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Better Than Opiates

To assume that immersive “VR is dead” is premature. It belies a lack of cultural, historical and technological knowledge, or signals the peculiar foggy hangover that results from a common conflation, frozen in time – entanglements of a giddy technological imaginary with attendant utopian and dystopian visions, disappointments born of early technophilic hyperbole and the twinned forces of technological imperatives that march arm-in-arm with knowledge regimes that privilege the always-ever-new (Lyotard, 1985). Although research in VR has waned in the realms of Computer Science and Interactive Art, a diversity of other disciplines have quietly but significantly expanded its scope and everyday use. Further, ideas derived from early work in VR continue to inform other practices in ways that remain invisible and under-examined.

Our current work involves immersive VR, primarily because it has been shown to be consistently more effective than opioids in alleviating pain (Hoffman, 2009). That a specific form of media can be used to alleviate pain at all, and can consistently trump the widespread, centuries-long use of opioids is exceedingly provocative. Research in VR as a non-pharmacological form of analgesia appears to be limited to shortterm, acute pain. Though the reasons for why VR works to reduce acute pain is unknown, it is discussed in terms of “pain distraction.” Our work is distinctive because it addresses not acute but long-term, chronic pain – recently defined as a disease that is so widespread it is referred to as ‘the silent epidemic.’

Eschewing the more common perspectives that focus on teleological histories or on immersion and presence, we build on our experience in creating well-known virtual environments for artistic, cultural heritage and medical applications. We examine specific affordances of VR through the lens of a fundamental human experience – pain. As in disability and animal studies, to understand pain necessitates a radical questioning of ways of knowing and being – described by Cary Wolfe (2009). Pain teaches us that bodies do not respond in some “objective” manner (Scarrey, 1985). It brings to the foreground embodied perceptual and sensory roles in experience,



Fig. 1: Virtual Meditative Walk

The biofeedback signals – indicators of inner processes – continuously change the visuals and multilayered sounds, helping immersants learn to meditate, and thereby to better modulate their own sense of pain intensity.



Fig. 2: Dancing with the Virtual Dervish: Virtual Bodies, 1992-2003, Diane Gromala & Yacov Shair.

The more literal form of the body, derived from MRI studies of Gromala's body, continuously moves, according to immersants' physical movements. Not depicted are organs; though they appear to be small, vast, non-rectilinear, abstract spaces unfold, provoking proprioceptive disturbances.

many of which are usually beneath conscious experience (Leder, 1990), and underscores the mediating role of culture (Gatchel, et al., 2007). Thus, the inextricable interplays of artistic intent, immersant experiences and ascribed meaning, and “technical entities” (Simondon, 1958) are crucial in our work. Both VR and pain are boundary conditions that bring inner and preconscious processes into awareness, and scramble embodied perceptual processes and normative ways of thinking and being in the world.

References

- Lyotard, Jean-Francois (1984) *The Postmodern Condition: A Report on Knowledge*. Minneapolis: University of Minnesota Press.
- Gatchel, Robert J., Peters, Madelon, Fuchs, Perry N. & Turk, Dennis C. (2007) 'The BioPsychoSocial Approach to Chronic Pain: Scientific Advances and Future Directions', in *Psychological Bulletin*, 133:4, 581-624.
- Hoffman, Hunter (2009) 'Virtual Reality as an Adjunctive Pain control during burn wound care in adolescent patients', *Pain*, Vol. 85, No. 1, 305-309.
- Leder, Drew (1990). *The Absent Body*. Chicago: University of Chicago Press.
- Scarrey, Elaine (1985) *The Body in Pain: The Making and Unmaking of the World*. New York: Oxford University Press.
- Wolfe, Cary (2009) *What is Posthumanism?*. Minneapolis: University of Minnesota Press.