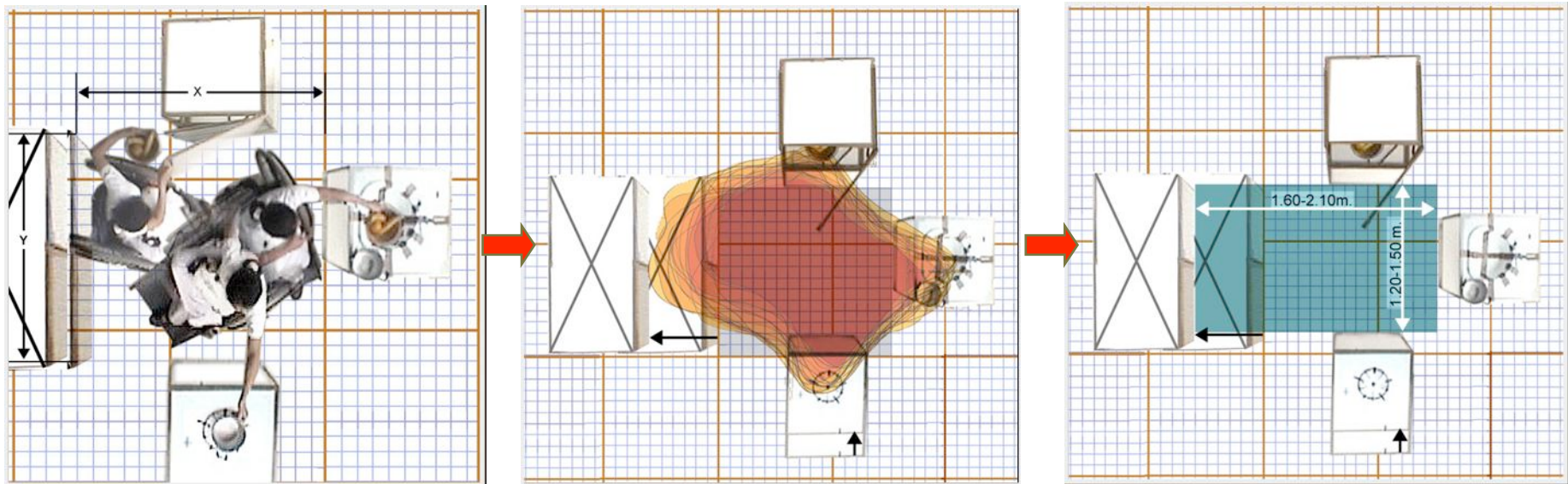


Shifting

The experiment utilised the measurement of human behaviour “Anthropometrics” and “Body Motion Envelop-BME” (B.Lantrip in Steinfeld,E et al.,editor, **Enabling Environment**, 1999)

Research Method & Findings

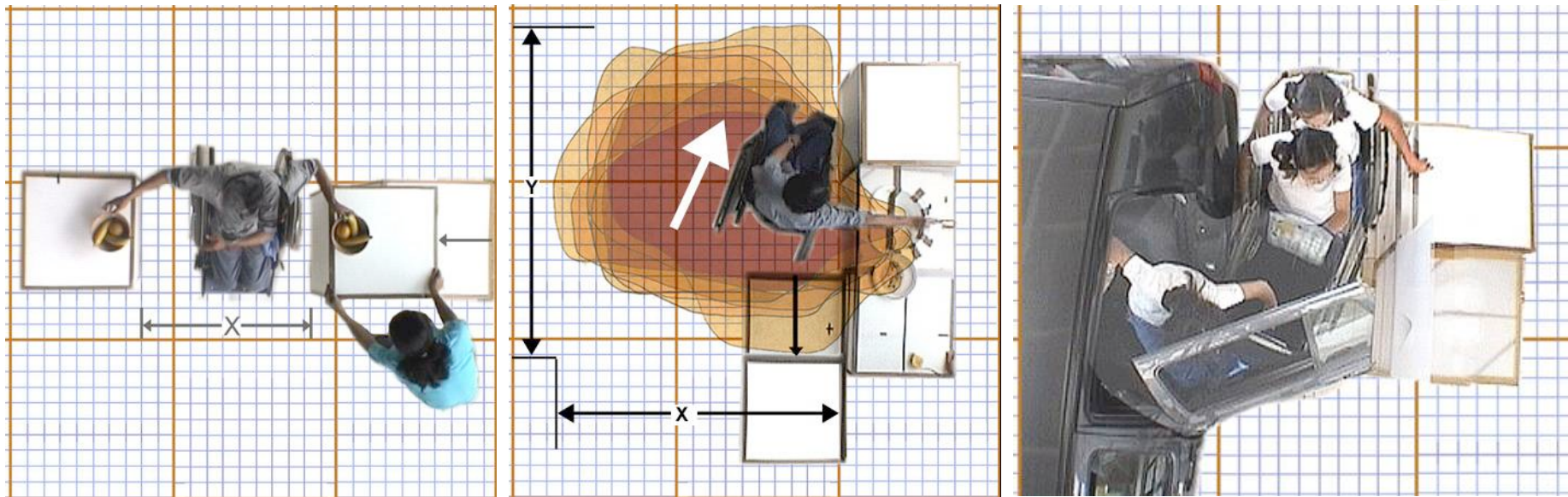
Question 2: What is the proper spatial size and shape for Thai people with disabilities ?



Recording and tracing their movement in 'envelop'
Interview with close-ended and open-ended questionnaire; semantic differential scale

A Universal Design Guideline to Accommodate Wheelchair Occupants

Research Method & Findings



The significant variables such as body size, the extent of disability, type of activities, approach to the area and the individual's skill for that particular activity play a crucial factor to the size and shape of space.

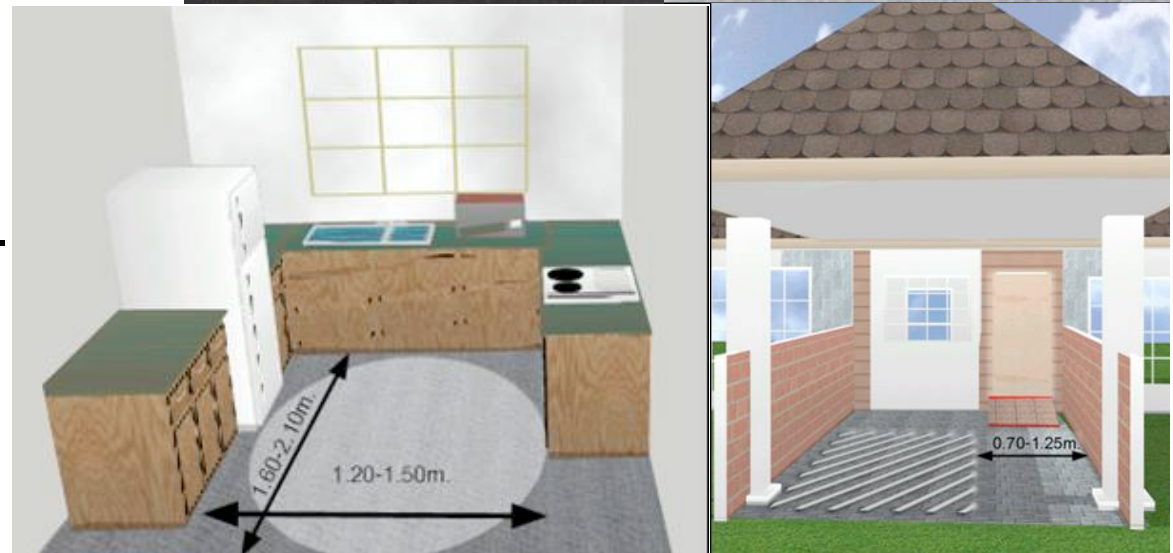
A Universal Design Guideline to Accommodate Wheelchair Occupants

Research Method & Findings

Question 2: To what extent their co-residents except home modification?

From 252 co-residents' attitude toward the suggested housing modification

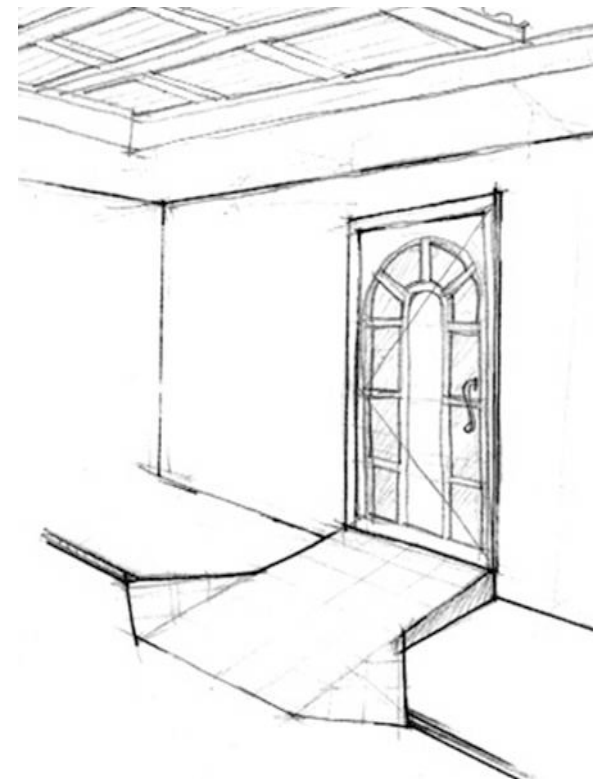
The study found that a distinctive result against finding from the Western cultural context;



Research Findings

Co-residents discern neither the priority of housing modification to accommodate all users including the disable members of the family in accordance with the former environments nor the aesthetic consideration.

Financial difficulty and the believe in recovery of disabled member are major factor.



Conclusion

The distinctive nature of people with disabilities and co-residents; in term of **socio-psychology**, the sense of belonging to their house, cultural background the extent of disability and the specific needs required by each of individual residents.

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A Universal Design Guideline to Accommodate Wheelchair Occupants

Discussion

Universal Design



A Universal Design Guideline to Accommodate Wheelchair Occupants

Further info.

thank you very much

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A Universal Design Guideline to Accommodate Wheelchair Occupants