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Technological Claustrophobia

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A few years ago, while visiting an observatory in Dublin as part of an ongoing interest in the nature of scientific practice and the spaces in which it operates, I unexpectedly came across a curious memento. Dunsink observatory is part of the Dublin Institute of Advanced Studies and has had many illustrious inhabitants in its 200-year history, perhaps most notably the mathematician, William Rowan Hamilton, whose work on quaternions contributed in no small way to the development of quantum mechanics in the early 20th Century. Perhaps due in part to his work, the practices and the technology associated with astronomy have moved on considerably since Hamilton’s day and today Dunsink is no longer a working observatory, with many of its staff having relocated to the city center. So it was with some surprise that I found myself at the observatory on the day in question, holding a small Irish flag about the size of a postcard that had apparently traveled to the moon onboard the Apollo 11 spacecraft and which for some reason had ended up in Dunsink.

Fig. 1 – The Irish flag which was carried on board Apollo 11, 1969

Michael Collins was the command module pilot for the Apollo 11 mission and some maintain he has Irish connections so it was with a degree of improvisation that I connected him with the little flag. Although previous space missions had made successful lunar orbits, Collins was the first person to make this journey alone and for some 48 minutes during each revolution of just under two hours, he was entirely cut off from radio contact, his only link with earth. I mention this story as the flag became firmly lodged in my imagination and was the catalyst for a number of related projects, one of which was to try to make a film that somehow recreated Collins' lunar orbit in real time. Many of the familiar 16mm film sequences from the Apollo missions were shot at a low frame rate. When played back at normal speed this has the effect of accelerating the spacecraft's apparent movement above the moon, an acceleration that further distances the viewer from the astronauts' actual experience in space. In contrast, I wanted to recreate an orbit that occurs in real time, where there is a correlation between the physical space covered in a particular period and the time spent viewing this unfolding scenario. This necessitated building a model, albeit a computer model, of a vast, expansive space, an activity that happened to take place within the confines of a small room.

Fig. 2 – 4 Intervals, 1998 (digital c-print on aluminium, from a series of four, 80.5 x 150 cm)

These days a computer can be used pretty much anywhere but sometimes the specific location in which someone works affects the nature and character of that work. The spaces of thought, speculation or imagining can sometimes mesh with the actual spaces one inhabits [cf. Bachelard 1969; Perec 1997]. But computers are representing machines like no other. A computer embodies multiple realms, being at once a material object and simultaneously a space for action or a place of retreat. Moreover, a computer model – or any computer file, for that matter - is embedded in a code which becomes the means through which it is made manifest. The visual representation, the model's appearance, is a kind of external projection of the idea that the model embodies. As the philosopher Vilém Flusser maintained, the 'form' is 'materialized' [Flusser 1999]. Such an image, and there are an increasing number of them, is possessed of a peculiar reality. Part of this world and yet somehow occupying another space, it is rather like an externalized thought or dream. Writing on what he saw as a 'new imagination' associated with this technology, Flusser remarked that: 'One can follow this sequence of images, just as if the imagination had become self-sufficient; or as if it had travelled from inside (let's say from the cranium) to outside (into the computer); or as if one could observe one's own dreams from the outside.' [Flusser 2002]

For a number of years I have worked routinely though not exclusively in a small room (which measures 1.9 x 2.7 metres), surrounded with the products of my research, the things, images, texts and references which on occasion find their way into my work. As frequently, however, electronic information washes up in this networked space from the proliferating ocean of knowledge, commerce and ephemera that is the world-wide web. This is a world inscribed through codified data, a set of representations that have transformed the world we inhabit within a relatively short period of time. In some senses, it has become a tangible outside to the interior spaces of thought, memory and the imagination. In contrast, when working with synthetic computer modelling processes, nothing is given. Objects and spaces are inscribed through data;

they are constructed and exist within a kind of vitrine where there is little sense of an outside.

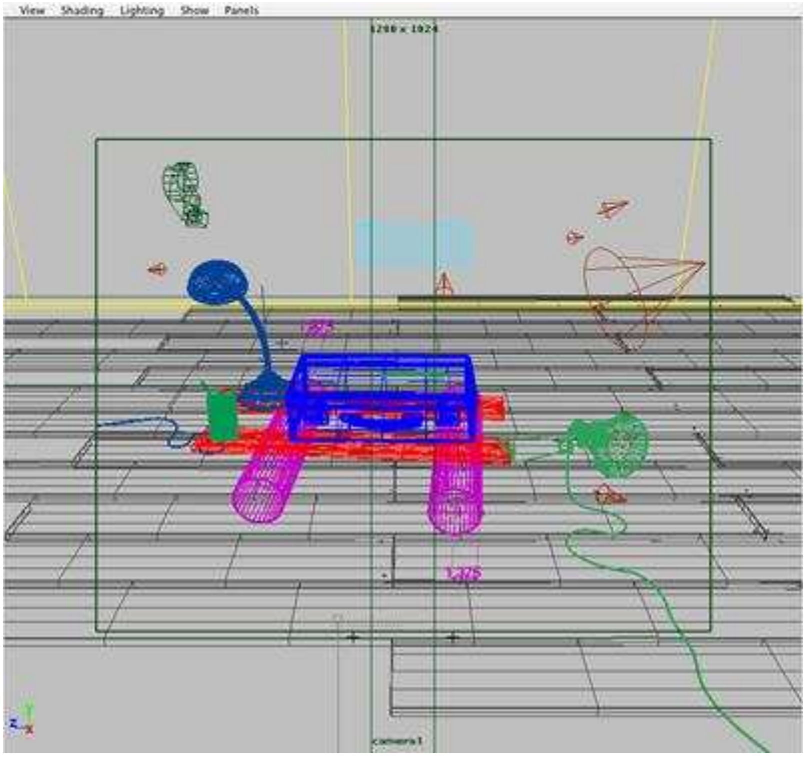


Fig 3 – computer modeling environment

Fig 4 – Prototype, 2005 (digital c-print on aluminium, 120 x 150.2 cm)

Indeed the very idea of an outside to such a vitrine-like world-within-a-world is problematic. These calculated spaces are projections from a position of confinement rather than unfettered realms of exploration. Nothing is given, everything is fabricated. The experience of working in a highly systematized space, removed from the touch, sounds and smell of things perhaps inevitably leads to a desire to escape, to go from a calculated world of zero dimensional points out into a world out of people and things. By externalizing (computationally) whatever is internal to the mind, an environment is created that is not strictly outside this mind. Inside and outside become conflated. Obviously such models currently have nowhere near the degree of complexity ascribed to what could be hesitatingly called real things. At best, they are schematic. But imagine a time (playfully) when these processes will be developed to a far greater degree and to a far greater degree of exactitude. The more precise and detailed the model, the more determined and resolved the thought will be. The model and the actual thing might jostle for your attention. The model could conceivably compete with the object in a concrete sense and you could conceivably lose track of where you actually are, and perhaps disappear altogether like the characters in Ilya Kabakov's artworks, into an undifferentiated space of bits. Since The Matrix, such ideas are more or less clichés. Now there is confident talk about the 'edge of the construct', the point at which the artificial worlds rub up against the real one [Clover 2004]. The latter will always seem to have priority over the former. But Flusser thought that things were perhaps more complicated. The flood of technological images does not obliterate the ‘real’ but poses a conundrum: it is not that the virtual worlds are more or less real, but that what we call reality is more or less an apparition.

With such thoughts in mind and while fixating on the material and paraphernalia surrounding the exploration of the moon (and inspired by my serendipitous encounter with the aforementioned Irish flag), I found myself looking at maps of the moon with a view to developing the animation of a lunar orbit. As far as this was possible, it was important that this animation was rooted in fact rather than invention and so it became necessary to construct a logical, computer model in which the relative scale and positions of the moon, earth, sun and stars correspond as far as possible to actuality. The moon’s surface is based on the Clementine dataset, currently the most complete map of the moon’s surface, which is freely available digitally through the United States Geological Survey (see below for the link). Part of a military research the project that was a successor to the ‘Star Wars’ program of the 1980s, Clementine was the name of a joint NASA/U.S. Department of Defense mission in which a spacecraft was sent to the moon in 1994 with a view to mapping it photographically. Clementine spent some months orbiting the moon, systematically generating 1.8 million images which have since been collated into a mosaic of the entire lunar surface. Anthony Cook, a computer scientist who has been working with the Clementine data for a number of years, has derived a ‘digital elevation model’ from this data which enables one to generate three dimensional terrain from the two dimensional source material, based on the relative greyscale values at a particular point in the map. The lighter the tone, the higher the terrain and vice versa.

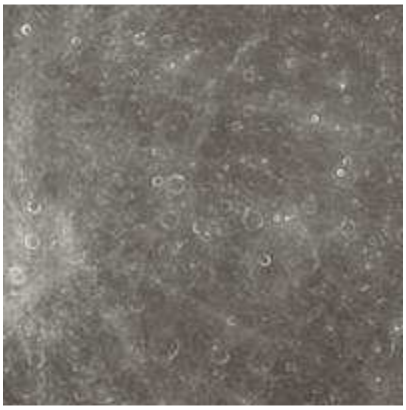


Fig. 5 – Detail of a 30° tile based on the original Clementine mosaic

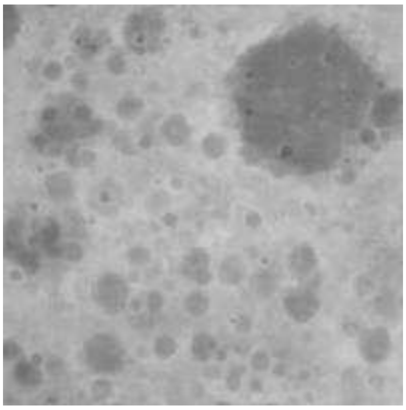


Fig. 6 – Detail of the corresponding digital elevation model used to generate three dimensional terrain

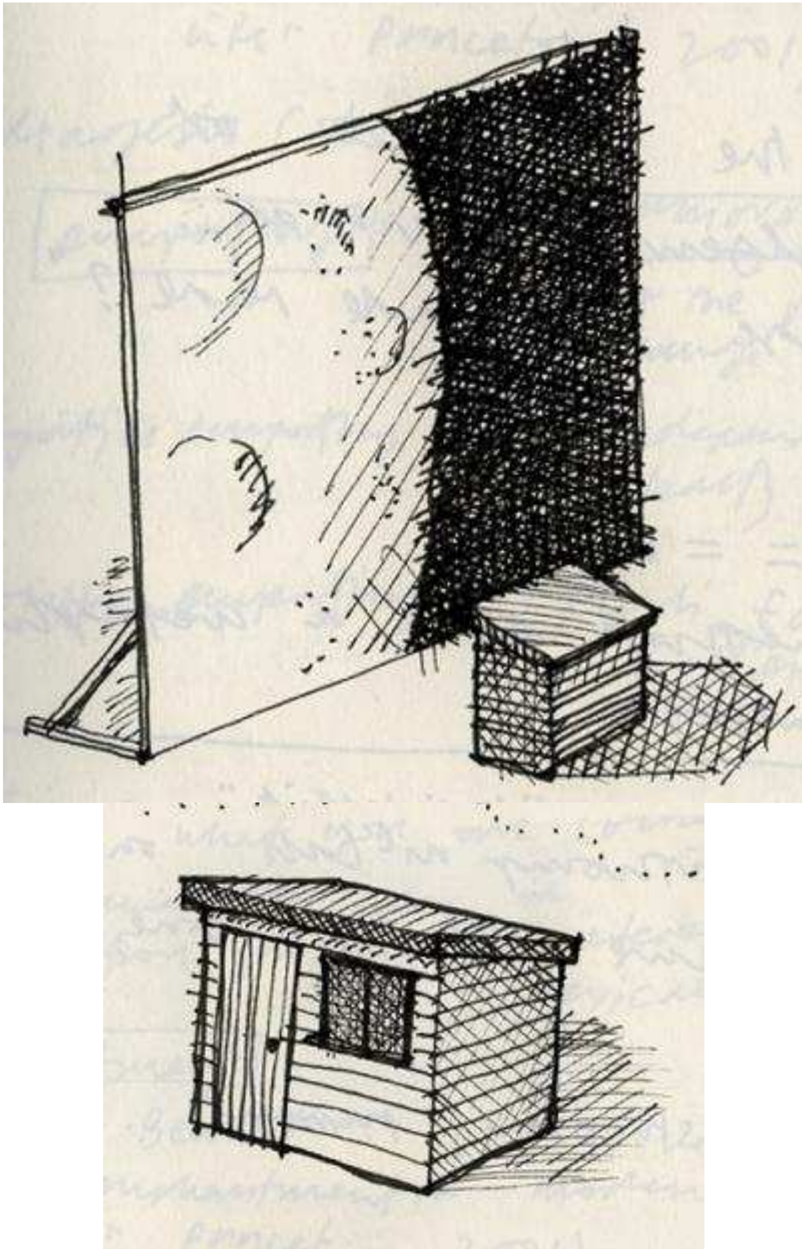
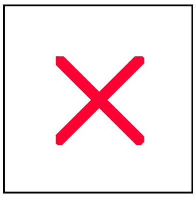


Fig. 7, 8 - Two drawings for a possible projection scenario

This project involves a curious conflation of spaces (interior, exterior, cosmological, imaginative, and so on). Technology is used as both the conduit and the means with which to construct and project a speculative model as the basis for a physical, spatial experience. Perhaps unintentionally mimicking the Apollo missions' paradoxical sense of 'outward-bound confinement', the animation is being produced entirely within the aforementioned small room. But it would be unthinkable without access to the hard scientific, observational data made publicly available by NASA and the USGS via the Internet, information that is in theory accessible to any computer anywhere in the world. Ubiquity, the convergence of multiple spaces, frameworks and narratives is an inescapable fact of modern computing (and modern life) but for this project at least, it seems appropriate that this material is collected, collated and reconfigured in the specific place in which the idea first occurred to me.



Clementine, 2008 (digital animation, 118 minutes - 3 minute clip)

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USGS: the Clementine dataset can be found at http://webgis.wr.usgs.gov/index.html