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Interface

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Todays high tech products don't expose their content or way of peration by their form. Interface design is a new disciplin that deals with the problem of how to explain the operation and potential of an object to the user. The paper discusses interface design and argues that it will become an important extension of the architects traditional tasks.

Industrial Design and New Technology

Industrial Designers are to a higher degree than other members of our profession directly involved in new technology. Not only as a working tool, but the issues they are working with, often imply planning and the use of advanced technology. In the 50' Danish designers were proud because some of their products were internationally known for their clear structure and geometry, and for a sophisticated use of materials. A sense inherited from the national tradition of craftsmanship. Clear structure in this context means that form followed the function. The use of the product was obvious. The functional elements and their interaction gave the main idea of the product. Of course this condition is still valid to many products: The most common articles for every days use, hand tools, furniture.

Today designers are to an increasing degree occupied with complex high-tech products, where the structure is not given by functional and static elements. Nor by known models, because there are none.
Many of to days high-tech products are dominated by a hybrid substance, - the internal components can be twisted in relationship to each other as you wish. The appearance of many boxes with different purposes, - computers, measuring instruments, stereo sets, VCR's etc. - was the stiff print-card in the bottom of the box. The print card can be substituted by flexible silicon, which can be twisted into nearly any shape.

The same has happened to the control panel, which has been freed from the main electronics and has become less mechanical. The electronic display has grown from a insignificant control function to a considerable part of the operation of the product.

The Display

When you watch professional designers as critics in a presentation of a ID student project which is dominated by an electronic interface, you will recognise two different attitudes to the product. It makes it obvious to see the disagreements with our professional borders. The traditional designers are only concerned about the physical parts of the product, - its shape, structure, composition, quality of materiel, colour, the knobs and ergonomics. These parts form a decreasing proportion of such products. An increasing part of the functions are placed on the display. The logic and functionality is visible and operational on the display through the tough-screen. We see products with buttons on their displays. Even the clicks are emulated.

This kind of display forms an overwhelming barrier to designers, who only see the product with a black screen. Therefore the evaluation of the product tends to be meaningless.
In some situations the main structure of the product and the interface is separated in such a way, that we apprehend the interface as the product itself. The remote control IS the VCR, or the stereo set. Wireless Virtuallity.
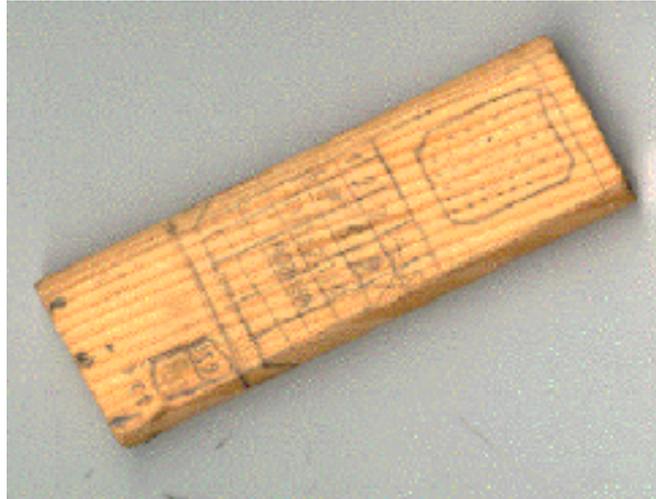
An earlier generation of kids would have drawn a box with buttons and lamps and loudspeakers, if they were to design a radio, today's kids would draw a Remote Control   *(by Jesper Lentz, 7 years old)*

The Identity of the Product

To my opinion the problem is the product's lack of identity until the display is turned on. At that moment the functionality should bee obvious, the entity can be experienced, because the interface is an integrated part of the total aesthetics of the product.

I have difficulty in deciding how important this aspect is. It is a loss of quality that many products become unreal, - virtual. If they are not in use, they loose their importance. On the other hand I suppose that very few in this assembly have any problems with the virtuallity in this our most used tool in our working day - the computer - which very fast takes many different identities during a day: word-processor, video editor, calculator, gameboy etc.

Without the interface the product is nothing. The designer is free to design the interface, because of its virtuallity and independence of the interior of the product. It increases the demands for atmosphere and aesthetics and readability in the software. These issues are evident to the success of the product.

Teamwork

In the professional world the design of an interface is a teamwork. An interface-team could consist of a designer/producer, a software designer/programmer, a screen designer/graphic designer and a technical specialist/researcher on the subject to plan. This situation is not very different from the role the Architect or the Industrial Designer normally has in a design process. A team of experts working closely together.

Two different states for a product: The product in a state where traditional designers can find their attitude,- and a state where the interface gives meaning to the product. You can talk to product, write on it, point at it etc. *(byHenrik Steen Hansen, Computer for Vehicles. Marts 1994)*

The role of the Architect/Producer is to keep the complex subject together as an entity. Because we do not have particular models and methods for the production of interfaces, - only a gathering of comparable techniques, it is essential, that we return to the basic principles of design. The conceptual analyses followed by the conceptual synthesis.

You start with the construction of a conceptual map of the topics to be covered. This map will go through many changes durring the oroces, and will show the main relationships between the topics. The process starts when the designer the focus of the designer onto the display-representation of the topics. It leads to two important discussions; how to choose a metaphor and to develop a language with a grammar to represent the knowledge.

The metaphor must encapsulate the potential of the system. The metaphor creates the atmosphere, gives the user an idea of the kind of information to be obtained, and how the information is treated. The metaphor will also determine the navigation in the information and it might give an idea of the width of services to obtain. The metaphors can be taken from architecture, nature, existing media etc....

When you teach interface-design, it is important, that the students understand their role in this teamwork. Analogue to the co-operation between an architect and an engineer, a interface designer must know about programming techniques and data structures, knowing that others are more efficient in that field.

Interface simulating course.

The courses at the school of architecture at Aarhus have been a combination of a 3D-modelling course, where the students did realistic visualisations of their products, followed by an Interface simulation course, where the function and control of the interface was tested.

We have used several programs for simulation of interfaces and making software dummies:
HyperCard, SuperCard and MacroMind Director. All on a Macintosh. They are all easy to learn and they are all object-oriented and perform hyper structured interfaces. They all have a high level programming

language, HyperTalk, SuperTalk, Lingo. All Basic alike. I prefer MacroMind Director, because of its ability to integrate Multi Media. Another advantage is, that the structure of the program is close to the analogue perception of event handling during time. It can be used for the mapping and simulation of the information structure even before you think of any design solution. The program is available on PC and Mac.

SuperCard has an advantage to MacroMind, if you want your software to look like the operational system, using the facilities like windows, dialogues, menus and icons. They are more difficult to get hand of when using MacroMind Director, where the graphic elements always will need a unique design.

The practical part

The following is an outline of the course that covers 2 weeks with daily lectures and hands on exercises ending up with a project.

Exercises and project were carried out on Mac's using MacroMind Director. The course is only meant to be a starter. If students want a real freedom in complex simulations it demands more knowledge to the programming language, Lingo, than a short course can give them. It also demands an extended experience in the use of graphic user interfaces.

3 exercises:

1. An Interactive Information system. The main purpose is to make the students familiar with the structure of MacroMind Director and to learn simple object linking.

   The discussion in this part is about mapping of information, and how to develop an appropriate metaphor.

2. Simulation of a Cash Register with display and sounds.

   The simulation is more complex, and include conditions like "if...then...else..."

   The purpose of this exercise is to extend the comprehension of Lingo-programming.

3. A Cash Dispenser. Planning the possible display events when using the cash dispenser. Design of the screens. Implementation in Lingo.

4. The project: Simulation of an Audiometer, an instrument for measuring the hearing.

Most of the students worked with simulations of a physical object. The screen simulation of the audiometer worked with all functions, including high quality stereo. We were on the border between a virtual product and a piece of software. Using the simulation on the screen gave the feeling of a software with a (too) firm metaphor. The virtual product was close to be a prototype, while the physical product was just beginning to be developed. Anuway, the soft-product would be sufficient for most purposes.

The students came to the conclusion, that a lot of specialised products for measuring, registration and control would be cheaper to produce in software and more flexible than a physical box.

Conclusions

• In the design process there is little difference between a physical object and a software product when it comes to planning and decision making. The methods to obtain functional and aesthetic result are very alike. It is the same kind of decisions.

• A software metaphor can be a 3D concept where the depth makes it more comprehensible to navigate in complex information.

• The fact that the software interface is only graphic makes a difference. The lack of material and 3D shape demand a design development on the terms of media. To day we often take references in analogue elements in our physical world.

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