

HCI in Germany

Some Impressions and Facts from the Scene

The German scene in Human-Computer Interaction cannot be visited without also looking at its European context and its relations to the global activities in this field. German HCI is closely interlinked with the HCI specialists in the other German-speaking countries Austria and Switzerland; it has always been strongly influenced by joint research projects of the European Community; and many of its members are eagerly participating in SIGCHI work and SIGCHI conferences.

Intellectual Roots

The first observation a visitor will make is, that instead of “HCI”¹ or

“CHI” another term is used more frequently in Germany, “Software-Ergonomie” (Software Ergonomics). For instance, the series of bi-annual conferences on “Software-Ergonomie”, jointly organized by the German Chapter of the ACM and the “GI – Gesellschaft für Informatik” (the German Informatics Society) bears this label. Though “Software-Ergonomie” is mostly used in the same broad sense as HCI, it indicates the dominant influence of its roots in ergonomics and work psychology.

Leading researchers such as Hacker (1985), Ulich (1987) and Volpert (1994) used the activity theory created by Leontyev (1978) and formed it into the action regulation theory (Hand-

lungsregulationstheorie), which offers a mental model for the manner how human beings normally organize (regulate) their work by preplanning actions and removing obstacles to the progress of their work. This model is especially suited for constructive purposes. Thus software developers can assess how to avoid obstacles in the user interface already during the design process and can provide for adequate error handling instead of having to wait until the product (or at least a prototype) is ready. These results have been not easily available to the international HCI scene because much of the work was published in German.

Official Standards

With this theoretical background, and based on the path-breaking work of Dzida, Herda and Itzfeld (1978) twenty years ago, the German national standard DIN 66234 was developed and published in 1989. Its definitions of usability principles for software user interfaces for office work became the basis for the international and European standard ISO EN 9241-10 (ISO 1996). This standard serves as the reference for the European Community directive 90/270/EEC for minimum safety and health requirements to be guaranteed by an employer for his staff working at computer workstations. In a sense, this is a “User’s Bill of Rights” (see Karat, 1998) that is already part of European legislation—a success of HCI work in Germany. In addition, corresponding evaluation methods and tools have been developed, such as the ISO 9241 Evaluator (Oppermann & Reiterer, 1997).

Main Streams of Thought

Contrastive analyses of human and computer, as they were published by Norman (1997), have long been typical in the German HCI scene. For example, Oberquelle, Kupka and Maaß (1983) published an early analy-

sis of human-computer communication and cooperation showing the limits of this kind of communication and the necessity of including the developers as the producers of the delegated communication behavior. Hacker (1987) introduced software design as work design. Volpert developed his concept of contrastive task analysis (Volpert, 1992) and formed it into a standard tool for the analysis of computer-supported work. Maaß and Oberquelle (1992) looked for adequate perspectives and metaphors for HCI.

Other HCI activities were strongly influenced by a modeling approach. Many projects were aimed at developing formal and semi-formal task and user models and at building corresponding tools to generate user interfaces more or less automatically from these models. Such efforts include projects such as TASK (Beck & Janssen, 1993), GENIUS and TOOLS (Janssen, Weissbecker & Ziegler, 1993), JANUS (Balzert, 1994), EXPOSE (Gorny, 1995), and IDA (Reiterer, 1995). The enthusiasm for these projects, though, has been somewhat dampened because of their limited results and open questions. For example, it is difficult to set up and maintain the large knowledge bases accompanying the models, and it is a problem for software developers and the participating users to learn and apply the formal description methods. Therefore, we are seeing a return to manual UI design, supported by semi-formal procedures, e.g. MUSE II (Daldrup & Gorny, 1996).

The modeling approach encountered strong criticism from the second main stream of HCI in Germany, which—in close relation to Scandinavian HCI traditions—directs attention towards the social processes in software development and use, and towards the embedding into work contexts, including computer-supported cooperative work. It is oriented towards a con-

¹. Since the label “Human-Computer Interaction” is not well defined we will consequently refrain from attempting a description of the research area, but use it simply as an umbrella term.

structivist learning perspective on software development (Floyd, 1995; Floyd et al., 1992; Keil-Slawik, 1992), including prototyping, participation and an iterative development process. Here action research and ethnographic methods are used to achieve general improvement of the process of reorganizing human work in organizations rather than simply an improvement in user interfaces.

Both main streams offer a considerable contrast to the American HCI community, where empirical methods and pragmatic approaches have always dominated. There, the model-driven approaches were never popular, while ethnographic methods have now obviously reached higher attention within SIGCHI during the past two or three years.

Current Challenges

The German HCI scene suffers presently from too narrow a focus caused by its strong roots in ergonomics and work psychology: it concentrated on work situations. In the meantime, the world around changed and work tasks are not the dominant use of computer systems that they had once been. New groups of users have to be considered. Computers as such are gradually disappearing, embedded into many devices where they become invisible, and so today we have to cope with the design of the interfaces of those devices as well. The usability of the remote control for interactive television or of a Web site, the user interfaces for electronic commerce, games, telematics-based training software or hypermedia for private information retrieval cannot be designed or assessed on the basis of theories and methods for work situations. It is especially important to bring the qualifications of specialists, in industrial and graphic design and in education for example, into an enhanced design process.

To overcome this problem, a great number of projects have been recently started up in these areas. The new projects show already that many of the methods and design guidelines developed for office work software can be

adapted and complemented for the new context and the different users.

In particular, the areas CSCW and groupware development have produced some interesting results as a result of the political decision to move the German federal government from Bonn to Berlin, while leaving a considerable part of the administration in Bonn. In several projects, in the project PoliTeam (Prinz, Mark & Pankoke-Babatz, 1998) for instance, groupware systems have been developed to support distributed decision making and distributed administration. Hartmann, Herrmann, Rohde and Wulf (1994) have collected interesting papers on adaptability of groupware. Moving from hypertext-based groupware (Dolphin), the GMD group at Darmstadt now works on information landscapes (e.g., project i-LAND) (Streitz, Rexroth & Holmer, 1998; Holmer, Lacour & Streitz, 1998).

Outlook

The field of HCI is extending in many directions: from single users to groups and organizations, from work contexts to education, commerce and leisure, from normal users between 15 and 60 years to kids and elderly as well as persons with impairments, from desktop systems to embedded systems etc. Usability is on its way to change from a developer's favor to a user's right. It becomes an important quality for products in use that cannot be completely evaluated outside of use contexts and is best designed into the products rather than only onto their surfaces.

Researchers in the extending German HCI scene participate in all activities within the cycle of design (imagine), engineering (implement) and science (evaluate) (cf. Henderson, 1998) driving these innovations. This will probably also lead to a transition from the software ergonomics conference series into a new series of events on humans and computers and all aspects of user-oriented information, interaction and cooperation.

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