Human~Computer Interaction

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Introduction

Ill-thought-out ideas, incompatible and unusable designs can be ironed out while it is relatively easy and painless to do. Once ideas are committed to code (which typically takes considerable effort, time, and money), they become much harder to throw away and much more painful.

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Such preliminary thinking through of ideas about user needs and what kinds of designs might be appropriate is, however, a skill that needs to be learned. It is not something that can be done overnight through following a checklist, but requires practice in learning to **identify**, **understand**, and **examine** the issues just like learning to write an essay or to program.

Understanding the problem space

A problem with trying to solve a design problem beginning at this level is that critical usability goals and user needs may be overlooked. For example, consider the problem of providing drivers with better navigation and traffic information. How might you achieve this? One could tackle the problem by thinking straight away about a good technology or kind of interface to use.

Understand the problem space

In the process of creating an interactive product, it can be temping to begin at the nuts and bolts level of the design. By this, we mean working out how to design the physical interface and…

what interaction styles to use whether to use menus, forms, speech, icons, or commands).

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For example, one might think that augmented reality, where images are superimposed on objects in the real world (see Figure 2.1 on Color Plate 2), would be appropriate, since it can be useful for integrating additional information with an   ongoing   activity
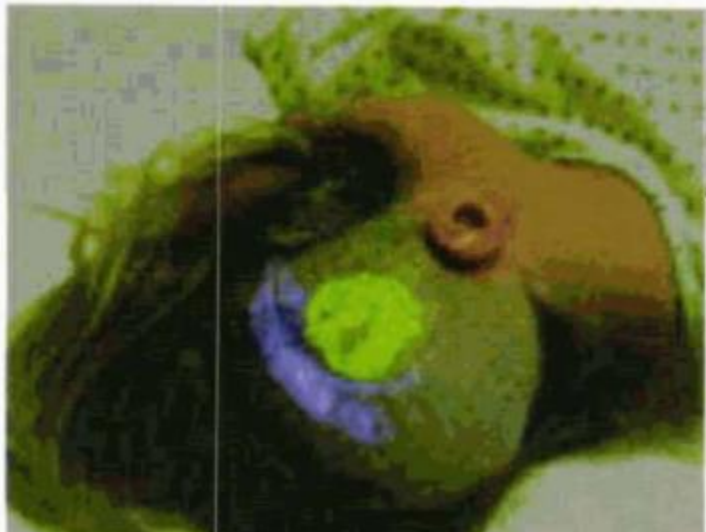
                                          a   patient   during   an

Figure 2.1 An example of augmented reality. Virtual and physical worlds have been combined so that a digital image of the brain is superimposed on the

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A problem in starting to solve a design problem at the physical level, therefore, is that usability goals can be easily overlooked. While it is certainly necessary at some point to decide on the design of physical aspects, it is better to make these kinds of design decisions understanding the nature of the problem space.

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By this, we mean conceptualizing what you want to create and articulating why you want to do so. This requires thinking through how your design will support people in their everyday or work activities.

Clarifying your usability and user experience goals is a central part of working out the problem space.

Below is another scenario in which the problem space focuses on solving an identified problem with an existing product. Initial assumptions are presented first, followed by a further explanation of what lies behind these (assumptions are highlighted in italics), before we start to illustrate the scenario, we'd like to shed the light of the scenario.

Scenarios

Employs personas as the main characters in a set of techniques that rapidly arrive at design solutions in an iterative, repeatable, and testable fashion. This process has four major activities: developing stories or scenarios as a means of imagining ideal user interactions,

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using those scenarios to define requirements, using these requirements in turn to define the fundamental interaction framework for the product, and filling in the framework with ever-increasing amounts of design detail. The glue that holds the processes together is narrative: using personas to create stories that point to design.

Cont. Understand the problem space

A large software company has decided to develop an upgrade of its web browser. *They assume that there is a need for a new one, which has better and more powerful functionality.* They begin by carrying out an extensive study of people's actual use of web browsers, talking to lots of different kinds of users and observing them using their browsers. One of their main findings is that many people do not use the bookmarking feature effectively. **A** common finding is that it is too restrictive and underused. ***In*** *fathoming why this is the case, it was considered that the process of placing web addresses into hierarchical folders was an inadequate way of supporting the user activity* of needing to mark hundreds and sometimes thousands of websites such that any one of them could be easily returned to or forwarded onto other people. *An implication of the study was that a new way of saving and retrieving web addresses was needed.*

Cont. Understand the problem space

In working out why users find the existing feature of bookmarking cumbersome to use, a further assumption was explicated:

- *The existing way of organizing saved (favorite) web addresses into folders is inefficient because it takes too long and is prone to errors.*

A number of underlying reasons why this was assumed to be the case were further identified, including:

- It is easy to lose web addresses by placing them accidentally into the wrong folders.
- It is not easy to move web addresses between folders.
- It is not obvious how to move a number of addresses from the saved favorite list into another folder simultaneously.
- It is not obvious how to reorder web addresses once placed in folders.

Scenarios in Design

In the 1990s, substantial work was done by the HCI(Human-Computer Interaction) community around the idea of use-oriented software design. From this work came the concept of the scenario, commonly used to describe a method of design problem solving by concretization: making use of a specific story to both **construct** and **illustrate** design solutions.

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Scenarios are paradoxically concrete but rough, tangible but flexible . . . they implicitly encourage "what-if?" thinking among all parties. They permit the articulation of design possibilities without undermining innovation .

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Scenarios compel attention to the use that will be made of the design product. They can describe situations at many levels of detail, for many different purposes, helping to coordinate various aspects of the design project.

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Carroll's use of scenario-based design focuses on describing how users accomplish tasks. It consists of an environmental setting and includes agents or actors that are abstracted stand-ins for users, with role-based names such as Accountant or Programmer

Conceptual Model

The most important thing to design is the user's conceptual model. Everything else should be subordinated to making that model clear, obvious, and substantial. That is almost exactly the opposite of how most software is designed (David Liddle, 1996, p. 17).
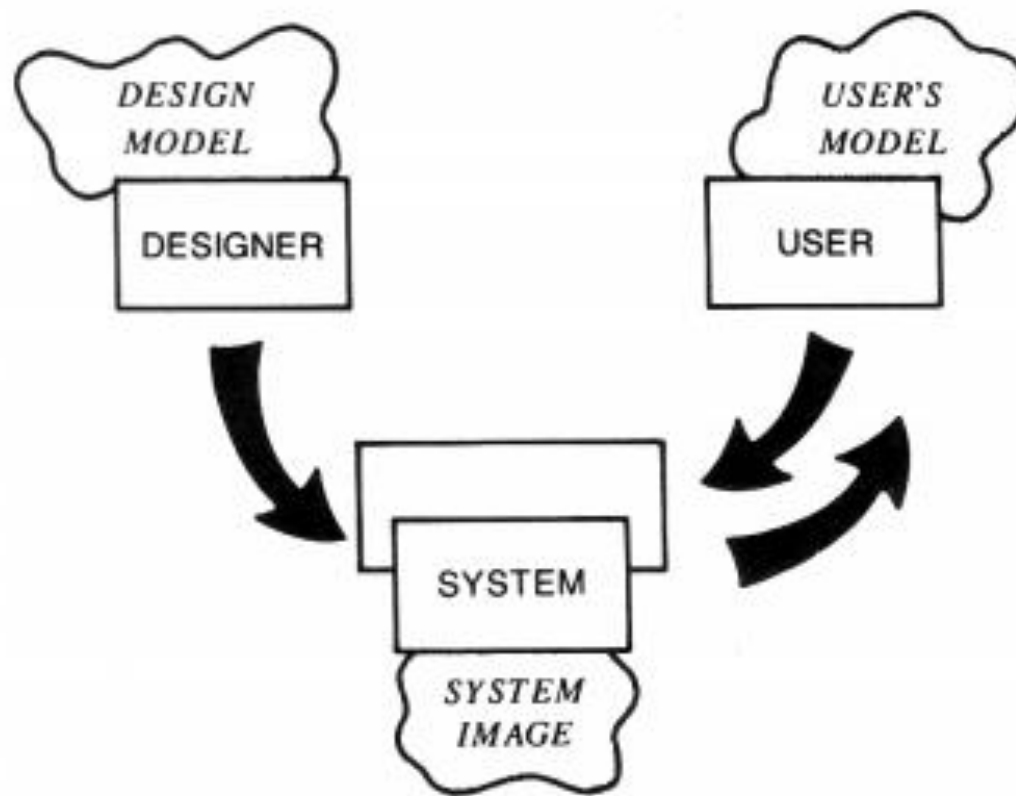
Cont.

By a conceptual model is meant:

a description of the proposed system in terms of a set of integrated ideas and concepts about what it should do, behave and look like, that will be understandable by the users in the manner intended.

Conceptual Model

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To develop a conceptual model involves envisioning the proposed product, based on the users' needs and other requirements identified. To ensure that it is designed to be understandable in the manner intended requires doing iterative testing of the product as it is developed A key aspect of this design process is initially to decide what the users will be doing when carrying out their tasks.

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For example, will they be primarily searching for information, creating documents, communicating with other users, recording events, or some other activity? At this stage, the interaction mode that would best support this needs to be considered.

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For example, would allow the users to browse be appropriate, or would allow them to ask questions directly to the system in their native language be more effective? Decisions about which kind of interaction style to use whether to use **a menu-based system**, **speech input**, **commands**) should be made in relation to the interaction mode.

Thank You