Perceiving Users as Sentient, Living and Purposive Bodies to Create Embodied Interaction in Remote Communication

Introduction

The paper presents an argument that with the novel forms of technology being more closely connected to the body, there is a need to comprehend the sensory engagement of the users in the embodied interaction with such technology, and suggests the metaphor of perceiving users as living, sentient and purposive bodies for the same. The metaphor arises from a void traced in Dewey's explanation of aesthetic experience which misses out on the role of the body as he explains action to be situated and creative. The metaphor finds its roots in Shusterman's research project of somaesthetics which considers the body or 'soma' as the tool of all tools for perception and engagement. The paper discusses a few applications based on somaesthetic appreciation designs and the work of prominent researchers to trace a positive scope of design for remote communication.

Understanding the 'Feltness' of an Experience

Today we just don't use technology, rather we live with it. While the first wave of HCI focussed on ergonomics, and the second wave on distributed cognition; the third wave underscores the concept of embodied interaction in the design of novel technologies, such as pervasive computing, augmented reality, tangible interfaces etc., where we engage with technology emotionally, intellectually, and sensually. For this reason, it becomes increasingly significant for design practitioners to understand and analyze people's 'felt' experience with technology.

Comprehending and describing a 'felt experience' is difficult because the term 'experience' is both rich, and discursively open and complex [1]. It is also difficult because a person who is having an experience cannot step out of it at that moment to perceive it. Each person's experience can differ from the other for a given situation and one person's experience can also vary with respect to context (time, people, and place) for the same situation. And since it's so hard to comprehend and form a narration of an experience, we look up to other disciplines, in this instance, philosophy, for better comprehension.

The works of American pragmatist philosopher, John Dewey, provide us with the theory of aesthetic experience which helps us gain a better understanding of having 'an experience'. As per Dewey, experience is more personal than behavior — it involves an active self who not only engages in but also creatively shapes action; it is more inclusive than knowledge because it tries to encapsulate a person's full relationship — sensory, emotional, and intellectual — with his or her physical and social environment; and it is embedded as it is in what people do in the world and what is done to them — it is more than feelings [1].

Dewey's model of action, which is key to understanding a felt experience is that action is 'situated' and 'creative' [2]. There's no difference between the mean and end in an action; rather action is both means and ends. This model of action can be understood with the example of a painter creating an artwork who paints not just to create an artwork but also to enjoy the process of painting, where he feels the texture of acrylic paints on the canvas and his breath attunes to his movement of the hand as he makes the strokes meticulously.

From Pragmatist Aesthetic Experience to Somaesthetics

Another American pragmatist philosopher, Richard Shusterman, further explains aesthetic experience as 'an experience of satisfying form, where means and ends, subject and object, doing and undergoing, are integrated into a unity' [2]. He formulated the research project Somaesthetics combining two principal themes of his research — pragmatist aesthetics and philosophy as an embodied art of living [3]. The term 'somaesthetics' was coined through the compounding of the word 'soma', an expression derived from the Greek word for body, and 'aesthetics', a word derived from the Greek aesthesis, meaning 'sensory perception' [4]. As a discipline, somaesthetics foregrounds the role of bodily experience in aesthetic appreciation.

Dewey's theory of pragmatist aesthetics shines a light on active creative engagement but doesn't mention the role of the sentient body, the centre for sensory appreciation. Shusterman's somaesthetics which is a consequent interpretation of pragmatist aesthetics, provides for this void and recognizes that all action (artistic, practical, or political) requires the body, our tool of tools. Somaesthetics considers 'the soma' – the living, sentient, purposive body – as the indispensable medium for all perception and sensory appreciation [3].

Applications of Somaesthetics in HCI

As human-computer interaction is becoming intimately connected and embedded within our everyday experience with the third wave of HCI bringing in tangible and wearable artifacts; and since the body accounts for the most of the experience in interaction with such forms of technology, the need to perceive the *'user as a living, sentient, and purposive body'* becomes significant for the design practitioners.

Deploying somaesthetics as a theoretical foundation in interaction design, shows the potential to improve the ideation process of interactive product design by improving designers and developers' sensibility of haptic, dynamic, and invisible qualities of bodily movements [5]. We discuss here a few applications of somaesthetic in wellness, digital art, human-robot interaction.

Snap-Snap T-Shirt: Posture Awareness Through Playful and Somaesthetic Experience
Svetlana Mironcika et al. designed a prototype of a personalized garment that provides rich haptic feedback for posture awareness in the context of strain injury (Figure 1). They aimed to design a garment that would allow the user to gain an awareness of his posture with a help of sensorial experiences. Collaboratively engaging the user as a co-designer in movement enactment, movement analysis and embodied co-design sessions, their design offers posture awareness through playful and somaesthetic experience [6].

Figure 1: Garment for posture awareness

Hold my Heart and Breathe with Me: Tangible Somaesthetic Designs Abstract
Ilhan Aslan et al., designed tangible products acting as mediating tools to address wellbeing for challenging user groups, such as children (Figure 2). Their design includes two artifacts: the first resembles a heart that allows the users to experience their own heart's behavior by providing haptic feedback; the second is a stuffed animal, which is capable to breathe in synchrony with a user [7].

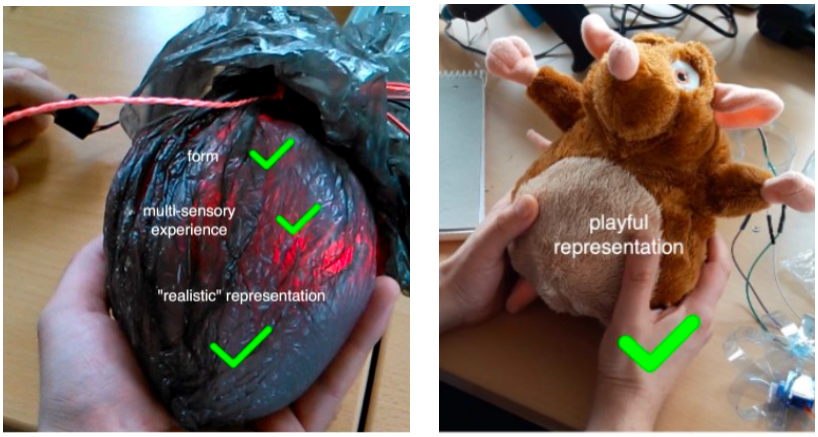

Figure 2: Tangible tools for self awareness and meditation

Drone Chi: Somaesthetic Human-Drone Interaction
Joseph La Delfa et al designed Drone Chi: a Tai Chi-inspired close-range human-drone interaction experience which exemplifies dynamic and intimate somaesthetic interactions with a robotic design material, and body movements in expansive 3D space (Figure 3). In contrast to other current somaesthetics design examples which often feature calm, soft, malleable forms or materials, drone-chi explores the potentials of somaesthetic design using robotic materials and whole-body movements in 3D space [8].

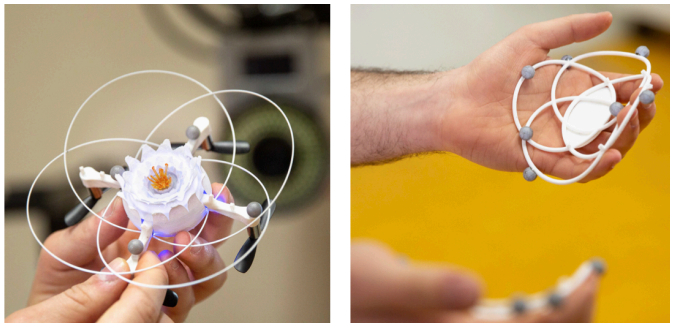

Figure 3: Drone-chi drone and hand pads

Prominent researchers exploring Somaesthetics

Taking a step back from design application to design research, somaesthetics is a rather new field with the body of related work in HCI being yet limited. Thecla Schiphorst and Kristina Höök are the prominent names in an increasing group of researchers applying and exploring a somaesthetic approach in their designs. Thecla Schiphorst in her paper Toward a Somaesthetics of Touch presents a definitional framework of somaesthetics and links the concept of somaesthetics to a specific design case in which tactile interaction is applied to the design of a networked, tangible interactive artwork (Figure 4) [9].

Figure 4: *soft(n)* objects are networked to one another and respond playfully to touch and movement

On the other hand, Kristina Hooks, in her book Designing with the Body, points out that with the rise of ubiquitous technology and the Internet of Things, a successful interactive tool will be one that allows users to engage in a smooth, embodied, interaction, creating an intimate correspondence between users' actions and systems' response. She proposes a qualitative shift in interaction design to an experiential, felt, aesthetic stance. Hooks calls this new approach as 'soma design' — it is an approach that incorporates body and movement into a design regime that has long focussed on language on logic [10].

Deploying the theoretical foundations of Somaesthetics in Remote Communication Technology Design

So far we've seen how the theoretical foundations of somaesthetics are being deployed in interaction design in the realm of wellness, art and human-robot interaction through wearable and tangible digital artifacts. However, not much has been articulated when it comes to the application of somaesthetics in remote communication. The post-pandemic world is highly reliant on remote communication which brings in a set of challenges serving as design opportunities. Considering *users or remote communicators as living, sentient and purposive bodies* while designing for such technology will help in creating 'an aesthetic experience' that is smooth, engaging, and meaningful for the users.

A dialogue between the interlocutors who are co-located involves gaze, gestures, facial expressions and subtle embodied cues which serve as physical communication channels and can communicate attention, intent, affect and more. That along with the physical space where the interlocutors are present can be termed as 'embodied information'. In remote communication, this embodied information is absent and the interlocutors are engaged in different environments. Thus, the problem is not merely that they cannot co-experience the same embodied information but also that their senses are occupied by completely different stimuli [11].

Simon Mare et al presented a paper in CHI 2021 based on this design problem. Their design, Azalea, includes a smart-phone based app and a tactile cushion (Figure 5). A pair of Azaleas are used by remote interlocutors to enrich the communication with a shared, synchronized motion-driven soundscape and audio-driven light. While the current strategies in enriching remote communication focus on increasing fidelity, their design focuses on reducing distractions [11]. They applied the concept of Somaesthetics Appreciation which states that somaesthetic designs share a subtleness in how they encourage and spur bodily inquiry in their choice of interaction modalities; they require an intimate correspondence – feedback and interactions that follow the rhythm of the body; they entail a distinct manner of making space shutting out the outside world – metaphorically and literally – to allow users to turn their attention inwards; and they rely on the articulation of bodily experiences to encourage learning and increased somatic awareness [12].

Figure 5: Azalea — idle (left), initializing (center), in use (right).

Conclusion

Thus, we see how the third wave of HCI bringing in novel technologies that are closer to bodily perception, requires design practitioners to have a shift in the focus from language and logic to sensory appreciation. This shift needs new research methods to learn about the sensory engagement of users in the use of technology while focussing on embodied interaction. Perceiving users as sentient, living and purposive bodies, is the beginning for such a shift. This shift which aligns with deploying the theoretical foundations of somaesthetics in human-computer interaction, has the potential to provide for self-awareness by bringing the embodied information to the surface, something which has not been much explored by the technology of the past two waves in HCI. Remote communication, which clearly misses out on embodied information can be greatly benefitted by this shift.

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