Introduction: Stereoscopic Illusions

Maurice Merleau Ponty has said that ‘to see is to have at a distance’ (1964: 166). Vivian Sobchack quotes this in order to make the point that to hear, by contrast, is to be enveloped and surrounded (2012: 30). Although Sobchack frequently discusses audio-visual media that conflate this distinction between the senses (1992, 2004), long-standing artistic practices and theories posit sight as the colder, yet more intellectually engaged, disembodied receiver of phenomena. Consequently, artistic works, particularly those created in the Western world over the last few hundred years, are often constructed to maintain this division (Crary, 1992; Marks, 2000). What, then, of optical illusions that rely on a sense of proximity in order to function? In particular, I am interested in stereoscopy as a mode of visioning that has an almost 200-year history based upon deceiving the eyes’ understanding of distance, depth and solidity.1 While stereoscopic images, be they from the stereoscope, cinema screen, television set or computer monitor, do not fully envelop or surround their viewer, by no means are they at a distance in the same way that flat (2D) images are. I do not use the term ‘flat’ to suggest that these latter images are without significant depth cues (perspective, shading, motion parallax), but they do perceptively operate on a planar surface. They do not contain the negative parallax (in the auditorium) and positive parallax (receding depth) qualities unique to stereoscopic imagery, which can only be realised when binocular vision is activated. I shall return to these technical considerations shortly, but, needless to say, stereoscopic images disturb the traditional concept of disembodied vision.2 They present optical illusions in which objects

M. Ross, 3D Cinema
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are frequently extremely close but simultaneously not quite there, forcing into play an embodied engagement with a thick, tactile visual field. Although one could argue that stereoscopic moving images do no more than replicate our natural viewing process whereby sight displaces objects, the illusion at the heart of stereoscopy makes seemingly stable boundaries permeable and the stability of the self in distinct space is diminished, far more so than the radical reconfigurations of the self in space that occur during edited sequences in flat moving images. When dust motes in *Hugo* (2011) appear to gently swarm around the auditorium and when luminescent seeds in *Avatar* (2009) seem to be within touching distance of one’s fingertips, the body is positioned in a sensory arena that is material and immaterial at the same time.

The mechanisms for producing stereoscopic imaging have been in place since the late 1830s, and, while under-studied, their effects on audiences should not be underestimated. There have been a number of landmark moments that offer new technological manifestations but nonetheless retain the same aim of displaying binocular depth. Stereoscopy was first showcased in 1838 when Sir Charles Wheatstone presented hand-drawn images in a reflecting stereoscope in order to demonstrate his theories of binocular vision (Darrah, 1977; Schiavo, 2003; Zone, 2007; Pietrobruno, 2011). His device was able to combine two separate images into a single, depth-rich view and was later updated to display stereoscopic photography, particularly when commercialised by Sir David Brewster’s lenticular stereoscope in the 1850s. The stereoscope then moved from a parlour object to a mobile imaging device when Oliver Wendell Holmes modified Brewster’s box-type stereoscope into a hand-held version, which (unpatented) became especially successful in the US. At the height of its success, stereoscopic photography was more common in the home than flat photography, and millions of stereographic images were produced worldwide throughout the nineteenth and twentieth centuries (Fowles, 1994; Babbits, 2004). From its early days there was interest in producing stereoscopic moving images: experiments in the mid- to late nineteenth century led inventors such as Antoine Claudet, Jules Duboscq, William Thomas Shaw, Henry Cook, Gaetano Bonelli, and Emile Reynaud to work on stereo-versions of moving-image devices such as the Phenakistoscope and Magic Lantern Slides (Zone, 2007). While many of their attempts to animate photographic