

Reaction to SIGIR 99 Panel on User Interface Issues

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A panel held at the SIGIR99 conference, reflecting the mandate of the conference to focus on user interface issues, raised some interesting questions regarding applying results of user studies and observations to the design of information retrieval systems and interfaces. In part, the panel echoed a problem well-known to the IR community: how can we respect the tradition and methodology of search engine evaluation and at the same time recognize and adapt to the emerging role of interactive information retrieval? The community, it seems, has a few choices:

Retain focus on search engines. Should SIGIR, as a community, reject the emphasis on interactive use and focus on the underlying indexing and retrieval technology? Surely there are communities such as CHI and CSCW that can pick up the technology and apply their expertise in understanding the larger social issues introduced by wide-scale use to produce useful and usable tools. Combining SIGIR expertise in core technology with design expertise from CHI should in the long run produce powerful and easy to use systems.

Shift focus to user issues. Although indexing and retrieval algorithms and theory continue to evolve, the marginal returns in effectiveness and efficiency appear to be declining. It is certainly premature to announce the problem solved, but we appear to be converging on a class of solutions, and it is unlikely that innovation in algorithms will result in order-of-magnitude improvements. So perhaps the field will benefit more from a shift in focus from

algorithms to the design and evaluation of interactive systems, systems that include the people using them in their scope.

Embrace heterogeneity. We have made such progress in our understanding, in our design, and in our ability to manufacture software that esoteric tools of a few years ago are commodities today. Continued innovation requires us to look broader rather than deeper, to think in terms of systems rather than components, and to find value in synergy. By systems I mean man-machine systems rather than computer software; IR systems include the software, the documents, the users, and, importantly, the relationships among them. A great search algorithm isn't terribly useful if its interface isn't designed for its users or if it isn't sensitive to the peculiarities of the documents being retrieved. Similarly, a wonderful interface is useless unless it can be used to retrieve documents that people need. Thus, an important question for the field, if it is to remain relevant, is to understand how to provide people with search engines that are powerful and suited to their needs and tasks.

I would like to argue that the question facing us is not whether we should change, but rather how can we, as researchers, retain our individual expertise (in indexing, in retrieval, in librarianship, in evaluation, etc.) and yet adopt a heterogeneous approach that will produce systems rather than components? Currently we are able to design and build sophisticated tools, and we are able to assess the needs and behaviors of real people, but we are unable to map those

needs to concrete system design decisions. The skills required to study a group of people and to understand how they use information are very different from the skills required to design and build a distributed retrieval system. So different are they that it is often difficult to find a common language: a paper that describes work practice in a reference library may not offer much specific advice to a system builder concerned with query throughput or with the integration of thesaurus-based query expansion. Similarly, researchers running user studies or experiments may not be able to take advantage of the algorithms described in the latest conference proceedings because they do not have appropriate system-building skills.

These problems are not new. They are merely an indication that our field has reached a level of maturity that requires some changes in the way we see ourselves. Other research communities (e.g., CSCW) have encountered similar divergences between the researchers who understand people and those who understand technology. But such differences exist outside the research world also: for example, mechanical engineers, electronics engineers, software engineers and optics engineers need to work together to build heads-up displays for airplanes. None of the disciplines speaks the others' language, but their efforts must be coordinated to build the system. Thus systems engineers mediate the communication among the other groups, translate requirements from one discipline to another, and resolve constraints and conflicts that may arise. We need to learn from such organizations.

If we are to produce useful tools suited to the way people work, we cannot concentrate solely on the tool building, we cannot simply delegate the UI work to the

amorphous CHI community and hope that someone will get it right. We must create within our ranks a group of people who can understand the needs of the engine builders, of the user interface designers and of the experimenters and ethnographers, and who are able to derive systems requirements from observations of users, who are able to translate experimental results to implications for user interface design, who are able to suggest avenues of exploration that would benefit research in search engines and in understanding user behavior.

Such people already exist today. Some of them build software and others run experiments, but their roles as integrators and mediators are not recognized. We need to recognize and to reward such efforts, and we need to change the way we educate students to reflect the growing importance of such mediation. This effort does not merely increase the "greater good" of SIGIR, but also benefits the individual researchers: for example, our application of some of these techniques at FXPAL has produced a variety of patents and publications that would not have been possible had we focused solely on software creation or on studies and observation of people.