

Prostheses for Instincts

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Abstract

What if we had devices that induced emotions in a manner similar to instincts, but triggered by non-tangible stimuli? What if we used machines to act as prostheses for instincts we have not yet developed? With this project, I propose a scenario of transhumanity, in which machines induce human emotions, while exploring their aesthetics, functionalities and ethical aspects. This work builds upon a common theme in transhumanism - the augmentation of our natural sensory experiences and thus widening the spectrum of things that we can perceive.

Background

Instincts are embodied dispositions towards a specific behaviour. Instinctual actions consist of a set of reflexes, which result in changed physical and mental states. An instinctual jumping into action is a primary human experience that deeply effects our emotions. Our natural instincts have ensured our survival for the last 50,000 generations. (Goleman 1995) They are triggered by immediate outside stimuli such as predatory animals or dangerous substances like rotting food, faeces, or carcasses. Such threats signalled the possibility of a swift death for early humans.

With the help of technology we have managed to create a highly industrialised environment that grants our survival without needing to rely on our instincts. Now we hardly find ourselves hunted for food (Adler et al., 1998). We ourselves do not even need to hunt animals for a meal. We have facilities to supply us with food, when we need it. We can refrigerate what we want to eat.

Our basic needs of survival are cared for by a complex system of services and supply chains. Our prosperity is directed by the highly abstract dynamics of a global

market. Our social status is progressively measured with new forms of social currency situated within networked realities and our interpersonal relations evolve to a technologically mediated habit of deferred communication.

Societal processes that once were immediate and tangible, have become deferred and enigmatic. We can observe that trade, communication and social dynamics have evolved into data streams. This data is intangible and totally separated from our physical selves. As a result, some of our instincts weakened, others deadened and those that remain are redirected to unrewarded activities. We infer that our hardwired emotional infrastructure is practically incompatible with the current forms of deferred social organisation, interpersonal interaction and economic realities.

Idea

How can we retrieve the instinctual abilities of pre-societal humanity and how can these instincts be mapped on today's complex environment? How can we gain a set of instincts that are engineered to fit today's needs?

We need to make use of technology to connect our bodies to the abstract data that surround us. We need machines that give us the ability to react to data in the same manner we once reacted to immediate dangers. We need machines to help us experience the same emotional intensity with data events that we had with tangible threatening events.

Prostheses for Instincts

The term 'prostheses' is used here in the sense of 'addition' or 'extension' of the body, rather than referring to a purely medical understanding of the prosthesis as a 'replacement' (Smith and Morra 2005). *Prostheses for Instincts* are wearable devices that allow us to instinctively respond to the data that has a huge impact on our personal wellbeing and reputation. A wireless connection binds the devices to a specific data stream. This can be real time information linked to one's own stock portfolio, a home country's currency rate and national debt, oil and gas prices, mortgage rates etc. down to one's own status and credibility in social networks. This stream's abstract signals are parsed and analysed and eventually translated into physical stimuli upon wearer's skin.

Referring to the concept of 'body to emotion feedback', which postulates that our bodily state can directly influence particular emotions we feel, we hypothesize that the strategic use of physical sensations will induce specific emotional states (Kok et al., 2008, Ekman 1992). The devices induce a form of peripheral feedback (Kok et al., 2008) through different actuators on different locations on the skin. As with natural instincts, experience of the world is one teeming with palpable emotion-inducing sensation. Delivering such a tactile experience in connection to data, these devices take the role of an artificial instinct that we are lacking.

Aesthetic questions

Zooming in on the design aspects of this project, we can see a set of questions arising that ask for investigation. These questions are not exclusively related to the devices' practical application. Yet, it is vital in creating a functional prototype to explore how these devices will be attached to the body and what kind of materials are suitable for direct contact with the skin; we are much more interested to investigate the aesthetic questions arising from a critical design perspective (Sengers 2005) (Figure 1). We want to explore to which extent the idea of the prostheses should be reflected in the form giving.

Medical prostheses in general strive to be invisible. Can Prostheses for Instincts instead - aim to have a prominent form? If so, would their meaning be altered into a statement for transhumanity rather than being simply functional devices? Which aspects of the body's organic properties should Prostheses for Instincts borrow? What would change for the wearer if they are openly exposed to a public audience?



Figure 1. Exploring aesthetic qualities of *Prostheses for Instincts*

Applications

The theme of Prostheses for Instincts creates a framework that allows for a variety of potential applications. In the following section some of these will be introduced and explained.

The first application of Prostheses for Instincts is a device intended to create cold shivers, goose bumps, raised neck hair - to elicit the state of alertness and the emotion of fear. Fear in this context should not be mistaken as an unnecessary inhibiting and 'negative' emotion. Seen from a biological or behavioural perspective, fear is an important component of our built-in defence system to deal with immediate and anticipated dangers. Fear is probably the most researched of all human emotions (Ekman 2003). It sharpens our senses, lifts us to state of increased alertness, focuses our attention and gets us 'ready for action' in the face of an immediate threat (Misslin 2003). To elicit a feeling of discomfort and fear, a combination of haptic (vibrating) and thermal (cold) stimulation is applied onto the skin. This uncomfortable sensation is then distributed across the surface of the skin as 'phantom sensation.' To create this effect, a set of points on the body gets successively stimulated, following a predefined pattern. The wearer now not only perceives cold taps, but a sensation of being touched by a 'ghostly' finger or small animals running on his body (Geldard 1972).

Other potential applications would be devices to address an instinct of domination and submission. Those prostheses are a take on the concept of a virtual currency based on personal reputation (Doctorow 2003) as we can see it emerging in online communities. The idea is to take one's virtual reputation back to the physical world and the body. One variety of prosthesis would place the wearer within the social hierarchy by stooping (Riskin 1984). Depending on his or her social reputation, a device in form of an exoskeleton could constrain or free posture. Another application could be that of a 'social radar.' Supplying the wearer with up-to-date social rank information of peers, this prosthesis helps to detect the 'alpha person' in a group of strangers. Both applications amplify our fears about egoism as it is measured through social networking services but also the familiar desire for and prohibition from eavesdropping.

Discussion

A transhuman future in which people make use of Prostheses for Instincts raises a number of ethical questions about their advantages and dangers. While our natural instincts are triggered by tangible stimuli and received as a signal in the amygdala, the 'non-thinking' emotional centre of the brain (Misslin 2003), wearing a Prosthesis for Instincts follows a conscious decision; we would be given the possibility to choose

what kind of scenario we want to sense or emotionally experience. This would mean we could make much more rational use of our instincts. On the other hand, the stream of data fed into the device to create the automated stimulations could potentially be filtered, censored or fed with fraudulent information. Using technology to elicit emotions in a large group of people and thus creating a situation of collectivised feelings, opens a doorway to mass manipulation, which is a very powerful and potentially dangerous political tool. And finally - what if emotion gets automated and mediated by devices, what does it mean to be emotionally ill in a transhuman world?

Conclusion

This project is an experiment trying to merge an artistic concept with a design approach and scientific research. It started life as a graduation project in the Design Interactions course at the Royal College of Art and was taken to this stage during a research stay at the Meta Perception Group of University of Tokyo's Department of Creative Informatics in summer 2009.

One of the goals of this project is to encourage a debate about our status as human beings in a society that is highly driven by on interdependent abstract streams of data. Yet, we don't want Prostheses for Instincts to be limited to playing the roles of protagonists in a design story (Sengers 2005) with the intention to engage a public audience. This project's aim goes further by developing functional technological methods through which wearable devices interact with human bodies. On our way home to instinctual life, we seek to find a new more revealing relationship to worn prosthetics.

References

Adler, R. S., et al. "Emotions in Negotiation: How to Manage Fear and Anger." *Negotiation Journal* 14, 1998: 161-179.

Doctorow, C. *Down and Out in the Magic Kingdom*. Tor Books, 2003.

Ekman, P., Rolls, E. T., Perrett, D. I. and Ellis, H. D. "Facial Expressions of Emotion:

An Old Controversy and New Findings [and Discussion], *Philosophical Transactions. Biological Sciences*, Vol. 335: 1992: 63-69.

Ekman, P. *Emotions revealed*. New York: Henry Holt and Company, 2003

Geldard, F. A. and Sherrick, C. E. "The cutaneous 'rabbit': a perceptual illusion." *Science* 178(57): 1972: 178-179.

Goleman, D. *Emotional intelligence*. New York: Bantam Books, 1995.

Hesse, G. A., Spies, K., and Hesse, F. W. "Experimental inductions of emotional states and their effectiveness: A review." *British Journal of Psychology*, 85(1): 1994: 55-78.

Kok, R. & Broekens, J. "Physical Emotion Induction and Its Use in Entertainment: Lessons Learned." In *New Frontiers for Entertainment Computing*, 2008: 33-48.

Riskind, J. H. "They stoop to conquer: Guiding and self-regulatory functions of physical posture after success and failure." *Journal of Personality and Social Psychology*, 47(3): 1984: 479-493.

Sengers, P., K. Boehner, David S., Kay J., "Reflective Design." *Proceedings of the 4th decennial conference on Critical computing: between sense and sensibility*, 2005: 49-58.

Smith, M., Morra, J., eds. *The Prosthetic Impulse: From a Posthuman Present to a Biocultural Future*. The MIT Press, (illustrated edition), 2005.