

# NEURO-TECHNOLOGY AND AUGMENTED PERCEPTION

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Science fiction films suggest methods for contextualizing concepts and concerns surrounding new perceptual technologies. Through revisiting two films, I will highlight major themes of neurological perceptual representation and procedural translation associated with brain computer interfaces, while suggesting their relevance to contemporary trajectories in augmented perception and mixed reality.

Traditional science fiction films suggest methods for contextualizing concepts and concerns surrounding new perceptual technologies. Through revisiting two well-known science fiction films, *Brainstorm* (1983) and *Strange Days* (1995), I will highlight major themes of neurological perceptual representation and procedural translation associated with brain computer interfaces, while suggesting their relevance to contemporary trajectories in augmented perception and mixed reality.

Brain sensors are integrated into diverse contexts ranging from imaginative portrayal in films, actual use within interactive art works, and as scientific tools for investigation. Throughout each, the apparatus stimulates narratives of penetration, record, distribution, replication, simulation, and reproduction of interior perceptual experience. These narratives are not unique to brain sensors, but rather continue along a technological trajectory, including forms of perceptual instrumentation and methodology as diverse as the X-Ray and psychoanalysis.

## Perception as Media

*Brainstorm* opens its trailer with the provocation: "Suppose it were possible to transfer from one mind to another the experience of another person, any person, any experience." This major fantasy surrounding this transfer of experience implies that the device will mediate an immersive experience that is paradoxically both immediate (1) and scientifically observed. The device's methods reflexively call attention to the neurological perceptual process as a mediating act that can be extended and replicated.

"Immersed in media experience, conscious of mediated experience, we no longer experience any realm of human existence as unmediated, immediate, "natural". We can only imagine such an experience (now aware that imagination, too, is an "imaging," a mode of mediated representation)." (2)

The physiological act of perception is presented as a cinematic media process, accessed computationally through a scientific device, such as a brain computer interface, and distributed cinematically. Sensory information is recorded as electrical data signal, stored, transmitted, and reconfigured from one processing center to the next along a one-to-one pathway. In *Brainstorm*, the biological brain is intercepted and translated by an electro-mechanical headset prosthesis. In *Strange Days*, the brain-computer-interface, called the SQUID (superconducting quantum interference device) references, at least in name, early brain imaging technology associated with clinical MEG (Magnetoencephalography), first developed in the 1960s. (3) Unlike actual SQUIDS, the devices in the film and in David Cronenberg films, such as *Existenz* (1999), are partially composed of biological matter. Nonetheless, processes of perception are still

treated as computational electrical sensory streams, transmitted via digital or analog media distribution channels (tapes or CD's).

Within scientific contexts, imaging of electro-magnetic data from the brain is most frequently used to dissect and understand sensory and perceptual processes. However, computational neuroscientists have also been working to simulate imagery directly from collected sensory data. (4) EEG (Electroencephalography) Neurofeedback is a process whereby electrical neurological data is recorded and re-played for a user, translated into audio-visual signals, or as with LENS (Low Energy Neurofeedback System), fed back to the brain as an electrical signal. While chemical brain alternations are widely accepted psychiatric therapies, active electrical stimulation systems such as DBS (Deep Brain Stimulation), ECT (electroconvulsive therapy), and TMS (transcranial magnetic stimulation), are more controversial. Other experimental researchers have directly stimulated the brain to induce and study perceptual phenomena, such as autoscopia, the sense of an out-of-body experience. (5)

### Augmented Transpersonal Experience

In the films, the source of pleasure seems to arise from the expansion of perception achieved through adaptive integration of the implant of another's perception within oneself. Instead of striving for a complete substitution of perception or full cinematic immersion in the entertainment material, the devices promise a greater pleasure of going beyond both self and other into territory which can only be facilitated through integration with the device. The novelty of perceptual difference might increase awareness of one's own interpretive biases and filters, propelling the user into a state of augmented meta-awareness beyond the confines of the individual self.

Both films use the fantasy of experiencing another's perception to engage with the desire to know what happens at the moment of death and beyond. In *Brainstorm*, this ability to see beyond the confines of one's own perception culminates in a scientific and spiritual quest to experience extended frontiers beyond mortality and physiology itself. This desire to engage in the most forbidden of experiences, seeing death before actually dying, is presented as an alluring scientific, philosophical, and entertaining goal. In *Brainstorm*, the main protagonist scientist, Michael, excitedly exclaims: "I'm scared, but the thing is, I like it. I want more. It's a chance to look scientifically at the scariest thing a person ever has to face."

### Representational Modes

*Brainstorm* maximized the special effects of its day, including extended 70mm show-scan projection technology and enhanced graphics, to represent the transcendent experience of dying first as a poetic reflection on the brain as computer database memory mainframe, before travelling through psychedelic abstraction, and then finally dissolving into hyper-space. Douglas Trumbull directed *Brainstorm* after producing other effects sequences representing the sublime through of technology and space, including *Close Encounters of the Third Kind*, *2001: A Space Odyssey*, *Star Trek: The Motion Picture*, and *Blade Runner*.

*Strange Days* presents the perception of dying as a pleasurable desire in more pathological terms. Snuff tapes, in which an individual's perception is recorded as they die, are a prized form of entertainment. During the film's homicides, victims' deaths are shown on screen, while the perceptions of the perpetra-

tor are continually recorded and simulated for the victim - homage to the voyeuristic pleasure of augmented terror presented in Michael Powell's film, *Peeping Tom* (1960). Here, desire concentrates on an intensification of physiological expression associated with fear of death and the otherwise unrepeatable embodied terror of dying, rather than transcendence or dissolution of individual material experience.

In *Strange Days*, the clips end at death, asserting that perception is either an on/off binary, or ceases to be able to present information related to its own destruction. The clips are displayed in factual photorealistic form without attempt to treat perception subjectively or abstractly, even in moments intended to represent intense feeling and death. Instead, perception is displayed as classical first person point-of-view cinema. While the dominant movement within contemporary visual effects continues towards graphical photorealism, alternate trajectories do exist, emphasizing abstracted subjectivity, exaggerated hyper-realism, and other forms of stylization serving affective perceptual effect. (6) In terms of brain computer interfaces, movements of presentation might span the gamut from desires to replicate or simulate objective reality, to alternate attempts to diminish or amplify more affective, subjective, or thematic aspects of perception for narrative aim.

In conclusion, examining notable science fiction narratives is a valuable method for extrapolating conceptual trajectories of less traceable interactive media art forms. In particular, *Brainstorm* and *Strange Days* demonstrate how perceptual processes and mediation devices have been represented, contextualized, and integrated with popular media forms, while suggesting thematic issues relevant to working with augmented perceptual devices. If perception is framed, translated, taught, modified, and augmented in part through existing neural technologies, what new speculative design contexts might be employed to encourage the development of devices that augment perception in ways beneficial to society?

### **References and Notes:**

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5. Olaf Blanke, Theodor Landis, Laurent Spinelli, and Margitta Seeck, "Out-of-body experience and autoscapy of neurological origin," *Brain* 127 (2004): 243-258.
6. (Sobchack, 283).