Foreword

Many disciplines are hyphenated combinations, such as bio-informatics or physical-chemistry, but human-computer interaction (HCI) spans a broader range of topics than most. As a result, HCI researchers often draw on multiple diverse research methods, even in a single paper. It is just possible that HCI's remarkable successes in academic publishing and in widely used technologies stem from its diverse research methods.

While the traditional scientific method was a solid foundation for HCI, controlled laboratory studies with tests for statistically significant differences were never quite enough to deal with the ambitions of HCI researchers. We also embraced interviews, surveys, and focus groups, sometimes in fresh ways, to capture impressions of distinctive users and elicit suggestions, reactions, frustrations, and fears. Ethnographic observation and anthropological methods were also applied to study computer users "in the wild," which meant going to the place where people worked, lived, or played to see what actual use was like. As researchers shifted from studying the immediate out-of-the-box experience to understanding the evolution of user experiences over weeks and months, long-term case studies and time diaries became more common.

A larger step for HCI researchers was to incorporate iterative engineering processes and design thinking. They had to overcome resistance from traditional researchers who believed that controlled experiments were the best way forward. Over the years still newer methods tuned to the needs of businesses were developed, such as usability testing and expert reviews, to accelerate the development process, rather than refine theories. A major step forward was the development of A/B testing which contrasted two slightly different user interfaces in actual use over a period of days or weeks with thousands of actual users. Web designers were able to make rapid progress in determining which features led to greater commercial success.

Another novel approach has been to crowdsource research, by putting up online experiments available to many users or to use services like Amazon Turk to hire hundreds of participants for experimental studies. In recent years still newer methods based on big data analyses of millions of tweets or social media posts changed the game dramatically. The online availability of so much data about human performance led theoreticians and practitioners to study whole communities at scale in realistic settings.

I am pleased that the authors have used the distinction between micro-HCI and macro-HCI to organize thinking about when to apply one research method or another. Short-term perceptual, motor, or cognitive tasks can be studied by micro-HCI methods such as controlled experiments, but long-term trust, community development, or satisfaction are better studied by macro-HCI methods. I am also pleased that the authors encourage readers to reach out to other research communities to learn of their methods, to partner with them in policy initiatives, and to convey the opportunities that HCI presents for bold new directions and powerful impact.

The continuing discussions about which methods to use make this book a vital resource for new students, active researchers, and serious practitioners. It provides a comprehensive introduction with ample references for those who want more information and for those who are ready to invent still newer research methods, tailored to the issues they are studying.

This book also testifies to the vitality and ambition of HCI researchers, who have moved from narrow studies about pointing times for different target sizes to broader goals such as promoting information and communication technology for development (ICT4D), ensuring universal usability, countering cyberbullying, and reducing fake news. In a world where technology plays an increasing role, HCI is maturing into a larger field that is becoming a necessary component of new ideas in business, education, healthcare, community safety, energy sustainability, and environmental protection. There is an astonishing history of success in enabling 8 billion people to use novel technologies. This book celebrates that history and points to future directions that will yield new theories and still further benefits. There is also a great deal of work to be done by the next generation of creative researchers.

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