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INCLUSIVE DESIGN – REVIEW OF STUDENT PROJECTS

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1. Introduction

The notion INCLUSIVE DESIGN (or UNIVERSAL DESIGN) is referred to the process of designing artificial and visual environment usable by all people regardless of age, health conditions, education, skills and other, to the greates extent possible, without the need for specialized design. It was conceived as part of research explored at The Helen Hamlyn Research Centre, Royal College of Art in London, and introduced to design students in Zagreb during autumn 2000/2001, by Julia Cassim, lecturer at RCA, and David Constantine, member of "MOTIVATION", non-profitable organization dealing with design for disabled. The British Council Office in Zagreb organized their visit to Study of Design. 7th semester students of Study of Design, Faculty of Architecture, University of Zagreb executed projects presented in this paper during the winter semester 2001/2002.
These projects challenge usually accepted presumption that majority of world population is young and healthy. Statistics show only about 18 % of population has no physical or psychological difficulties.
Human life expectance is getting longer and average age is getting higher. So does understanding need for better safety and quality of life including people who are unjustly and unnecessary separated or even totally excluded from many forms of everyday life, because of their physical or sensorial disabilities.

2. Student projects

Students were encouraged to explore possibilities to conceive products which all people, regardless of age, health, abilities, etc. would be able to use. These projects included wide range of problems related to contemporary human population, such as:

- Communications
- Orientation in space
- Work
- Kitchen
- Bathroom equipment
- Heating
- Footware

These student projects are going to be displayed on exhibition during the DESIGN 2002 Conference.

2.1 Communication

Due to technological development contemporary societies live in age of communication. Society with underdeveloped possibilities of communication is not able to advance. Technological development of communication equipment is very fast. New generations of communication products having more and

more functions are produced almost daily. We can also notice that human being is very often neglected in design process of these products. The question is to which extent are all these products suitably designed to meet the needs and physical and psychological abilities of majority of human population.

2.1.1 Multipurpose Communicator

Student Ines Pašic has decided to work on problems of waiting in lines. People spend a lot of time in all sorts of waiting lines. Student came to conclusion that solution to this problem most likely would be in organizing various activities in a way which would prevent waiting lines, or at least shorten it as much as possible, as for instance waiting lines in banks. She has designed “Godot”, a multipurpose electronic pocket communicator as an alternative to most of today’s mobile phones, computers, cd-players, credit cards, valets, etc. This communicator enables users to pre-program any transaction desired before getting to bank or other institution. Desired transaction is stored in memory. After that communicator has to be connected to the nearest port. Necessary identification is provided by fingerprint. The pocket – size communicator is designed as user friendly, meaning that handling is very simple and easy to understand.

Figure 1. Multipurpose Communicator

Figure 2. Free standing Port

Student: Ines Pašic; Mentor: Zlatko Kapetanovic; Asst.: Sanja Horvat

2.1.2 Production Line Remote Operating Device

Student Klara Jancar dealt with relationship of workers and production lines consisting of different sorts of tools and processing machines. Tools and processing machines were invented to meet the need for faster, larger and more precise production. Machine operating devices are very important in production process. At first they were extensions of human arms. Quality of operation depended on skillfull coordination of arm movement. Further development brought complex systems of diverse exchange of energetic and mechanical processes. Operator must have full concentration in often noisy and disturbing environment. This remote operating device is designed as lap – top which can be worn arround the wrist enabling operator to controll production processes from distance. It has air – bag which gently squeezes operator's wrist signaling him toopen lap – top and react.

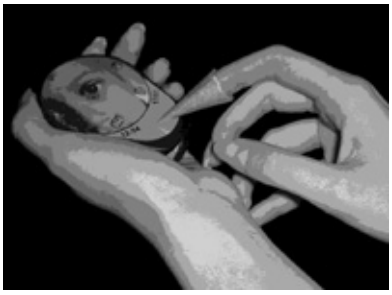

Figure 3. Pocket Communicator

Student: Senka Skenderovic; Mentor: Mladen Orešic; Asst.: Sanja Horvat

2.1.3 Pocket Communicator

Today's technology produces products such as mobile phones, palm tops, etc. with more and more functions. They are often designed in a confusing way for ordinary people and especially to senior citizens and children.
They mostly use only few basic functions. Student Senka Skenderovic has developed a pocket size communicator with only those basic functions most people use and are familiar with, such as talk and danger alarm, which reacts to body change under stress and similar situation. It's handling is very simplified, using visual and voice controls. Visual controls consist of basic icons on touch screen.

2.1.4 Orientation in Space

Our environment, as well as products used in everyday life are conceived in a way, which stimulates only one human sense, namely sight. Experience of people with sight problems show that it is possible to conceive environment and products in a way which would stimulate better use of other senses, such as touch, hearing, olfactory sense, flavour. Student Mirna Grubišic has developed a solution that enables better orientation in space for people with sensorial deficiencies. It also enables better manipulation with various products. Other users are stimulated to use better senses other then sight. Student has applied Chromosome reversible pigment and Alova foam to interior and product design.

2.1.5 Work

Computer technology is rapidly expanding in contemporary society. The way we work is significantly changed. New problems of health and fatigue appear because of less physical activity. Student Dragana Kurtic dealt with fatigue caused by keyboards. She has ergonomically designed keyboard with silicon hand support giving better comfort and more efficiency with less fatigue.

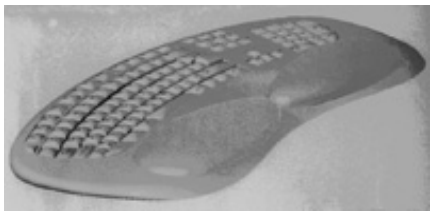

Figure 4. Keyboard

Student: Dragana Kurtic; Mentor: Mladen Orešic; Asst.: Sanja Horvat

2.1.6 Kitchen and Kitchen Equipment

Kitchen is perhaps a space in everyday usage by all people regardless of age, health, physical or psychological ability. In most cases kitchen designs today cause more difficulties and create even dangers situations. On the other hand, design for disabled people is often too expensive and tends to label disabled persons, or it is exclusive for other persons.

Figure 5. Kitchen Design

Student: Ljiljana Tutnjevic; Mentor: Zlatko Kapetanovic; Asst.: Sanja Horvat

This may cause psychological and sociological problems. Student Ljiljana Tutnjevic attempted to design an inclusive kitchen, which would be accessible, safe, comfortable and adjusted according to needs of most people regardless of age, health, and psychological or physical abilities. Kitchen elements are positioned in comfort zones suitable for most people, enabling better organization of work.

Persons with hands disabilities often have very basic difficulties. They find difficult even how to open a bottle. Student Sven Gjurcek has designed a bottle opener which enables persons to open bottles with crown tops by easy one – hand grip equally comfortable to left and right handed persons, and at the same time the grip prevent bottle to slip aside.

Figure 6. Bottle Opener

Student: Sven Gjurcek; Mentor: Božidar Lapaine; Asst.: Sanja Horvat

2.1.7 Bathroom Equipment

Bathroom is also a place most commonly used by all people and perhaps the most dangers one. Styling is often more important then safety and accessibility. It is usually the least accessible to children, elderly and disabled persons.

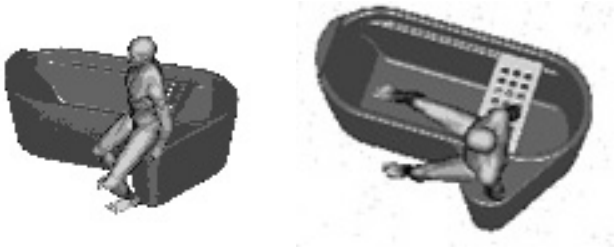

Figure 7. Bathtub Design

Student: Nikolina Jelic; Mentor: Marijan Orešic; Asst.: Sanja Horvat

Older and disabled persons have difficulties in getting in and out of the bathtub. Student Nikolina Jelic attempted to design a bathtub which would give easier and safer access to older persons and persons with physical difficulties. The bathtub has a shape user can lean or seat on, giving better body support when getting in or out.

Figure 8. Shower Handle Design

Student: Dunja Dobranic; Mentor: Marijan Orešic; Asst.: Sanja Horvat

Another interesting segment of bathroom equipment is a shower. Showers are supposed to be handy, safe and easy accessible designs enabling simpler and quicker hygiene. Usual shower designs are quite opposite. Student Dunja Dobranic has designed a shower handle enabling users to open and close water maintaining desired temperature and pressure of water. At the bottom of the shower handle is a vacuum device. Users can easily stick the shower handle on desired places of shower walls. While in meny situations an older person can ask for help, bathroom is one of the places any person would like to maintain privacy through entire lifetime. Student Antica Vucicevic has designed a shower handle according to these principles. Older persons and persons with temporary or permanent disabilities often have difficulties opening shampoo bottles, soaps, etc. this Shower handle is designed with shampoo or liquid soap container. It enables easy one - hand operation by simple squeeze of container.

Figure 9. Shower Handle Design

Student: Antica Vucicevic; Mentor: Božidar Lapaine; Asst.: Sanja Horvat

Toilette seats, especially public ones, are often designed neglecting needs of persons with difficulties, wheelchair users, older persons and children. People rather avoid seating in public toilettes because they are uncertain whether the seats are properly disinfected. Student Matej Korlaet has designed a toilette seat that enables easy access to wheelchair users and disinfects the seat with hot steam after usage.

2.1.8 Heating

Types of heating used today in public and private space can cause problems such as dry air, air – flow, energy saving, heating devices handling, etc. Dry air may cause breathing and other discomfort. Student Duška Korica has attempted to design a small and practical heating device that would give more pleasant warmth and dampness, with possibility to add refreshing aroma.
The heater has small balls on it's top. They accumulate heat. Persons with cold hands can warm them up by holding warmed balls in their hands. Unlike central heating systems and similar, this heating device is designed in rounded shape enabling people to seat around. This can resembling seating around fire, what may bring people closer together and give pleasure of socializing.

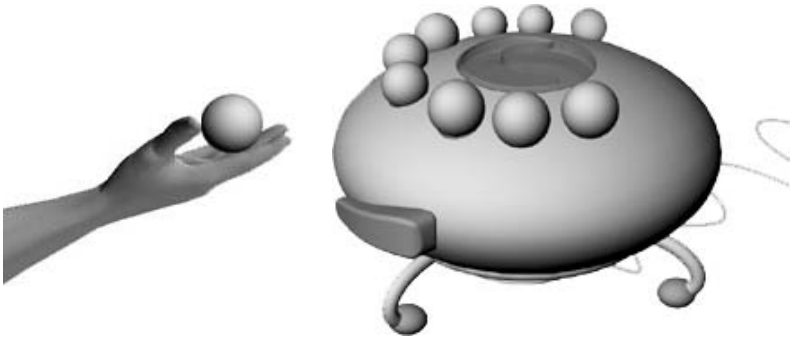

Figure 10. Agni Heater

Student: Duška Korica; Mentor: Zlatko Kapetanovic; Asst.: Sanja Horvat

2.1.9 Footware

Most persons today regardless of age, sex, health or fitness, have difficulty finding proper footware. Footware often cause serious health problems, especially for feet and spine. Older persons feel insecure on slippery surfaces and it is difficult for them to tie shoelaces, etc. Yet people mostly pay attention to styling rather then quality. Student Elena Franekic has designed foot ware which would give more safety, comfort, warmth, good appearance, but it would also be simple for putting them on and off, especially for older persons and children.

Figure 11. Footware Design

Student: Elena Franekic; Mentor: Božidar Lapaine; Asst.: Sanja Horvat

3. Conclusion

It has become obvious that design of products and environment well adjusted to disabled persons is acceptible to all people. But designing products only for disabled can result with expensive and unattractive solutions. It may even unintentionally cause sociological and psychological problems, because disabled persons may feel as they are segregated, stigmatized and excluded from society. On the other hand, inclusive design used equally by all people when it is possible, providing adaptability to user's knowledge, skills, concentration level, level of physical effort and appealing to all people, may create safer, more comfortable, user friendlier, more attractive and even less expensive environment.

Such approach to design rquires extensive research not only in ergonomics, but also in application of new materials and technology, as well as systematic research about needs of persons with special needs, problems of older population, children, etc. Inclusive approach to design should include a wide range of design disciplines: environments, products, communications.

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