Preface

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Biographical notes: David England is the Head of Computing at the School of Computing and Mathematical Sciences, Liverpool John Moores University. His research interests are in whole body interaction and digital art. He has run several SIGCHI workshops on whole body interaction and is also co-Founder and co-Chair of the SIGCHI Conference Digital Arts Community. He is also the Chair of the BCS Interactions Special Interest Group in the UK. He is a BCS Fellow and received his PhD in 1991 from Lancaster University.

Nick Bryan-Kinns is a Senior Lecturer of Computer Science, Director of Admissions, and Deputy Dean at Queen Mary University of London. He leads the Interactional Sound and Music Group at the Centre for Digital Music and has published award winning international journal papers on mutual engagement, cross-modal interaction, and tangible interfaces. He provided expert opinion for the NSF and European Commission, and chaired the *ACM Creativity and Cognition Conference 2009*, and *BCS HCI 2006*. He is a BCS Fellow, and recipient of ACM and BCS Recognition of Service Awards. In 1998, he received his PhD in HCI (University of London).

Whole body interaction is a reaction against the deconstruction and compartmentalisation of the human person when designing technology.

It reacts against the cognitive and usability models of interaction design. In this regard it follows the thinking of Buxton and Myers (1986) and Suchman (2007) who, respectively, emphasise the wholeness and situated-ness of the person when interacting through and with technology. In the four papers presented here, we have exemplars of this approach of designing for the whole person.

Whole body interaction is a design approach to support richer interaction.

It is an engineering approach considering the mechanics of understand the human body in terms of kinetics, physiology, intention and emotion. The papers in this special issue move beyond previous engineering research in devices and algorithms towards considering the quality of interaction of the whole human with technology.

Whole body interaction is a philosophical movement.

Building on the design and engineering considerations we ask what it means to be human in the digital age. In the same way that web search has said to have affected our consciousness – by leading us to remember less but know how to search for more – whole body interaction considers the philosophical questions of how our interactions and uses of whole body technology may change our perceptions of our physical selves and our physical interactions with other agents be they human and digital. Just as Turkle (2005) considered the second 'mental' self we can now consider the second (or more) 'physical' selves as we express ourselves and perform in new embodiments and re-embodiments.

For the authors and editors this series of papers began with the whole body interaction series of workshops, beginning in 2007 with the first Whole Body Interaction Workshop in Liverpool: subtitled the 'Future of the human body'. This subtitle ran in parallel with a year-long theme on the future of the human body at the Foundation for Art and Creative Technology, FACT in that year. That first workshop brought together computer scientists, movement scientists, artists and performances to raise the initial questions considering whole body interaction. The workshop series has evolved to take place in the context of human computer interaction (HCI2008, CHI2009, and CHI2010) games (ACE0211) and more recently movement quality and performance at IRCAM (2012). A selection of papers, from earlier workshops is gathered together in England (2011).

In this special issue, Pollini explores technologies that are designed for people with special needs, and for children in particular. Technologies, which they suggest have a special social relevance and are important within the wider research of interaction design for children. In this context, *active surfaces* is an example of a tangible technology designed to assist and empower water therapy for children with special needs aiming at merging physical and cognitive therapeutic goals. *Active surfaces* aims at supporting caregivers in experimenting with creative options and to increase physical activity, greater motivation, a longer attention span and active participation for children with special needs. Their case study focuses on field experiments with *active surfaces* within the educational and therapeutic domain, challenging previous ideas on physical and cognitive therapy in water.

Loke et al. explore interdisciplinary work undertaken by a group of artists, designers, curators and somatic bodywork practitioners to explore a human-centred approach to the potential of touch, movement, balance and proprioception as modalities for interactive art. They introduce the Feldenkrais method as a somatic bodywork methodology. Re-sensitising the body through somatic investigations allowed them as makers of body-focussed interactive art to translate the subtle shifts in attention and nuances of felt sensation into the audience experience of sensor-based interactive artworks. They describe the results of a yearlong project of their experience of the making of one specific experimental artwork, *surging verticality*. They reflect on the conditions for audience engagement and the profound connections experienced between Feldenkrais somatic bodywork and art practice as modes of enquiry into the world.

Alaoui et al. present a novel interface for the real-time control of interactive visualisation through full body dance movements, designed with a specific focus on the notion of *movement qualities*, i.e., the manner in which the movement is executed. Their system can recognise predefined movement qualities through gesture analysis. It also allows for the control of abstract visualisation based on physical models, specifically mass-springs models, displaying graphical animations with 'qualities' reflecting the participants' expressions. Their work has been implemented and tested in an interactive

installation called double skin/double mind. In that context, they were able to test the contribution of the system to dance pedagogy and to collect participants' feedback. These preliminary tests suggest that the dancers can embrace the interaction with physical model based visualisation. They also reveal that the movement qualities of the visualisation generated by our system fairly mirror the dancers own qualities.

Antle et al. present a quantitative, comparative study of a multimedia environment about social justice that users can control using whole body interaction or a simple control device. They explore the efficacy of using an embodied metaphor-based, whole body interaction compared to controller-based interaction for an abstract domain (social justice). They describe how conceptual metaphor theory can be applied to the design of a whole body interaction model, focusing on the twin-pan balance image schema and its metaphorical elaboration that structures the concept of balance in social justice. They describe the *Springboard* system, methodology and results from a study with 76 participants. The results indicate that participants were able to interact with the system using both input approaches. However, participants in the whole body group were more deeply impacted by their experiences related to social justice than those in the control device group.

These papers push the boundaries of whole body interaction from the engineering domain into the realms of interactive and digital live art (Sheridan, 2006). There is a clear trend towards more *engaging* whole body interaction experiences which will expand in the future to encompass multi-person whole body interaction where people mutually engage (Bryan-Kinns, 2009) with each other through technologically mediated human to human body interaction. The visualisations, methodologies, and tangible technological approaches presented in these works provide the springboard to this future vision for whole body interaction.

All the papers in this special issue have gone through additional peer review prior to publishing and we would like to thank the reviewers for their support to help disseminate these papers further. We would also like to thank the Editor-in-Chief of *IJART* Athanasios Vasilakos, for giving us the opportunity to publish these papers in this special issue of *IJART*.

We hope you enjoy these papers and gain new insights and ideas from them.

References

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