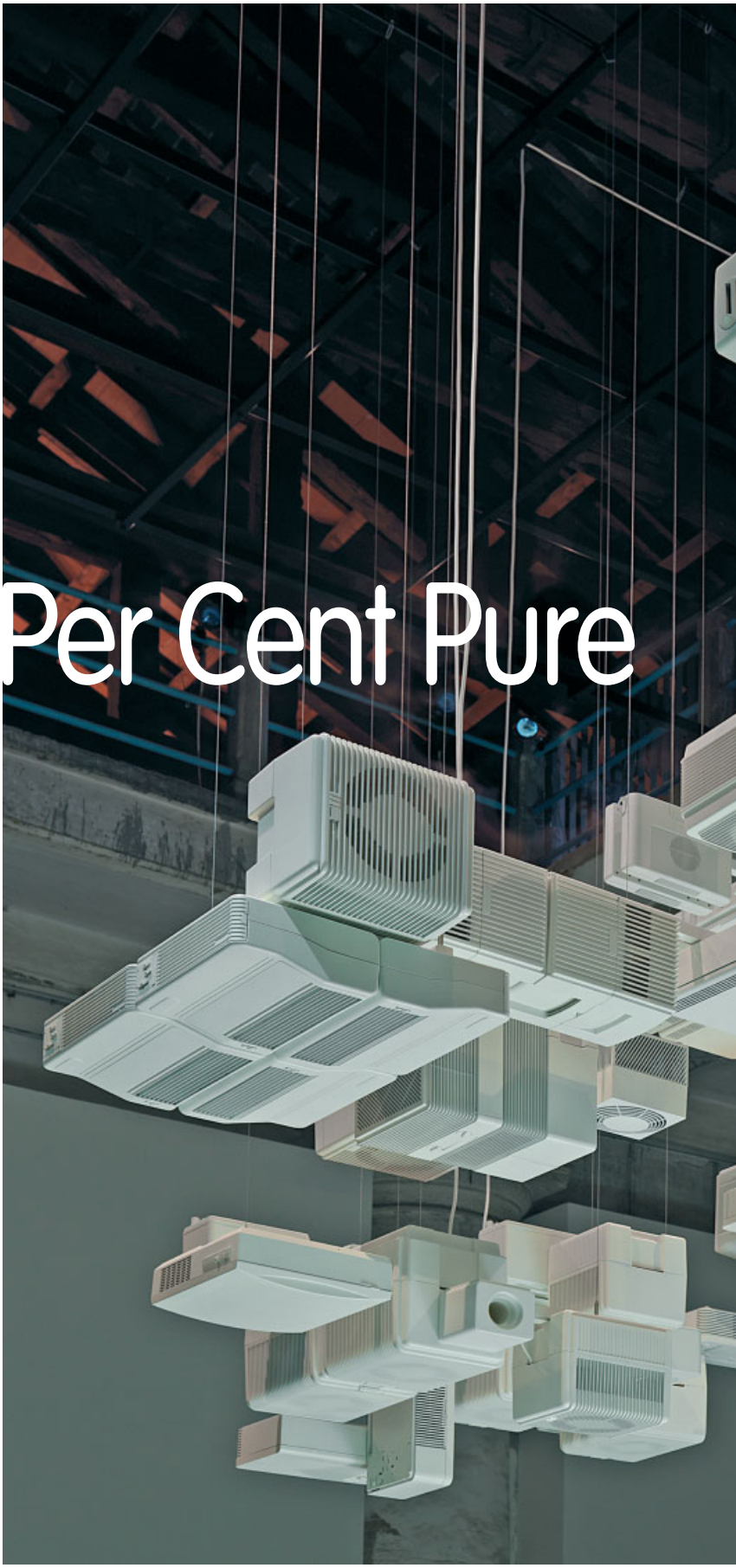
99.7 Per Cent Pure

The HEPA air filter is only capable of processing 99.7 per cent of airborne particles, leaving 0.3 per cent unaccounted for. **Mason White** describes the work of Canadian installation artist An Te Liu who made air-filtration appliances his main subject.



An Te Liu, *Cloud*, Venice Biennale, 2008
Air purifiers, ionisers, sterilisers, washers, humidifiers and ozone air cleaners running continuously.

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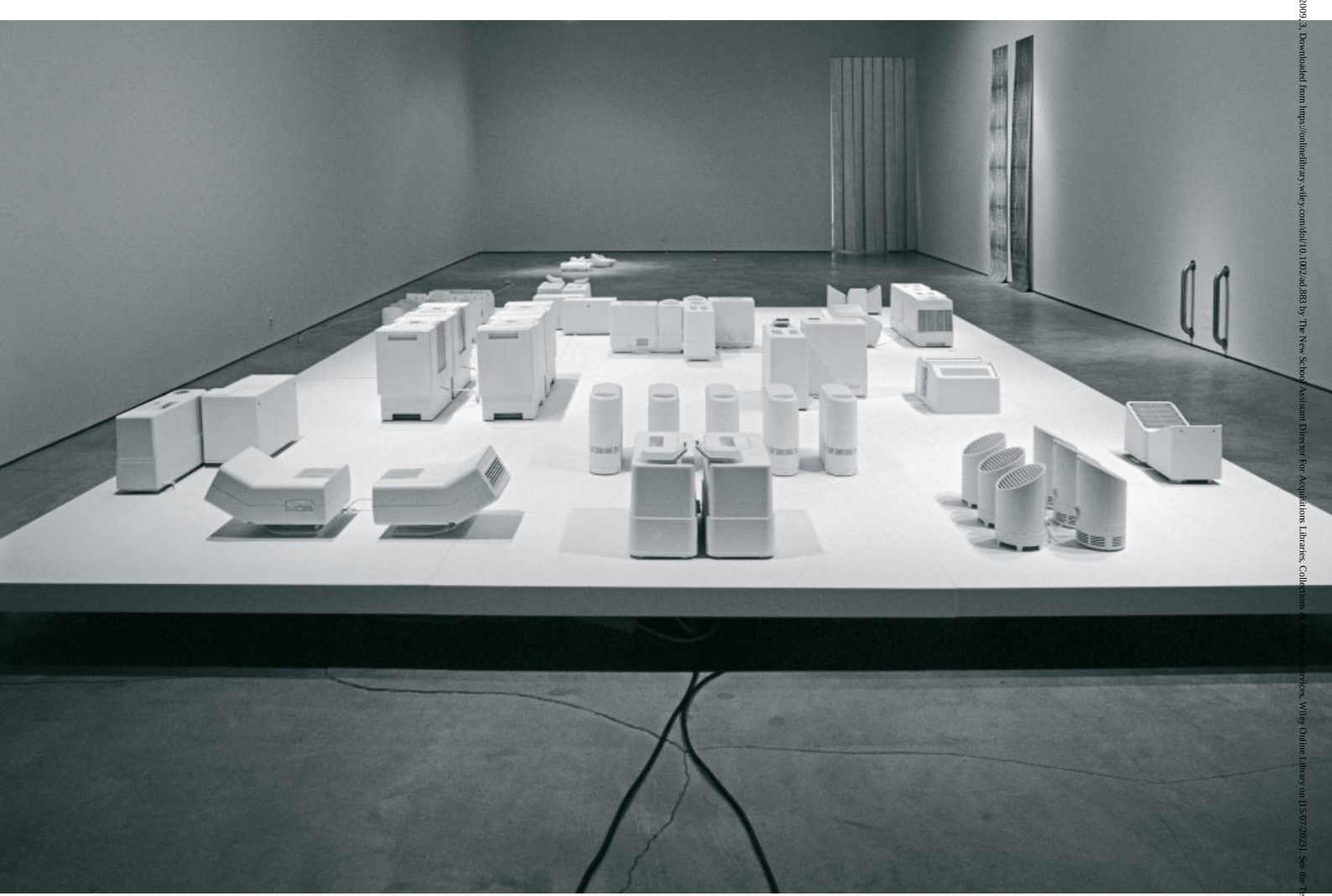

Taiwanese-Canadian artist An Te Liu's recent work operates within the complex airspace of classification, hygiene and weightlessness. Charged with conflicting and multiple readings of scales and eras, Liu employs modified devices and materials in swarms and assemblies with a tenacious attention to sequencing. Since 2000, he has used a broad range of continuously running air-filtration appliances – from HEPA (high efficiency particulate air) filters to ozone air cleaners – in his work. The intention of this series of installations, which began with *Airborne*, is to stimulate our awareness of and increasing reliance on (or the promise of) filtered and purified air. Of course, like any quest for technological perfection, the devices reach a Zeno's-paradox-like impossibility. The HEPA filter, the most effective common domestic filtration product on the market, for example, is only capable of processing 99.7 per cent of airborne particulates, leaving a lingering concern surrounding the unaccounted for 0.3 per cent matter. Liu's filtration appliance series capitalises on this problem and its urban and architectural ramifications.

Innovations in air filtration originated from a desire for increased respiratory safety for fire fighters (in the 1820s), coal miners (in the 1850s) and, later, for underwater divers (1910s). Augustus Siebe's patented diving helmet used tubes and filters to pump fresh air in and bad air out. Siebe adapted this same system into the gas mask during the First World War. The HEPA filter was a wartime innovation in the 1940s, which effectively processed the air of US government scientists working in radioactive conditions. What began as a classified item later became a well-marketed and domesticated product. Over time, filtration technology continued to extend into the workplace and public institutions, offering some level of perceived atmospheric purity. And in recent decades, air modification has extended beyond the elimination of foul odours, toxicity and noxious gases to the removal of odourless and invisible elements such as viruses and bacteria.

Air-purification systems also developed in response to the increasing toxicity of building materials, cleaning products and bio-aerosols containing pathogens, formaldehyde, VOCs (volatile organic compounds), asbestos and lead. In the 1960s, Klaus and Manfred Hammes introduced the first residential air purifier in Germany, increasing awareness of the effects of these domestic substances. The 1970s energy crisis created catalytic conditions for the success of

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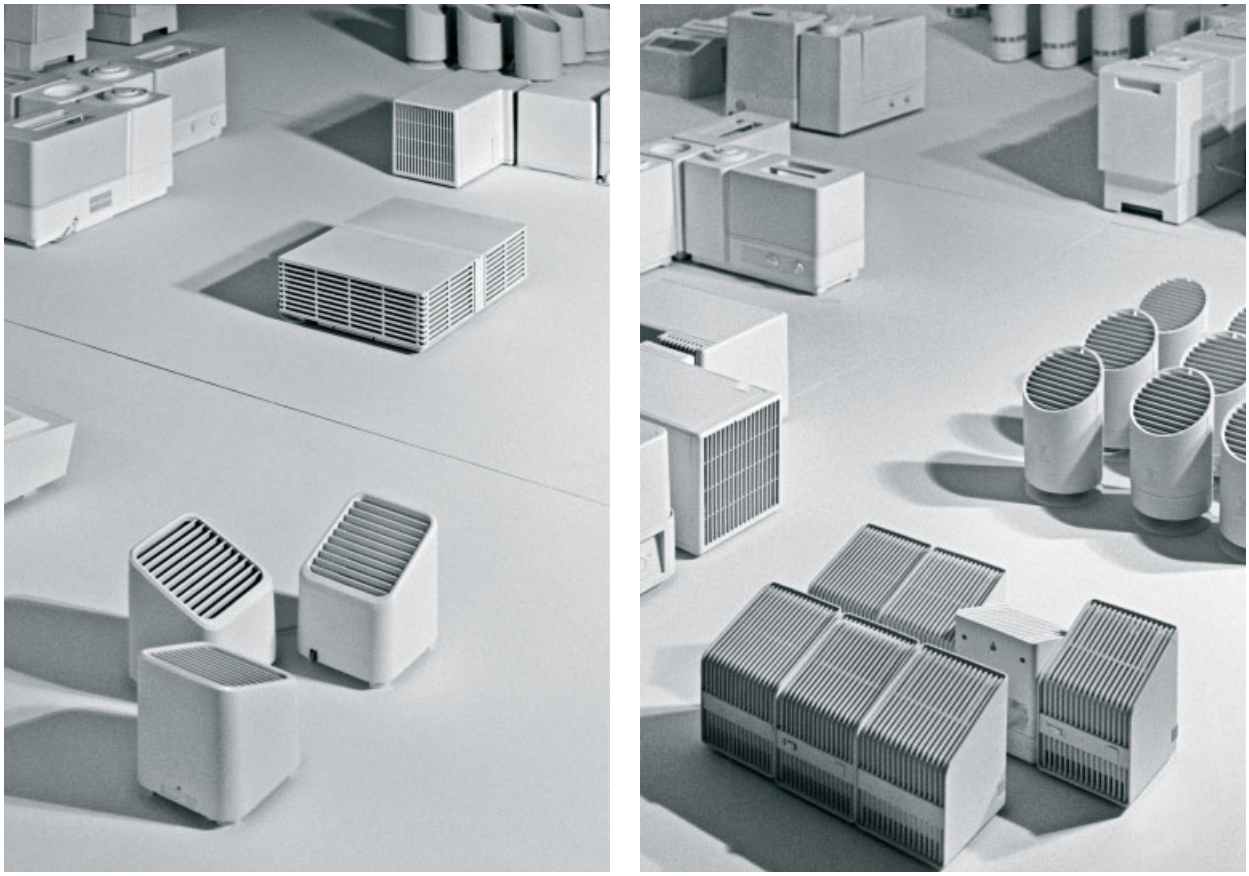

An Te Liu, *Airborne*, 2000
Air ionisers, purifiers, ecologisers, humidifiers; 64 units running continuously. Installation view, Contemporary Art Gallery, Vancouver.

indoor air-filtration machinery, which sought to quarantine indoor from outdoor air. In 1984 the World Health Organization reported on a series of symptoms occurring at increasing frequencies in buildings with indoor climate issues. These symptoms, including irritation of the eyes, nose and throat, respiratory infections, dizziness and nausea later became known as Sick Building Syndrome (SBS). In Liu's air-filtration series, especially in *Airborne* (2000), *Exchange* (2001) and *Cloud* (2008), there is a seeming sickness in the excessive use of these appliances which are perpetually operational in such great numbers. Are the very machines designed to mitigate illness now in fact operating as facilitators of it? Air so pure, it hurts.

Inevitably wrapped up within their cultural status, Liu's appliance works also confront the complex evolution and development of their role within architecture and interiors. Early Modernism's faith in the technological agency in architecture predicted the significance to which it would influence building enterprises. Walter Gropius' 1956 *Scope of Total Architecture* posits a complete transformation of life 'brought about by technological advancements' and, along with these changes, architecture that embodies a 'living urban organism' that he termed 'total architecture'.[1] In *Megastructures*, Reyner Banham offers the megastructure as a critique of Gropius' total architecture as being too homogeneous, culturally thin, and as dead 'as any other perfect machine'.[2] An Te Liu's work extends this critique from total architecture to megastructure. *Cloud* best exhibits this transition as it hovers effortlessly, teasing our airspace with its purity, a megastructure melding flocks of humming ionisers, purifiers and sterilisers, assembled in squadron formation, which aggregate into self-replicating and expanding clusters.

Liu's use of the appliance has shifted from the readymade to a modified unitised material. In *Cloud*, the appliances are merged, creating mutant assemblies and further confusing the scale at which the work is to be read. It is configurable, expandable and networked, and as a one-to-one reading it is intrusive – even excessive – highlighting the fear of unmediated interior environments. At an intermediate scale, the work is less Modernist urbanism than Futurist space-junk, since most of the material is intercepted by Liu, no doubt through online bartering portals, en route to dumps as the global e-waste burden grows. At its largest scale, *Cloud* is read as a machined

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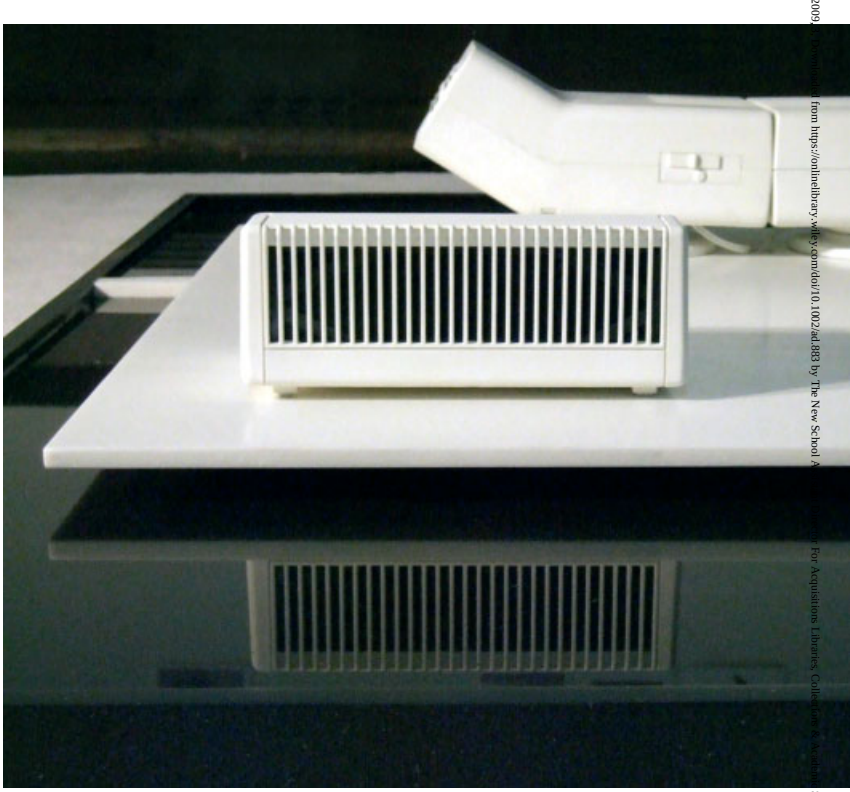
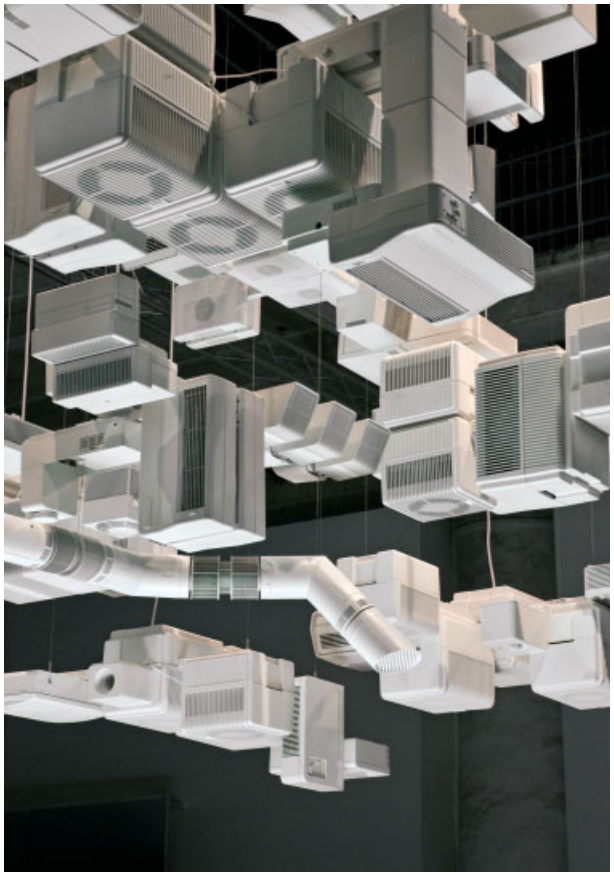
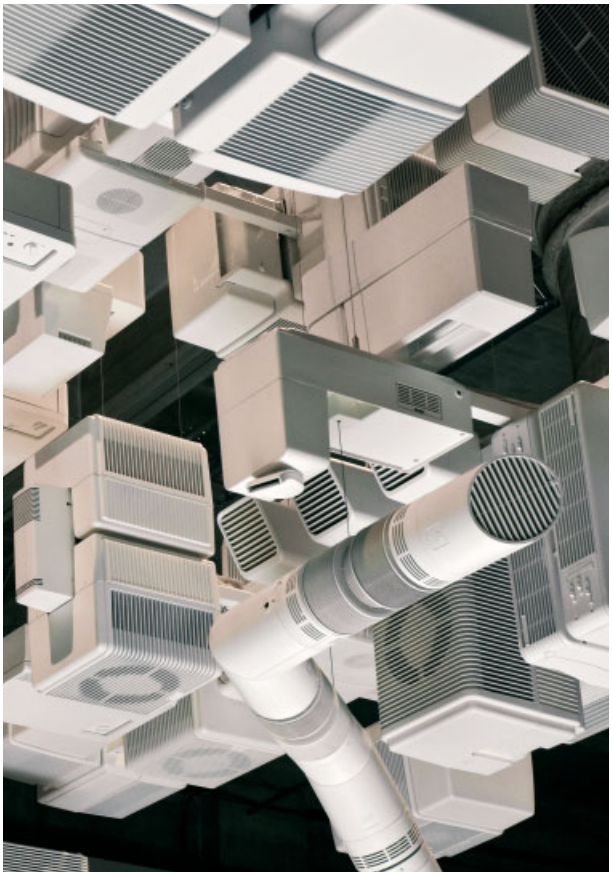
An Te Liu, *Exchange*, 2001
above: HEPA air purifiers and cords; 56 units running continuously. Installation view, Henry Urbach Gallery, New York.



An Te Liu, *Untitled* (Complex IV), 2007
above: Carpeting, Corian, distilled water, male and female pheromones, vibrators and air sterilisers running continuously.





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An Te Liu, *Cloud*, Venice Biennale, 2008
opposite bottom and right: Air purifiers, ionisers, sterilisers, washers, humidifiers and ozone air cleaners running continuously.

equivalent of an actual cloud abstracted into its components of moisture processing, air exchanges and atmospheric densities, and imagines the potential, as with snow-making machines, of generating entire weather conditions at will.

As with earlier works of the series, *Cloud* has had its overwhelming beige-ness traded for the cleanliness of white, and is fully operational. However, departing from static Brasilia-like assemblies, it hovers as if in mid-flight, embarking on a mission for space. Or perhaps it is a well-vented and exhaling space station – the ultimate megastructure. *Cloud* extends the ambition of levitation found in earlier works such as *Ether (or, Migratory Studies of the North American Chinatown)* (2004) in which rendered suburban fabric floats among cumulus-like cloud formations. In many ways its disposition is more akin to how we might conventionally think of mechanical systems: hung from the ceiling, tucked outside our more accessible visual field.

Installed at the 2008 Venice Biennale and acknowledging the inability to process or filter the entirety of the Arsenale, *Cloud* instead creates its own bubble of processed air dissipating into the larger space; an invisible zone of purity shape-shifting with the interior microclimates. Unlike earlier works with similar materials, *Cloud* is without orientation or reference. It has left the ground and thus left behind any reading of the Modernist city in favour of science fiction. Replacing the orderly plinth of *Airborne* and the columnar organisational logic of *Exchange*, its catenary-like suspension carries a new range of references grounded within 1960s architecture and 1970s film – perhaps Lando Calrissian's heady Cloud City from *The Empire Strikes Back*, or Yona Friedman's Ville Spatiale, a continuous space-frame with occupiable volumes. Either way, Liu's recent work seems to occupy the destabilising 0.3 per cent airspace where, given a tendency towards excess, there exists the slim margin that we are still not fully serviced by technological utopias. The processing and conversion of air into pure air, and its associated packaging, is caught between a Modernist ideal and a contemporary fear. AD

Notes
1. Walter Gropius, *Scope of Total Architecture*, Collier Books (New York), 1962.
2. Nigel Whiteley, *Reyner Banham: History of the Immediate Future*, MIT Press (Cambridge, MA), 2002, p 287.

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