Interactive Experience in the Digital Age
Evaluating New Art Practice

Linda Candy
Sam Ferguson
Editors

Springer Series on Cultural Computing

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Interactive Experience in the Digital Age

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Foreword

While the connections between the arts and digital technologies can be traced back over decades, it is the phenomenal diversification of the computer interface over recent years which has driven the explosion of interest in interactive arts. The emergence of immersive, mobile, wearable, tangible, gestural, embedded, intelligent, autonomous, adaptive, social, networked – the list seems endless – technologies provides digital artists with a rich palette from which to create their art. This, of course, serves to transform the nature of the art that is created, with viewers becoming spectators, with artworks becoming experiences, and with increasing blurring between genres and forms as an inevitable consequence of digital technology’s inherent tendency to transgress conventional boundaries.

Into this maelstrom steps the Human Computer Interaction (HCI) practitioner. While artists’ interest in the world of computing initially focused on rendering graphics and sound, they are now turning their gaze to the challenges of interaction design. Artists need to design compelling user experiences; and ones that can stand up against the increasingly sophisticated quality of design delivered through our everyday smartphones, gaming consoles and sometimes even our humble personal computers.

In their turn, HCI researchers appear to be fascinated by the digital arts as a new (to them) and challenging playground for their craft. The Arts raise new and unusual challenges for HCI, may innovate unusual approaches, and, of course, are as deserving of HCI’s attention as any other aspect of our digital lives. It is no surprise then that leading HCI conferences and journals are excited by the digital arts, launching special interest groups, special issues and publishing a growing number of papers that report on artistic experiences and issues from ‘the field’.

It is therefore very exciting to see this book published at the present time. Never has there been a greater need to explore the boundary between the digital arts and interactive experience design. Artists need to understand the new challenges that they face, HCI practitioners need to appreciate the distinctiveness of the digital arts, and the increasing number of researcher-practitioners whose work cuts across both
fields must be able to navigate their way through unchartered interdisciplinary waters. The breadth of this book, both in terms of the artistic forms that it covers, but also the issues it tackles – and especially its focus on the critical challenge of evaluation – offers a major contribution to this movement. It will be of great interest to artists, interaction designers and researchers alike, and especially to those who increasingly find themselves spanning these endeavours.

Nottingham, UK

Steve Benford
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**Kira Askaroff** is a freelance exhibition designer, creative producer and graphic designer formerly of Site Gallery, Sheffield and B&B Gallery, Sheffield. She studied MA Economics at The University of Edinburgh and MA Digital Arts at Norwich University of the Arts.

**Stephen Barrass** is associate professor in Digital Design and Media Arts in the Faculty of Arts and Design at the University of Canberra. His research interests include interactive storytelling, collective creativity, and interfaces to museum exhibitions. He publishes widely including in Leonardo Music Journal and *ACM Computers in Entertainment*.

**Kirsty Beilharz** is a composer and professor at the University of Technology, Sydney, Australia, where she directs the Sound and Music Design degree. Her research convolves generative and interactive creative music environments, musical timbre, sonification, gestural interaction and philosophies of knowledge.

**Ben Bengler** is a doctoral researcher on the design and evaluation of interactive music systems for collaborative music making in the Centre for Digital Music at Queen Mary University of London. He has a degree in Electrical Engineering and Audio Engineering from Graz University of Technology and the University of Music and Performing Arts Graz.

**Oliver Bown** is a researcher in computing and creativity and a practising electronic musician working experimentally with new technology. His research interests include musical meta-creation and multi-agent modelling approaches to creativity. He is on the organising committee for the Musical Meta-creation workshop series and the International Conference on Computational Creativity.
Nick Bryan-Kinns is reader in Interaction Design and Deputy Dean at Queen Mary, University of London. He has published award winning international papers on mutual engagement, cross-modal interaction and tangible interfaces. He is a fellow of the British Computer Society and in 1998 received his PhD in HCI.

Linda Candy is a writer and researcher in creativity with a focus on practice-based research and qualitative methods for evaluation. She is presently an adjunct professor at the University of Technology, Sydney. She has over 20 years experience in research and development in IT, creative design and digital art.

Fanny Chevalier is a research scientist at INRIA, France, where she works on data visualization, human-computer interaction and computer graphics. Her research investigates the perceptual, cognitive and social factors involved in making sense of data, resulting in new interactive systems for data manipulation and communication.

Matthew Connell is the principal curator of Physical Sciences and Information Technology at the Powerhouse Museum, Sydney. His curatorial expertise in computing and mathematics extends to information technologies including calculation and logic, history of mathematics computing history, robotics, human-computer interaction, media history, new media, gambling machines and digital preservation.

Ernest Edmonds is an artist who began using computers in his art in 1968 and supervising practice-based research degrees in the digital arts in 1974. He is a research professor at the University of Technology, Sydney, and at De Montfort University, Leicester.

Jane Faram is Public Programme and Gallery manager at Site Gallery, Sheffield, UK. She is also a writer specialising in contemporary art, theatre and literature and is a commissioned illustrator and book designer. She has 6 years experience in managing visitor services, working with artists and supporting exhibition production.

Sam Ferguson is a lecturer at the University of Technology, Sydney, and a member of the Creativity & Cognition Studios. His focus is to understand the relationship between sound and music and human beings, and he has published widely in diverse areas such as sonification, emotion, interaction design, loudness and music research.

Dustin Freeman is a PhD candidate at the University of Toronto, exploring the use of whole-body interfaces in improvised theatrical performance. Starting with a math and engineering degree at Queen’s University, his theatre hobby kept growing until he decided to use it to motivate his research.

Petra Gemeinboeck is senior lecturer at the College of Fine Arts, UNSW. Her practice in machine performance, interactive installation and virtual environments explores ambiguities and vulnerabilities in our relationships with machines. Her works have been exhibited internationally, including the Thessaloniki Biennale, Ars Electronica, MCA Chicago, ICC Tokyo and GOMA Brisbane.
Gillian Hobson is an independent artist, writer and consultant. Her work is concerned with the physical and psychological dimensions of person and place, examining the importance of environment in everyday experience. She is currently a doctoral researcher in fine art at Sheffield Hallam University.

Andrew Johnston is a researcher, interaction/software designer and musician based at the University of Technology, Sydney. His practice and research focuses on the design of systems that support experimental, exploratory approaches to live performance and the experiences of the artists who use them. He is co-director of the Creativity & Cognition Studios.

George Poonkhin Khut is an artist and interaction designer working across the fields of electronic art, design and health. He was the recipient of the 2012 Queensland Art Gallery-National New Media Art Award (Australia) and is currently researching clinical applications for his interactive artworks with Dr. Angie Morrow, at The Children’s Hospital, Westmead.

Lian Loke is a performer, designer and researcher, with the body as the central focus of her interdisciplinary practice. She places the lived body at the core of inquiry into contemporary issues and emerging technologies. Her work includes the creation of body-centred artistic works and human-centred design approaches to interactive technologies and spaces.

Roger Mills is a musician and lecturer at the University of Technology, Sydney, Australia. His practice and research focuses on improvisation, networked music, sound installation and experimental radio. He is founder of the networked music ensemble Ethernet Orchestra, which informs his research into telematic sound and intercultural interaction in networked improvisatory performance.

Derek Reilly is an assistant professor in the Faculty of Computer Science at Dalhousie University, Canada. His research explores various forms of post-desktop human-computer interaction, focusing on the impact of the physical environment on how we interact with digital systems.

Ana Luisa Sanchez Laws is an assistant professor in Arts and Design at the University of Canberra. She has published a book on the representation of diverse minorities in museums in her home country, Panama. She is a practising video artist with works exhibited in collective shows around the world.

Rob Saunders is a senior lecturer of the Faculty of Architecture, Design and Planning, University of Sydney. His research explores the role of curiosity in creative processes by developing computational model for personal and social creativity. Working with artists and designers, he applies his research in creative support software, interactive installations and robotic artworks.

Jennifer G. Sheridan the CEO of Togeva, was named Entrepreneur of the Year 2013, FDM everywoman in Technology Awards. Born in Canada, she received a PhD in Computer Science (Lancaster University, UK), an MSc in HCI (Georgia Tech, USA) and a BA (University of Waterloo, CAN). She lives in London, England.
Scott L. Simon is a composer who works with electronic synthesis and guitar. He graduated from the Australian National University in Art History (BA Hons) and Adelaide University in Composition/Music Technology (MA). He is currently researching a PhD entitled ‘Music and Philosophy as Transforming Gesture’ at the University of Technology, Sydney.

Chek Tien Tan is the co-director of the Games Studio at the University of Technology, Sydney, where he performs research on serious games and the evaluation of player experiences. He has been actively involved in game communities and has held various organising and advisory roles in international game conferences and festivals.

Deborah Turnbull is an independent curator and founder of New Media Curation for the promotion of innovative art in commercial galleries, public museums and research communities. She has fulfilled major exhibition contracts for Australia Council; University of Technology, Sydney; Conny Dietzschold Gallery; and the Design Lab, Sydney University. Deborah is currently curator in Design and Technology at the Powerhouse Museum, Sydney.
Chapter 1
Interactive Experience, Art and Evaluation

Linda Candy and Sam Ferguson

Abstract Art in the early twenty-first century is increasingly an interactive experience that is shared with others and in public. The use of digital technology in the arts has been used to transform the viewer into a participant and is similarly starting to transform our expectations of the experience of art. From visual and sound art to performance and gaming, the boundaries of what is possible for creativity, curatorial design, performance and exhibition are continually extending and, as a consequence, propelling the practitioners involved to examine and evaluate their practices and products as contributions to a greater understanding of the nature of interactive experience. This book, Interactive Experience in the Digital Age, explores the development of interactive digital art through the eyes of the practitioners who are embedding evaluation in their creative processes. Many of the interactive art system developments and the methodologies presented are relevant to the wider concerns of Human Computer Interaction as well as within the Digital Arts community. Contributors have been informed by research methods from several disciplines and have adapted them in novel ways in order to develop new strategies and techniques for assessing the experience of interactive art. With contributions from artists, curators, designers, business entrepreneurs, technologists and scientists engaged in the creative arts, this book is intended to inform, inspire and stimulate other researchers and practitioners to explore further the novel and challenging developments taking place in this field.

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