The Institute of Design
Umeå University

Mike Stott

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The Institute of Design was founded in 1989 and is part of Umeå University where some 25,000 students are currently enrolled in full-time studies. The University is one of the five major Universities in Sweden and is situated about 600 km north of Stockholm and 300 km south of the Arctic circle.

The Institute of Design provides four educational programs. One BA program is offered in Industrial Design and accepts Swedish speaking students only. Three two-year Masters programs were started in 1996 in Transportation Design, Advanced Product Design and Interaction Design and accept international students. We currently have students from 16 different countries enrolled in our MA programs creating an exciting blend of creative energy and cross-cultural enrichment. The Interaction Design program accepts eight to ten students each year.

The Institute of Design, Umeå University.

Interaction Design Philosophy

Our interaction design philosophy has emerged because industrial designers need to extend their professional activities to address the impact of information technology. Industrial design education and practice traditionally focuses on the qualities of the three-dimensional object. The emphasis has been on “object-oriented design” and creating improved versions of existing products. Information technology demands a shift from the traditional idea of “product-as-object” to the notion of “product-as-event,” in which the dynamic and behavioral qualities of products, services and environments are becoming increasingly important. This shift of focus demands that industrial designers are taught additional elements and forces radical changes in the structure and content of courses.

The interaction design program integrates software and hardware into pleasurable, useful and practical products, services and environments. Much of current digital technology can be described as “solutions looking for problems,” which shifts the creative challenge toward a better understanding of people’s needs as well as a greater ability to generate new product concepts and applications. A major challenge for interaction design students is not just to understand the convergence among the areas of communications, data technologies and entertainment, but to visualize the consequences as new products and services and to place them in their usable context.

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The Institute of Design is based on artistic training but is also part of a traditional university and is therefore closely aligned with other disciplines and programs. We cooperate with university departments such as Informatics, Cognitive Science, Computing Science and Applied Physics and Electronics.

Curriculum Structure

Students admitted to the interaction design program are expected to have experience in traditional design skills that include sketching techniques, 3D form studies, design methodology and ergonomics, which allow the interaction design program to focus on skills and theoretical knowledge specific for interaction design. The program is open to students from other disciplines such as cognitive science, applied electronics or graphic design.

The curriculum introduces theory and skills at a point when they are most relevant to practical project work. The program strongly emphasizes actively involving users in the design process. Each term includes a major ten week project based on a specific user group rather than a product category. The first major project focuses on the ***specialist user.*** Specialist users have expert knowledge and experience in using a product or system. Understanding and designing for specialist users often involves specific circumstances. First, the designer often lacks first-hand user knowledge and experience and must take time to understand what the specialist user is doing. Failure to do this can result in incorrectly defined problems or oversimplified user behavior. The designer needs to employ specific methods to obtain information rapidly and understand what users are doing. Subsequent term projects follow a similar pattern but focus on other user groups.

Courses cover a range of subjects including HCI, Graphic Design, Contextual Enquiry and Experience Prototyping. These are either integrated into a ten week project or run as separate five week courses. Software programs such as Macromedia Director, Macromedia Flash, Rhino (a 3D modeling program from McNeel) and Alias Wavefront's Maya are used. Student participation in the annual CHI conference combined with study visits to local companies and research institutions are important features of the interaction design program.

Cooperation with Industry

Mobile communicator for students. Design student: Anne-Mari Tornberg, 2001 Cooperating company: Nokia Ventures, Finland. This hand-held mobile aimed at the student traveller market includes e-mail, notebook and mp3 player. The physical form and roll-up screen allow rapid two-hand interaction.

All project work is carried out in collaboration with industrial partners or research institutions including major Scandinavian companies such as Ericsson, Nokia, Telia Research, Electrolux, Volvo and IKEA. The Institute of Design cooperates with the relevant company to form project proposals. A three to five year technological perspective is usually adopted. This allows students to explore converging technologies and new market scenarios which can be both inspiring for the students and provocative for the company.

The Interaction Design program prepares students to work in either industry or research. Students are frequently employed in major corporations as well as design consultancies. A newly formed PhD program in the Institute will coordinate research topics with other departments at Umeå University.

User-centered Approach

Scandinavia has a long tradition of user-centered research focusing on the relationship between people and technical systems. Actively involving users in design projects is a central feature of the interaction design program. The program emphasizes user involvement in the design process and iterative prototype evaluation. Our approach to interaction design is more about people than technology.

Research

On-going research is funded through general research grants as well as

collaborations with companies such as Volvo Trucks and ABB.

A research group named Interaction Design Lab was started in 2000 and now has a staff of 13 researchers plus several PhD and masters students from the disciplines of Interaction Design, Informatics, Digital Media, Applied Physics and Electronics and Ethnography.

Some New Directions in Our Courses

The discipline of Interaction Design is constantly evolving, which requires us to evaluate the direction of several existing courses as well as consider the introduction of new topics and methods. The following areas are currently being reevaluated:

Graphic design exercise in using multi-layering techniques in interface design by Design student Sungho Yang, 2002.

Form Courses

Form is no longer being seen as an exclusively visual quality of three dimensional objects. Studies in "three-dimensional form" have evolved toward the "three dimensions ***of*** form" which encompass ***sensorial*** (visual, tactile, auditory), ***contextual*** and ***temporal*** qualities. We have introduced new courses and research projects to examine the relationships between form, tactility, sound and movement. The aesthetics of form include not only shape but also sound, gesture, interaction and context. Product appearance has given way to the idea of product experience.

Cognition & Perception

Information technology is characterized by the demands it makes on our cognitive and perceptual abilities. The real challenge for designers is to understand human perception and cognition rather than technological capability and performance. Designers need to improve their understanding of how people think, understand and make decisions. We are planning to refine our existing courses in HCI to include new course configurations which will merge subjects like ergonomics, cognition, ethnographic methods and inclusive design under the broader heading of human needs.

Graphic Design

With the exception of web design, the language of graphic design for interfaces is still largely dominated by conventions of HCI and the WIMP interface which uses overlapping windows, scrolling menus, icons and desk-top metaphors. Other graphic design traditions such as poster design and colloquial graphics have been largely ignored. But these traditions can offer novel approaches to interface design. We are experimenting with design principles like layering, transparency, blurring, shape diversity, color and movement to support visual selection and direct the user's attention.

Visualisation

Interaction design requires skill in visualizing contexts and problems as much as solutions and ideas. This has often been neglected in mainstream industrial design education because visualization skills have mostly concentrated on sketching and 3D modeling. We are focusing more and more on problem vizualisation techniques such as role-playing and scenarios to better understand behavior and context of use.

Techniques for visualizing solutions are central to all design disciplines but are often restricted to static presentation media such as sketches and hardware models. These static models cannot capture and illustrate the dynamic interaction between people and products. We have begun to investigate stable

and reliable methods of experience prototyping which combine interface demos with hardware models so that concepts can be demonstrated and tested in real contexts. This is one of several examples of how our research and development is adopting the theory of our educational models.

Advising the Design Profession

The Scandinavian industrial design profession has been rather slow to incorporate interaction design into their services. Design educationalists must inform and advise professional designers on alternative strategies and new methods for entering this rapidly developing area. Design practitioners can include interaction design at several different levels. One level offers graphical user interface design as a complement to traditional product design. Another more extensive commitment combines computer programming, cognitive science and applied electronic facilities to build and evaluate fully-interactive behavioral prototypes. Many design companies are still uncertain which path to take or where it might lead.

Mike Stott trained as an industrial designer at the Royal College of Art, London graduating in 1968. Strongly influenced by Bruce Archer's research work at the RCA he moved to Stockholm in 1970 to work for the design consultancy Ergonomic Design on human factors research in hospital operating rooms. He subsequently became a partner and continued to work with interface design and participatory design methods both in the medical field and graphics industry sector. After 25 years of experience as a designer he was appointed professor and course leader for the Interaction Design program at Umeå University's Institute of Design in 1996. He also teaches and lectures at other Scandinavian design schools.