

# MACHINE\_

# LANDSCAPES

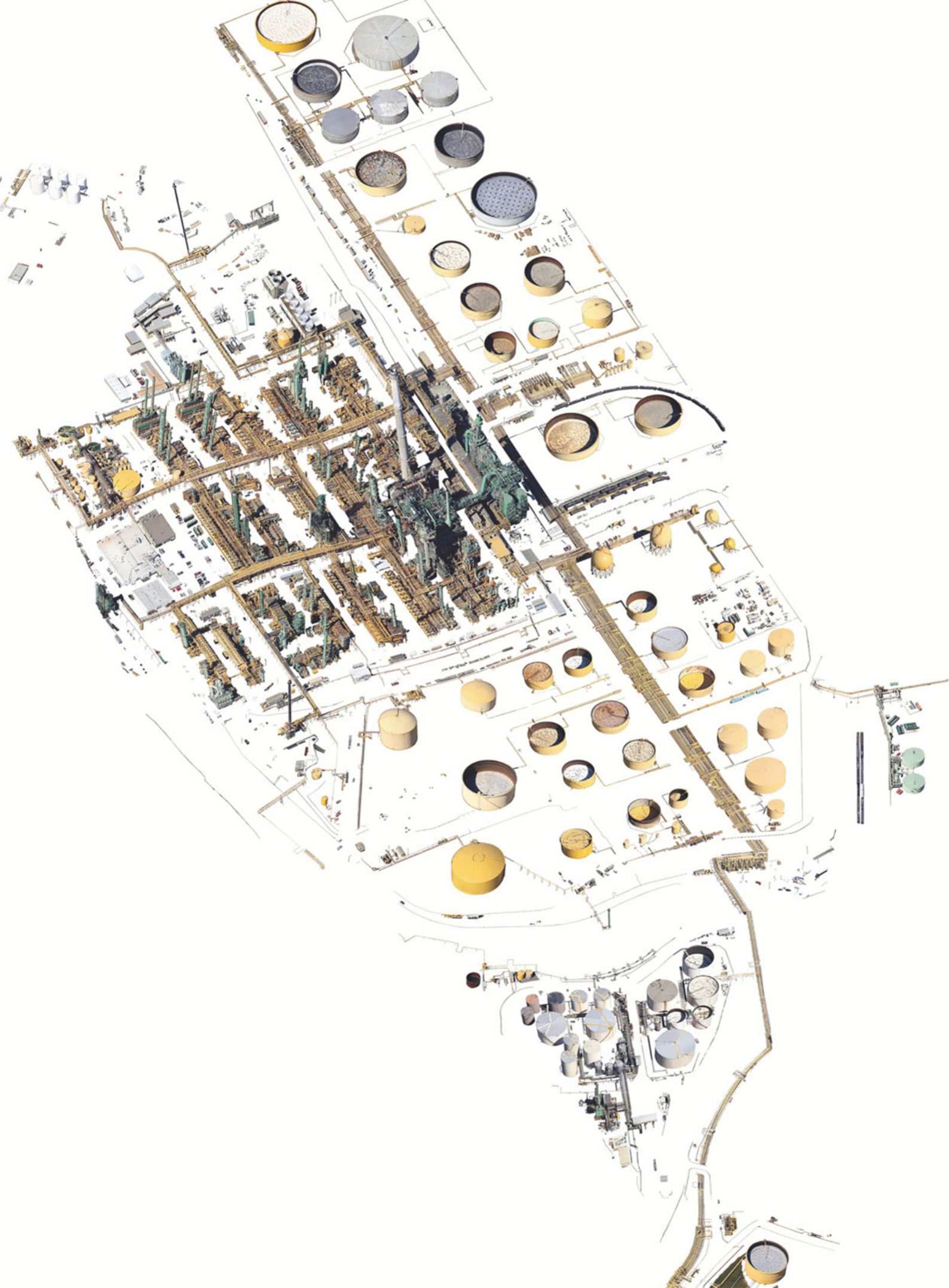
## ARCHITECTURES

## OF THE

## POST-ANTHROPOCENE

01 | Vol 89 | 2019

Guest-edited by LIAM YOUNG





ARCHITECTURAL DESIGN  
January/February 2019

Profile  
No 257

# MACHINE LANDSCAPES

ARCHITECTURES OF THE  
POST-ANTHROPOCENE

Guest-edited by  
LIAM YOUNG

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01 / 2019

	ARCHITECTURAL DESIGN
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2019	257

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Print ISSN: 0003-8504  
Online ISSN: 1554-2769

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and include postage and  
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Air freight and mailing in  
the USA by Mercury Media  
Processing, 1850 Elizabeth  
Avenue, Suite C, Rahway,  
NJ 07065, USA.

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PO Box 465, Hanover,  
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ABOUT THE  
GUEST-EDITOR

LIAM YOUNG



Liam Young is a speculative architect and director who operates in the spaces between design, fiction and futures. He is the co-founder of Tomorrow's Thoughts Today, an urban futures think-tank exploring the local and global implications of new technologies, and Unknown Fields, a nomadic research studio that travels on expeditions to chronicle these emerging conditions as they occur on the ground. He has been acclaimed in both mainstream and architectural media, including the BBC, *Wired*, the *Guardian*, Channel 4 and *Vice*, and is producer of a BAFTA-nominated film. His work has been collected by institutions such as the Metropolitan Museum of Art in New York, the Victoria and Albert Museum in London and the Museum of Applied Arts and Sciences in Sydney. He has taught internationally at the Architectural Association (AA) in London and Princeton University in New Jersey, and now runs the groundbreaking MA in Fiction and Entertainment at the Southern California Institute of Architecture (SCI-Arc) in Los Angeles. His narrative approach sits between documentary and fiction, exploring distant landscapes and visualising the future worlds that he extrapolates from them. ▽



# ARCHITECTURE

# NEO-

Met Office supercomputer,  
Exeter, UK,  
2017

The Cray XC40 is the most powerful supercomputer  
on the planet dedicated to weather and climate.



A photograph of a server room with rows of black server racks. A white pillar stands in the center, and the ceiling has recessed lighting. The text 'WITHOUT PEOPLE' is in white and '— MACHINE' is in large black letters.

# WITHOUT PEOPLE — MACHINE

**INTRODUCTION**

LIAM YOUNG

The most significant architectural spaces in the world are now entirely empty of people. We are going on a tour through these sites, to visit the landscapes and structures made for and by our machines. We begin in a series of anonymous towns in the middle of Oregon where we are visiting the largest cultural landscape in human history. Here, sitting at the confluence of cool air, cheap hydropower and tax incentives the tech giants of Facebook, Google, Apple and Amazon have built their data centres. The chilly breeze that brushes our face has set in motion a storm of infrastructure. This is where the Internet lives.

### The Buildings Where We Keep the World

These unremarkable streets and sprawling periphery contain everything about who we are. All of our dreams and fears, histories and futures are here, just behind an Oregon Thriftway, drenched in the stench of diner pancakes and simulation syrup. If we were to stroll through the screen and follow the fibre-optic tentacles across the planet we would find ourselves in unfamiliar places like this, in the autonomous server farms, power plants, ports, factories and mines that produce the modern world.

One of these towns is Prineville, home to Facebook. This is a town that turns electricity into bits, and its data centres are giant machines for organising our culture and archiving our lives. Every like, love letter, embarrassing photo and ironic update is stored in the purring technologies contained in its vast concrete boxes. This intricate portrait of human history is sitting somewhere along a winding two-lane road, near a parking lot, beside a tree, baking in the afternoon sun.

We stroll through the hot aisles, breathing the air that was warmed by our digital selves.

The Facebook Data Center in Prineville, like many similar facilities, is essentially just row upon row of identical floor-to-ceiling server stacks, spinning and writing the lives of 1.9 billion global users. Each of the 4,000 servers in this hall has a blue LED that illuminates when it is accessed, and a yellow flashing light that flickers with the writing of data. The server floor trembles like a forest of fireflies, a map of social-media territory, a spatialised Internet, a field of flickering Facebookers all waving hello. As we exit each room on our tour we diligently switch off the lights. There is no one left behind in the dark; it is a building of empty rooms, quietly humming away without us. Just one Facebook engineer is able to maintain 25,000 servers each day. We are surplus to the practical needs of the data centre. It is a landscape filled with our digital avatars, but strangely absent of people. Just a few wandering techs stalk the aisles, babysitting the servers, watching the lights, waiting for something to do.

The Facebook Data Center is a prime example of one of the new typologies of the posthuman, a building of extraordinary meaning that sits at the core of what it means to exist today, but at the same time turns its back on any expression of that significance. At first glance, there appears to be little architecture here, no grand monumental gesture; instead, this network of spaces so fundamental to our modern experience of the world seems to be conceived of as little more than air-conditioning infrastructure. Architecture has always been defined by the prevailing means of production. Stonemasons once carved column capitals and

Cyrille Dubreuil,  
*The Bow # 8*,  
2018

The anonymous and faceless facades of these logistics buildings stand in radical contrast to streets of screaming shopfronts that characterise the shopping malls they are replacing.





modern architects harnessed the prefabricated components made possible by industrialisation. These flickering buildings are more than just computational infrastructures, they are becoming the defining cultural constructions of our age. At a time when our collective history is digital, these blank forms are our generation's great library, our cathedral, our cultural legacy. Every era has had its own iconic architectural typology. The dream commission was once the church, Modernism had the factory and then the house; in the past decade we celebrated the decadent museum and the gallery. Now we have the data centre.



Sheehan Partners,  
Facebook Data Center,  
Prineville, Oregon,  
2012

*left top:* The Prineville Data Center is an icon of the technological sublime where incalculable awe is no longer cast across an untamed nature, but intricately bundled cables of turquoise and purple, white noise and the concrete geologies of vast data complexes.

*left:* A typical server cabinet at Facebook uses 24,000 kilowatt-hours a year, twice the load of two average family homes. Sitting beside the Oregon river hydro-plant, energy is cheap in Prineville, about half the cost of elsewhere in the US, and that is why all the data centres are here.

Met Office supercomputer,  
Exeter, UK,  
2017

*below:* The UK's Met Office facility is the most powerful supercomputer on the planet dedicated to weather and climate.



## Human Exclusion Zones

In order to understand and chronicle the emerging condition that the data centre embodies, we will push open the pressurised doors and cross the lines of the human exclusion zones to trespass through the machine landscapes that run the world. The server farms, telecommunications networks, distribution warehouses, unmanned ports and industrialised agriculture that define the very nature of who we are today are at the same time places we can never visit. Instead they are occupied by processors and hard drives, logistics bots and mobile shelving units, autonomous cranes and container ships, robot vacuum cleaners and connected toasters, driverless tractors and taxis.

When early explorers were charting the new world, they would load up their ships and head off the map on expansive journeys with uncertain ends. They were pioneers plotting out new lands and foreign territories, strange and unfamiliar although anything but empty. In this issue of  $\Delta$  we map the less-trodden sites, architectures and infrastructures of a system not built for us, but whose form, materiality and purpose is configured to anticipate the logics of machine vision and habitation rather than our own. It is a compendium of conversations and encounters, travels and incursions in landscapes where we do not belong. *Machine Landscapes* is a collection of spaces filled with autonomous natives, where we are each an intruder in an architecture that has left us behind.

We begin the tour with Benjamin Bratton as our guide, sifting through the trace effects of this new age and taking us through a sample set of the constituent conditions of the emerging machine world. With John Gerrard we fly over the tank-proof fence to explore the ventilation towers and manicured lawns of Google's data repository. Ingrid Burrington takes us on a visit to the Amazon wind farms, an energy landscape spinning our Internet into being. In remote mountains we explore the caverns of cryptocurrency miners with photojournalist Xingzhe Liu, and on the coast Geoff Manaugh dodges the robot cranes that load the GPS-controlled container ships with our worldly wares. We follow the trail of rolling machines into the Amazon fulfilment centres where Jesse LeCavalier watches them rumble beneath the pallets from the edges of the human exclusion zones. Clare Lyster surveys a bestiary of bots that form a nomadic infrastructure of everything, Simone Niquille explores the domestic habitat of the SpotMini robot dog, and Tim Maughan careens through the smart city stretched out on the back seat of a driverless car. Deborah Harrison meets the chatbots that live here, and Trevor Paglen captures how different the world looks through their machine-vision eyes. In the skies above, a swarm of unmanned satellites and space junk hurtles through space as archaeologist Alice Gorman pieces together their history and through their orbiting cameras Jenny Odell captures the extent of this vast, autonomous Earth on the edge of change.

*Machine Landscapes* is a collection of spaces filled with autonomous natives, where we are each an intruder in an architecture that has left us behind.

Cyrille Dubreuil,  
*The Bow # 1*,  
2018

Logistic warehouses emerge like huge cargo ships, exposing valiantly their bow to the horizon, ploughing through the waves.



## An Atlas of the Post-Anthropocene

Across the issue, these pioneer landscapes come together to form an atlas, a collection of disconnected territories that constitute an aggregate geography and a portrait of this emerging world. We believe we are living in a new geological epoch, the Anthropocene, where humans are the dominant force shaping the planet, where our own acts of design have forever changed the composition of the atmosphere, the oceans and the Earth. Architecture is a geological force and we have machined the Earth, from the scale of the electron to the tectonic plate.

Ancient craftsmen once measured using parts of the human body: the cubit is based on the length of a forearm; the inch, the length of a thumb. Le Corbusier designed his buildings based around the Modulor, a scale he derived from the proportions of the human body. We once understood our world through systems that positioned ourselves, human scale, vision and patterns of occupation at the centre of the structures that we design. In the age of the network, however, the body is no longer the dominant measure of space; instead it is the machines that occupy the spaces that now define the parameters of the architecture that contains them – an architecture whose form and materiality is configured to anticipate the logics of machine perception and comfort rather than our own.

Spaces that were once bound by the proportions of the body, patterns and cycles of human living, the ambitions of beauty and comfort are now stripped bare and are hazardous zones of toxic air, high-speed robotics, sensor calibration markers, algorithmic complexity and machine scales as inhospitable as the most powerful engine room. We very rarely get our hands dirty, and if we do it is not with any kind of agency, but as optimised bodies engineered as components in this planetary-scaled robot.

The travels through the spaces in this  $\Delta$  more accurately map out an era of the Post-Anthropocene as Bratton has defined it,<sup>1</sup> a new age of nonhuman actors where it is technology and artificial intelligence that now compute, condition and construct our world. The issue makes visible an uneven geography where the largest and most critical areas of our cities are now the least occupied. We are constructing an architecture without people. This is not a 'posthuman' condition in the sense this term is typically used. It is not about body modifications, cyborgs, exoskeletons and genetic engineering. The sites that constitute the Post-Anthropocene have nothing to do with our bodies; they are more accurately extra-human in that they are outside us, totally indifferent to us, where we are no longer part of the equation at all.

Cyrille Dubreuil,  
*The Bow # 6,*  
2018

The boom of the e-commerce industry has fundamentally transformed the landscape and architecture of the city's periphery. Blank buildings containing a world of objects ready to be boxed up and shipped out are the new face of retail.





Foster + Partners,  
Apple Campus,  
Cupertino,  
California,  
2017

The architects' giant doughnut design houses the headquarters of Apple, the richest technology company in the world.

NBBJ,  
Amazon Spheres,  
Seattle,  
Washington,  
2017

Architects NBBJ have designed a breakout space for Amazon workers. The transparent domes house vertical gardens and informal relaxation and meeting rooms to bring employees 'closer to nature'.



## The Technological Sublime

We begin to make sense of a new phenomenon by naming it and framing it through mechanisms we find familiar. To assimilate the unknowns of the natural world we first understood it through mythology and folklore. Gods pulled the sun across the sky and sea monsters crashed waves across ships. Then our objective scientific eye categorised nature, developing classes and species, and all fell into line. Machine landscapes are typologies without history. They are sites that force us to question all we know of architecture, and we must again re-evaluate our own position in relation to the spaces and systems around us. So many of these evidentiary artefacts of this emerging era suggest new typologies or call out the inefficiencies of architectural conventions based around our own bodies that until now have seemed satisfactory. We do not have sufficient terminology to describe these conditions; they emerged in the shadows, out of sight, in territories where we are not allowed to wander. They occur at scales where the disciplinary language of architecture breaks down, where interiors become so vast that they become microclimates, where landscapes are so engineered they become circuit boards, where robots become so ubiquitous they become nature, where aisles through the server stacks are like partitions on a hard drive and buildings are so full of machines that they are better understood as urban-scale computers. The core ambitions upon which the architectural profession is founded are being brought into question by these machine structures. These projects are rarely discussed in the design press, but are so fundamental to the cities we all live in. This issue of  $\Delta$  is an early map, an atlas fraught with gaps and contradictions, but an initial attempt to chronicle these conditions as they occur on the ground so that we may develop new relationships to a context evolving faster than our culture can keep up with.

The marquee architectures of technology are the corporate headquarters of BIG and Heatherwick Studio's Googleplex, Foster + Partners' Apple Campus and NBBJ's Amazon Spheres. These are not the star architects of the Post-Anthropocene. They are just set-dressing the waiting rooms ...

Once the definition of a new territory has been outlined we need to come to some consensus of what to do next. Do we go to war, do we colonise or sneak our way in, or do we stand at the edges and watch on from afar? The world without us is not the result of some apocalyptic event that wiped us out, but a gradual development, the origins of which can be traced back to the Industrial Revolution. The architects of server farms and data centres, logistics warehouses, the streets of the driverless car, production lines and factory floors have been operating behind the scenes for some time, silently constructing everything and everywhere. Falling into the Post-Anthropocene does not mean the abandoning of all that came before it. It necessitates an understanding that our technology is, as geology, a system that has resonant effects through deep history and even deeper futures. These sites are not warning signs, they are not cautionary tales of what could happen. This is not about the fear of redundancies through automation or the threat of machines out of control, but an emerging landscape of opportunities generated precisely because we can stay away.

Ideology rarely evolves at the pace of our technology. As we turn our gaze towards the machine landscapes, we need to radically embrace our uncomfortable place in a world where we are no longer at its centre. These extra-human sites are the precursors of a new aesthetic and formal movement, a technological sublime. This issue marks an end to human-centred design as we now chart an era of hard-drive-centred design, LIDAR-centred design or autonomous-car-centred design.

The default position of the architecture profession seems to be to try to reclaim this lost territory, to sneak back in and parasitically occupy these landscapes with ergonomic furniture, open-plan offices, green walls and raw-juice bars. The marquee architectures of technology are the corporate headquarters of BIG and Heatherwick Studio's Googleplex, Foster + Partners' Apple Campus and NBBJ's Amazon Spheres. These are not the star architects of the Post-Anthropocene. They are just set-dressing the waiting rooms, distracting us with expressive displays while the machines program our planet, hidden behind windowless walls and anonymous forms. While machines burn down the house we are still worried about the shape of its roof. In these new landscapes the poetics of human occupation are extraneous, the scale of the body is immaterial, and we must explore new forms of productive engagement with the nonhuman world. As this atlas attests, the founding machine landscapes of the Post-Anthropocene are already here, critical and fundamental, embedded in the ground of the Earth and the fabric of the planetary city. Their cooling fans spin, the electromagnetics hum, the LEDs flicker and it smells of rare earth. Machines are making the world and we are on the outside peering in, faces pressed to the glass windows of an empty control room.  $\Delta$

### Note

1. Benjamin H Bratton, 'Some Trace Effects of the Post-Anthropocene: On Accelerationist Geopolitical Aesthetics', *E-Flux Journal*, 46, June 2013, pp 1–12.