

Encounters with HCI Pioneers

A Personal History and Photo Journal

Synthesis Lectures on Human-Centered Informatics

Editor

John M. Carroll, *Penn State University*

Human-Centered Informatics (HCI) is the intersection of the cultural, the social, the cognitive, and the aesthetic with computing and information technology. It encompasses a huge range of issues, theories, technologies, designs, tools, environments, and human experiences in knowledge work, recreation and leisure activity, teaching and learning, and the potpourri of everyday life. The series publishes state-of-the-art syntheses, case studies, and tutorials in key areas. It shares the focus of leading international conferences in HCI.

Encounters with HCI Pioneers: A Personal History and Photo Journal

Ben Shneiderman

Social Media and Civic Engagement: History, Theory, and Practice

Scott P. Robertson

The Art of Interaction: What HCI Can Learn from Interactive Art

Ernest Edmonds

Representation, Inclusion, and Innovation: Multidisciplinary Explorations

Clayton Lewis

Research in the Wild

Yvonne Rogers and Paul Marshall

Designing for Gesture and Tangible Interaction

Mary Lou Maher and Lina Lee

From Tool to Partner: The Evolution of Human-Computer Interaction

Jonathan Grudin

Qualitative HCI Research: Going behind the Scenes

Ann Blandford, Dominic Furniss, and Stephann Makri

Learner-Centered Design of Computing Education: Research on Computing for Everyone

Mark Guzdial

The Envisionment and Discovery Collaboratory (EDC): Explorations in Human-Centered Informatics with Tabletop Computing Environments

Ernesto G. Arias, Hal Eden, and Gerhard Fischer

Humanistic HCI

Jeffrey Bardzell and Shaowen Bardzell

The Paradigm Shift to Multimodality in Contemporary Computer Interfaces

Sharon Oviatt and Philip R. Cohen

Multitasking in the Digital Age

Gloria Mark

The Design of Implicit Interactions

Wendy Ju

Core-Task Design: A Practice-Theory Approach to Human Factors

Leena Norros, Paula Savioja, and Hanna Koskinen

An Anthropology of Services: Toward a Practice Approach to Designing Services

Jeanette Blomberg and Chuck Darrah

Proxemic Interactions: From Theory to Practice

Nicolai Marquardt and Saul Greenberg

Contextual Design: Evolved

Karen Holtzblatt and Hugh Beyer

Constructing Knowledge Art: An Experiential Perspective on Crafting Participatory Representations

Al Selvin and Simon Buckingham Shum

Spaces of Interaction, Places for Experience

David Benyon

Mobile Interactions in Context: A Designerly Way Toward Digital Ecology

Jesper Kjeldskov

Working Together Apart: Collaboration over the Internet

Judith S. Olson and Gary M. Olson

Surface Computing and Collaborative Analysis Work

Judith Brown, Jeff Wilson, Stevenson Gossage, Chris Hack, and Robert Biddle

How We Cope with Digital Technology

Phil Turner

Translating Euclid: Designing a Human-Centered Mathematics

Gerry Stahl

Adaptive Interaction: A Utility Maximisation Approach to Understanding Human Interaction with Technology

Stephen J. Payne and Andrew Howes

Making Claims: Knowledge Design, Capture, and Sharing in HCI

D. Scott McCrickard

HCI Theory: Classical, Modern, and Contemporary

Yvonne Rogers

Activity Theory in HCI: Fundamentals and Reflections

Victor Kaptelinin and Bonnie Nardi

Conceptual Models: Core to Good Design

Jeff Johnson and Austin Henderson

Geographical Design: Spatial Cognition and Geographical Information Science

Stephen C. Hirtle

User-Centered Agile Methods

Hugh Beyer

Experience-Centered Design: Designers, Users, and Communities in Dialogue

Peter Wright and John McCarthy

Experience Design: Technology for All the Right Reasons

Marc Hassenzahl

Designing and Evaluating Usable Technology in Industrial Research: Three Case Studies

Clare-Marie Karat and John Karat

Interacting with Information

Ann Blandford and Simon Attfield

Designing for User Engagement: Aesthetic and Attractive User Interfaces

Alistair Sutcliffe

Context-Aware Mobile Computing: Affordances of Space, Social Awareness, and Social Influence

Geri Gay

Studies of Work and the Workplace in HCI: Concepts and Techniques

Graham Button and Wes Sharrock

Semiotic Engineering Methods for Scientific Research in HCI

Clarisse Sieckenius de Souza and Carla Faria Leitão

Common Ground in Electronically Mediated Conversation

Andrew Monk

© Springer Nature Switzerland AG 2022

Reprint of original edition © Morgan & Claypool 2019

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means—electronic, mechanical, photocopy, recording, or any other except for brief quotations in printed reviews, without the prior permission of the publisher.

Encounters with HCI Pioneers: A Personal History and Photo Journal
Ben Shneiderman

ISBN: 978-3-031-01096-5 Paperback

ISBN: 978-3-031-00204-5 Hardcover

DOI 10.1007/978-3-031-02224-1

A Publication in the Springer series

SYNTHESIS LECTURES ON HUMAN-CENTERED INFORMATICS, #41

Series Editor: John M. Carroll, Penn State University

Series ISSN: 1946-7680 Print 1946-7699 Electronic

Encounters with HCI Pioneers

A Personal History and Photo Journal

Ben Shneiderman
University of Maryland

SYNTHESIS LECTURES ON HUMAN-CENTERED INFORMATICS #41

ABSTRACT

The huge success of personal computing technologies has brought astonishing benefits to individuals, families, communities, businesses, and government, transforming human life, largely for the better. These democratizing transformations happened because a small group of researchers saw the opportunities to convert sophisticated computational tools into appealing personal devices offering valued services by way of easy-to-use interfaces. Along the way, there were challenges to their agenda of human-centered design by: (1) traditional computer scientists who were focused on computation rather than people-oriented services and (2) those who sought to build anthropomorphic agents or robots based on excessively autonomous scenarios. The easy-to-learn and easy-to-use interfaces based on direct manipulation became the dominant form of interaction for more than six billion people.

This book gives my personal history of the intellectual arguments and the key personalities I encountered. I believe that the lessons of how the discipline of Human-Computer Interaction (HCI) and the profession of User Experience Design (UXD) were launched can guide others in forming new disciplines and professions. The stories and photos of the 60 HCI pioneers, engaged in discussions and presentations, capture the human drama of collaboration and competition that invigorated the encounters among these bold, creative, generous, and impassioned individuals.

KEYWORDS

Human-Computer Interaction (HCI), User Experience Design (UXD), paradigm birth, research pioneers, direct manipulation

Contents

Introduction	xiii
Acknowledgments	xv
Part 1: A Personal History of HCI	xvii
1 The Emergence of Human-Computer Interaction	1
1.1 The Early Visionaries: Bush, Licklider, Engelbart	1
1.2 Empirical Studies and Guidelines Documents Gain Prominence	6
1.3 The Origins of Direct Manipulation	10
1.4 Personal Computing Takes Hold: Macintosh vs. Windows	13
1.5 Hypertext, Computer-Supported Cooperative Work, and Multimedia Are Born	14
1.6 The World Wide Web Spreads	16
1.7 Eight Golden Rules of User Interface Design	18
1.8 Direct Manipulation vs. Intelligent Agents	19
1.9 Visualization	22
2 The Growth of HCI and User Interface/Experience Design: Presented as a Tire-Tracks Diagram	25
2.1 Introduction	25
2.2 Explosive Growth in HCI Publications	26
2.3 Tire-Tracks Diagram for HCI	29
2.4 Three-Stage Process from Experiments to User Success	32
2.5 Professional Obligations	32
2.6 Conclusion	33
3 Starting a Discipline and Launching an Industry	35
3.1 Introduction	35
3.2 Components of Success	36
3.3 Threats to Paradigm Births	42
3.4 Conclusion	43
4 Future Possibilities	45
4.1 Introduction	45

4.2 Emerging Technologies for Still Grander Goals 46

4.3 Shifting to Frontier Thinking 47

5 About the HCI Pioneers Project 51

Table of Abbreviations and Acronyms 55

References 57

Part 2: HCI Pioneers Photo Journal 65

Author Biography..... 187

Introduction

The excitement of founding a new discipline brings together those with a shared vision that breaks from tradition. Success requires a motivated and determined community that values collaboration, even as individuals are pushing their own agendas and reputations. I've had the opportunity to see the energy and turmoil of those who contributed to the formation of Human-Computer Interaction (HCI), and the pleasure to see it succeed far beyond my expectations.

The book contains my personal reflections about the people I worked with and the ideas we wrestled with as we worked together to create theories, principles, guidelines, inspirational prototypes, and breakthrough ideas that were manifest in papers, journals, books, conferences, curricula, businesses, and much more.

The first three chapters are a partial personal history, with recollections of memorable encounters, influential contributors, and disconcerting controversies, as we built a new discipline in the 1970s, 1980s, and 1990s. A more complete description of my contributions are on my home page <http://www.cs.umd.edu/~ben/about.html> and in a timeline of my career <http://www.cs.umd.edu/~ben/timeline.html>. This book focuses on the HCI community's history, so I cite papers that describe our discipline's evolution.

I recognize that historians and my colleagues are likely to differ on whose ideas were influential, so I welcome their accounts. These multiple perspectives will enrich us all and inform new generations of students, historians, and journalists about our transformative contributions to the success of key technologies such as the World Wide Web, e-commerce, social media, and novel visual media, such as videos, artificial and virtual reality, and information visualization.

[Chapter 4](#) discusses future possibilities for HCI. [Chapter 5](#) describes the second component of this book, which are my photos and comments about 60 of the luminaries who contributed to the emergence of HCI. This set of people, whom I call HCI Pioneers, is based on my personal encounters and is therefore incomplete, as I describe in [Chapter 5](#), with my sincere apologies to the many other people who also made important contributions. I hope that seeing the photos of individuals engaged in discussions and presentations helps capture the human drama of teamwork and competition that invigorated the encounters among these bold, creative, generous, and impassioned individuals.

Acknowledgments

I've had the pleasure of having a satisfying career filled with professional accomplishments, made meaningful by my personal connections with mentors, colleagues, and students. Catherine Plaisant has been a supportive colleague and close friend for more than 30 years, making my time at work satisfying, productive, and fun. My wife, Jennifer Preece, has been a loving partner, trusted advisor, and knowledgeable colleague who enriches my life in many ways every day. They both provided thoughtful comments and encouragement for this project.

I give warm thanks to Jeffrey Bigham, Sara Bly, Jack Carroll, Clarisse Sieckenuis de Souza, Alan Dix, Fan Du, Paul Dourish, Ernest Edmonds, Steven Feiner, Gerhard Fischer, Jim Foley, Jon Froehlich, Thomas Hewett, Jim Hollan, Bonnie John, Joe Konstan, Jonathan Lazar, Marilyn Mantel, Matt Mauriello, Judith S. Olson, Gary Perlman, Bernard Rous, Jean Scholtz, Markus Schmid, Loren Terveen, Ron Vetter, Ping Wang, Mark Anderson, and Clayton Lewis for constructive and supportive comments on drafts of this book, two articles on *Medium*, and one in *IEEE Computer*.

Special thanks to Gary Perlman for help with HCIBIB data (www.hcibib.org) and for creating the remarkable HCI Bibliography, which has been an important resource for our field. Thanks also to Matt Ericson for obtaining the *New York Times* data and Fan Du for preparing the charts. Deep appreciation to University of Maryland students Catherine Bloom, Sarah Sexton, and Gowtham Ashok who were excellent contributors in creating the HCI Pioneers website during 2016, although I did revisions at the end of 2018 for this publication. Rick Weisburd was instrumental in breaking my rare writing impasse by merging several unpublished essays into a coherent presentation, which laid the foundation for my further additions. Heartfelt thanks to Diane Cerra, Jack Carroll, and their team for working with me to bring this project to publication.

Part 1: A Personal History of HCI