## The Midas project PAUL THOMAS

The *Midas* project is a visual and sonic installation that amplifies certain aspects of experience at a nano level. The *Midas* project is analogous to the curse of the fabled Midas, King of Phrygia, to whom Dionysus gave the power of turning all that he touched into gold. This gift of touch soon changed for the king from a source of pride in his ability to a curse, as even his food and drink transformed into gold. The metonymic work is based on this Midas story, which parallels the transmutability of matter predicted by some nano scientists. As early as 1959 in his paper 'There's Plenty of Room at the Bottom',[1] Richard Feynman made social predictions concerning the potential of nanotechnology to transmute knowledge, stating that there 'is enough room on the head of a pin to put all of the Encyclopedia Britannica'. Eric Drexler further explored these ideas in his 1986 book *Engines of Creation: The Coming Era of Nanotechnology*,[2] in which he hypothesized on a 'grey goo' theory, suggesting that manipulating atoms could lead to a chain reaction where self-replicating nanobots became destructive. The action of the nanobots would call to mind the touch of the mythical King Midas. Bill Joy discussed these concepts of transference and transformation in an article in *Wired* magazine: 'It is most of all the power of destructive self-replication in genetics, nanotechnolgy and robotics (GNR) that should give us pause'.[3]

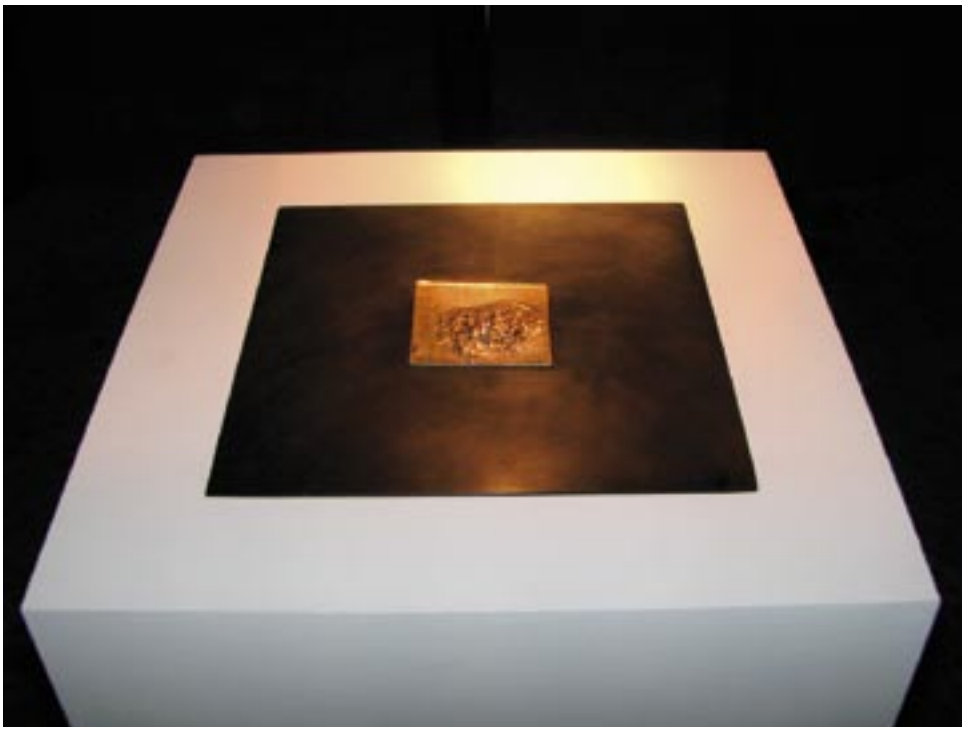
The *Midas* project uses the atomic force microscope (AFM), invented in 1986, and developed at the end of long line of optical microscopes introduced since the early 1600s. Robert Hooke (1635–1703) used the optical microscope to study living systems.[4] Optical microscopes were used exclusively until 1931 when the first electron microscope was introduced. The scanning probe microscope (SPM) was introduced in 1981, leading the way for the scanning tunnelling microscope (STM) and the AFM. Optical microscopes have a number of limitations in that they can only image dark or strongly refracting objects effectively. The diffraction limits resolution to approximately 0.2 micrometres, and ambient light can diffuse the focus. Unlike previous microscopes, the AFM is not optical and therefore the name is a misnomer.

1 R. P. Feynman, 'There's Plenty of Room at the Bottom', *Engineering and Science* 24.1 (February 1960), http://www.zyvex.com/nanotech/feynman.html (accessed 1 November 2007).

2 K. E. Drexler, *Engines of Creation: The Coming Era of Nanotechnology* (New York: Anchor Books, 1986), http://www.e-drexler.com/d/06/00/EOC/EOC_Table_of_Contents.html (accessed 1 November 2007).

3 B. Joy, 'Why The Future Doesn't Need Us', *Wired* 8.4 (April 2000), http://www.wired.com/wired/archive/8.04/joy.html (accessed 1 November 2007)

4 It was Robert Hooke who published *Micrographia* (1665), in which he coined the term 'cell'. When looking through the microscope at box-like cells of cork he was reminded of a monk's cell in a monastery.



The *Midas* project.

For the realization of this installation, Oron Catts and Ionat Zurr cultured skin cells on the substrates at the SymbioticA Research Lab in preparation for them to be scanned. The process of culturing skin cells was to create a unique set of samples from which to work, allowing me to explore various experiments with specific cells. The AFM uses a cantilever probe to touch the surface, reverting to a scanning process where an image of the surface is obtained by mechanically moving the probe in a raster scan of the specimen, line by line, and recording the probe-surface interaction via a laser being reflected on a photodiode. The AFM produces images of atoms, constructing a machinic visualization of the invisible. By scanning a skin cell with both a gold-coated and uncoated cantilever tip, specific recorded data for each event can be comparatively examined. Using the AFM in force spectroscopy mode, which only records the up and down motion of the cantilever, the transition of atomic vibrations between a skin cell and gold is demonstrated. The recorded data of vibrating atoms is translated into sound files to be presented in conjunction with a genetic algorithmic visualization of the skin cell. The algorithm is written to contaminate the skin cell's image, replicating a Drexlerian deterritorializing landscape for semi-autonomous nano assemblers. In the nano world bodies that can be deterritorialized can be reterritorialized. The reterritorialization of atoms can be constructed from a bottom-up approach. In the same way, the binary code of digital culture is based on machinic deterritorialization and reterritorialization of data by digital devices. The machinic controls interpret and process the decoding of data into the manifestation of a thing as a co-conspirator, re-coding and re-translating. The encoded and decoded machinic interpretation implies a territory of continual re-translation as a reaction to chaos.

The *Midas* project uses the skin cell as a visual metaphor for exploring the deterritorialized and reterritorialized nanobiological body. In the installation semi-autonomous self-organizing nanobots affect the AFM's imaging of the skin cell, transmuting it into gold. The experience of touch is represented in this process via the viewer making contact with a gold-coated metal skin cell constructed from a 3D plotted image. This action plays the sound of the atoms and releases nanobots, seeded from the recorded data. The digital sound for the installation presents the viewer with the AFM's

The *Midas* project, installation view.

Photo © Paul Thomas

tactile analysis as an audible topographic map where speakers amplify the data of the atoms' vibrations, making that which is infinitely small both audible and palpable.

To define a contemporary understanding of matter, Colin Milburn states at the inception of nanotechnologies as a scientific discipline that it 'provokes the hyperreal collapse of humanistic discourse, puncturing the fragile membrane between real and simulation, science and science fiction, organism and machine, and heralding metamorphic futures and cyborganic discontinuities'.[5] Thus the possibilities of metamorphic and cyborganic discourses being part human, part the surrounding space and part technology extends our spatial concerns in which the boundaries of the body become a signifier of an imagined particle relationship with the space between and enveloping us. The *Midas* project reconfigures perceptions of space and scale by constructing an experiential space. This space allows for exploration and questions, and further highlights the infinite smallness and the extent to which our perception of scale is of major importance in defining humanity. The sensorial analogy of touch to nanotechnology is confronted in a humanizing way through an immersive desire to be spatially connected to the world around us. 'Nano art' allows for a reconfiguring of our conscious understanding of space, which is our lived experience, generating the potential for new spatial understanding.

This project in collaboration with Kevin Raxworthy was assisted by Oron Catts and Ionat Zurr (SymbioticA), Dr Thomas Becker (Nano Research Institute at Curtin University of Technology, Perth) and Adrian Reeves (Department of Art, Curtin University of Technology, Perth).

**5** **C. Milburn, 'Nanotechnology in the Age of Posthuman Engineering: Science Fiction as Science', in N. K. Hayles (ed.), *Nanoculture: Implications of the New Technoscience* (Bristol: Intellect Books, 2004), 123.**