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# Bringing the Body into Interface Design

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**Position Statement**

Many of us spend a good portion of the day interacting with computers. Predominantly, this means that we are sedentary. Because of this, the U.S. now faces a sweeping health crisis in large part due to our inactivity. Recent statistics report that 40% of the population is overweight, and 2 of 3 individuals fail to meet the daily recommended exercise requirements set forth by the U.S. Surgeon General [1]. The situation is especially desperate amongst the younger generation. Approximately 18% of children between 2-19 are classified as overweight, more than double what it was in 1980. Equally disturbing is the increasing cases of childhood Diabetes Type II – a disease that before 1997 was only observed in middle age. A major contributing factor is that many of today's youth grow up in households where they spend their free time being sedentary – playing video games, watching television, or interacting with desktop computers - as opposed to engaging in physical activities that can help them achieve optimum health [1]. I am interested in exploring the role of that computational technology might play in this issue, and further, how as a malleable and boundless medium, we might create technology that can encourage healthier relationships with the body.

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As described in the workshop call, conventional computer interfaces are often designed for “efficient operation and ease of use.” This interface model was conceived in a time when the predominant view of human cognition was the ‘mind-as-computer metaphor,’ wherein external events are brought into the brain as internal representations. This model draws a “fairly sharp line” between a person’s physical body and his/her intellectual abilities [8]. This model establishes a master-slave relationship between the body and the “purely mental operations” engaged in computation [4]. The body and its operations are seen as a vehicle to transport the brain around and execute its commands. I believe that as a result of this perspective, we have developed interface models that serve the brain above all else. Issues of the body are delegated to ergonomics, a field conceived to make subtle adjustments to the status quo so as to “provide optimum comfort and avoid stress or injury” [5]. This is a band-aid approach, in contrast to building interfaces that serve humans (brain plus body) in a more holistic way.

Within the past decade, the cognitive sciences have experienced a revolution that overthrows this sort of Cartesian brain/body dualism with the rise of embodied cognitive models [6]. As a graduate student in the cognitive sciences (Ph.D. Candidate, UC San Diego), I have had a good deal of exposure in theories of embodiment, and have used it as a foundation in my research on the relationships between humans and technology in a number of field settings [2, 3]. In embodied cognitive models, the body and its operations are integral, not peripheral or subservient, to human cognition. Nevertheless, we largely remain locked into interface models that force the body into unhealthy configurations. I believe the biggest problem is the “sit-in-front-of-a-box” interaction metaphor. This interaction design takes our body wildly out of its natural structural alignment. Human spines are not designed to remain seated in chairs,

hunched over computers, for long periods of time. This position collapses the natural curvature of the spine – back and abdominal muscles weaken, quadriceps muscles shorten and lose flexibility. Our shoulders develop strain from overuse, as we spend the day with our arms lifted at keyboards in front of us [5]. Given the needs our bodies have for movement and positioning, why design technology that ignores such requirements? Some may argue against such a critique, because of course you need to sit down and be still to think deeply and do serious work! But I believe that these are simply folk models of human thought, enforced by our current educational institutions and workplaces, and to me, this suggestion remains unproven. I think it is possible to deeply reflect while the body is thoroughly engaged in action. Many report that walking or running is when they “do their best thinking.” Could we write efficiently if full body gestures were turned into letters, or words? Also, the recent “exertainment” movement provides stimulating design ideas to try out [7].

As a former college athlete, and now a certified aerobics instructor, I have always had great interest in the mechanics of the human body. In a more formal sense, I am also trained as an ethnographer who specializes in methods for discovering human cognitive needs that can be met in technology design. Currently, I am doing research on the role of the body in professional education, and how technology can improve the way students are trained [3]. The unification of these two disparate interests has compelled me to move in this direction in the future. I would like to participate in the research and design of new interfaces that can integrate with humans as complete, embodied beings; interfaces that encourage us to take care of ourselves holistically. The workshop on Exertion Interfaces will be a wonderful opportunity for me to learn about state-of-the-art research in the field, and to build relationships with designers and other researchers with whom I may collaborate in the future.

**Citations**

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