



# Adam Norton's *Mars Gravity Simulator*

## ALTAIR ROELANTS

As an arts writer, I don't often find myself writing and thinking about space-science, particularly a real experiment that myself and a couple of hundred other members of the public and art world experienced first-hand, in real-time at Sydney's CarriageWorks. Nevertheless here I am – gathered around the *Mars Gravity Simulator* (MGS) – a striking cone-like structure, painted with black-and-white arrows and sporting a variety of rigging – as artist Adam Norton strolls onto 'the stage' and begins to dress in a bright orange utility suit and helmet. The convoy of white-coated MGS 'technicians' then proceed to check the apparatus and to get Norton 'hooked up'. Once weighed in and given the all-clear, Norton pulls down his orange goggles and is off – circling the central structure carrying out an impressive range of timed and measured experiments that analyse the effects of Mars's gravity on varying speeds and types of walking. Obviously this sight was hugely entertaining – as the audience's cheers and animated faces proved – but despite the spectacle, what many people may not have realised was that although the MGS was one of the artworks on display at Performance Space's recent exhibition *Awfully Wonderful: Science Fiction in Contemporary Art*, Norton's experiment and research was actually unfolding in real-time and would continue to do so over the course of the exhibition – and that's what makes the MGS such an engaging and multifaceted work as it continually moves beyond the realms of art and performance to develop lines of scientific enquiry and discovery.

Norton's *Mars Gravity Simulator* is based on a scientific apparatus and test scenario developed by NASA during the Apollo era in the 1960s, which the artist has updated to suit conditions on Mars. Such experiments then, and contemporary models now, are used to measure the effects of reduced gravity on human movement and fitness, and to test spacesuit prototypes against these environmental strains. Norton conceived of the MGS after visiting NASA's Jet Propulsion Lab (JPL)<sup>1</sup> in Pasadena, California, the work forming part of the artist's ongoing body of research, the *Das Marsprojekt* (2009-present) – an area of interest in part because a manned mission to Mars still remains a goal of human space exploration today. This clever but surprisingly simple

experiment that the production team at Performance Space helped Norton to construct involves the test-subject being horizontally rigged up to five ropes and slings suspended from a central axis point fixed to the ceiling at one-third off the perpendicular (approximately the gravity of Mars). In the case of the MGS, these are attached just below Norton's left knee, around his hip, below the arm and helmet, and a 'dog's-leg' brace is attached to the outer right leg to allow movement. The artist then stands on the central structure, an angled circular wooden ramp, or frustum,<sup>2</sup> also at one-third off the perpendicular, specifically constructed to support the Mars component of the gravity. The rigging carries the outstanding part of the test-subject's weight, reducing the overall body mass weight. As a result, when Norton circles the frustum the artist's remaining body mass behaves differently and movements are substantially slowed down, simulating the physical experience one would have in an environment of reduced gravity or, as the artist refers to it, a 'pendulum effect'.<sup>3</sup> Also in line with 1960s NASA set-ups and an aesthetic that certainly appeals to our collective memories of sci-fi films and grainy documentary footage, are Norton's hand-made orange *Mars Utility Suit* (2009),<sup>4</sup> the 'ground-crew's white coats and boiler suits bearing MGS logos, and the 'test station' dotted with monitors.

Norton is keen to position the MGS as an experiment rather than a performance, although one obviously cannot escape its setting, the audience's assumptions, or the fact that he is indeed an artist. Since the late 20<sup>th</sup> century art increasingly has re-found its voice within scientific research. This is particularly true of space-science which has had a long-running relationship with art and imagination. The contemporary genre of Space Art is supported by a broad cross-section of arts practitioners and scientific bodies, including at times NASA. This shift, as with other postmodern, cross-disciplined approaches, contests the binary model and instead seeks a new, integrated role. Science like art also possesses an 'imaginative reach' and 'can be profitably analysed for its subtexts, its associations to more general cultural forces, and its implications as well as its surface rationales'.<sup>5</sup> Such an intermediate position is demonstrated by Norton's approach as he expands upon previous research by creating his own body of

scientific work. In an art context, Norton loosely refers to his work as 'retro-futurism' as he investigates and utilises past technology in an attempt to understand the present.<sup>6</sup>

The test program Norton developed for the MGS was based on his extensive research into Gait Analysis – the methodical study of human movement – and draws upon a selection of technical papers and NASA footage. Throughout the *Awfully Wonderful* exhibition the MGS crew tested a variety of walking styles<sup>7</sup> that involved Norton doing laps of the fifteen-metre central structure, at speeds ranging from 2.4kmh to 9.2kmh, over six sixty-minute<sup>8</sup> live public sessions. Rather than repeating the test-cycle, certain movements were eliminated as the tests deemed them unsuitable for Mars's gravity. The 'bunny hop', for example, used by astronauts on the Moon, was found too fast for Mars's gravity. Other approaches were introduced such as a pulse monitored endurance test. The results were documented on a white board, in a log-report, and were filmed – all of which were on view at the MGS 'test station' in CarriageWork's Foyer throughout the show.

Norton's main objective for the MGS was to share in the experience of those original astronauts by achieving reduced gravity, and to communicate this to others. As with all scientific experiments there is no definitive right or wrong; the 'proof' that the MGS came within a remarkable 7% accuracy to achieving Mars's gravity<sup>9</sup> is demonstrated by Norton's suited weight which dropped from 100kg to 44kg, the slow 'space-like' strides and jumps he was able to make when circling the central structure, and the number of laps he completed with relative ease. The MGS enables Norton to embody his subject through the acts of movement, gesture and repetition, and employs the inherent agency of encounter and visibility that resides in publicly presented live art. Consequently, as science is often positioned as being inaccessible, both linguistically and spatially, the MGS reframes it firmly within the public domain. Here the artwork as 'spectacle' evolves in response to the team's scientific findings, combining the productive and chance elements of science, experience (both Norton's and the audience's), and daily routine. The MGS thus creates an 'activated space' by creating a framework for 'a mode of analysis whereby knowledges and ideas could be extracted from the process of making art, thereby enabling both the maker and the viewer to tune into the sorts of thinking or approaches to the world that apprehension of art itself makes you do'.<sup>10</sup>

Norton's MGS project will continue to exist beyond its own documentation by feeding into, and potentially expanding,

other research forums. The artist's findings have attracted interest from the American Mars Society in view of its annual convention in Dallas next month. Subsequently, the MGS becomes a potential link within this historical cycle: as artist's creations once again make 'dreams desirable for engineers to achieve',<sup>11</sup> and in the contemporary era of paranoia and increasing humanitarian and environmental catastrophes, such expanded and integrated research may become more urgent. 🦋

1. The Jet Propulsion Lab (JPL) is where NASA builds most of its unmanned space program, which includes everything NASA has sent to Mars. They also operate them from the JPL as well as assist tracking other nation's probes.
2. The only major change to the apparatus itself is the central frustum which Norton has designed 'in the round', to accommodate the limits of the project and venue – the NASA models would have been flat and covered a longer distance. The frustum as a shape also references orbiting and the connection point of spacecraft.
3. Adam Norton, in interview with the author, April 2011.
4. Created as part of a previous project.
5. S. Will, *Information Arts: Intersections of Art, Science and Technology*, MIT Press, Cambridge, Massachusetts, 2002, p. 3.
6. Adam Norton, in interview with the author, May 2011.
7. Specific movements tested included a slow walk, medium walk, fast walk, running, lopping left-leg leading, lopping right-leg leading, bounding and fastest safe run.
8. Norton would be walking on the MGS apparatus for approximately 30-60 minutes of each session.
9. Mars Gravity is 38% of Earth's Gravity, and the best figure the MGS reached was 45% of Earth's gravity. Therefore the team was only 7% of Earth's gravity away from Mars's Gravity, and may have been able to more accurately reach Mars's Gravity if not for restrictions of the venue.
10. K. Love, 'The Experience of Art as Living Through of Language', in G. Butt, *After Criticism: New Responses to Art and Performance*, Blackwell, London, 2005, p. 172.
11. Will, 2002: p. 262.

*Awfully Wonderful: Science Fiction in Contemporary Art*, curated by Bec Dean and Lizzie Muller, was shown at Performance Space, CarriageWorks, Sydney, 15 April to 14 May. Adam Norton's next exhibition is *Drawing Lines in the Sand*, Cockatoo Island, February 2012: [www.adamnorton.net](http://www.adamnorton.net)

Altair Roelant is a freelance arts writer from London who relocated to Sydney in early 2010. She has been working in the visual arts for over a decade, collaborating on a variety of artist/exhibition, community and text-based projects.

Andrew Norton, *Mars Gravity Simulator*, 2001, installation views, Performance Space, Sydney. Images courtesy the artist and Performance Space, Sydney.



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*Not at home* [detail], 2010  
Amber Koroluk Stephenson  
Represented by Bett Gallery

