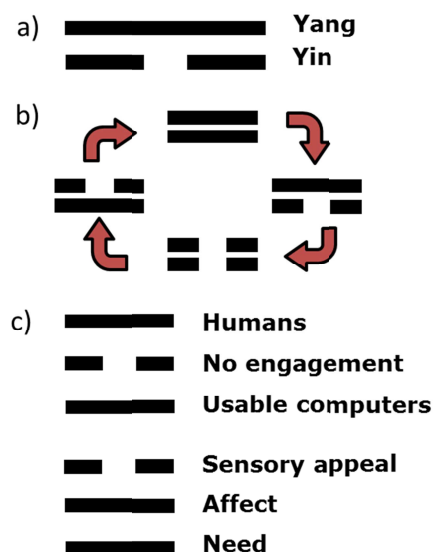


Leveraging and Integrating Eastern and Western Insights for Human Engagement Studies in HCI



What are technologies that induce no sensory appeal but elicit

Figure 1. Core ideas of Yijing and implications for human-engagement-computer relations

Effie Lai-Chong Law
(contact author)

Department of Computer Science
University of Leicester
LE1 7RH, Leicester, U.K.
elaw@mcs.le.ac.uk

Chaklam Silpasuwanchai

School of Information
Kochi University of Technology
Kami, Kochi, Japan
chaklam.silpasuwanchai@gmail.com

Xiangshi Ren (contact author)

Centre for Human Computer
Interaction
Kochi University of Technology
Kami, Kochi, Japan
ren.xiangshi@kochi-tech.ac.jp

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Jeffrey Bardzell

School of Informatics and
Computing
Indiana University, USA
jbardzell@indiana.edu

Torkil Clemmensen

Dept. of IT Management
Copenhagen Business School
Denmark
tc.itm@cbs.dk

Yan Liu

Department of Computing
The Hong Kong Polytechnic
University, Hong Kong
China
csyliu@comp.polyu.edu.hk

Abstract

Human engagement is at the heart of every interactive technology. However, a concrete framework for synergizing the capabilities of humans and technologies to allow fully engaging interactions to happen is yet to be developed. We posit that such a framework should be grounded in a deeper understanding of human nature (e.g., mind-body relations), which in the field of HCI has primarily been built upon the Western philosophies. There are scattered, underexplored Eastern philosophies (e.g., Yijing, Zen) that may provide new lens and tools to analyze how humans interact with resources in their environments, including technological artefacts. Discussions of leveraging and possibly integrating Eastern and Western insights for human engagement studies will be an exciting and a radical forum for the HCI community.

Author Keywords

Human engagement; East-West integration; Cultural differences; Mindfulness; Eastern philosophies;

ACM Classification Keywords

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

Note for Figure 1: a) Yijing is structured under two principles - first, all existence is governed by two basic elements - Yin and Yang. Yang is bright, creative and active while Yin is dark and passive. Yin and yang is not necessarily evil/good, both are complementary and coexist. Second, all existence is under changes (Yin to Yang, vice versa). To depict Yin and Yang, scholars deployed a numerological system - straight line for Yang; broken line for Yin. b) By combining two combinations of lines (bigram), one can understand any two-dimensional polar categorization. For example, one can use the bigram to identify the four weather seasons, or to use the bigram to understand different types of couples. c) One can also combine three lines (trigram) to understand tripartite relationships such as human-engagement-computers, or sensory appeal-affect-need. One potential use of Yijing's numerological system is to help identify different possibilities.

Introduction

Human engagement is a crucial element in HCI. Failing to engage users in an application can lead to less participation, less learning, less commitment, less sales, and other undesirable outcomes. Consequently, the original goal of an interaction design is not realized to its full potential. As O'Brien and Toms [15] have concluded - "Successful technologies are not just usable; they engage users." The growing relevancy of engagement can be associated with three global changes over the past decade: First, business needs have changed drastically, where engagement becomes the new differentiator, replacing usability [9, 13, 14]. Second, the common misconception that humans are rational has been proven otherwise (e.g., [1]). This paradigm shift has attracted much research attention in the study of emotion, motivation, and decision making. Third, there have been growing motivational problems (e.g., in education), which can be related to the decreasing attention spans [2], possibly due to the prolonged use of technologies (e.g., the Web), implying increasing difficulty to engage humans over a short period of time.

Despite the widely recognized importance of engagement, a concrete framework for synergizing the capabilities of humans and technologies to allow fully engaging interactions to happen is yet to be developed. We argue that such a framework should be grounded in a deeper understanding of human nature (e.g., mind-body relations). However, the predominant view of human capabilities as well as current studies of engagement in the field of HCI are largely based on the Western philosophies and approaches, which are generally characterized as more "scientific" and "reductionistic". As a consequence, it may be difficult

for designers and researchers to make a holistic sense of how engagement works. Furthermore, although several factors influencing engagement have been identified such as sensory appeal [9, 13, 14], affect/emotion [8, 9, 13, 14], and need [5, 8], the interrelationships among these and other engagement factors are not known, this (partly) explains the incoherence in the existing views of engagement.

To address the gaps identified, we propose an East-West integration approach. Specifically, we argue that there are potentially useful, underexplored knowledge from the Eastern traditions that are yet to be tapped for the development of an integrated framework for human engagement, which is generalizable to diverse cultural contexts. The Eastern knowledge such as Yijing or the concept of "mindfulness" has long been proposed by philosophers and potentially possesses high explanatory power of the holistic nature of humans. This knowledge will enable HCI researchers and practitioners to deepen their understanding of human engagement, thereby drawing implications for the design and evaluation of computing technologies.

Given the holistic nature of the Eastern awareness and the analytical nature of the Western awareness, together we believe they may provide direction and correction to each other and impart far stronger effect and efficiency in meeting real human needs. The conscious promotion of "cross-fertilization" and integration between the two can be very fruitful in a world with problems becoming increasingly complex, and resolving them requires multi-cultural perspectives.

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Related Work

Here below we briefly review two key concepts: (i) Engagement and (ii) East-West integration approach.

Engagement

Various definitions of engagement have been proposed. For example, Chapman [3] defined engagement as "something that draws us in, that attracts and holds our attention". Laurel [11] defined engagement as "desirable, even essential, human responses to computer-mediated activities". Dewey [6] described the notion of holistic engagement where action, emotion, and thinking are all connected, with the "whole" person engaging with the activities. Toms and O'Brien [15] proposed that human engagement consists of different cycles. Csikszentmihalyi [4] described engagement as a state of "flow" where users are fully absorbed in the task. Consistent across these definitions, engagement is high, advanced quality of user experience in which the user is absorbed in the task with undivided attention. Engagement factors have been associated with sensory appeals (e.g., appearance, sound, olfactory properties) [9, 13, 14], affect (emotions) [8, 9, 13, 14], and need [5, 8]. Despite these existing works, we lack overarching, theoretical frameworks or principles to understand the relationships between these different constructs of engagement. As a consequence, it is difficult for researchers and practitioners to design for human engagement. The Eastern ideas and knowledge, given their holistic nature, can complement and provide direction to extend further what is already built.

East-West Integration

Achieving engagement requires a holistic understanding of humans. One of the radical approaches is to consider

the integration of eastern and western knowledge and insights. One excellent example of the influence of the East on the West in recent decades is the practice of mindfulness [10]. Mindfulness and engagement share similar factors such as absorption and undivided attention, and thus the knowledge of mindfulness has important implications for achieving engagement. For example, the concept of "mindfulness" implies that no matter what the nature of the task is, it is the absorption in the task that is satisfying and refreshing. This is radical because it implies that engagement depends largely on the humans undertaking the task and not on the task itself. In other words, no matter how boring or distasteful a task can be, as long as the task incorporates "human" engagement principles, the task could be engaging.

Another good example is the ancient Chinese doctrine called "Yijing", one of the most powerful, wide-reaching frameworks among the Chinese doctrines [7, 17]. Yijing offers powerful insights regarding human changes and human nature through 64 combinations of symbols (hexagrams), which can be used as a framework to understand relationships and possibilities (see more explanations in Figure 1). Its holistic nature of considering the aspects of beginning, process, and long-term sustainability, leads to various adoptions in the field of management and human development [7, 17]. One can also find possible integration of East-West philosophies. For example, both Shusterman's somaesthetics [16] and Chinese's *Tai Chi Chuan* (i.e. the corporal expression of the philosophy of Yin and Yang) share similar views that the body and the mind are whole. However, they each have their own emphases (Somaesthetics on consciousness, Tai Chi Chuan on mind-body balance) with unique

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contributions. The integration of these two concepts can reveal insights into how humans engage in an embodied way with different levels of consciousness as well as how designers can maintain a good mind-body balance. The key challenge of adopting the Eastern philosophies for HCI lies in its abstract, holistic nature, which often alienate outsiders who are not familiar with the seemingly “mystic” text.

Four Threads of Discussion

To gain insights how the East-West integration can inform HCI work, in-depth discussions on four threads are deemed necessary:

Theoretical - What existing Eastern frameworks, models, principles are particularly promising for enabling a deeper understanding of human engagement and providing guidance for designing computer-mediated activities to elicit desirable responses in humans (cf. Laurel's [11] definition)? How these theories (e.g., YiJing, Lao Tzu, Zen) are situated with respect to existing Western theories and how can they leverage each other's strengths and eventually be integrated? This theoretical thread can advance our understanding by providing new 'ways of thinking' regarding human engagement.

Practical - What existing studies have been conducted under the proposed theme of the workshop? What techniques/methodologies have they employed in their work and to what effect? Do existing methodologies suffice? This practical thread can provide evidence as well as inspiration for some novel methods.

Reflective - The notion of the East-West integration should be critically reviewed by reflecting on some basic assumptions. For instance, could the two traditions with deeply entrenched values be integrated or are inherently unbridgeable? Is human engagement mostly a cognitive and physiological phenomenon that can best be studied by brain structure at the individual level or a social and cultural matter to be better analyzed through dialogic interactions? This thread addresses these basic questions.

Programmatic - How should the East-West integration research proceed? Which challenges and questions should be prioritized in the research agenda of this specific area? What should be the expected outcome in the next five or ten years? This programmatic thread focuses on driving the proposed theme forward through well-defined research questions.

Concluding Remarks

It is indeed very ambitious to leverage and integrate philosophical ideas, which have evolved over millennia in the East and West. The foremost step of this challenging endeavour is to analyse the Eastern approaches to conceptualizing human nature by studying their historical roots, and to examine how such approaches have informed design and evaluation of contemporary computing technologies. Insights to be gained from this initial but critical work can contribute to the development of an integrated framework being built upon two major entities - Engaged Humans and Engaging Technologies.