Designing for the Experiential Body

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Abstract

The goal of this panel is to reflect on the past and discuss the present and future of designing for an experiencing body in HCI. The motivation is to discuss the full range of rich body/movement-based experiences and how the CHI community can embrace and extend these perspectives on designing for the body. The panelists and audience will be asked to share their perspectives on what has most influenced thought in designing for the body, how new sensing technologies are crafting the HCI perspective, and where they see this line of research and design heading in the next ten years.

Author Keywords

Measurement; evaluation; bodily interaction; health; exertion interface; whole-body interaction.

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction

The numerous new commercially available technologies for sensing bodily movement, such as the Kinect, Leap Motion, and FitBit, along with the pervasiveness of mobile computing applications have provided a great opportunity for the CHI community to explore designing for the body and bodily movement. From evocative interactive art exhibits to exergaming and personal

health assessment, at no other time has the CHI community been able to explore new mechanisms of bodily interaction and experience to the degree it can now.

However, these sensing and data collection technologies also have the possibility of stilting the design of experiences around the body. The actual corporeal human body and its experiences in interaction with machines has, for the most part, been treated from the perspective of body as extension of mind or body as something that needs to be trimmed and controlled in HCI. The body has been seen as subordinate to the mind, as an instrument or object, and as passively receiving sign and signals, but not actively being part of producing them. By designing applications with an explicit focus on aesthetics, somaesthetics, and empathy with ourselves and others, we aim to move beyond treating our bodies as mere input-output machines through impoverished interaction modalities, towards richer, more meaningful interactions based on our human ways of living in the world.

There are many limitations in the ways we think of today's wearable and mobile technologies and their impact on bodily behaviors and practices. We often miss out on designing for much richer experiences. Some even claim that the technologies we wear today treat our bodies in a severely negative way [3]: "Electronics, robotics, and spintronics invade and transform the body and, as a consequence of this, the body becomes an object and loses its remaining personal characteristics, those characteristics that might make us consider it as the sacred guardian of our identity".

When Merleau-Ponty writes about the body he begins by stating that the body is not an object [4]. It is instead the condition and context through which one is in the world. Our bodily experiences are integral to how we come to interpret and thus make sense of the world. This premise draws heavily on the notion of embodiment. Playing a central role in phenomenology, embodiment offers a way of explaining how we create meaning from our interactions with the everyday world we inhabit. Our experience of the world depends on our human bodies, not only in a strict physical, biological way, through our experiential body, but also through our cultural bodies.

But not all bodily experiences with digital technology are impoverished, limiting or painful. There have been attempts to design for various aesthetic experiences. For instance, Thecla Schiphorst's [7] soft(n) and other art pieces also explores somaesthetic interactions and in particular touch as a means of meaning-making. Danielle Wilde's [8] work on HipDisk is a humorous comment on how awkward hip movements can create for an interesting commentary on what kind of kinetic movements we find worthy of attention. Others in this space include Lian Loke [2] with her framework for how to stage a kinetic interactive arts experience, Ilstedt Hjelm et al. [1] with the Brainball project that asks questions about control and relaxation through bio-sensor data, and Moen's design for the joy of moving in her BodyBug system [5]. All of these projects taken together point to limitations in the ways we think of today's wearable and mobile technologies and their impact on bodily behaviors and practices.

With this panel, we are interested in discussing the full range of rich body/movement-based experiences and

how the CHI community can embrace and extend these perspectives on designing for the body.

Structure and Format

The goal of this session is to open discussion around the conceptual ways we can design for the body in HCI. In particular, the panelists will share the prior work that has most influenced their perspectives on designing for the body and discuss how they perceive this particular research perspective evolving over the next 10 years. To encourage participation and engage the audience, we have structured the panel as follows.

The session will begin with a short (five-minute maximum) presentation by the moderator to describe the purpose and format of the panel, and to introduce the panelists and themselves. This introduction will be followed by brief presentations by the panelists on their perspectives on designing for the body – each panelist will have 5 minutes.

The brunt of the panel session will then be a series of 15-minute fragments involving panelists' discussion and audience interaction. We will start each 15-minute fragment by the moderator posing a question or a controversial statement to the panelists (along the lines of the themes and questions outlined below), and then ask the panelists to reflect on it and discuss it with the audience. Although we expect that some topics will emerge through the discussion, our initial set of topics and statements for the panel includes the following:

(1) *Reflections on bodily studies that had significant influences on panelists' work.* Each of the panelists will first reflect on a study, paper, or book that had an important impact on their view of designing for bodily interaction. Beforehand the panelists will select a piece that they found influential and/or interesting, and then during the panel discuss how it shaped their research and perspectives in designing for bodily interaction. Members of the audience will also be invited to reflect on works they found influential in their own work.

(2) *Challenges and opportunities that emerge from new bodily sensing systems.* One of the main thrusts for the rising interest in designing for bodily interaction has been the development of new COTS sensing technologies. Although these new technologies provide some powerful opportunities, they also present some new challenges. For example, the central challenge in much HCI research has been the social–technical gap— the divide between what we know we must support socially and what we can support technically. If we are constantly relying on what sensing technology can be appropriated, are we hampered by what is already created as opposed to investigating a new realm of interaction technologies? How are our panelists or our audience members overcoming these challenges? Are there any new challenges emerging from the rise of new sensing technologies?

(3) *Designing for the body and play.* The advent of digital games and associated hardware accessories to support digital bodily play, for example the Microsoft Kinect, Sony Move, Nintendo's Wiimotes and motion-sensitive mobile devices, are further promoting a trend towards designing for the body, in particular, this has been dubbed as designing for the active human body [6]. Questions arising from this trend are: how to design for the body if play is the main objective? How does play lend itself to body-centric design? What is body-centric play design anyhow?

(4) *Future agenda for designing for the body in HCI.* What is the future for this area of design and research? Can HCI contribute a novel perspective that really makes an impact in other fields? We are specifically interested in discussing a future agenda with the broader CHI community. Are there any other suggestions for how to broaden the perspectives of designing for the body in HCI?

Technical Requirements
The panelists and moderators will require the use of a laptop projector for their presentations.

Panelists
Helena Mentis (moderator) is an assistant professor in the Department of Information Systems at the University of Maryland, Baltimore County, where she directs the Bodies in Motion Lab. Her research is on movement and gesturing in healthcare. This has included topics such as gestural interaction in the surgical theatre as well as sensing of movement disorder progression such as with Parkinson's Disease. Her particular research interest is on the ways we see the body's movement in the health domain. This includes articulating how perceiving and understanding bodily movement can be very different depending on experience and context and assessment of bodily movement is more than simply a sensor problem.

Kia Höök is a professor in Interaction Design at the Royal Institute of Technology and also works part-time at SICS (Swedish Institute of Computer Science). Höök started and currently leads the Mobile Life Centre that has ~45 researchers. Höök does research on affective interaction and designing for bodily engagement in interaction through somaesthetics. Most recently she

has been engaging in Feldenkrais exercises, translating them into design.

Florian 'Floyd' Mueller directs the Exertion Games Lab at RMIT University in Melbourne, Australia. The Exertion Games Lab investigates the design of exertion games, these are digital games that require physical effort. This research is situated within a broader interaction design agenda that supports people's values such as an active and healthy life. His recent research interest is on how to articulate design knowledge gained from designing for the active human body. His work resulted in 4 long papers at this year's CHI, articulating research on design guidelines for movement-based games, design workshops with exertion game designers, material representations of physical activity, and novel bodily game interactions.

Katherine Isbister directs the Game Innovation Lab at NYU, and holds a joint appointment between the NYU-Poly School of Engineering's Computer Science Department and the NYU Tisch Game Center. Her research focuses on creating more compelling emotional and social qualities in body-based games. Isbister's team creates research games with support from NSF, Microsoft, Bell Labs, and other funders. Projects have been featured by Wired, Scientific American, and NPR. Isbister is a recipient of the MIT Technology Review Young Innovators award. Her book, Better Game Characters by Design, was nominated for a Game Developer Magazine Frontline Award.

George Poonkhin Khut is an artist, designer and lecturer at the University of New South Wales, College of Fine Art (COFA) in Sydney, Australia. His research in the area of body-focused interactions and aesthetics,

encompass biofeedback and neurofeedback interactions, audience research, participatory art, and clinical research into the efficacy of his interactive artworks for managing pain and anxiety. He was the founding director of the transdisciplinary Thinking Through The Body Art Lab research group with Dr. Lizzie Muller (2008-2010), a project that explored collaborations between Feldenkrais somatic bodywork practitioners (Maggie Slattery and Catherine Truman) and electronic artists, musicians and designers.

Toni Robertson is Professor of Interaction Design and the Director of the Centre for Human Centred Technology Design at the University of Technology Sydney. Her work focuses on building an understanding of human practices, as situated, social activities, into technology design practices. A large focus of her work is on the design and use of interactive technologies and interaction styles where movements of the human body are direct input into the system.

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