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Editor's Introduction:

THE CHALLENGES AND OPPORTUNITIES OF HUMAN TECHNOLOGY

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Technology is for human use. It is designed to satisfy some human needs and to aid people in reaching their goals. Technology, therefore, is a part of human activities and, for this reason alone, it should always be considered within the context of human life, the human experience. This basic credo forms the foundation for the concept of *human technology*. Instead of seeing technology as a construction following the laws of nature, the challenge of human technology is to explore and understand how humanist and social research can contribute to the conceptualization and implementation of technology.

Early in the 20th century, technical constructions were relatively simple from the human point of view. The use of those technologies normally did not require much skill or practice. Of course there were exceptions. Nevertheless, the development of technology gradually made interaction with hardware of all kinds and, more recently, software more complicated. For example, airplanes are more difficult to use than horse carriages or cars. Industrial environments also became increasingly more complex and therefore it has become imperative today to pay more attention to the human role in the interaction. Concepts such as ergonomy, usability, human-computer interaction, and other human factors have become part of technological thinking (Nielsen, 1993; Rasmussen, 1986; Wickens & Holands, 2000).

Nevertheless, the relatively recent emergence of new information and communication technologies has made the understanding of the human mind in technology even more focal. Today, people buy and use technologies that are increasingly more complicated than anything before. Complex information technologies are commonly used by ordinary consumers. Personal computers and mobile devices offer an increasing number of possibilities. New types of services are offered daily and new types of computational devices are continually being developed. All of this, and more, underscores the essential need to study the human perspective as a fundamental part of technical thinking today and in future (see Carroll, 2004; Norman, 1993, 2004; Shneiderman, 1998).

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For decades it has been sufficient to intuitively imagine human interaction with new devices. Today, however, it is necessary to admit that mere intuitions do not give us a sufficiently deep enough understanding of the human mind and social roles to enable us to design really good technical products for people. Scientists working with the human mind and society have naturally known for a long time that simple intuitions and lay science do not provide technologists with an accurate understanding of people. This is why psychology, sociology, anthropology, and other human sciences have developed sophisticated observations, concepts, and theories that make it easier for specialists to understand better human beings.

Therefore, the goal of human technology is to incorporate scientific knowledge about people—their mental, physical, emotional, and social capabilities, actions, desires, needs, and understandings—into ongoing technological discourse. Instead of intuitions, we need serious scientific analysis of human role in and interaction with technology. This online journal, *Human Technology: An Interdisciplinary Journal on Humans in ICT Environments,* has been established to offer an open forum for all of us scientists who wish to improve our understanding of these complex and multifaceted issues.

Human technology is a multidisciplinary field. There is no single theory, language, or empirical and theoretical approach that could be applied to all of the problems, challenges, or opportunities typical for human technology. Therefore, a multidisciplinary and interdisciplinary analysis of these issues is imperative. The nature of the questions determines the best means of exploring and analyzing the human role in technology.

In this first issue, we have contributions from the fields of psychology, cognitive science, anthropology, sociology, and communication. Each has a distinct way of seeing some of the various issues in human technology but, as a whole, the papers serve well the goals of this journal.

In her paper, Dorothy Salonius-Pasternak reviews recent literature on children's electronic game playing. Video and computer games have become a vast industry during the past two decades. Game playing is common a pastime for children (as well as adults) and therefore it is vital to investigate the effects of game playing on children. Understanding the human role, in this case of the young, in electronic play does not mean concentrating only on negative aspect of playing but, as the author discusses, it is necessary to look for the positive dimensions of this new pastime as well. Understanding the play phenomenon from multiple perspectives provides rich data needed to make reasonable policies for coping with the phenomenon.

Raul Pertierra's paper concentrates on the changes mobile phones have made on human communication and interaction in the Philippines. He illustrates the growing role of technology, in particular mobile phones, on users' social and individual identities and means of interacting. He presents several cases and interviews that allow us to see how communication, from politics to private life, may change within the new ICT-culture. Indeed, it seems that people can change their communicative lives with new devices and this leads as well to important socio-cultural changes.

Jim McGuigan discusses the possibilities that sociological concepts can give us to investigate human interaction with new technologies. His focus is understandably on social change. We know that the mobile phone, like any major technology, will impact society. However, from a scientific point of view, it is very important to find rational methodological approaches to effectively conduct user-sociological research. McGuigan investigates the

strengths and weaknesses of some major contemporary methodological approaches and demonstrates their scope and limits in investigating social change initiated by mobile phones.

Antti Oulasvirta and Sacha Helfenstein take the discussion of humans and technology onto a new path. Their focus is on innovative design. New technology does not emerge from nothing, but rather it embodies a huge design challenge. From the human technology point of view, it is important to find effective ways to implement the knowledge we have about the human mind within the design culture so that this knowledge can effectively influence the subsequent products. Oulasvirta develops several ideas about effective design procedures. His paper explores how to organize interaction design at the initial stages of product conceptualization so that knowledge about people can be incorporated appropriately into the thought behind new design ideas. Helfenstein makes a concrete point in this direction. He is interested in the emotions we associate with products we buy and use. He demonstrates both how to measure the emotional ascriptions we make toward products and how our previous experiences may affect the way we later emotionally assess the brands and producers.

Finally, Pertti Hurme focuses on the role of technologies on the communication process. He discusses the expanding roles of new communication tools and means in work life. Most of us are familiar with basic communication processes and with the growing scope of knowledge-based organization and knowledge management. However, new technologies apparently make it necessary to rethink how these two phenomena intertwine through the use of contemporary communication technologies. As a result, the context of work is becoming more mobile, and thanks to the new mobility, the concept of work may be changing.

The papers in this inaugural issue of *Human Technology* demonstrate that a wide variety of questions and an equally wide variety of solutions to be investigated exist in the field of human technology research. Becoming familiar with these questions and potential solutions demands exploration irrespective of the field of research. Organizationally the field of human technology research is somewhat chaotic. New lines of development may emerge any day, or to be more accurate they emerge daily. People—in science and academia, in business and industry, and in government—interested in technology and how humans affect and are affected by technology need to know what is happening in neighboring, and perhaps totally unrelated, research disciplines. Although one single unified conception of human role in modern technology, is not possible—or even desired—*Human Technology* provides one platform that seeks a dynamic unity by discourse.

REFERENCES

Carroll, J. M. (Ed.). (2003). *HCI models, theories, and frameworks.* San Francisco: Morgan Kaufmann.

Norman, D. A. (1993). *Things that make us smart*. Reading, MA: Perseus Books.

Norman, D. A. (2004). *Emotional design: Why we love (or hate) everyday things.* New York: Basic Books.

Nielsen, J. (1993). *Usability engineering*. San Diego, CA: Academic Press.

Rasmussen, J. (1986). *Information processing and human-machine interaction*. Amsterdam: North-Holland.

Shneiderman, B. (1998). *Designing the user interface*. Reading, MA: Addison Wesley Longman.

Wickens, C., & Holands, J. G. (2000). *Engineering psychology and human performance*. Upper Saddle River, NJ: Prentice-Hall.

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