

Freedom of Fun, Freedom of Interaction

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The modernist tradition still drives our society and our scientific endeavors. Modernity stood for technology push, progress through industry, linearity, money, the abstract, and the logical. But it has resulted in a feeling of uneasiness, even coldness. That is why, we think, there is now such a drive to get human and societal values back in the equation: Think of human-centered engineering, the experience economy, funology, and the like. In this article we give an example of the direction interaction-design research might take. We describe an approach that exploits all human skills, including perceptual-motor and emotional skills. We then reflect on the question of why industry has been slow to adopt this approach.

What can design research do to contribute to an engaging experience?

We begin with the understanding that to incorporate fun, beauty, engagement,

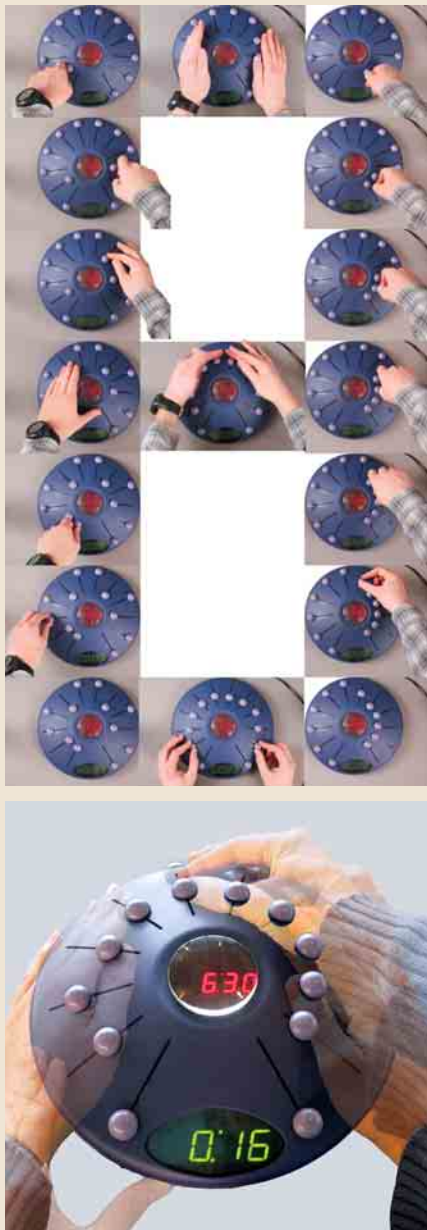


Figure 1: The top sequence (top to bottom) is an expression of irritation through swift actions resulting in an asymmetrical and chaotic pattern. The bottom sequence is done in a relaxed state with symmetrical actions.

and emotions in person-product interaction, we have to respect all human skills. In HCI-research the primary focus has been on interaction that relies on the cognitive skills of the user. Today, we are seeing new approaches to interaction that focus on the perceptual motor skills, i.e., tangible interaction [1], and those that focus on the emotional skills, i.e., affective interaction [2]. We propose a marriage of these two approaches, i.e., a

tangible approach to affective interaction. In this approach we take the interaction with the product as the starting point for the detection of emotion. While physical interaction with the product is needed to communicate “factual” information, it is emotional interaction that connects the person to the product.

Expressing Emotions

The way one interacts with the world is colored by mood or emotional state. For successful human-human communication the expression of emotion is essential. In human-product communication people also express emotion (often negative); for instance, they may shove a chair, bang a printer, or slam a door. While this behavior might offer some relief, it does not enhance communication or the experience. On the contrary, if we forcefully express our negative emotions we can break the product and diminish the beauty of interaction. Is it possible to design products that can invite, recognize, and adapt to emotions?

Expressing emotions to an interactive product presupposes freedom of expression and thus freedom of interaction. This freedom of interaction is based on the exploitation of a range of perceptual motor skills by offering the user myriad ways to reach the product’s functionality. The designed action possibilities should therefore allow for diversification. This diversification can be realized through variations on the following aspects taken from the physical world, e.g., time, location, direction, dynamics, modality, and expression of the action [4].

In our alarm clock prototype, freedom of interaction is realized by offering myriad ways to set the wake-up time, instead of a fixed sequential procedure. Figure 1 offers a sampling of the many ways to set the alarm clock to 6:00.

In a user test with the alarm clock we demonstrated that the freedom of interaction allowed for freedom of expres-

sion from which the person’s mood and a level of urgency could be recognized. We found positive correlations between the mood of the users and their creation of beauty of interaction, as measured via the aesthetics of symmetrical and balanced actions [3]. Urgency was expressed in actions that resulted in smooth, yet unbalanced slider patterns. Over time the alarm clock can adapt to this information to engage in an emotionally valuable relationship with the user.

Traces of Action

An important part of expressing oneself is seeing the effects emotionally expressive actions generate in your environment. It allows you to value and appreciate what you have done. This means that there should be more to freedom of interaction than unlimited freedom of action. While unbounded action possibilities might allow for freedom of expression, the experience becomes even more engaging if the result reflects the expressive action, in the way a snowboarder looks back to the slope to appreciate the beauty of the trace left behind. The experience of the descent is not only about getting to the bottom of the mountain, but how one gets there. The trace in the snow is a reflection of this experience and becomes part of the experience. Likewise, setting the alarm is not only about the fact that it will be set to 6:30; it is also about how you set it to 6:30. It’s about how the setting expresses your mood and a sense of urgency. Therefore the alarm clock not only informs you about the alarm time, it also reflects the emotional expression of the action. The slider pattern of the alarm clock is an inherent and tangible trace reflecting the expression of the actions that modulated the slider pattern. When the inherent trace in the slider pattern is coupled to the functional feedback, i.e., the alarm sound, it offers information about the current state of the product, i.e. its functional mode. Because both the slider pat-

tern and the alarm sound allow for so many variations there is ambiguity in what the exact relation between the two is. This ambiguity can invoke curiosity and stimulate exploration, keeping the interaction engaging and fun.

Why Industry Doesn't Pick Up

In modernity we are driven by the premise that time costs money, the assumption being that money is the measure of all things—especially a thing's value. But economic value, technological value, cultural value, and therefore human value are not only measured in terms of money or financial capital—perhaps they should never be measured in such terms. The values of modernity also stress that faster is better—the assumption being that speed equals efficiency, time-savings, and therefore, money. In fact, these attributes are favored in humans as well as machines: acceleration, efficiency, order, linearity, simplicity, binary logic, and “machine” like operation, even to the extent that people should reflect these qualities in their behavior and (reflective) relationships with others at all times.

Each one of the “higher” or “emotional” or “humane” qualities which we endeavor to design into our products, flies in the face of modern ideals. The paradox, exemplified by the knowledge that we instinctively want more of these “qualities of life” and yet cannot scientifically prove that they have economic value, is what stops many companies from positioning themselves in this context today. Such qualities are simply measured as too expensive, too complex, too inefficient, too time consuming, and not well organized—even to chaotic.

Most of the world's “corporate” manufacturers and technology development institutions are still evolving in the value environment, driven by the metrics of economic, rather than human value. Despite the fact that this is especially true in the areas of “high” or “intelli-

gent” technology there are glimpses of significant progress in other contexts.

The objects and systems, which have hitherto made us think, remember, imagine the future, feel or simply be, rather than efficiently “do,” have been considered mechanically or technologically simplistic, even though on closer inspection, they are seen to be as complex as we can imagine. Things such as clothes, paint brushes, pencils, time pieces, musical instruments, cooking utensils, craft tools, and pieces of furniture have all regained appreciation as sources of enjoyment, objects of expression and creativity. They have enabled us to grow and participate in our personal, local, and global culture.

In the worlds of embedded computational complexity and the everyday tool we simply haven't reached the point yet where the objects are rewarding enough to use, cheap enough to make, and ubiquitous enough in our everyday cultures for them to take on the mantle of cultural carrier, commentator, or in time even protagonist. Perhaps this is because these technologies have not yet moved fully from the state of scientific instrument to fetish object to the embedded every day.

When this happens and the metrics of “value” are fully human-centered we will be free of the modernist restraints, and the tools of “happiness” will be democratized.

REFERENCES:

1. Picard, R.W. (1997). *Affective computing*. Cambridge: MIT Press.
2. Ullmer, B., & Ishii, H. (2000). Emerging frameworks for tangible user interfaces. *IBM Systems Journal*, 39(3 and 4) 915-931.
3. Wensveen, S.A.G., Overbeeke, C.J., & Djajadiningrat, J.P. (2002, June 25-28). Push me, shove me and I show you how you feel. Recognising mood from emotionally rich interaction. In N. Macdonald (Ed.). *Proceedings of DIS2002* (pp. 335-340). London.
4. Wensveen, S. A. G., Djajadiningrat, J. P., & Overbeeke, C. J. (in press). Interaction frogger: A design framework to couple action and function. In *Proceedings of the DIS2004*. Cambridge, MA.

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It Felt Like Clown Sparkles

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A small group of children are playing in a theatre space. One of them, a four year old boy is carefully investigating a man's hat. The hat is making a singing sound that changes pitch when it is moved. He plays on his own for a long time turning the hat slowly or shaking it and listening to the different qualities of the sound. Then he gives the hat to another child and goes back to where he left his shoes and jacket when he first arrived. There he picks up first one shoe, and then the other. He turns them over and shakes them a bit—but they just don't make a noise like the hat.

The hat is part of a set of dress-up clothes made for a project called ensemble. The other garments are a dress, an umbrella, a bag, a pair of suspenders and