

Guest Editors' Introduction**HUMAN–TECHNOLOGY CHOREOGRAPHIES: BODY,
MOVEMENT, AND SPACE IN EXPRESSIVE INTERACTIONS**

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The design of anything that is intended for us human beings is fundamentally influenced by how the designers conceptualize what is “human.” Researchers in the field of human–computer interaction happily use *human* to denote the counterpart of *technology*. In this tradition, however, *human* often becomes synonymous with a user of technology. As a result, the emphasis tends to be on the user’s cognitive abilities and successful end-results from interaction. Consequently, the embodied nature of humans—as intentional, moving beings—often receives less focus. We, as editors, but more so as researchers, thus want to promote a shift in focus from *what* can be done with technology to the inherently expressive processes of *how* humans move while interacting with technology.

In parallel with the emergence of digital applications in everyday life, there is a need to go beyond the traditional usability approach, to see human beings and the available technology from several points of view. Above all, the discussions inevitably relate to the very core of the nature of humanity. When discussing the relationship between humans and technology, researchers and designers take a stand—either implicitly or explicitly—on what is essentially human and what can be outsourced to technology.

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In this thematic issue of *Human Technology*, we editors turn the focus of human–technology interaction from the traditional cognitive aspects to the moving human being, specifically emphasizing the concept of choreography in design and application. This issue was preceded by another special issue within the same topic area (see Pirhonen, Tuuri, & Erkut, 2016). By *choreography* we want to emphasize meaningful continua of movement that humans, as individuals or as groups, constitute and experience during interaction with technology (see also, e.g., Loke & Reinhardt, 2012; Parviainen, Tuuri, & Pirhonen, 2013; Tuuri, Parviainen, & Pirhonen, in press).

Our perspective on choreographies in technology design and interaction clearly has been demonstrated as timely and interesting. Through the call for papers on this topic area, a large number of high quality manuscripts were submitted to the journal. Following the review process, we ended up with enough papers to fill two separate thematic issues. In addition, three submissions were shifted to an open submissions issue in *Human Technology*.¹ Another reason for two issues was the variation of topics among the submissions. We found that it was quite effortless to divide the submissions into two categories. The submissions in the May 2016 issue concentrated on interaction design, while the submissions in this issue more specifically focused on expressivity in human–technology choreographies. Therefore, the papers published in the present issue deal with themes such as emotion perception, analysis through dancing, interfaces for musical expression, and the biomechanics of drumming. Interaction design, even if it was the primary focus of the previous choreography-themed special issue, can still be seen at least implicitly as an area that potentially benefits from the insights of the contributions of this issue.

Human–technology choreographies denote a multifaceted approach to human life. As can be seen in the contributions of this issue, the concept may be approached from a wide variety of perspectives. Both the backgrounds of the authors and the application areas are so diverse that, in the end, the common ground that all the texts share the interest in the movements of human beings.

Nearly 3 years ago, we first considered how to continue the work involving human–technology choreographies that formed the basis for our NordiChi '14 conference workshop. We were convinced then and remain so that movement and the bodily basis of human cognition would be an appropriate approach to conceptualize the relationship between humans and technology. Much has happened in technology and in our culture since that workshop. Indeed, it is often argued in the human–computer research field that the form of technology changes so rapidly that research in that area becomes outdated quickly. However, as we observe the research world around us, it seems our theme has not lost any of its topicality. Rather, the expressive power of the moving human body remains a valuable and valued topic that deserves more attention among designers of technology.

PREVIEW OF THIS THEMATIC ISSUE

Olli Poutanen, Salu Ylirisku, and Petri Hoppu propose a method that highlights the value of first-person enactment in user-centered design. They capture implied choreographies in particular interaction scenarios (drawn from two Microsoft Corporation's *Productivity Future Vision* videos) and literally dance these interactions while gathering insights. Their research

design is theoretically and practically relevant for the choreographic approach in interaction design (Parviainen et al., 2013). Theoretically, the authors extend the choreographic approach through applying the hermeneutics of the body; practically, they provide a methodical, movement-based framework for operationalizing the approach. Their work offers much for future intelligent environments designed with this approach.

In their article “Body, Space and Emotion: A Perceptual Study,” **Donald Glowinski, Sélim Yahia Coll, Naëm Baron, Maëva Sanchez, Simon Schaerlaeken** and **Didier Grandjean** take a holistic stance on the expression and experience of body movements, specifically focusing on emotional content. In their conceptual framework, they combine the perspectives of the performer and the observer, thus outlining an integrated and interactive model of communication through the body.

In this second thematic issue, we are fortunate to have three articles that relate to embodied musical interaction. The first one, titled “Musical Instruments, Body Movement, Space, and Motion Data: Music as an Emergent Multimodal Choreography,” comes from **Federico Visi, Esther Coorevits, Rodrigo Schramm, and Eduardo Reck Miranda**. The authors first propose techniques for extracting meaningful information from motion capture data. But the core of this paper lies in their suggestion that artistic practices, such as musical performances, can be utilized in better understanding movement-related data for expressive purposes that ultimately extend beyond musical or artistic applications.

Marcella Mandanici, Antonio Rodà, and Sergio Canazza investigated bodily choreographies in producing musically structured events within a music education-oriented interactive space, explicitly explored through an application titled Harmonic Walk. The authors suggest that movement coordination in such applications relates to entrainment phenomena between the human user and the environmental stimuli in the interactive space. Consequently they propose a framework for designing and assessing motion-based music applications.

John R. Taylor demonstrates yet another different approach to the notion of human–technology choreographies. Playing drums requires learning a large repertoire of choreographed body movements. Applying an information-processing stance as a model of human motor control, the author tackles the biomechanics of a percussive performance in relation to the various developmental goals of a drummer. Motivated by research into computer modeling and as a prequel for future empirical studies, the article outlines a theoretical framework for considering the aspects of movement patterns in the interaction between the drummer and his or her instrument.

Finally, this issue includes a book review. The ubiquitousness of technology and its benefits in 21st century societies undergirds much research and product development. But access to this technology is uneven across the globe and is the subject of the tome *Public Access ICT Across Cultures: Diversifying Participation in the Network Society*, edited by Francisco Proenza. In his review of this 2015 publication, **Sakari Taipale** assesses the research regarding workable and problematic provision of public access venues (e.g., government-subsidized telecenters, libraries) in 10 developing countries and emerging economies, as well as various demographic groups, on three continents. He argues the book provides an unprecedented overview of Internet access provision that allows the poorer citizens of the world to participate in the Network Society.

ENDNOTE

1. See *Human Technology*'s website (<http://humantechnology.jyu.fi/archive/vol-12/issue-2>) for papers by Marc-Eric Bobillier Chaumon, Bruno Cuvillier, Salima Body, & Florence Cros; Elena Márquez Segura, Laia Turmo Vidal, & Asreen Rostami; and Pablo Ventura & Daniel Bisig.

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