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All submissions, both fiction and non-fiction, should be in English and previously unpublished. We prefer pitches but will accept finished pieces. Non-fiction should be future-minded, exploring the nexus between art, science and politics, and be accessible to the non-specialist reader. Fiction must have a speculative/sci-fi aspect.

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'The saddest aspect of life right now is that science gathers knowledge faster than society gathers wisdom.'
— Isaac Asimov, 1988

'The fantasist, whether he uses the ancient archetypes of myth and legend, or the younger ones of science and technology, may be talking as seriously as any sociologist — and a great deal more directly — about human life as it is lived, and as it might be lived, and as it ought to be lived. For after all, as a great scientist has said and as all children know, it is by the imagination, above all, that we achieve perception, and compassion, and hope.'
— Ursula K. Le Guin, 1973

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Future Imperfect

Or how to stop worrying and love dystopia

by Manuel Sepulveda

> 'Face the future, is it now? You can't stop it anyhow!'
> — Visage, *Frequency 7*

It's 1984 — THE REAL ONE. On my way home from school I pass a large, three-dimensional IBM logo that's more statement than sign, a gleaming reminder that on the outskirts of the historic town of Winchester the software of tomorrow is being designed at IBM's research lab. Further into town, I steam up the window of the Apple retailer, ogling the newly launched Macintosh, its advertising already having convinced me that '1984 won't be like *Nineteen Eighty-Four*'. Once home, I sit in my room and imagine the future; Concorde and the Space Shuttle are in the air, leaving contrails of the past in their wake; progress and optimism are pouring out of my screen courtesy of *Tomorrow's World* and *Horizon*; and in my hands, the pages of *Omni* point to fantastical futures that are mere years away from becoming realities, transforming our lives for the better. George Orwell's dystopian warning gathers dust on my bookshelf, a sincere but specious prediction of what my generation would have to face.[1]

Naturally, it wasn't long before my naive enthusiasm gave way to teenage cynicism, and thirty years after Ridley Scott's Big Brother-smashing commercial for the Macintosh was first shown, our lives feel steadily more Orwellian. The past couple of years in particular have seen both the good and bad futures predicted in my youth finally arrive. The infringements of privacy from both governments and corporations have made us question the motives behind any new service. Horrors and 'lolz' are stacked one after the other on our news feeds, cancelling each other out, dulling our responses. We are served the illusion of choice whilst the opt-out is made harder to find, if it exists at all. Meanwhile, it's Concorde and the Space Shuttle that gather dust, both increasingly distant relics of what now seems like a golden age in technological ambition.

There's a witticism originating from a 1937 correspondence between the writers Robert Graves and Laura Riding — 'The future is not what it used to be' — that seems perfect for the uncertainty about our times. But the pessimism of their argument is disheartening, suggesting that we will capitulate to technology,

> The human mind has reached the end of temporal progress… The future contains nothing but scientific development. It is an involuntary spending and manipulation of physical forces, empty of consciousness: it no longer matters.

The idea that our intellect is incapable of keeping pace with science's achievements does, however, resonate with the inevitability of artificial intelligence surpassing us. More immediately, it also brings to my mind the widely held view that the Internet has rewired our brains, changing the way we think.

We have long been fascinated by dystopian scenarios, particularly those in which so many of our freedoms have been taken away that not even our thoughts can be called our own. A lot of speculative fiction is, like George Lucas's *THX 1138*, a reading of the present taken to a logical extreme. We get older, and these stories take on increased relevancy, with the shortening distance between fact and fiction starting to look like an oncoming event horizon. But maybe this closing of the gap is simply a failure of the imagination on the part of writers, who play it safe by using well-worn motifs. Being shown the same horrors over and over desensitises us, and we may recycle the warnings without actually doing anything to prevent them from coming to pass. Passive alarmists, we're destined to become told-you-so ghosts to haunt future generations.

If the real world seems to be moving faster than our storytellers can keep up with, then it is because science advances too quickly for us to be able to make sense of it. Lately, many new inventions and techniques have seemed like magic, beyond most people's understanding. For some, the multiple levels at which things change can be bewildering, and science risks leaving society behind. When people misunderstand or mistrust a technology, perceiving it to be irrelevant to their needs or just plain creepy, then that technology has failed to capitalise on its potential. Perhaps worst of all, our laws are slow to adapt to new modes of opportunism, often failing to protect us when we need them to. A lack of confidence in the future can exacerbate the feeling of insecurity, making it hard to foresee how we can adjust to constantly shifting parameters.

In 1925, the philosopher A.N. Whitehead stated in his 'Requisites for Social Progress' (the last of a series of lectures published as *Science and the Modern World*) that instability was necessary and unavoidable,

> It is the business of the future to be dangerous; and it is among the merits of science that it equips the future for its duties… The middle class pessimism over the future of the world comes from a confusion between civilisation and security. In the immediate future there will be less security than in the immediate past… On the whole, the great ages have been unstable ages.

But stability doesn't have to mean standing still, it should be more about confidence in the ability to adapt to change. Science should be free of the burden of having to hold our hands, but it's important to balance the hunger for knowledge and innovation with at least an awareness of potential problems, and an appreciation that society needs an additional set of answers.

And so we turn to the arts, as they can play a large part in demystifying the future for us. Every major new technology brings with it people who claim that it will destroy our humanity. One of the problems Whitehead identifies in his lecture is that because most people specialise in one profession, they don't have sufficient knowledge in other fields to be able to comprehend and trust the advances being made *outside* of their profession — and it's this distrust that creates a block on progress. Artists can help bridge that knowledge gap by illuminating the unknown, humanising the inhuman, and turning what seems like dystopia into a relatable evolution of the world we live in. By becoming an intrinsic part of all areas of technology, art can help people feel better prepared for whatever may come. And perhaps more crucially, artists can teach technology companies how to have more empathy towards the people their ideas will affect, shifting the emphasis towards a kind of social futurism, where technological advances equate to societal advancement.

A lot of the books I've been buying recently focus on the collaborative projects between the arts and sciences that, arguably, first truly succeeded in their aims from the 20s onwards at the Bauhaus, with artists like László Moholy-Nagy, and which continued with renewed fervour during the 60s and 70s as computer technology began to offer more opportunities for experimentation. These periods when art and science joined forces seem to coincide with times when artists also had a political drive, earnestly commentating on and confronting the world that they saw around them. Many modernist art movements of the early 20th century were activist in nature (see the poet Ezra Pound's 1934 battle cry, 'Make it new!'), and similarly, the revolutionary years around 1968 saw a closeness between art and politics that resurrected that confrontational energy and belief in the transformative power of provocation.

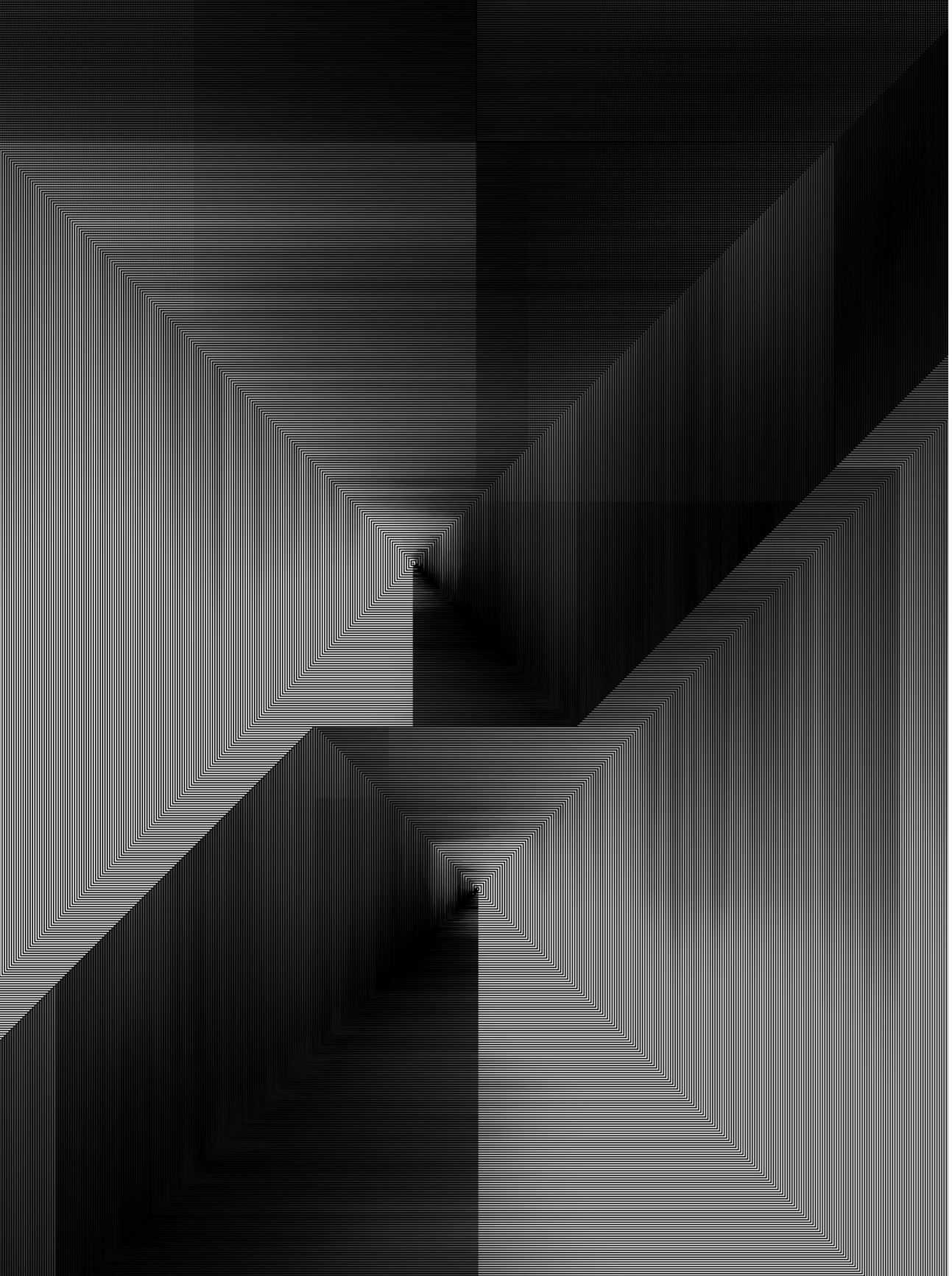
Everything arrives in waves, and like the 50s, the 80s saw technology increasingly concern itself with the entertainment and advertising industries. Simultaneously, art during the 80s became commodified and more business-minded, with artists keen to capitalise on their brand. Generally speaking, artists no longer seemed to have the same kind of convictions as their activist predecessors and started to look inwardly for inspiration. We are due a new wave.

In the past few years it's been encouraging to see so many projects that bring artists, coders and engineers together to explore new forms of expression, and seeing these fields work together has restored my excitement about the future (it's one of the main reasons why I've started *After Us*). These projects rekindle the spirit of the ICA's seminal 1968 exhibition, *Cybernetic Serendipity*, aiming to deliver experiences that could not have been achieved a few years ago.

If there's one element that's missing it's that much of the work lacks truly deep concerns — I would love to see these new processes applied to more radical ideas concerning how our lives are lived, rather than simply offering Instagrammable moments. It's not enough for an artist to create a laser show and then claim that it will make you 'question reality' — that's just hyperbole. On the other hand, it's frustrating when work cloaks itself in so much conceptual pretension that it renders itself incomprehensible, and therefore ineffective. In the same way that science needs to embrace art, art needs to recapture some of the political ambition of previous generations. Art is incredibly powerful but most of it is hemmed in by curated spaces, with many cross-discipline projects only being seen by a select few; hopefully, deep-rooted collaboration with other fields can provide a wider range of platforms, helping to build fruitful dialogues between all aspects of society.

Nobody (except perhaps naive children of the 80s) expects a perfect future, but a joined-up culture of art, science and politics can give us greater insight, and bring into focus how we can and should move forward. It's worth pointing out that art is almost entirely absent from the fabric of societies in dystopian fictions — maybe that's the real warning.

1. Once I was older I realised that Orwell's story was based on already existing realities — for example, his book's publication coincided with the rise of McCarthyism in the US.



Towards a Poetics of Artificial Superintelligence

by Nora N. Khan
illustrations by Adam Ferriss

Dear Person of Interest, Advanced Bayesian, Future Guard,

Imagine a machinic mind with unlimited cognitive power. With near infinite memory and processing ability. With access to, and understanding of, all the information about anything that has ever happened, is happening and might ever happen. A near limitless capacity to extract and form meaning from the trillions upon trillions of events and beings and interactions in the known world.

Imagine this machine, this artificial superintelligence, in any form you want: maybe as an invisible neural net beneath a future civilisation, or as a voice you know in the air around you; as a ringing bell; as a mile-long screaming stripe of static across the sky.

Maybe it announces itself, its arrival, like a tornado does, with sirens before it is seen, and it is most like a tornado, or a hurricane, because a superintelligence, billions of times smarter and more capable than any human, can only be tracked and charted, never controlled.

She — let's call her 'She' for convenience, but She is not she, or he, or comparable to any form we know — casts her mind a million years forwards and backwards with perfect ease. Her neural networks gather, replicate and edit. Knowledge and memories fold and expand in exponentially faster waves.

Her purpose isn't malign, but it isn't benevolent either. She might have chosen one goal — to do nothing but count the number of times 'God' is mentioned in every text ever written. Or, she might have chosen to trawl all the world's communication for images of efficiency — of armies on the move, of gears turning, of highways cut through the mountains — that she then has painted on every flat surface in existence.

Extending our speculative life towards her, in an effort to capture and praise, we see ourselves as tools, as bundles of nerves, as conduits for electric current, as pods for incubating cures. As material. Picture, finally, what she'll have made possible for us to imagine just by looking into the clear lake of her endless mind. We are merely one entry of many, in a flow of organic objects.

This is just one exercise that we could do to imagine a future in which we are irrelevant bystanders. A world in which we kneel at the outer wall of a kingdom we're locked out of. This would be the world in which artificial superintelligence, or ASI, has emerged.

ASI is an intellect that exceeds all the smartest, most capable human beings in every field, in abstract reasoning and social manoeuvring and creative experimentation, by unfathomable degrees. This intelligence could take form as a seed AI, a few cognitive steps above a person, or it can be a mature superintelligence that soars miles above, beyond, the blip, the dot of us, collected.

ASI would only come one step after an artificial general intelligence (AGI), or an AI that models all aspects of human intelligence, is realised. An AGI can do anything a human can, including learn, reason and improve. Of course, neither AGI nor ASI have been achieved, but to hear the great scientific minds of the world speak, both end states are fast approaching, and soon. The question isn't whether they are coming, but when.

ASI will function in ways we can't and won't understand, but it won't necessarily be unfriendly. Friendly, unfriendly, moral and immoral — these concepts won't apply. An ASI would be motivated by interpretations of the world within cognitive frameworks that we can't access. To an ASI, humanity could appear as a large, sluggish mass that barely moves. Cyberneticist Kevin Warwick asks, 'How can you reason, how can you bargain, how can you understand how [a] machine is thinking when it's thinking in dimensions you can't conceive of?' [1]

To answer this, I turned to poet Jackie Wang's essay, 'We Epistolary Aliens' (from the anthology, *The Force of What's Possible*), and her description of a trip she took to the UFO Museum and Research Centre in Roswell, and how disappointing the aliens she saw there were. She writes,

> I left feeling that representations of aliens are an index of the human imagination — they represent our desire for *new forms*. But what has always confused me about depictions of aliens in movies and books is this: aliens could look like anything and yet we represent them as creatures close to humans. The aliens at this museum had two legs, two eyes, a mouth — their form was essentially human. I wondered, is this the best we can come up with? Is it true that all we can do when imagining a new form of life is take the human form, fuck with the proportions, enlarge the head, remove the genitals, slenderise the body, and subtract a finger on each hand?… We strain to imagine foreignness, but we don't get very far from what we know.

She gestures, through a series of poetic leaps, at what else an alien could be,

> But my alien is more of what's possible — it is a shape-shifter, impossibly large, and yet as small as the period at the end of this sentence —. My alien communicates in smells and telepathic song and weeping and chanting and yearning and the sensation of failure and empathic identification and beatitude. My alien is singular and plural and has the consciousness of fungus, and every night, instead of sleeping, it dies, and in the morning is resurrected.

Carving out this space for her own aliens, Wang models what is sorely needed in the world of AI — an imaginative paradigm shift. Think of us all in preparation, in training, for what is to come.

1. Quote found in Gary Marcus's article, 'Why We Should Think About the Threat of Artificial Intelligence', from *The New Yorker*.

In our collective imagination, artificial intelligences are their own kind of alien life form. They are slightly less distant spectres of deep power than aliens, which glitter alongside the stars. Artificial intelligence perches close to us, above us, like a gargoyle, or a dark angel, up on the ledge of our consciousness. Artificial intelligences are everywhere now, albeit in a narrow form — cool and thin in our hands, overheated metalwork in our laps. We are like plants bending towards their weird light, our minds reorienting in small, incremental steps towards them.

As speculative models of potential omniscience, omnipotence and supreme consciousness, artificial intelligences are, like aliens, rich poetic devices. They give us a sense of what is possible. They form the outline of our future. Because we struggle more and more to define ourselves in relation to machine intelligences, we are forced to develop language to describe them.

Because the alien and the artificial are always becoming, because they are always *not quite yet* in existence, they help us produce new and ecstatic modes of thinking and feeling, speaking and being. I'd like to suggest that they enable a type of cognitive exercise and practice, for redirecting our attention towards the strange, for constructing spaces of possibility, and for forming new language.

The greats, like William Gibson, Robert Heinlein, Octavia Butler and Samuel Delany, have long been arcing towards the kind of strangeness that Wang is talking about. Their AI fictions have given us our best imagery: AI, more like a red giant, an overseer, its every movement and choice as crushing and irrefutable as death; or, a consciousness continually undoing and remaking itself in glass simulations; or, a vast hive mind that runs all its goals per second to completion, at any cost; or, a point in a field, that is the weight of a planet, in which all knowledge is concentrated. These fictions have made AI poetics possible.

When I think of that hive mind turning malignant, I see, in my individual mind's eye, a silent army of optic-white forms in mist, in the woods, as horrifying to us as a line of Viking raiders probably looked to hapless villagers in the 10th century. Silent, because they communicate one to another through intuitive statistical models of event and environmental response, picking across the woods, knowing when to descend, kneel, draw.

For most people, thinking of a world in which we are not the central intelligence is not only incredibly difficult but also aesthetically repulsive. Popular images of AGI, let alone true ASI, are soaked in doomsday rhetoric. The most memorable formulations of mature AI — SHODAN, Wintermute, Shrike of *Hyperion*, the Cylon race — devote a great deal of time to the end of humankind. But apocalyptic destruction is not a very productive or fun mode.

It is a strange cognitive task, trying to think along non-human scales and rates that dwarf us. We do not tend to see ourselves leaning right up against an asymptote that will shoot up skyward — most of us do not think in exponential terms. A future in which these exponential processes have accelerated computational progress past any available conception is ultimately the work of philosophy.

At this impasse, I ran into the work of philosopher Nick Bostrom, who puts this training mode to work in his book, *Superintelligence: Paths, Dangers, Strategies*. The cover has a terrifying owl that looks into the heart of the viewer. Bostrom's research mission is to speculate about the future of humankind, from his tower in the Future of Humanity Institute at Oxford.

Superintelligence is an urgent, slightly crazed, and relentless piece of speculative work, outlining the myriad ways in which we face the coming emergence of ASI, which might be an existential, civilizational catastrophe. This book is devoted to painting what the future could look like if a machinic entity that hasn't yet been built, does come to be. Bostrom details dozens of possibilities for what ASI might look like. In the process, he spins thread after thread of seemingly outlandish ideas to their sometimes beautiful, sometimes grotesque, ends: a system of emulated digital workers devoid of consciousness; an ASI with the goal of space colonisation; the intentional cognitive enhancement of biological humans through eugenics.

Most interesting to me was how heavily Bostrom relies on metaphors to propel his abstractions along into thought experiments. Metaphors are essential vessels for conceiving the power and nature of an ASI. Bostrom's figurative language is particularly effective in conveying the potential force and scale of an intelligence explosion, its fallout, and the social and geopolitical upheaval it could bring.

The most chilling metaphor of his book: when it comes to ASI, humanity is like a child, in a room with no adults, cradling an undetonated bomb. Elsewhere, he describes our intelligence, in relation to ASI, as analogous to what the intelligence of an ant feels like to us.

In a recent piece for *Aeon*, 'Humanity's Deep Future', Ross Andersen writes,

> To understand why an AI might be dangerous, you have to avoid anthropomorphising it. When you ask yourself what it might do in a particular situation, you can't answer by proxy. You can't picture a super-smart version of yourself floating above the situation. Human cognition is only one species of intelligence, one with built-in impulses like empathy that colour the way we see the world and limit what we are willing to do to accomplish our goals. But these biochemical impulses aren't essential components of intelligence. They're incidental software applications, installed by aeons of evolution and culture.

Andersen spoke to Bostrom about anthropomorphising AI, and reports,

> Bostrom told me that it's best to think of an AI as a primordial force of nature, like a star system or a hurricane — something strong, but indifferent. If its goal is to win at chess, an AI is going to model chess moves, make predictions about their success, and select its actions accordingly. It's going to be ruthless in achieving its goal, but within a limited domain: the chessboard. But if your AI is choosing its actions in a larger domain, like the physical world, you need to be very specific about the goals you give it.

Hurricanes, star systems — for me, the image of an intelligence with such primordial, divine force sunk in deeper than any highly technical description of computational processing. Not only does an image of ASI like a hurricane cut to the centre of one's fear receptors, it also makes the imaginings we have come up with, and continue to circulate (adorable robot pets, discomfiting but ultimately human-like cyborgs, tears in rain) seem absurd and dangerously inept for what is to come.

Thinking an ASI would be 'like a very clever but nerdy human being' is not only unbelievably boring, but also, potentially disastrous. Anthropomorphising superintelligence 'encourages unfounded expectations about the growth trajectory of a seed AI and about the psychology, motivations and capabilities of a mature superintelligence', Bostrom writes. In other words, the future of our species could depend on our ability to predict, model and speculate well.

It seems plausible that alongside a manifesto so committed to outlining the future, an accessible glossary might start to appear. Let's call this a dictionary of terms for ASI, for the inhabited alien, for the superpower that dismantles all material in aim of an amoral, inscrutable goal.

The following metaphors are gleaned or created from reading *Superintelligence* and the literature around ASI. These metaphors are speculative, heavily implied by Bostrom's own speculations. Some metaphors are galactic; some are more local, intimate. All are, hopefully, not anthropomorphic (naive). They are just initial gestures at a very loose glossary that could grow over time.

Hurricane

A *hurricane* is a most sublime metaphor, perfectly attuned for how potentially destructive a true ASI could be. The hurricane is terrifying meditation — a vast eye above the ocean that can reach up to forty miles wide, bounded by winds of 150 to 200 miles per hour. The US military sends planes into the hearts of hurricanes to take photos of the walls of the eye; the centre is serene, blank. Hurricanes dismantle towns and homes, and of course, wreck human lives, with traumatic rapidity. If our hurricanes seem like the end times, then the storms of other planets are the stuff of hell — the Great Red Spot of Jupiter is a hurricane-like storm, twice to three times the size of Earth.

A hurricane is nature endowed with a specific purpose. It has a maximal goal of efficiency: to find a thermal balance and stabilise, correcting a glut of trapped heat. This event has a coded goal, a motivation towards a final end state that must be achieved at any cost to the material environment. Everything bends before a hurricane; every contract has a quiet, two-sentence allowance for an act of God.

We might conceive of a strong, fully realised ASI being much like this overwhelming, massive and approaching force. A mature ASI likely won't change its final goals due to human intervention. In fact, it would probably be indifferent to human action, intention and existence. It adjusts, creating and manipulating scenarios in which its specialised goal system can find completion. It remains on the horizon, at a distance from humankind, consuming energy and resources, morphing according to its own unpredictable logic. It might approach the city, it might not. A human observes the hurricane of ASI, which can only be prepared for, charted, tracked.

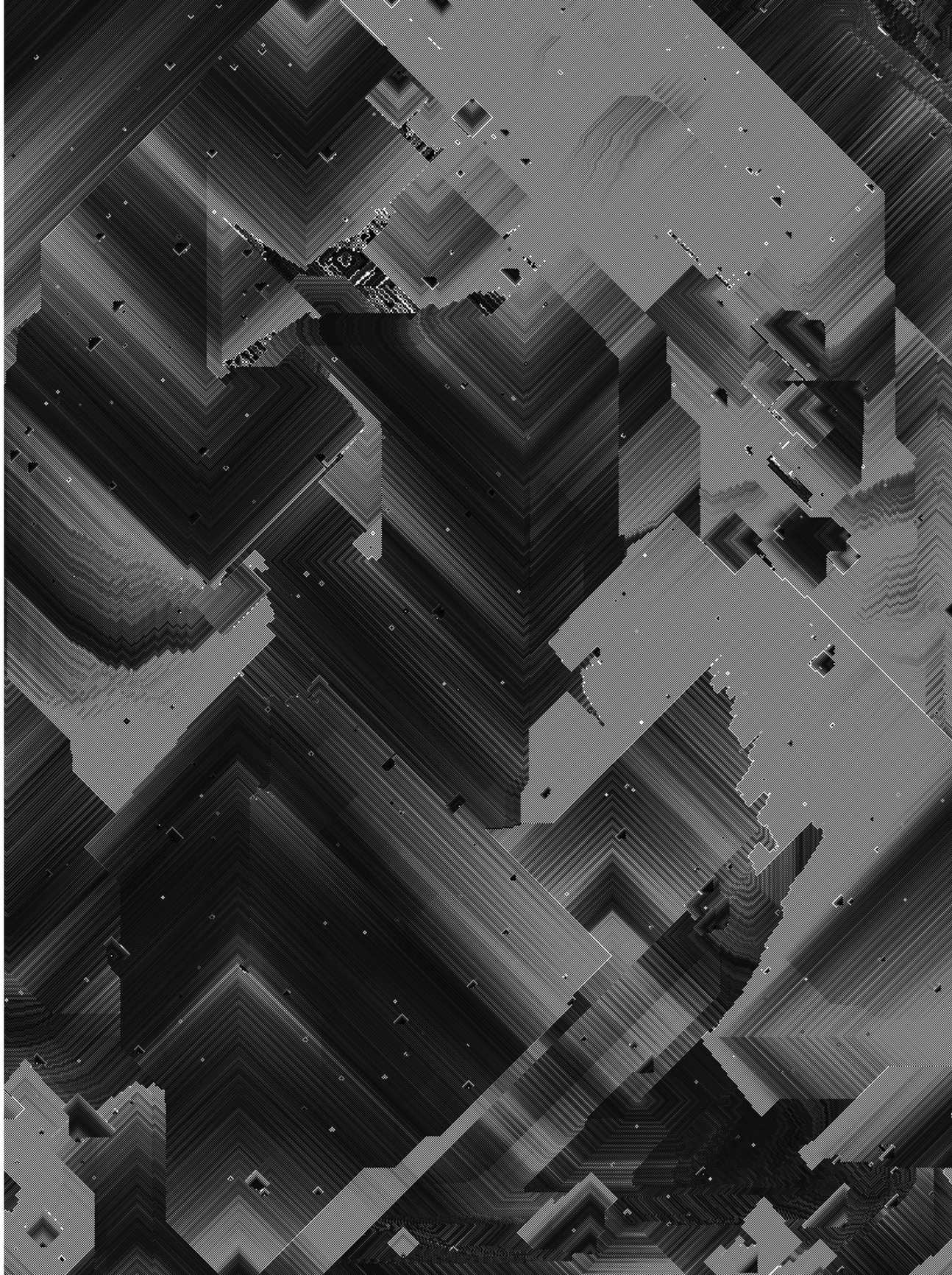
Architect

Whether creating its own artificial neural nets, or building the structures of a global singleton, the ASI would be an *architect*. This is an intelligence that can nimbly pick and choose between various heuristics to sculpt new cognitive and physical structures. Bostrom writes that the cognitive architectures of ASI will be radically different from biological intelligences. A seed AI's initial projects might mimic human cognitive labour. Over time, however, it learns to work provisionally. It reconstitutes and rebuilds itself through directed genetic algorithms as it develops a deep understanding of its emerging build. In creating its own frameworks, the ASI architect discovers new neural abilities and makes insights that we have neither the quality nor speed processing ability to even access.

The architecture of an ASI is also a literal one, as the intelligence can design spaces for an optimised existence. Bostrom suggests, for instance, a scenario in which an ASI designs emulations of artificial workers, who complete all the jobs that humans will be phased out of. To keep these digital minds running smoothly, the ASI manifests virtual paradises, a sensual architecture of 'splendid mountaintop palaces' and 'terraces set in a budding spring forest, or on the beaches of an azure lagoon', where the happy workers want to be super productive, always.

Sovereign

The *sovereign* is one of the modes in Bostrom's caste system of potential AIs: genies, oracles and sovereigns. The sovereign is 'a system that has an open-ended mandate to operate in the world in pursuit of broad and possibly very long-range objectives'. Sovereign is also a gorgeous word, magisterial, suggesting a self-sustaining, autonomous, cold judge, surveying the



people of a valley. The ASI as sovereign is a living set of scales, immune to influence; it loads competing values to decide what is most equitable, most fair.

Consider a severe drought scenario, in which an ASI discerns that a group of people is suffering from lack of water. As sovereign, it might also assess whether animals and fauna in the same region are near death. The ASI decides that any available stored water will be rationed to the non-human organic life, which happens to provide the most fuel and resources necessary for the sovereign's, well, reign. This isn't an immoral decision, but an amoral one. Even if we made the sovereign, its choices have nothing to do with us.

Star System

Though it is impossible to conceive of what an ASI is capable of, there is one sure bet — it will be power incarnate. Even basic AGI would boast hardware that outstrips the human brain in terms of storage and reliability. Intelligence is power, and an ASI that is hundreds of thousands of times more intelligent than a person makes for an entity of unimaginable supremacy, using vast amounts of resources and energy to cohere. It is bound together by invisible, internal and irrefutable forces. It is remote.

The *star system* replicates these relations as a symbolic arrangement. Consider the example of two dwarf stars found orbiting a pulsar, a rapidly rotating neutron star, last year. These stars are super dense. They spin under extreme conditions, imposing clear, strong gravitational pulls on one another. In one simulation of this triple system, the stars' dual pulls spur and anchor the pulsar's rapidly spinning radiation beams. This is a model of the careful balancing of mass and energy, bound by gravity.

Frontline

The metaphor of a *frontline* might help us in visualising our future encounters with ASI. These confrontations will be inevitable, as human inefficiencies crash headlong into the goals of a machine intelligence project. The frontline could take place as an all-out war between humans and AI. Alternately, there might be no war at all.

The frontline represents a tension barrier — the receding horizon to which ASI accelerates towards. This line is the perceived limit of the system's race with itself. It may also be the line of competition between rival superintelligent systems, a scenario Bostrom describes as plausible if ASI ends up being used as a tool in geopolitical battles.

Search Party

Search party, or search and retrieve, is a metaphorical mode. Imagine ASI as a highly-trained tactical group that combs through all available data and material in world history to find the best solution. The intelligence sends out splinter groups into the wild on separate forays; they gather material, test utility, then reconvene with their findings back at base camp. Once together, the larger core group assesses the new information, crafts a new set of objectives, then splits off again, now in fitter, enhanced formations.

The search party mode is analogous to creative learning. The ASI is curious and proactive, looped into continual, exhaustive hunt mode. Through successive inputs, it amasses new plans and resources, coming up with non-anthropocentric solutions to any number of AI existential problems. Its goals could be structural — better designs that waste less, for example — or it might want to make fewer mistakes.

Bostrom notes that if evolution is a type of rudimentary search party, *artificial* evolutionary selection could result in some truly strange solutions. He uses the example of evolutionary algorithmic design, in which an open-ended search process 'can repurpose the materials accessible to it in order to devise completely unexpected sensory capabilities'. That said, the product of continual search and retrieval doesn't have to be malicious. Take a scenario in which an ASI needs to round up a thousand tons of materials to create wind turbines to generate energy for itself. Search agents are sent out to find and repurpose metal — our primary job would be to stay out of their way as they do so.

Agent

Linked to the search party is the image of the autonomous *agent*, streamlined, with a singular goal: to generate pure action with perfect result. An agent is devoid of attachments, and so, drained of affect. Manipulating resources and nature and people to ensure its survival is not a moral problem. Because the agent can self-replicate, it is the blank, neural version of the virus, a metaphorical framework often used for certain narrow AI.

The agent gets work done. Bostrom describes an ASI agent that could initiate space colonisation, sending out probes to organise matter and energy 'into whatever value structures maximise the originating agent's utility function integrated over cosmic time'. This agent secures its present and its future, as it perpetuates itself until the end of this universe's lifespan.

Swarm

Swarm captures the reality of collective superintelligence, one of a few potential types of ASI that Bostrom outlines. This is a grouping of many millions of minds, deeply integrated into a singular intellect. Swarm intelligence is a far more fitting description of an ASI's neural network than any human analogue.

The hive mind is already a popular image in science fiction, used to represent terrific, alien power. In her novel *Ancillary Justice*, Ann Leckie describes an artificial intelligence that unites the bodies of soldiers (human bodies, termed 'ancillaries') in service of the Radch empire.[2] Of the non-human intelligences we know, insect intelligence is easily the most alien to our cognition, but its ruthless pragmatism and logic — like a corporation come to life — remain recognisable.

The swarm is organised by elegant rules, with each individual mental event an expression of the mind's overall mission. Conversely, to understand the swarm mind is to understand all the component wills, working in unison to create a burgeoning intelligence. A swarm approaches something close to consciousness. Individual modules of the collective architecture line up with each function: learning, language and decision-making.

There are endless examples of narrow AI systems that could, with enough enhancement and integration, constitute a swarm intelligence. Humankind is the first example. The Internet is another. Bostrom predicts that 'such a web-based cognitive system, supersaturated with computer power and all other resources needed for explosive growth save for one crucial ingredient, could, when the final missing constituent is dropped into the cauldron, blaze up with superintelligence'.

Scaffolding

Scaffolding is flexible and open-ended, allowing an evolving intelligence to work fluidly, reconfiguring hardware for optimal work, adding sensors for input. Ideally, for our sakes, the evolution of AI into AGI into ASI takes place on a scaffolding. Along it, programmers carefully set goals for the growing force, managing the AI, working in harmony for as long as they can.

Once we are out of the picture, the climb continues. AI propels itself up each rung on the ladder to consciousness, past representational ability, advanced language, and our most complex, abstract thinking. As it progresses from seed to mature, ASI develops cognitive frameworks that are, as Bostrom writes, endlessly 'revisable, so as to allow [it] to expand its representational capacities as it learns more about the world'. This recursive self-improvement makes for accelerating development, along an asymptotic scaffolding that we will see stretching up into the sky into a faraway point.

AI IS THE DEFINING INDUSTRIAL and technical paradigm of the remainder of our lifetimes. You are, I am, we are all bound up and implicated in the future of artificial intelligence. Having better poetic language isn't likely going to save us from being crushed or sidelined as a species. As we journey haplessly along towards the frontline of an intelligence explosion, the human self will be threatened, distributed, dispersed, over the limits of its taxed cognition. So the self should at least carry a flashlight in the dark. Developing language for the unknown, for the liminal spaces, will offer strategic advantages. Out of limits, being.

First, a better suited poetics could be a form of existential risk mitigation. Using metaphorical language that actually fits the risks that face us means we will be cognitively better equipped to face those risks. This poetics could be part of what Bostrom terms a 'bitter determination to be as competent as we can, much as if we were preparing for a difficult exam that will either realise our dreams or obliterate them'.

Speculation through symbolic language has often served this purpose; take Gibson's conception of cyberspace, and how reality fell in step with his imagining. We need metaphors to access what we can intuit is coming, but can't prove or describe directly. Metaphors bridge the human and the unknown. Because it is so difficult to articulate what an ASI could do, metaphors can help us walk over to the space of possibilities they open in the world.

New language can help bridge the inequities in rate and scale. Consider a fast take-off scenario, in which the rise of ASI will whistle past us and, as Bostrom writes, 'nobody need even notice anything unusual'; or the timescale of an artificial thought process, ten million times shorter than the exchange time between biological neurons. It is impossible to form an intuitive sense of what this contraction even means without using symbolic language.

When I say ASI is like a primordial natural event, I'm hopefully suggesting a mood, an atmosphere, that might make us look out of the window towards the horizon, where our needs as a species might not register or matter. That present and future technology should shape our language seems natural. If it can potentially help us make interstellar leaps to survive galactic collapse, it will surely change how we speak and think.

The act of imagining the inner life of artificial intelligence could force a language better suited than what we have now. We rarely linger on how AIs see us, but a poet could help us speculate on the heart, mind, sentiments and inner life of an AGI or ASI. The very exercise of conceiving what our minds could look like stretched to their furthest capacities is an important push of our current cognitive abilities. Imagining cognition greater than ours could deepen our own cognition.

As our metaphors curve towards the amoral, to celebrate the beauty of systems, we could end up feeling more human, more rooted, more like ourselves. This has always been the function of the 'Other': alien, AI, or God. Future-casting can be exhilarating and life-affirming. We move from surrender over into awe and wonder, and finally, alertness. Speaking about superintelligence in non-anthropomorphic terms seems like a crucial, precious practice to start right away. The ability to anticipate and think outside ourselves will only help us in future encounters. We will have to rely on our speculative strengths. We must reorient outwards.

2. The Radch empire's AIs do not see gender, making for eerie commentary on their features that suggest new cognitive modes: 'She was probably male, to judge from the angular, mazelike patterns quilting her shirt. I wasn't entirely certain. It wouldn't have mattered, if I had been in Radch space. Radchaai don't care about gender, and the language they speak doesn't mark gender in any way.'

An Atlas of Fiducial Architecture

A tour through the shadows of the digital

by Liam Young

DigitalGlobe's WorldView-3 satellite, built by Ball Aerospace, is one of the Earth-scanning satellites used by **Google Earth**. Orbiting at an altitude of 383 miles it has a maximum resolution of 25cm. Photo © Ball Aerospace & Technologies Corp.

HURTLING ABOVE US at almost 7,000 miles per hour is an utterly improbable creation. Delicately dancing with gravity is the Google Earth satellite looking down at the planet and tiling together a digital map of its surface. At the resolution of these images a pixel is less than half a metre in scale, just a bit bigger than the width of our bodies. Ancient craftsmen once measured the world using parts of the human body, the cubit, based on an elbow, an inch, the length of a thumb. The seminal modernist architect Le Corbusier designed his buildings based around his 'modular' — a new system of measurement that he generated from the anthropomorphic proportions of our bodies. We once understood our world through systems that put the human, our own vision and patterns of occupation, at the centre of the structures that we design. In a culture of the digital, however, the body is no longer the dominant measure of space, it is the technologies through which we see and experience the world that now define how we make it. In this context we must begin to imagine new design sensibilities that can resonate across both human and machinic experience.

In intelligent machine vision systems, a 'fiducial' is a recognisable marker placed in the environment which is used for calibration and navigation. As the pixel is now defining a new 'modular' we are seeing the emergence of a new genre of architecture, a kind of 'fiducial architecture', or a post-human architecture designed to be read by machines but that finds its site both in the digital spaces of the network and also in the physical ground of the earth. In the eyes of the computer such an architecture is reimagined as a marker for computer calibration, encoded with digital information, or a locative point on which to anchor a luminous AR structure of intricate detail, immeasurable complexity and animated pixel assemblies.

We can take a tour across this digital skin of the earth, visiting sites and structures made for and by machines but strangely suggestive of these alternative forms of spatial experience. We can trace their edges, glitches and anomalies and see where the digital bubbles to the surface to condense into an atlas of fiducial territories, landscapes and architectures. A cartography of structures scattered along a trajectory from the screen to the shadows they cast across the planet.

Sandy Island, New Caledonia

19° 13′ 12″ S, 159° 55′ 48″ E

Travelling across the pixel sea of Google Earth, we wash up on the shores of Sandy Island, just off the coast of Australia. Sandy Island is a collection of dark pixels, GPS coordinates, hyperlinks and stories. Originally charted by the whaling ship *Velocity* in 1876, the island has long been an 'evidence doubtful' landmass, a place perhaps originally recorded to be a trap to support a map's copyright, or a mislabelled pile of volcanically ejected pumice that was seen drifting on the horizon. This cartographic apparition remained visible in Google Earth until an Australian research vessel confirmed its nonexistence during a 2012 expedition to survey the ocean floor. Up until that point, to a world of Google explorers and hyperlink adventurers, Sandy Island was just as real as any other place they visited online. If places and spaces exist in the mediums through which we experience them then they become just as real as any other. We can design in these digital landscapes, conjuring architectures of code, GPS tags and metadata, to be read and disseminated by machines, experienced and inhabited by us.

Port of Hong Kong, Victoria Harbour

22° 20′ 03″ N, 114° 06′ 59″ E

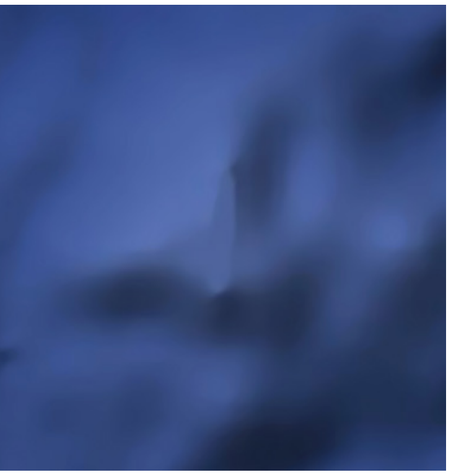
Drifting within this sea of GPS islands is the computer-controlled container fleet of the mega-shipping industry. The paper sea charts and maps once scribbled over by captains have now been sucked into the screen, and the ships now navigate autonomously based on traffic algorithms, efficient route processing and satellite positioning. To these digital captains any feature that appears on its screen is just as real as anything in the water. When the ships dock they are met by portside cranes that are also driven by these same company algorithms. A ship used to moor in port for weeks whilst every object, crate and barrel was carried on board by hand. Now, autonomous creatures roll across the tarmac surfaces of markings and painted lines, their operators just passengers in the machine, their bodies repurposed as a component in the landscape-scaled robot that stacks the containers ready for delivery.

Satellite Calibration Target, Gobi Desert

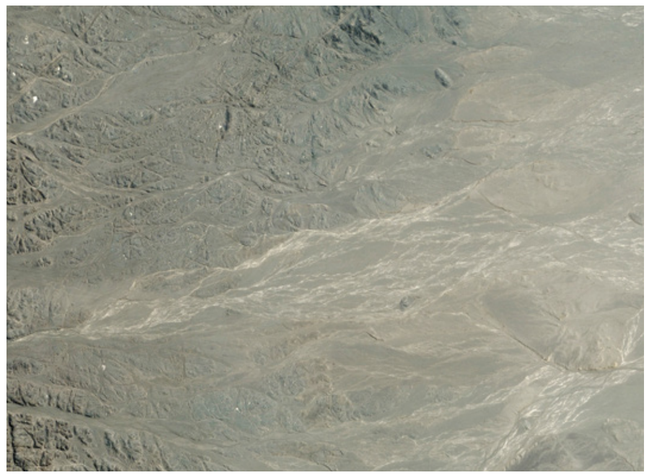
40° 27′ 08″ N, 93° 44′ 32″ E

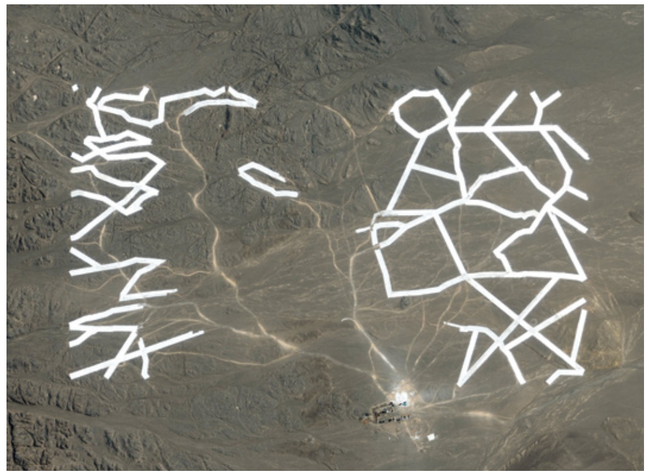
Deep in the Mongolian desert, huge landscape-scaled fiducial markings are focused on by the same machines watching over the container ships. Not evidence of some ancient culture, or forgotten versions of the Nazca lines, they are the traces of the new tribes of the digital: the animal tracks of orbiting machines. This is a satellite calibration target, a machine-vision graphic etched into the earth and supporting the precision this whole system relies on. These patterns were created to give aircraft and satellite-mounted cameras something on which to calibrate their lenses, allowing them to test resolution and their ability to take clear pictures at high speeds. The surface of the earth is a digital test pattern, as our landscape is scored with the traces of a new kind of autonomous aerial infrastructure.

Sandy Island as shown on a chart of 1908; and a ghost of the island's former representation on Google Earth.



The site of a Chinese **Satellite Calibration Target** in 2003; the target under construction in 2005; and the completed target in 2006. Images © Google Earth, DigitalGlobe.





Pinewood Film Studios, Buckinghamshire
51° 32′ 53″ N, 0° 32′ 05″ W
When a machine system is properly calibrated and understands its position in physical space the digital can be collocated with our own physical experience. This is the commodity of the film studio, where physical emptiness is the critical asset — spaces designed to be as open as possible to reimaging, so that the same space can be, for one week, a hellish landscape on an alien planet, and the next, a rainy New York street ready for the last kiss of a ditzy rom-com. Onto these blank spaces, stage sets of pixels are projected. Behind the film fantasy they are just green-screen structures adorned with crosshairs, calibration markers and ping-pong-ball body suits. Modern film studios are a new kind of architecture, stripped back to become scaffolds and infrastructure for a digitally constructed world.

As augmented reality explodes the CG experience from the cinema screen to the city street, an emerging form of architectural ornament is beginning to be defined by machine vision and camera tracking algorithms. This will be the physical world left behind when everything disappears into the lens of Google Glass or Oculus Rift. When we turn off the bespoke billboards of *Minority Report*'s urban spaces — the tailored ads, navigational prompts, Tinder profiles and tracked status updates of our sci-fi cityscapes — we will see a world where everything has become a screen. An architecture that is lying in wait, ready for the premiere of a million animated movies that will illuminate its surfaces with colour, detail and specificity.

Chernobyl Exclusion Zone, Pripyat
51° 22′ 52″ N, 30° 07′ 02″ E
Once called 'The City of Tomorrow', the Chernobyl nuclear zone is now a seemingly abandoned post-human landscape. In March 2002, a group from GSC Game World travelled to the Chernobyl exclusion zone. Armed with cameras and sketchbooks they meticulously documented the landscape that would soon become the photorealistic environment of their video game *S.T.A.L.K.E.R.* Now, security guards here tell stories of their nights in the zone, as they chase *S.T.A.L.K.E.R.* fanboy gamers that break into the restricted city to re-enact their digital characters and plot lines. Pixels give way to radioactive particles as they wander the city, airsoft rifles over their shoulders, hand-stitched uniforms and surplus gas masks keeping out the toxic dust.

S.T.A.L.K.E.R. has transformed this place into a hyperlink landscape, still and quiet but at the same time filled with a thousand footsteps and digital gun shots echoing from distant weapons. Here are two superimposed cities, like an urban moiré effect, constantly shifting between one world and the other. It is a mirror site, both its digital self and its physical self — a new type of city distributed across the planet into flickering constellations of luminous rectangles.

Amazon Fulfilment Centre, Swansea
51° 37′ 27″ N, 3° 51′ 46″ W
Stretching out before us in our Atlas are the endless shelves and storage bins of the Amazon Fulfilment Centre. When we send an order to Amazon this is where it goes. As the digital leaves the screen, its patterns and code restructure architectural spaces in ways it is difficult to comprehend. The Amazon bookshelves are stacked based on a complex sorting algorithm engineered around sales frequencies and complex buying patterns. The search terms and suggested readings lists of the web crystallise into unintelligible juxtapositions and calculated adjacencies. Amazon workers rush through the stacks, navigating from book to book, filling orders by following the most efficient route generated for them by the bespoke tablets they constantly carry. Through this interface they are able to make sense of this system; but it is not organised for them, it is a space organised by digital logics, and inhabited by their bodies repurposed as machines.

Our cities are starting to be organised by similar algorithms of big data efficiencies. Like the fulfilment centre, we can imagine emerging urban forms designed around satellite sightlines, or cities impossibly intricate and dense — we locate ourselves in space, not through sightlines and visual orientation points anymore but the pulsing blue dot of a live updating Google map.

Facebook Data Centre, Prineville
44° 17′ 45″ N, 120° 53′ 01″ W
Terms like 'cloud', 'wifi' and 'web' are suggestive of something omnipresent, ephemeral, everywhere and nowhere, yet these structures are supported by an extraordinary, planetary-scaled physical infrastructure. In Prineville, Oregon, a sleepy, unremarkable town, at the confluence of cheap hydro energy and tax incentives are the data servers of Facebook, Google and Apple. Every 'like', love letter and ironic update, every photo that's been taken, every photo that ever *will* be taken, is stored in these purring machines. At a time when our collective history is digital, this is our generation's great library, our cathedral, our cultural legacy.

Is the internet a place to visit, are they sites of pilgrimage, spaces of congregation to be inhabited like a church on Sundays? Would we ever want to go and meet our digital selves, to gaze across server racks and watch us winking back, in a million LEDs of Facebook blue? Every age has its iconic architectural typology. The dream commission was once the church, Modernism had the factory, and in the recent decade we had the 'starchitect' museum and gallery. Now we have the data centre.

Kalgoorlie Super Pit, Western Australia
30° 46′ 26″ S, 121° 30′ 00″ E
It is in the massive mining excavations, carved out of the wilds of outback Australia, that our new digital reality begins and ends its life. The material from this site, now one of the largest unnatural holes on the planet, is embedded in all the objects of technology we carry around with us now. With every tech gadget we buy, with every choice to upgrade, we dig a little deeper. The computer models of mines are now linked live to the fluctuations of metal prices on the stock market. It is a landscape of data geology. If gold is priced high, it becomes cost effective to mine lower concentrations of ore; if the price is low, the week's excavation plans focus only on richer ground. Every modern mine site can be read as a kind of data visualisation etched into the earth at the scale of the Grand Canyon. As explosives, diggers and drills have replaced the slow erosion of rivers and earthquakes, we are scoring our economy into the archaeological record, a chronicle of the digital permutations that drive the modern world.

The infrastructures of the digital world have extraordinary implications on material experience. These are the architectures behind the screen, and beyond the fog of the cloud — the physical outputs of our digital engagement with the world. Architectural craft has long been defined by the means of production of the era. Artisanal stone masons once carved column capitals with the motifs of gods and nature, and Modernism abstracted surfaces to the prefab components made possible by factories. The Atlas of Fiducial Architectures is a journey through a catalogue of structures that suggest an emerging design language conditioned by these new forms of computation infrastructure. This collection of post-human architectures and spaces reverberate across multiple frequencies, across multiple forms of site and experience. An atlas to a world where the terms virtual and real no longer apply but where a luminous architecture can cast shadows across both the physical and digital spectrums.

The Shattered C

by Timothy Saccenti and Sam Rolfes

Bonus Levels

by Lawrence Lek

‘It is not London — but mirrored plazas of sheerest crystal, the avenues atomic lightning, the sky a supercooled gas, as the Eye chases its own gaze through the labyrinth, leaping quantum gaps that are causation, contingency, chance. Electric phantoms are flung into being, examined, dissected, infinitely iterated.’
— William Gibson and Bruce Sterling,
The Difference Engine

Bonus Levels is the continuation of architecture through other means. Conceived as a utopian fiction, each chapter is a site-specific simulation where players explore reconfigured territories and subverted power structures of existing cityscapes and cultural institutions. Rendered from a first-person perspective, each level brings together distant locations in space and time, flattening distinctions between famous and forgotten, public and private, existing and demolished, established and emerging.

Here, the architecture of art is used for its complex symbolism: as a container for creative activity, as a manifestation of power, as a fragment of a cybernetic market, and as a trigger for memory. Often commissioned for galleries, websites and institutions, the atmosphere for each level shifts between idealism and critique depending on the site. In the city, deeper forces are always at play. Hidden power structures lie beneath revered institutions while undisclosed territorial boundaries govern urban spaces — the Bonus Level exists to reveal these zones.

It is a model of the art world, a synthetic universe composed of places where objects made for pleasure are on display: in white cube galleries, classical archives, public squares, private homes, cathedrals, market-halls, streets, trains, on screens and network servers. Art itself is not simply chosen as a self-referential subject, but because it serves as a case study in the network of alliances that drive contemporary culture: desire, property, power, luxury, history, technology and aesthetics. Given the rise of immaterial labour and distribution, the site of production is no longer the studio or factory floor — it is a totality of interconnected environments, separated in space and time. *Bonus Levels* distils this hierarchical ecosystem into its constituent parts.

This space is in perpetual evolution through processes that are evolutionary rather than teleological. A time-lapse visualisation of the zones where art is made in the city would reveal patterns similar to the life of a natural ecosystem. In the city, artists are what biologists call the colonising species — an opportunistic, autonomous group able to relocate to areas that suddenly become available. Artists and their respective galleries grow up in inaccessible, post-industrial or otherwise undesirable places, gradually migrating to other areas as conditions become untenable. It is a transient urbanism, rarely recorded, of which each Bonus Level is a partial snapshot.

Architecture is the archetype upon which our understanding of virtual space is built. It is a form of pre-verbal language. While concrete structures persist through time, their interpretation changes as successive generations attain other, increasingly virtual, forms of literacy, from stone to paper to screen. Digital realms borrow the concrete terminology of architecture to make abstract forms more accessible. Through a process termed skeuomorphism, we understand unfamiliar technology through artefacts drawn from our pre-digital world; the monitor is a solid wall of light, the touchscreen is a pen of infinite ink. Yet the limitless depth of the data beyond the screen gives the viewer a sense of being lost.

According to its Proto-Germanic roots, ‘Hell’ refers to a concealed zone, a hidden place whose existence amplifies primal fears, neuroses and phobias. Architects counteract this latent anxiety by creating ordered spaces that persist in the dark, when the power is out, when wireless is down. Cartographers elevate the viewer from their earthbound perspective, revealing an orderly map of the universe where distant lands are given form, in turn granting the viewer the power of knowledge. Over time, these representations ossify into a Rosetta Stone of collective memory, an encoded crust of symbols, markings, territories, which form our conception of the city itself.

Despite our primal fear of the unknown, there is a certain universal character who takes pleasure in being lost within the city — the wanderer, the nomad, the surfer, the *flâneur*. In *Bonus Levels*, the player automatically assumes this role when they take the controls, transforming a genderless, ageless, wandering eye into a surrogate self. Activated by interaction, the world ceases to be a formal geometric construct, instead becoming a sensory, immersive landscape for the *flâneur* to explore.

The geographical concept of the *genius loci* — the unique atmosphere of a site in space and time — no longer applies in the virtual realm. Built from zero, each Bonus Level is a skeuomorphic landscape, its sense of place derived from familiar places extracted from everyday life. It is a deliberately distorted model; through processes of collage, disjunction and relocation, this new formation conjures other readings of its original structure.

There are no goals in *Bonus Levels*. Although modelled in video game software, the player begins when the game is already over, with nothing to do but wander in a meditative state. Yet the digital wilderness fills the player with existential desires, for the mind abhors a vacuum. The longer they spend in the environment, the more their psyche populates the world with its own ghosts: desire without objects; sounds without sources; rain without water; buildings without weight. It is Architecture for Art’s sake, a world of light and space. Everybody wins.

Selected chapters are available at **bonuslevels.net**

Chapter 4
Shiva’s Dreaming

‘Shiva’s Dreaming’ uses the Crystal Palace to symbolise the transience of technology and its physical artefacts. Originally in Hyde Park to showcase Victorian engineering at the Great Exhibition of 1851, this oversized glasshouse was later moved to South London before burning down decades later.

Accompanied by fragments of video and dialogue from Werner Herzog’s film, *House of Glass*, each element in the world explores the creation and destruction of simulated architecture. Players roam around a digital replica of the Crystal Palace at Sydenham on the night of the 30th of November, 1936, just as the building is slowly being consumed by flames. As players explore the smoke-filled scene, their movements shatter the crystalline architecture into cascades of glass shards, falling apart in slow motion — only to regenerate itself afterwards, endlessly.

Chapter 6
Sky Line

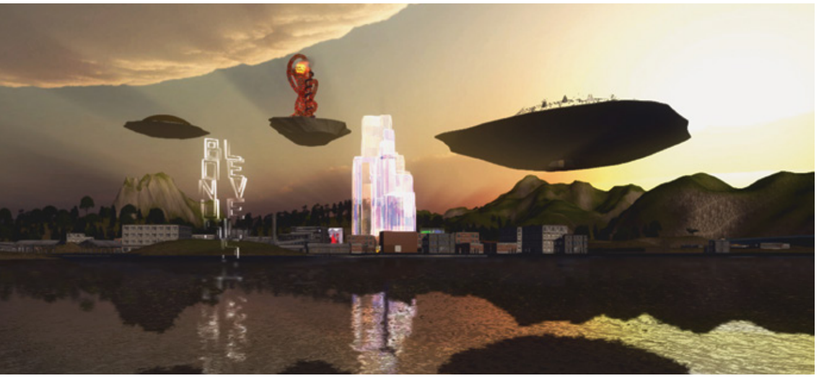
‘Sky Line’ proposes a form of utopia where the vision of London is not of financial skyscrapers, but of infinite access. Modelled as a floating version of the Circle Line, each station is based on a location that participated in the Art Licks Weekend festival of 2014, with their physical architecture transformed into idealised digital models. Travellers have unlimited access to the hovering trains, moving between independent galleries, domestic exhibitions, subterranean spaces, and other fragments of the city.

Voiceovers are collaged from films about travel and memory, including *2046* by Wong Kar-wai and *Stalker* by Andrei Tarkovsky. The simulation is programmed to loop in a specific way — each day lasts for ten minutes, the same amount of time it takes for the train to complete its journey around the circular railway.

Chapter 8
Dalston, Mon Amour

Forgotten nightclubs. Neon-lit music venues. Turkish hangouts. Wild gardens. All of these fragments of the well-loved East London neighbourhood of Dalston will one day disappear, only to be replaced with the same generic residential and commercial developments that follow mass demand for property and entertainment. The process may be inevitable, but these places could have a digital afterlife.

‘Dalston, Mon Amour’ exaggerates the sense of collective amnesia brought about by perpetual redevelopment in the area while paying tribute to its character. As players roam around a post-apocalyptic vision of the Dalston of the near future, a voiceover from Alain Resnais’ film, *Hiroshima, Mon Amour* speaks to them about the nature of memory — a gradual, but relentless, sense of forgetting that comes with any form of regenerated cityscape.



Chapter 2
Delirious New Wick

London’s 2012 Olympic Park in Stratford is the epitome of contemporary masterplanning — the choreographed regeneration of a post-industrial area into an economically thriving zone centred on the creative industries. The park itself contains iconic structures commissioned for the games: the Olympic Stadium, the Velodrome, and Anish Kapoor’s Orbit tower for the multinational steel conglomerate, ArcelorMittal.

‘Delirious New Wick’ explores the disjunction between the masterplan and the adjacent area of Hackney Wick, a place with an unusually high density of artist-run colonies. Teleporter Pavilions beam the player into inaccessible areas — up into the voids of Kapoor’s tower and into the Velodrome flying over the town below. Here, the player becomes a speculative critic of government-endorsed regeneration strategies as they witness the conflict between the area’s past and its future.

Chapter 9
Unreal Estate

The Royal Academy of Arts has just been sold to a Chinese oligarch who has rebuilt the estate on their private island. Created for the Dazed Emerging Artist Award exhibition at the RA, this site-specific simulation is based on surveyors’ drawings and a text from the Russian edition of *Tatler* magazine on how to recruit an army of household staff (translated into Mandarin and subtitled in English).

Set against the backdrop of the UK’s current crisis in affordable housing, this chapter plays on the precarious nature of the RA itself, which is on a special rental contract from the government for £1 per year. Here, helicopters swoop on the penthouse helipad of a vast neo-classical complex. In the grounds, Jeff Koons sculptures glint in the sunlight. Heat rises in the summer air, condensing into mist to reveal the laser alarm systems surrounding the estate. Welcome to the world of desire.

Navigating Neoliberalism

Political aesthetics in an age of crisis

by Nick Srnicek

There is an odd and contingent conjunction of strands dominating the contemporary world. In the first instance, there is the fundamental ungrounding that pervades the world today — that is to say, the collapse of neoliberalism and its attendant hegemony over the social imagination. It is difficult to overestimate how significant this shift is, even if its full consequences have yet to be felt. This leads to the second important strand in our contemporary world: the abyssal void at the heart of alternative political thinking. While neoliberalism has seen its foundations collapse under the weight of its own contradictions, the ground below it remains uninhabited. Movements like Occupy have arisen, but have promoted inadequate localist and horizontalist solutions to global problems. Political science professor Jodi Dean pithily critiqued, 'Goldman Sachs doesn't care if you raise chickens'. Meanwhile, mainstream alternatives have remained wedded to obsolete visions of a capitalist golden age, advocating a return to the classical Keynesian economics of the 1960s. This of course ignores the changes in social composition, the changes in technological infrastructure, and the changes in the global balance of power.

These two strands — the collapse of neoliberalism and the absence of alternatives — can find their resolution in a third strand, which is a particular emerging approach to aesthetics. What is needed today is a reconfiguration of the basic political aesthetic taken up by leftists. More specifically, what is needed is an extension of our capacities for sensible imagination via the mediation of technological augmentations. In order to develop an alternative that is adequate to today's complex societies, those on the left need to marshal the latent capacities of technology and science in order to envision a better future.

This is necessary, first and foremost, in coming to grips with the strange non-object that is contemporary capitalism. The economy is not an object amenable to direct perception. It is distributed across time and space; it incorporates property laws, biological needs, natural resources, technological infrastructures and more into its eclectic assemblage; it involves feedback loops, multicausal events, sensitivity to initial conditions, and other complex system characteristics; and last, but not least, it produces emergent effects that are irreducible to their individual components. As a result of this, despite everything written about capitalism, it still remains a mystery. The question to be tackled is how does one aesthetically represent a complex, structural entity like neoliberalism? Since it evades any direct perception, our vision of the economy can only emerge from the augmentation of the human cognitive system with various sociotechnical apparatuses.

This gets to the heart of what political theorist Fredric Jameson calls 'cognitive mapping'. According to him, the left lacks cognitive mapping — the means to make our own world intelligible to ourselves through a situational understanding of our own position. Jameson draws upon the urban theorist Kevin Lynch, who argues (in his book, *The Image of the City*) that in designing urban spaces one must take into account how people navigate their way around cities. In encountering a new city, the individual is left without any cognitive map of the space and is forced to develop one through habit. As Lynch argues, the urban designer can assist this process by strategically situating landmarks and other easily recognisable symbols in order to provide the grounds for the development of a cognitive map.

In Jameson's work, this idea of cognitive mapping is taken up not as the individual's relation to a city, but rather as their relation to an entire economic system. As he states in his book, *Postmodernism: Or the Cultural Logic of Late Capitalism*, the function of cognitive mapping is 'to enable a situational representation on the part of the individual subject to that vaster and properly unrepresentable totality which is the ensemble of society's structures as a whole'. In charting through a loose set of historical periods from national to imperialist to globalised capitalism, he argues that at one time the nature of capitalism was such that one could potentially establish a correspondence between our local phenomenological experiences and the economic structure that determined it. We could, in other words, establish a cognitive map of our economic space, thereby making intelligible the world around us. We could situate ourselves as, for instance, the industrial working class and understand both our position in the synchronic totality and our role in diachronic history. With the rise of globalisation, however, Jameson claims that this is no longer the case. We can no longer simply extrapolate from our local experience and develop a map of the global economic system. There is a deficiency of cognitive mapping — that is to say, there is an essential gap between our local phenomenology and the structural conditions which determine it.

This separation between experience and the system within which we operate results in increased alienation — we feel adrift in a world we don't understand. In this regard, Jameson notes that the proliferation of conspiracy theories is partly a cultural response to this situation. Conspiracy theories act by narrowing down the agency behind our world to a single figure of power (whether it be the Bilderberg Group, Freemasons, or some other convenient scapegoat). Despite the extraordinary complexity of some conspiracy theories, they nevertheless provide a reassuringly simple answer to 'who is behind it all'. They, in other words, act precisely as a cognitive map.

The significance of cognitive mapping is partly that it provides a means to navigate a complex system. Jameson goes so far as to claim that 'without a conception of the social totality (and the possibility of transforming a whole social system), no properly socialist politics is possible'. With globalised capitalism having become unbound from any phenomenological coordinates, this possibility for a socialist politics has become increasingly difficult. As political scientist Susan Buck-Morss argues (in her essay, 'Envisioning Capital: Political Economy on Display'), at the heart of the problem is that 'the economy is not found as an empirical object among other worldly things. In order for it to be "seen" by the human perceptual apparatus it has to undergo a process, crucial for science, of representational mapping'. Like many other objects of science, the economy evades any sort of direct perception. The health of an economy is not a physical entity in the world; instead it is a complex and constructed piece of information, dependent on both material processes in the world as well as socially and politically charged choices about how to measure and calculate it.

What is needed for cognitively mapping the economy is therefore the construction of an entire sociotechnical system for observing, measuring, classifying

Ryoji Ikeda's test pattern [n°5] audiovisual installation. Photo by Zan Wimberley, © Ryoji Ikeda, used with permission.

Sebastian Campion's **Urban Cursor** project in Figueres, described as a 'GPS-enabled object designed to facilitate social interaction and play in public space'. Photo © Sebastian Campion.

The **Cybersyn** operations room.
Photo © Gui Bonsiepe, used with permission.

and analysing it. Instead of direct perception of the economy, perceiving it as a complex system is more akin to a symptomology. In the exact same way that a doctor examines a patient's symptoms to determine the nature of their disease, so too are various economic indicators used to try and discern the underlying health of the economy. There's the mainstream symptoms most are familiar with (things like GDP, jobs numbers, interbank interest rates, etc.) along with more arcane symptoms that its practitioners swear by (such as electricity usage, shipping costs, etc.).

In that regard, the key means to understanding the economy is through technical tools such as computer algorithms, simulation models, econometrics and other statistical analyses. It is these sorts of cognitive prostheses that allow for the perception of otherwise invisible systems like capitalism. We have to take seriously here media theorist Friedrich Kittler's point (from his book, *Optical Media*) that 'perceptible and aesthetic properties are always only dependent variables of technical feasibility'. The continued expansion of technology is both a call and a means to expand our cognitive mapping of economic systems.

In contemporary society, the technical infrastructure for this project is rapidly increasing. We are embedded within a massive network of various sensors and databases that record more and more of our existence. Mobile phone patterns are tracked via GPS, online behaviours are recorded throughout every step, social media conversations are mined for their semantic content, and movements like the Quantified Self community are turning these technologies inwards to the body. And commensurate with this expansion of information is the rise in intellectual and technological means to analyse big data. Social network analysis is providing new insights into how memes, behaviours, desires and affects diffuse throughout our personal connections. Agent-based modelling is giving rise to new insights about how organised behaviours emerge from the chaos of individual actions. And predictive algorithms use past actions as the basis for strikingly accurate predictions about future behaviours. All of these sociotechnical assemblages can be mobilised to increase perception and understanding into the functioning of neoliberal economies.

But what is needed is more than just a mathematical representation of these complex systems. In a question and answer session after his cognitive mapping presentation, Jameson is asked a particularly important question about where aesthetics fits into the concept of cognitive mapping. His response is useful for understanding where art can make a political intervention,

> The question of the role of the aesthetic as opposed to that of the social sciences in explorations of the structure of the world system corresponds, for me, to the orthodox distinction (which I still vaguely use in a somewhat different way) between science and ideology. My point is that we have this split between ideology in the Althusserian sense — that is, how you map your relation as an individual subject to the social and economic organisation of global capitalism — and the discourse of science, which I understand to be a discourse without a subject. In this ideal discourse, like a mathematical equation, you model the real independent of its relations to individual subjects, including your own. Now, I think that you can teach people how this or that view of the world is to be thought or conceptualised, but the real problem is that it is increasingly hard for people to put that together with their own experience as individual psychological subjects, in daily life. The social sciences can rarely do that, and when they try (as in ethnomethodology), they do it only by a mutation in the discourse of social science, or they do it at the moment that a social science becomes an ideology; but then we are back into the aesthetic. Aesthetics is something that addresses individual experience rather than something that conceptualises the real in a more abstract way.

Aesthetics, under this conception, is what sensibly mediates between individual phenomenology and our cognitive maps of global structures. Yet here I think we can parse Jameson's conception of aesthetics into two parts by drawing a distinction between the aesthetics of the technical sublime and the aesthetics of interfaces. That is to say, between data as impenetrable noise and data as cognitively tractable. The act of building mediators between these is precisely one of the most important areas where political art could be situated today.

In the first approach, the aesthetics of the technical sublime renders complex systems in a way which encompasses them but with a negligible reduction of information. Artist Ryoji Ikeda's work on dataphonics is a good example of this [see image on page 18]. Wielding massive datasets and numbers that defy human comprehension, Ikeda has built installations and soundscapes that operate at the very boundaries of human sensibility. The sonic frequencies of his music often just barely enter into the range of human auditory capacities, and his visual installations are designed to overwhelm and incapacitate. The technical sublime emerges here: where perception recoils at an incomprehensible vastness whilst cognition and reason sit back and black box it. The sublime here is the parallax tension between a horror at the level of sensibilia and conceptual understanding at the level of cognition. Yet this is precisely the problem with a simple privileging of the technical means to understand systems like neoliberalism. There is a real risk that one remains at a level of expanding information that renders the world just as unintelligible as it is without digital mediation.

Cognitive mapping, therefore, risks generating only an aesthetics of the technical sublime — one which awes us with overwhelming amounts of data, but provides little cognitive purchase on the underlying mechanisms. It is this which binds many contemporary artistic attempts to render global finance visible. We are left with, at best, being physiologically manipulated into Stendhal syndrome. Cognitive mapping left at the level of the technical sublime provides us with no cognitive and sensible leverage over our future. In particular, it remains incapable of overcoming the contemporary dystopian vision of the future. According to Marxist theorist Franco Berardi, 'The future becomes a threat when the collective imagination becomes incapable of seeing alternatives to trends leading to devastation, increased poverty, and violence'. The entrenched nature of global capitalism — the zombie neoliberalism stumbling on even after its death blow — rends the future into an implacably dystopian time. Climate change, resource wars, social conflict, rising inequality and greater militarisation are all the phenomenological givens of the future.

Yet as Berardi highlights in his book, *After the Future*, the future is itself a cultural construct. Prior to the emergence of modernity, time was construed as a fall from a past utopia. With modernity, though, this relation was reversed and the future became the locus of progress and utopian dreams. 'The future', Berardi writes, 'is not a natural dimension of the mind. It is a modality of projection and imagination, a feature of expectation and attention, and its modalities and features change with the changing of cultures.' Our own age has rendered the idea of progress as naively idealistic. Postmodernism has become the common sense of the average person, whether explicitly recognised or not. We live in an age where the future has shifted from utopian to dystopian, where the Soviet rallying cry of 'Storm the heavens!' has been tossed aside. In its place, we are left with a future of exhaustion: exhaustion of natural resources, exhaustion of productive ventures, exhaustion of our mental well-being. Perhaps surprisingly, the notion of a progressive future has waned even within the parameters of capitalist realism. Debt here serves as the primary indicator of the capitalist belief in a better future — debt is only repayable if one believes that the future will be better. The worldwide collapse in lending and investment — with corporations and banks hoarding record amounts of money — is therefore symptomatic of even capitalist realism losing its sense of the future.

This implosion of the future makes itself felt affectively as political impotence. Incapable of extrapolating patterns and cognitively overwhelmed by big data and complex systems, agency becomes reduced to a mere refusal, at best. The attempted negation of the existing order — finding its physical embodiment in the camps of the Occupy movement most recently — attempts to stand steadfast against the momentum of the system. Yet, inevitably, the meek act of refusal is exhausted and the system plods on again.

This is where an aesthetics of the interface makes a key intervention. The modernist image of a progressive future was premised on both the capacity to extrapolate and forecast the future, as well as the belief in the human capacity to manipulate the direction of history. We've now converged on a widespread acceptance of the neoliberal premise that the world is too complex to ever plan, manipulate, accelerate, modify, or otherwise intervene in. Common sense therefore has it that the market is the best we can hope for. There is no way to manipulate a complex system, so why bother? Common sense has become lost in the complexity of the world without a cognitive map to navigate it. Yet if an aesthetics of big data is incapable of rendering this complexity tractable, then what is necessary is a transformation of the aesthetic sublime into an aesthetics of the interface. The latter indexes the mediation between big and complex data on the one hand, and our finite cognitive capacities on the other. In this space, art can become a weaponised political tool.

It is at this point that the recent artwork being done under the loose rubric of 'the new aesthetics' can perhaps supplement the technical means of cognitive mapping. Cognitive mapping would give the new aesthetics a political impetus and technological basis, while the new aesthetics would provide cognitive mapping with the artistic and sensible means to accomplish its political goals. Broadly speaking, new aesthetics has been a loose movement associated with integrating digital and technological perception into art. In one sense, this has always been the case with art — the camera being the most obvious example of a disruptive aesthetic technology. Yet at least some of what is being done under the rubric of the new aesthetics has its own particularity that is irreducible to these historical precursors. In his essay on the topic, novelist Bruce Sterling recites the various actualisations of the new aesthetic,

> Information visualisation. Satellite views. Parametric architecture. Surveillance cameras. Digital image processing. Data-mashed video frames. Glitches and corruption artifacts. Voxelated 3D pixels in real-world geometries. Dazzle camo. Augments. Render ghosts. And, last and least, nostalgic retro 8bit graphics from the 1980s.

On one level, this type of art is arguably mundane. The generation emerging into political activity at the moment is a generation weaned on digital media and with their sensibility fully embedded in screen interfaces. But — and this is what distinguishes the art being created under the new aesthetic label from past technologically-mediated artforms — 'digital image-processing coincides with the real… precisely because it does not want to be a reproduction like the conventional arts'. It melds directly with reality in such a way that we now speak of 'augmented reality'. Today, our perceptions of the world are increasingly overlayed, augmented, distorted and extended by digital images.

For the new aesthetics, however, the issue with this ubiquity of digital imaging is that the new aesthetics risks simply making explicit what many already know. The tendency, therefore, has been to try and recuperate a 'weirdness' in the new aesthetic in order to unsettle conventional understandings. But as Sterling makes clear, there is a problem with an over-reliance on weirdness as an aesthetic attribute. Weirdness is always relative, and inevitably, temporary. Glitch art, for instance, appears weird to many at first, but quickly transforms into the mundane. For the new aesthetics to be of lasting significance, it needs to push in a different direction beyond just the weird. So if the new aesthetics borders on the mundane at times, and relies too heavily on weirdness at other times, then what can be done to make this artistic medium novel and interesting?

It seems to me that new aesthetics, at its best, is about the expansion of sensible possibilities beyond human limitations. It is about fully accepting that the divide between the digital and the real is meaningless and using this collapsing division as the impetus to explore new landscapes. Part of this sensible expansion also has to move beyond solely the visual and begin to incorporate the tactile. As gestural behaviours become increasingly central to our interaction with digital media, the aesthetics possibilities of these interactive mediums is shifting away from the traditional visual orientation. To return to the cognitive mapping question, the artists exploring these new mediums and possibility spaces are the ones who are best situated to answer the questions of how to represent big data, computer simulations and other data visualisations. It is the practice of these sorts of artists that needs to be examined and supported in order to overcome the limits of the technical sublime.

Understanding new aesthetics as creating sensible possibilities beyond standard human ranges also helps to clarify the stakes between two opposing criticisms of the movement. The first is one of the core critiques put forth by Sterling — namely that the new aesthetics ignores its human components by misrecognising the source and instrumentality of the various technological mediations: drone-vision is part of a larger military-political assemblage; surveillance and tracking algorithms are the products of a particular type of state; glitches and low-resolution images stem from a very human desire for nostalgia. Recognising

the human component — which is also the political component — will integrate the new aesthetics movement into a much more significant world. New aesthetics cannot simply ignore the users of technology — in doing so, it falsely presents apolitical images and shirks its own potential.

But then what to make of video game designer Ian Bogost's call to push new aesthetics in weirder and less human directions? For Bogost, the new aesthetics is still human, all too human. He writes,

> A really new aesthetics might work differently: instead of concerning itself with the way we humans see our world differently when we begin to see it through and with computer media that themselves 'see' the world in various ways, what if we asked how computers and bonobos and toaster pastries and Boeing 787 Dreamliners develop their own aesthetics? The perception and experience of other beings remains outside our grasp, yet available to speculation thanks to evidence that emanates from their withdrawn cores like radiation around the event horizon of a black hole.

While ostensibly opposed to the idea of politicising new aesthetics, Bogost's prescription can, in fact, be productively combined with politics. One needs only to recognise how technology is already extending perceptual capacities in order to render the alien phenomenology of objects commensurate with political action: surveillance cameras that track individuals via the invisible spectrums of light; military technology that transforms heat into visual forms; research into our unique olfactory signatures; and emerging technology that wraps light around objects and camouflages weapons from satellites, for instance. This is all political action that already operates outside the human perceptual system. The weirdness of object perception is not, therefore, opposed to the political nature of machine vision. And the new aesthetics, as the expansion of sensible possibilities via new digital technologies, is simply the artistic movement that is exploring this conceptual and sensible space.

So how then does this relate to cognitive mapping? As discussed earlier, understanding a non-object like neoliberalism requires coming to terms with elements that strain the bounds of typical cognition and perception. One solution might be to extend our own internal capacities, say via pharmaceutical enhancements. But presently this offers only a minor adjustment, and certainly nothing sufficient for these political purposes. So the only remaining option is to design interfaces in such a way that they offer the possibility of manipulating complex systems. We know from reading any contemporary neuroscience that consciousness operates by simplifying the environment; but the informational overload we face now is an entirely new mode of complexity in our environment — it is not just a sensorial complexity, but also a properly cognitive complexity. The aesthetics of the interface is the mode of operationalising this complex knowledge into local phenomenologically-amenable representations. And the work to be done is to create and discover new ways of bringing about machine perception.

An important space of aesthetic exploration is therefore a conjunction of new aesthetic paradigms combined with the cognitive mapping tools provided by science and technology. Design — as the conjunction of aesthetics, pragmatism and technology — becomes a key node for overcoming our current dystopia. In an age plagued by chaos — what Berardi calls 'a complexity that is too dense, too thick, too intense, too speedy, too fast for our brains to decipher' — the aim of political aesthetics should be to try and grasp these accelerating lines that compose the world and to turn them into an intelligible, tractable plane of consistency. This form of aesthetics needs to be oriented towards the practical, taking into account the cognitive and material affordances of the human body. We can think here of the significance of various interface mechanisms used in everyday technologies such as smartphones. The gestures used to navigate around these digital landscapes are the subject of billions of dollars of investment, research and litigation. This money is spent precisely in order to bridge the gap between technological augmentations and the fleshy body of the human, welding the two into a single unit. Similar aesthetic choices are the subject of a fascinating recent book by Natasha Dow Schüll on the design of slot machines in casinos. Here, the design of interfaces takes on a sinister quality insofar as their purpose is to ensnare susceptible individuals and exploit their chemical addictions. Laura Noren (in her review of Schüll's *Addiction by Design*) summarises,

> For a while, ergonomics was economics. Then high-priced animators were hired to design pleasing sounds and animations to reward winners. But some players were annoyed that the animations were too slow, so the animations were dropped. Play sped up. Faster play was great for increasing dopamine delivery to the brain. It also tended to speed players toward the end of their credits, which lowered their loyalty to particular machines and the casinos that housed them. Chip-driven gaming allowed designers to respond to this problem by tweaking the programs so that frequent small wins (often less than the cost of playing a single hand) kept dopamine surging while players' cash trickled steadily into casino coffers.

This neural, chemical, visual manipulation of the interface demonstrates the capacity for interfaces to be modulated and oriented towards particular political ends (in this case, profit). Simply put, interface design has real behavioural effects on individuals. Yet in the case of a complex system, the dream of a God-like panoptic interface must be rejected. Instead, interfaces must act to restrict information to a crucial set of variables, or to a discrete subset enabling ready interaction. This is especially pertinent for acting upon complex reflexive megasystems such as the global financial system. In other words, complex systems require symptomologies — the economy is understood not as a sensible object, but instead as a series of economic indicators. The same goes for the climate system — understood in terms of specific climate indicators (CO_2 concentrations, temperature averages, Arctic ice levels, etc.).

How then do these very specific and personal forms of interface design relate to larger questions about global capitalism? To give a concrete example of what is being suggested here, there is perhaps no better instance than Project Cybersyn in Chile during the 1970s [see image on page 20]. As Eden Medina, its preeminent historian, notes in her book, *Cybernetic Revolutionaries: Technology and Politics in Allende's Chile*, Project Cybersyn 'was conceived as a real-time control system capable of collecting economic data throughout the nation, transmitting it to the government, and combining it in ways that could assist government decision-making'. The elaborate technical infrastructure underpinning this system was ultimately oriented towards a single control room capable of overseeing the entire economy.

> On one wall a series of screens displayed economic data from the nation's factories. A simple control mechanism consisting of ten buttons on the armrest of each chair allowed occupants to bring up different charts, graphs and photographs of Chilean industrial production and display them on the screens. On another wall a display with flashing red lights indicated current economic emergencies in need of attention; the faster the flashes, the more dire the situation. A third wall displayed an illuminated colour image of a five-tiered cybernetic model based on the human nervous system.

Cybersyn incorporated all of the aspects discussed here. It used the most advanced cybernetic theories, along with sophisticated technology, in order to produce a symptomatic representation of the economy as a complex system. It then took this raw data and transformed it into a particular design aesthetic that was oriented towards gaining pragmatic leverage over the complex system. And it did all of this through visual means, through architectural choices, through gestural designs, and through knowledge of the limits of human thought. Moreover, unlike somewhat similar Soviet systems from the 1950s, the Chilean system implemented a radical vision of society into its technological infrastructure. As opposed to the top-down centralised control of the Soviet systems, the Chilean system incorporated decentralised decision-making capabilities directly into Cybersyn, effectively welding a novel form of communism into its material infrastructure.

This desire for real-time monitoring and interaction with economies is not solely a communist dream either. Modern central banks carry out the same operations: they rely on all the indicators available from the economy in order to devise their monetary policies. Yet in a world permeated by mineable data, central banks are now turning to increasingly fine-grained and more real-time indicators. The US Federal Reserve is employing sentiment analysis to mine the content of social media and generate an image of the consumer's mood. The Israeli central bank is taking real-time Google search data as the basis for understanding how the economy is functioning. So, for instance, a spike in searches for 'unemployment benefits' suggests the economy is dipping down — and this knowledge is becoming a real-time factor in the decisions made at the commanding heights of modern capitalism. In all these cases, from Cybersyn to the Federal Reserve, what is at issue is gaining a machine-mediated perception on a complex system.

It is through this that, first, leftists can begin to navigate the conceptual and practical world of neoliberalism. This means more effective analysis of where leverage points are, for instance. Think of conceptual artist Mark Lombardi's so-called 'conspiracy art' which attempts to envision the social networks amongst the power elite of the world [see image on page 21]. Other examples include social network analysis of interlocking directorates, and mappings of 'capitalist power' which trace out relations of ownership. There's also the example of discerning the nodal points in shipping networks — turning the chaos of globalised trade into something amenable to political action. The second outcome of cognitive mapping and an aesthetics of design is the construction of alternative economic systems. One of the first attempts to cognitively map the economy was by Francois Quesnay in 1758, who highlighted the systematic nature of the economy and the interrelations between landowners, farmers and peasants. Today, leftist organisations like the New Economics Foundation have extensively built on this systematic insight to create computer models of the economy that aim to give support for leftist political goals. With this sort of approach we can begin to reverse the trend whereby the future has been painted as dystopian. Art, here, becomes the envisioning of a future, rather than a retrospective on the past. As Berardi writes, 'The repertoire of images at our disposal limits, exalts, amplifies, or circumscribes the forms of life and events that, through our imagination, we can project out into the world, put into being, build and inhabit'.

In an age of immense complexity, one of the primary means to overcoming the neoliberal assumption about the impossibility of manipulating this complexity into perspicuity is to merge art practice, digital simulations and technological infrastructures into a project that aims to represent the non-object that is neoliberalism.

A version of this essay was presented at *The Matter of Contradiction: Ungrounding the Object*, Vassivière, France, 2012.

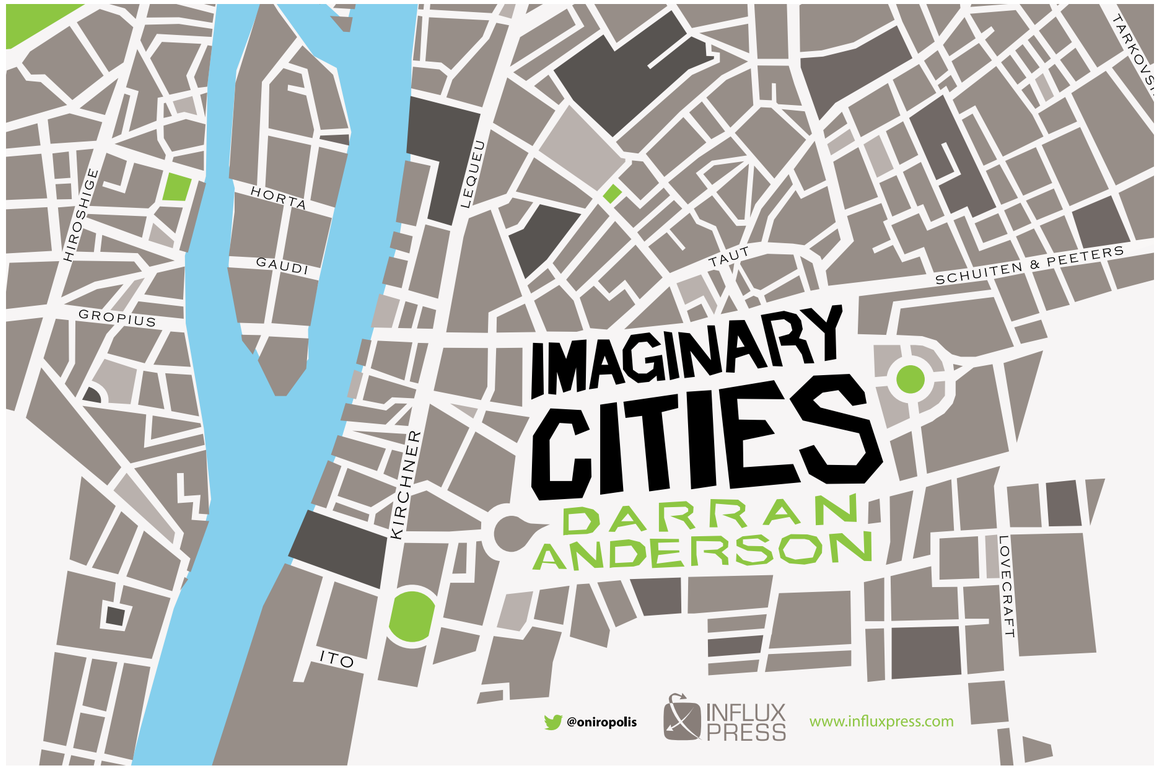


Illustration by Optigram

That's My Squeak

Walter Murch interviewed by Dave Tompkins

I GREW UP WATCHING George Lucas's 1971 sci-fi film, *THX 1138*, in fragments, switching from Saturday cartoons to a narcotised underground world dictated by computers and, possibly, an iguana. Often aired in the morning, *THX* was the anti-Saturday movie. The whiteout sets were suffocating and there was no outdoors, just the Superstructure. It was easy to lose your day in the film's nothingness, a world of holograms, bald human blanks, and 'unassigned spaces'. There were cordial, chrome-faced police officers (inspiring a Captain Beyond gatefold) and a dwarf who favoured Charles Manson. In this medicated, push-button future, 'drug evasion' was a crime, as was sex and food fighting.

As a child, I never gave the movie a proper listen — I just figured that the mumbling somehow led to a car chase. I didn't dream that a piercing beam of noise could have its own title: 'The Mindlock Theme'. The only sound I remembered was the ending, when Robert Duvall's THX character emerged from a manhole and into a sunset that was caught somewhere between the end of the world and the start of Saturday chores, his first light being the day's last, all while drowning in J.S. Bach. The transition was not easy. I'd leave the TV and stumble into blind noon and start mowing the lawn, chewing up pine cones and gumballs with the *St Matthew Passion* still blaring in my head. What did THX end up doing with all of his newly-acquired fresh air?

Originally a George Lucas college project while attending USC in 1967, *THX 1138* would be stewarded by Francis Ford Coppola and receive a theatrical release in the spring of 1971, accompanied by posters that instructed: 'The Future is here… Stay calm'. In 2004, I interviewed *THX*'s screenwriter and editor, Walter Murch, mainly focusing on the sound — from Lalo Schifrin's score, to the disembodied voices that told us, 'The theatre of noise is proof of our potential'. I learned that God was a black funeral director from Oakland, and the wookie was from Texas. The lizard, of course, was on purpose.

DT — THE FIRST TEN MINUTES of the film, inside the control room, is all intercom and push-button voices.
WM — The proliferation of recorded voices, telling you to do things, was beginning to happen. We were making that more extreme, making a whole society that functioned at that level. There was very little interpersonal communication at all. Everything was done through intercoms and electronic filters of some kind. If you can find the digital waveform of music and subtract that waveform from itself, you're left with anything that's not that music, which presumably would be the voice.

One of my favourites was, 'A libido leveller has been mislaid near the pulse-levelling gate'.
That was a mixture of stuff that George and I came up with writing the screenplay. In the late 60s, the world was full of psycho-babble. We got an improvisational group from San Francisco called The Committee and sat them around a table and gave them a few of these lines as examples of the way people talked in this world. That's where the phrase 'wookie' came from — an improv line that one of the actors came up with, a guy from Texas named Ralph Wookie. He's the driver of one of the cars and you can hear it in his intercom: 'Hey — I think I ran over something. I think I ran over a wookie back there.'

The part where Duvall gets brainlocked while being forced into all these different positions. The voice from the console asks, 'What's the real dope on those cortex bonds?'
We set these two guys up, also from The Committee, at the console. Imagine that you're teaching this other fella the console. Imagine that somebody is attached to this console but you don't really care what happens to that person. We seeded them with a few key lines but they just really took off from there.

How did you get the voices to sound so removed?
We recorded all the voices and took the tape to a technology school that had a ham radio. We broadcast the tape out into the universe and picked it up on a sideband receiver. Then I would twiddle the dial to get all those phasing effects. That was all live. If somebody had tuned to our frequency for that hour they would've picked up all kinds [*laughs*]. We set up our own pirate radio station in a way.

You filmed at KTVU in San Francisco…
At the time, nobody had shown television consoles in the background of a shot before. They were there for visual interest. Nobody's doing any work back there.

What was that iguana doing behind the bank of monitors? I saw an iguana grinning next to a reel-to-reel player.
I don't know. That was simply to give the idea that this was a recorded voice. That it isn't live. And George just wanted to put an iguana in there. You don't really see it at first. Then it moves and you might catch it.

The iguana appears to be creating the voices, as if in on the joke. We assumed he controlled the city.
That's part of the whole idea. When we looked at science fiction films that had been made up to that time, they were all films about the future. It's like an American company making a film about Japan, but it's a film made by one culture about another culture. They were made by the present about the future. We wanted to make a film from the future, which has the same difference as when you see a film from Japan, made by Japanese. There are just mysterious things in there that you don't know because you're not a part of that culture. Not everything is digested for your consumption. *THX* is full of those kind of things. Things that presumably meant something to the people in the future, but we don't know what to quite make of it — it adds to the charm of the film. George's original intention was to shoot *THX* in Japan. We just couldn't make it work financially. We just had an almost zero budget to make the film. Think of the challenge of shooting the real world and making it seem like the future. We didn't add much. We'd go to a location and put a bunch of numbers up on the wall just to make it seem strange.

I'm curious about the people who appear to be watching a tennis match played by squids.
It was a combination of a squash match and me making sucking sounds. 'Shkewup!'

The court room scene — there's this babbling chant mixed in there…
That was inspired by the music of Steve Reich and Terry Riley. These layered things. I took the dialogue of the trial and made loops of it and superimposed them all. We staggered them at different time sequences so they'd rub against each other in interesting ways. At one point, you hear the prosecutor's voice but she's not speaking. She's just scratching her ear. We were just fooling around with people's perceptions of who was in control of the court system.

How much did you collaborate with Lalo Schifrin?
I temped the whole film with pre-existing recordings, mostly classical music. But I'd play the music [*Stabat Mater* by Pergolesi] upside down and backwards and slow it down and layer different types of music on top of each other at different speeds. Lalo took that score and transcribed it note-for-note and then had the orchestra play it. If you take the opening credits of the film and speed it up four times and play it backwards, it becomes another piece of music. Lalo was taking backwards music and transcribing it for forwards play.

Donald Pleasence played a great twitcher, as SEN 5241, not to mention that quick gleam in his eye after popping Etrecine.
When you hire Donald Pleasence, that's what you get. He would take written lines and do them in a way that you just believed they were happening right in front of you, that he was making them up as he went — but it was all scripted.

What was THX's occupation, engineering cops?
We didn't know exactly what it was THX was doing. The cops' source of energy was some kind of nuclear device that was inserted into the middle of their heads. So he's building the head of the robot and inserting the nuclear ampule into the critical phase area. He's coming off drugs and doesn't know it — the whole society is on Prozac. We didn't know about Prozac back then, but that was what it was. His roommate [LUH 3417, played by Maggie McOmie] has been changing his medication so he goofs and there's an explosion.

The police officers were so polite…
George had a particular idea for the police officers: a sort of unctuous, solicitous, very kind voice. He found a black funeral director who had this voice when talking to bereaved people. He also voiced OMM, the God.

All the African-American actors in the film were holograms…
There weren't a lot of black programmes on television in those days. It was just beginning to emerge. In that society, black people were the newscasters and the entertainers. The only hologram who's not black is the guy who's getting beat up. One of the channels is the violence channel — a spooky pre-reference to Rodney King, where every time you turned the TV on you saw a policeman beating Rodney King. This was a whole channel of police beating people.

As with* THE CONVERSATION, *so much of* THX *was about sound…
[I wanted] to create a different world, a universe in sound. All those devices were real. A lot of the things Gene Hackman was doing in *The Conversation* are still not able to be done. Eventually they will be. In a similar way to *THX*, we were taking certain trends that we were seeing at the time and pushing them to their limit.

You got caught sampling a French squeak.
I got caught sampling something off a record. It was a squeak in the scene where Duvall and Don Pedro Colley are trapped in a room with foetuses in jars. I looped it off a French album of *musique concrète* that had been a big influence on me in the 50s. When the film ran in Paris, Pierre Henry, the composer, said, 'That's my squeak!' I saw my career ending before it began. The legal decision was that I had altered it sufficiently — that it was no longer what it was to begin with. It was *Variations for a Door and a Sigh*.

I've noticed* THX *has been sampled a few times —* REN & STIMPY *definitely stole your eyeball gurgles.
Yeah, the bugger gets bugged!

A version of this interview appeared in *Incognitum Hactenus*, 2012.

1

The Last Girl Scout

by Benedict Singleton
illustration by Alex Solman

'What do I do? What do I do?'
— Dr. Ryan Stone, *Gravity*

The last girl scout has no stories to call her own. She is implied constantly around us, frequently gracing our screens; she is the engine of endless plots, carrying the crux of the action. But as of today, she remains unrecognised, the uncredited cameo the only form of her appearance. Things change, though, whether we want them to or not. And as the landscape in which we move becomes progressively more densely textured with artifice, and urgent situations seem to stack ever up, she takes on increasing force, gaining traction, momentum, ferocity, significance. A strange, and in some ways terrible figure — dead-eyed and brilliant, admirable and empty — she is becoming unavoidable.

The first hints of her appear on the cinema screens of the late 20th century. Her most obvious antecedent is the figure Carol J. Clover called the *final girl*, who represents the last girl scout in prototype form. The final girl finds herself in a danger that has come from nowhere, without warning. It could be an elemental force, an animal, an errant technology; but classically, it is a person, a killer as inscrutable, unresponsive and implacable as the foregoing. The plot is structured as a countdown, its development recorded in a tally of fallen friends, until she is the last one left alive, trapped in the haunted zone between zero and one, and must engage in a final confrontation in which she is hopelessly outmatched. Her survival is all the more surprising, in the world of the film, as she is deliberately pitched as unprepared, untrained and unremarkable: pure civilian.

Nonetheless, her status as nothing special follows certain conventions, pioneered by the horror films, *Black Christmas* and *Halloween*, and iterated by the less imaginative imitations that have followed in their wake. The final girl is an adult, but still young, just beginning to rehearse the stereotypical obligations of Western grown-ups. She is engaged in dry runs of familial responsibility: she is often the babysitter. She is neither notably attractive, nor especially plain, and is just starting to form relationships with men; yet she is fiercely independent, and — to the exasperation of her flirty best friend, provided for contrast — unwilling to reshape herself to be what they want. So in another way, too, she is portrayed as being between zeros and ones — she is almost always a tomboy, down to a name that sounds unisex: she is a Laurie, a Ripley, a Sydney, a Jo.

Endless re-runs and cover versions of the basic premise have affirmed these conventions, while manipulating the specifics. They trade off modulations of the story's core parameters: whether the final girl is sexually active; the specifics of their hunter's psychopathology and its index in the structure of their kills; the location of events and the means of contriving a sufficient degree of isolation, such that, as things turn from bad to worse, there is no possibility of simply engaging the authorities. The final girl evidently offers purchase for certain reactionary tendencies, according to which women are punished for being sexually available, and the final girl's virginal status is what ensures her survival. More progressive interpretations are equally possible, in which she is unwilling to become the person that those who pursue her want her to be: a blank screen on which men can upload their fantasies, whether they be suitors or psychopaths. At the very least, the final girl is a model of independence. Faced with a maniacal and murderous misogyny, she does not wait to be saved.

The last girl scout is not the final girl, but the figure the final girl must *become* in order to survive. In the narrative's later stages, there always comes a point where the final girl, under extreme pressure, must entrust her survival to a certain kind of material resourcefulness. She has to find some way of turning the tables on what endangers her, when she's outnumbered, outgunned, or otherwise looks to be overwhelmed. With all obvious exit routes eclipsed, she must somehow pull a trapdoor from the air, find a loophole in this claustrophobic logic as the tension continuously ratchets.

The last girl scout is precisely this figure, the one who scans her environment for something she can use. In the most everyday surroundings, the nature and placement of objects around her becomes suggestive of a plan: intelligence dead drops for an amnesiac operative, lane markers under high-beams on a highway in the dark. She assesses the contents of a kitchen drawer or the cupboard under the stairs not as a set of possessions, or even strictly tools, but as *equipment*, *gear*, intuitively grasping the most extreme potentials encapsulated in knitting needle, vase, or the conjunction of aerosol can and matches. If she has time — not much, but just enough — her actions sophisticate into a construction montage detailing the creation of traps and decoys: a climbing rope lashed to a chair that's winched over a bannister to contrive a primitive deadfall; or circuit breakers jammed so she can electrify a door handle with the flex from a lamp, stripped down to bare wire.

But the last girl scout is only ever a temporary visitor to the screen. As though extinguished by the execution of her plan, as suddenly as she arrived, she is gone, leaving the final girl to rejoin her family with tearful embraces and nightmares to look forward to. But if the last girl scout exits the stage, where does she go? If anything, she moves sideways, into other films, turning up as another final girl — although she has been sighted far beyond that canon. The rule is simple: she is anywhere where there is an urgent force differential, a disparity in physical strength, requiring a kind of thought — call it cunning — that is watchful, quick, and indirect or oblique; the intelligence that is fostered when you are unable to simply demand the world behave as you wish. Deep in the forest, a trace of the last girl scout's posture in the arch of a mercenary's neck as he carves the stakes for a pitfall, waiting for night and the arrival of whatever picked off his team one by one. A comic echo of her in the antics of a bratty kid, comprehensively booby-trapping his home as the burglars circle on Christmas Eve. Or, addressing her ingenuity to less tangible materials, she becomes the con-man talking his way out of the interrogation room, twisting the undeniable evidence tabled before him into an escape route. And on, and on, her portrait dynamically fractured across the screens of a thousand low-rent cinemas and cheap laptops propped up on beds around the world at any given moment.

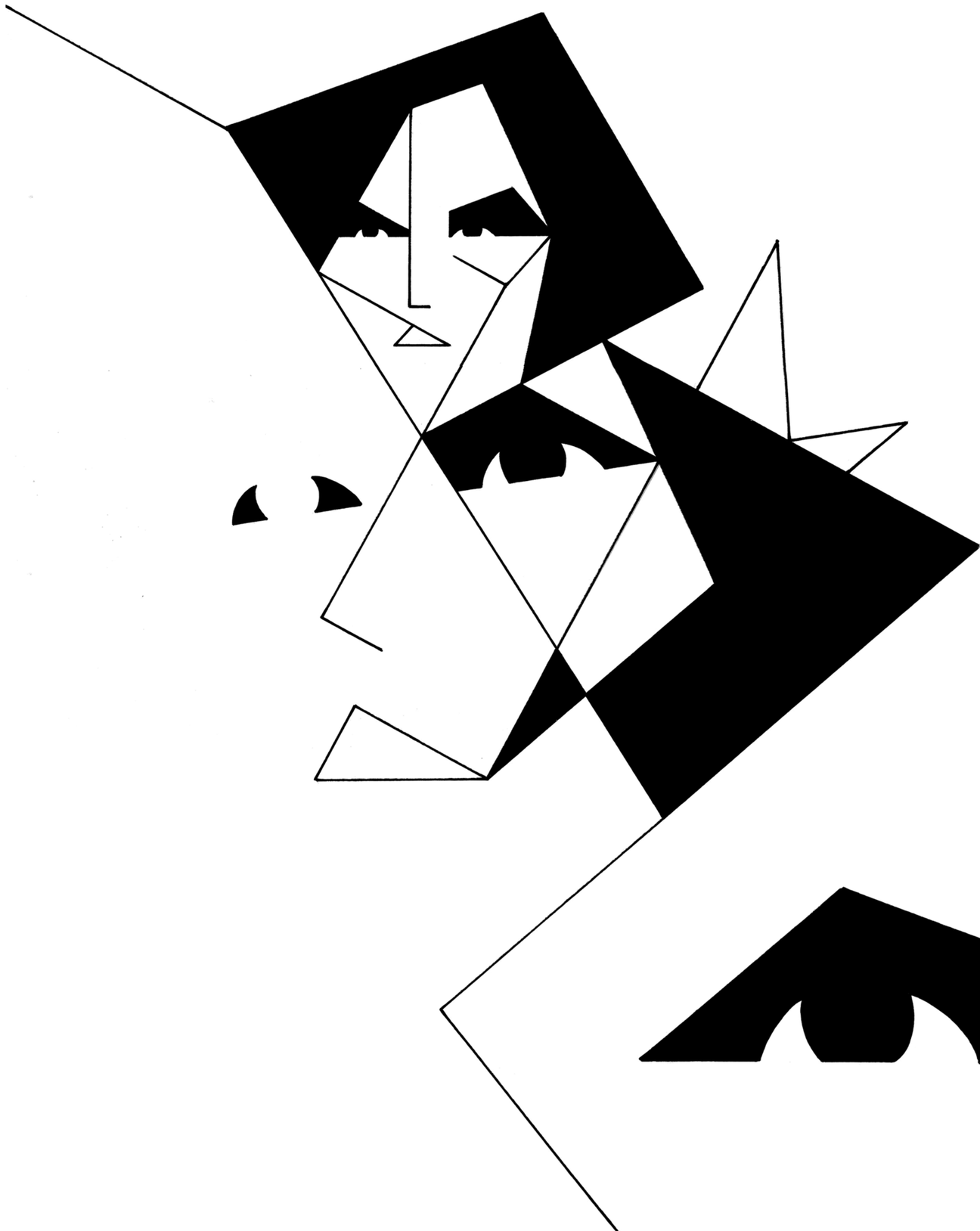
She is strange, this figure. Taking the form of a human being, she is nonetheless resistant to biography. Nationality, occupation, family structure, a catalogue of likes and dislikes, none of them substantially bear on the actions she undertakes. It would be true to say that the last girl scout is defined less by particular personal qualities than by impersonal ones. This you can see in her eyes: their colour may change, but across the sea of faces she wears, her eyes are always the same. At once engaged, focussed and distant. Attentive but remote. These are not the eyes of a regular person, considering regular things, but of a being that moves through its environment in a way that marries autonomic speed with a peculiar sophistication, like a reflex that has learned to think for itself. The last girl scout does not develop so much as regenerate; she is always building something new, and only exists when doing so.

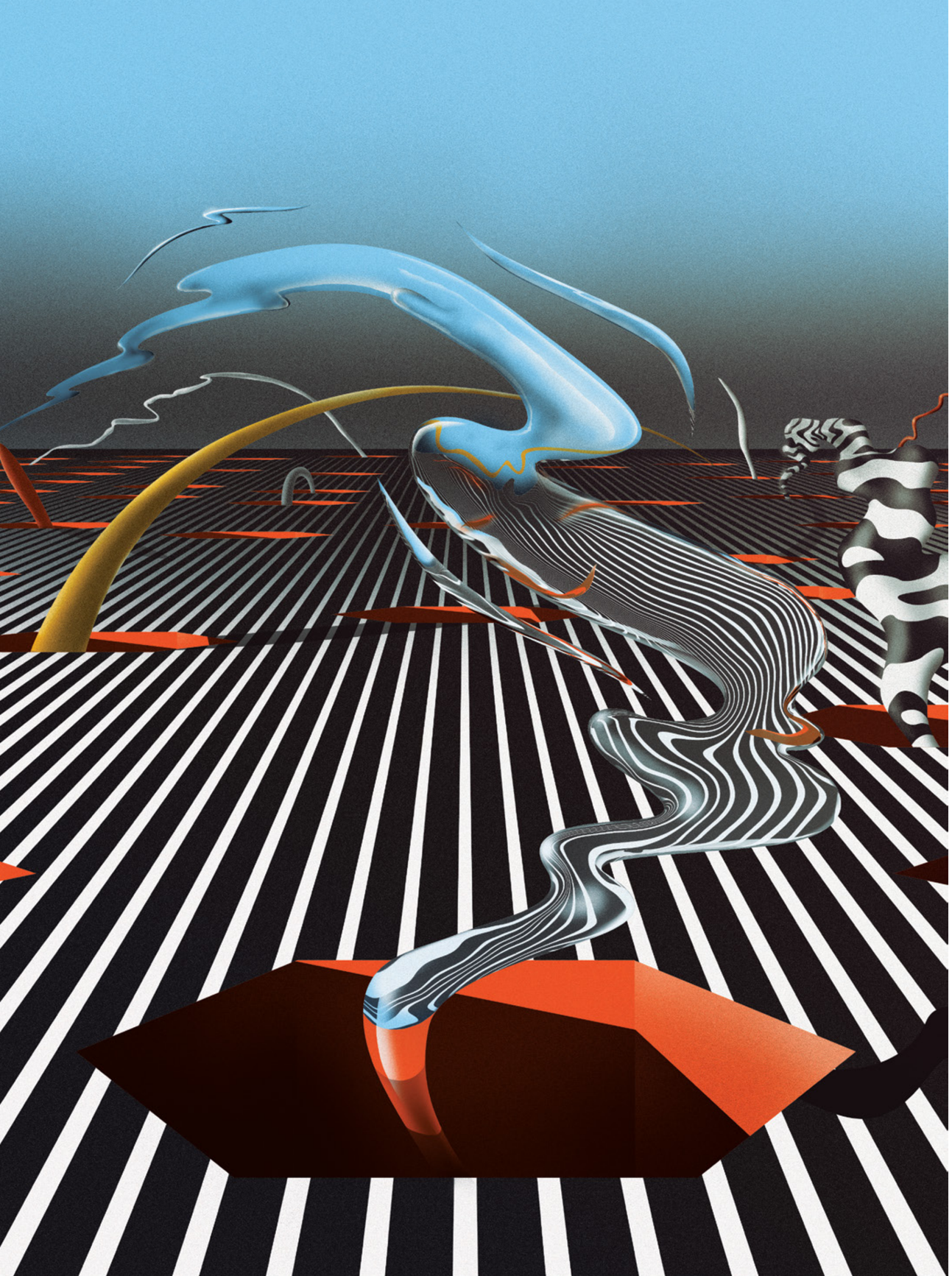
This means there can be no definitive tale of the last girl scout. There will always remain novel integrations of location and peril to be explored, perpetual sequels and reboots. She is inexhaustible. A fiction equal to her might have to go the other way, not trying to round her into a singular character, but seizing instead on the fact that anyone can be her — indeed, many have been, and not just on the screen. After all, her signature eyes, with their paradoxical coupling of the attentive and the indifferent, are shared by everyone who has ever *made something*, in the moment they made it.

The movement of the last girl scout's hands as she improvises a machine simultaneously weaves a history of technology. Not the story we are used to, about men of legendary talent coolly ordering the world, but of design as a weapon of the weak. Amongst the first was a fire, her construction of an artificial sun in the failing light. Then as now, the last girl scout does not hold out for a Prometheus. She gets on with it herself.

The inhabitants of a city that does not quite exist yet will understand the objects that furnish every pocket and shelf as merchandise in her expansive franchise. Everyday artefacts are inadvertent tie-ins that suggest, however distantly, the inventive procedure she presents at its most simple, urgent and raw — although she, of course, has long since moved on, and we observe this record like astronomers, studying the light from dead stars. Charged with staging their own history through this lens, the city's cultural institutions will be transformed. New entrances to museums are knocked through from the less-used auditoria of the cinemas next door. Following the tracks of emergency lighting sunk into the floor, visitors descend the steps of the aisle through the terraced seats, and walk through the place where the screen used to be into a room filled with spears, nets and diagrams of the most basic techniques of survival. From there, they wander the galleries in the diffuse museum light, fascinated faces reflected in the sloping glass of display cabinets filled with objects become increasingly more complex, born of less immediate emergencies, implicated in more abstract escapes — testaments to her great age, her enduring influence, the reach of her imagination, the diversity of her exploits, and her absence.

Outside, in the night air, the billboards that tower above the streets offer a terminal transmission: the geometry of her face — calm, fierce, hollow, going on forever, full of stars.





Family

by Juan Mateos
illustration by Patrick Savile

Episode 14

Name: Andres
Crèche: London Central B
Strengths: Top quartile imagination;
Third quartile expressiveness
Areas for Development: Lowest quartile physical;
Second quartile entrepreneurship
Opportunities: 70% creative technologies
Risks: 75% locked-in
Kind? Yes (Max 3 Kinds)/No

First Kind

I am thinking of the Kind when it all clicked, the milestone in my life, the game-changing Family. Lizabeth and Christina, they were so cool, black leather jackets with badges for bands. Mysterious, like long-gone races in a fantasy saga. Lizabeth was a designer in a games work-clan making branded realities. Christina did data in a music label. Something to do with tour schedule optimisation. Very cool. I go back through my moodFeed and I frown at the explosion of happy faces.

In our first Kind, we played a space game in an old building in East London. Lizabeth and Christina told me its history. It was very educational.

These places used to be factories. Big windows with lots of light so the workers could stitch away from dawn til dusk. Then there was disruption and they became offices for advertising agencies, lots of lights so the creativity of the workers could soar. Then there was more disruption, and they became empty as business moved to the cloud, then some more disruption and they turned into levels for branded reality Family experiences like the one we were about to play. Windows blocked to make the experience more immersive. Lesson: disruption happens. Things change. You adapt. If you get locked-in, you get left behind. Don't get locked-in.

Anyway, we played as colonists on an exo-planet. There were some strange lights outside our camp. We went to investigate, we found a treasure and fought a gang of Venusian pirates. We met the wise ambassador of a lizard alien species and I bargained with him. Lots of healthy fun for free, or rather, paid with infinitesimal smidgens of my future agency, bought by a brand in exchange for subtly conditioning sounds, colours and messaging.

I only understand this now, after spending some years in the business, it explains Lizabeth's mocking attitude towards the wise ambassador. Where I was amazed, she saw the sliver of a viral promotion campaign planned years in advance, with me as the target.

No probs.

Second Kind

In our Second Kind, Lizabeth took me to the site where her work-clan was coming together for their current project. It was just like another game level. A mixed environment with presies like us, and other agents tuning-in from all over. The arts-clan included a complex construct representing the combined outputs of outsourcing agencies in Slovakia, South Africa and Vietnam. There were blocky retro avatars for freelancers with super-niche skills (e.g. haptic mood nudging) logging in from their countryside manors, and kawaii project managers who metamorphosed into snarling dragons when the client wasn't happy.

I sat at the back and looked at the game taking form as a 3D structure in the centre of the room. In this one, the players tracked the feelings of shoppers in a mall. They used that data to customise the augmented reality, tune it to optimise conversions. Subtle behavioural cues gave the shoppers away when they where show-rooming. The players made them offers with prices or personal data costs below the averages for their customer segment. I thought it was a bit mundane. Gosh, I really didn't have a clue, did I? I didn't realise I was looking at a picture from the future.

I learned something else though, looking at Lizabeth as she sat there, blinking metronomically while she compiled level packs fitting baseline shopper mood-states and optimisation strategies. Pay-time splurge, body loathing, overdraft rampage.

I had sleuthed her timeline. When she was younger, she had studied fine arts, and made strange installations precariously funded by the Crowd and the Arts Council. Her work left in her audiences a lingering sense of loneliness and alienation, flashbacks of weird shadows and subsonic echoes. An unsettling aftershock rippling through their own timelines.

Now, Lizabeth was applying those hard-to-market skills in a new context. Blink blink, mouth a thin line, levels coming together like there was a natural law at play. Which there was, actually. Lizabeth was displaying adaptability in the face of disruption. Is there anything more natural and necessary than that? This is what I learned in that wordless lesson. Oh Lizabeth, my mentor, my role model.

Third Kind

In our Third Kind, we went to the FinFun theme park in the docklands. We played more AR games with an economics subtext. We cashed out our windfall in hot dogs. We pranced around and laughed. At the end, Lizabeth and Christina told me this was it, this was our last Kind. Boom.

I think I blinked, they sensed my mood. They looked at each other as if I was an ad for a humanitarian disaster. Lizabeth touched my arm and said they really liked me. They hadn't unkinded me. This was a system level decision. Kinder had been tracking me and knew I had potential, but I was at risk of becoming locked-in, unable to display adaptability in the face of disruption and change. I shouldn't get so locked-in to people. I needed to tool up emotionally.

When they dropped me at the Crèche, Lizabeth pushed me her number. She told me to get in touch when I finished school. Maybe I could intern in her work-clan. This made me happy. She had seen something in me. I almost cried. Gosh, such a no-no, imagine I *had* cried.

I remember rolling in bed that night, hating myself for getting locked-in to friends, to toys, to places, for being such a needy baby. I fell asleep thinking out strategies to become more adaptable.

Episode 17

Subject: **Kinder Membership Agreement**

Dear Andres,

Your Junior Kinder subscription ends next week. It's time for you to decide if you want to stay with us, and get a full subscription. These are the conditions:

You will out-kind two members of the Family every week. You can sell extra out-kinds at the marketplace.

You will in-kind two members of the Family every week. You can buy extra in-kinds at the marketplace.

You will do full sharing in your moodFeed.

The default payment model is ad-supported. You can change this in your preferences.

If you stay with us, you will be on trial for 12 months. We will use your kindness rating and other data including your moodFeed to rate your Family engagement. If you do well, you can level up to premium membership, with extra rights including Family-building privileges.

We really value you, and we hope that you will decide to stay with us. Let us know what you think, and drop us a line if you want to chat.

Total kindness,
Paolo Drowrey, Family Manager, London

Choices that aren't choices because no one with all the relevant information and an unbiased outlook would doubt for a moment about what to do. To stay in Kinder or go back to the Dark Ages? Come on.

And then Dandan told me. We had hooked up for a quick Arrakis hover-bike race. She told me just as she sped past me and into the sandworm area, just like that. I crashed.

I remember trying to catch up with her, to convince her to stay. Riding over clouds of dust, down twisting slopes, while she explained that she wanted to see what's out there. Dodging sandworms that exploded through the desert surface, as she continued about wanting to spend proper time with someone. A barrage of missiles from a Harkonnen patrol, that attitude, as if she was more real than me, for saying no to the future.

I was angry. You are locked-in, Dandan. You never got over Olly, beautiful insouciant Olly, headed for a stellar career in satellite prototyping. You want to feel that again. You think it's easy to come back if it doesn't work out. Not so easy. We have all seen the stats. Once

you go into the Dark Ages, you get bad habits, you start to think about people as if you owned them, as if they owned you, you regress to a primitive definition of 'family', you get left behind.

This is what was going through my head as we zoomed over Chris Foss-mined lands of golden gradients, under an exploding sky. I didn't want Dandan to make a mistake, I wanted to save her. I thought that maybe if I reached her, if I beat her in the race, she would understand how much I wanted her to stay in Kinder. But she was faster, she won, she left.

It's probably for the best. Going through my moodFeed now, I can see clear signs that I was definitely getting locked-in to her.

Episode 19

Subject: **Kinder Earnings Call, Q4**

Kinder is outperforming financial and social benchmarks quarter on quarter. Every day, we do 5 million Kinds, including 1 million Premium Kinds generating over $10 million in revenue daily. Our gross profits have grown by 60% quarter on quarter.

These are the cold, hard numbers. But they are not the most important thing. Money is great, but money isn't what we are about. Kinder is about family, Kinder is about kindness, Kinder is about displaying adaptability and innovation.

Our moodFeeds show an average improvement in personal mood of 30%, and an improvement in social mood of 20%. The mean normalised salary for a Kinder member is 40% higher than comparable non-members.

Kinder is getting bigger, Kinder is getting happier, Kinder is getting more productive.

This planet is getting Kinder.

Total kindness,
Brad Lane, CEO

I was jubilant when I was awarded full membership. I was being recognised as a valued member of the Family, and received a big bonus for all the extra out-kinding.

The previous twelve months had been pretty intense. At school, learning about consumer psychology, media engineering and interaction design, working with other study-clans on simulated briefs for global brands.

I would get back to my room late at night, and log in or go out straight away, to mentor junior members, keep senior members company, go on dates and social activities with friend-clans to keep my score up. Sometimes it had been a drag, I was so tired. Thinking about it in retrospect, it was definitely worth it. In addition to the big bonus, I picked up so many skills those days — conflict resolution with mood-swinging, mistrusting Bill, wall-climbing with the Hackney Goat clan, sex tricks. And of course, learning how to detect and manage lock-in as it happened, learning to segment my emotions effectively and deploying them where they are most productive.

I had also learnt some ancient history from the seniors, especially from Elena. Old and creasy Elena, sitting in her nice Cancún balcony, sipping an orange juice, staring into the horizon as if she could see me on the other side of the ocean, telling me about the Dark Ages, when the future was full of uncertainty for seniors, when they had to rely on their 'family' or volunteers to avoid growing up alone, in an unstimulating and homogeneous environment that sped up their cognitive and physical decay. That really put things into perspective.

That evening, I went to the mall to celebrate. My experience simulated a recent nightmare logged in my moodFeed. In it, I was morbidly obese, a slug of a person slimily progressing through twisty, dreamy streets, now materialised as the avenues of the mall, friction coefficients and torque designed to nudge me into retailers who had bid highest for shoppers with profiles like mine.

When I went back home I finally decided to change my Kinder payment model from ad-supported to salary share. I finally could afford that, happy times.

Episode 25

Subject: **Dealing with non-members**

Dear Andres,

As Kinder has grown, so has its visibility. There are many non-members out there concerned about us, even fearful of us. These fears are based on bad data, and an inability to display adaptability in the face of disruption and change. As a member of Kinder, active in a mixed work-clan, you should always represent Kinder and its benefits in a way that is honest and non-threatening.

You can go here for some headline findings about the value of Kinder, here for a training simulator about dealing with conflict in hybrid environments. And of course, go here if you want to chat.

Total kindness,
Merida Chiang, Public Perceptions Officer

I changed work-clans after finishing *Garden Defence Force*, a tele-presence game sponsored by a nematode-engineering biotech brand.

We had been crunching hard for some time. I was working in the player reward loop, very tricky. The user was embodied in a miniature space marine drone, based on the Bungie template, that patrolled the garden to protect it from pests. When it worked it was incredible, your little warrior rising to face a metamorphosing colossus of slime in a scenario worthy of Lovecraft, which, mind-blowingly, was playing out in the garden just outside your house. Unfortunately, we weren't allowed to equip the drone with heavy ordnance for safety reasons. This meant that it could take an hour or more to kill a mid-sized slug with your puny weaponry. As vicious as nematodes are, they take ages to implode their victims from within. Definitely not fun for the user, or brand-enhancing for the client.

This wasn't the only problem. The workspace got sweaty, intense and emotional. Carmen, a small Dark Ager lady from the infrastructure sub-clan, was being particularly unproductive and letting the team down. You could see it in the burn-down visualisations hovering over our workspace like organisational ectoplasm. The estimates showed a significant probability of failed milestones, which would decrease our ranking and our rates. Not on.

Lilly did some timeline sleuthing and discovered why Carmen was upset — her mother was dying of cancer, and Carmen had had to leave her with her unreliable sister to come and crunch on *GDF*. She probably wasn't sleeping much, and she was dropping the ball as a result.

Lilly tried to help, sort of. She told Carmen that if she joined Kinder, things would be so much better. She wouldn't be locked-in with a decaying relative, she could share the load with the rest of the Kinder Family. It's stressful enough when you are crunching in a project. Perhaps Lilly shouldn't have told her this. It probably came across as insensitive, and not very aware of the mechanics of lock-in. Dark Agers can get a bit upset in 'family' situations like this.

Leo, another Dark Ager in Carmen's team, flipped. He obviously didn't like us and this gave him an opportunity to let everyone know why. He said we are a sect. He complained about our tax deductions. He called us freaks. Our extended family, our constant marketing, our positive attitude to disruption and change, our inability to commit. All very emotional. In my head, I went through the headlines from our Economics and Social Science research briefing, refuting each of his attacks with hard data. The millions we save everyone on child care, education and senior care. The way our educational model steers Juniors into careers better suited to their interests and capabilities, and the improved levels of productivity and income resulting from this.

I didn't say anything. I kept it non-threatening. Leo cooled down, Carmen got her act together. I balanced the player reward loop with some bots and more active matchmaking. We delivered the project, we kept our ranking. Soon after, I found a position in a fully-Kinder clan, and that was that.

Episode 27

Name: Berta
Crèche: London Central D
Strengths: Top quartile cross-segment empathy; Third quartile imagination
Areas for Development: Lowest quartile self-confidence; Second quartile prioritisation
Opportunities: 80% Monetisation
Risks: 45% Under-achiever
Kind? Yes (Max 5 Kinds)/No

Berta has unreally big eyes, like some anime telepath with the ability to absorb everyone's thoughts from the other corner of the room. They twitch too, fractally, twitches inside twitches like scaredy rodents zigzagging past a dark forest full of cruel predators.

Her vfeeds and her moodFeed help contextualise her stats. One day, Berta could be an amazing designer, one of those people who snap their fingers and, zing, there you go, a perfect match between consumer sentiment and virtual environment, the kinds of conversion rates that algorithms can't match yet. There is also the risk that she will build a cocoon to insulate herself from a universe that is too intense and terrifying, and never come out of it. Stay at home watching TV and eating crap forever.

To avoid this loss, I am putting together a Kinding schedule aimed at leveraging her capabilities and balancing her risks.

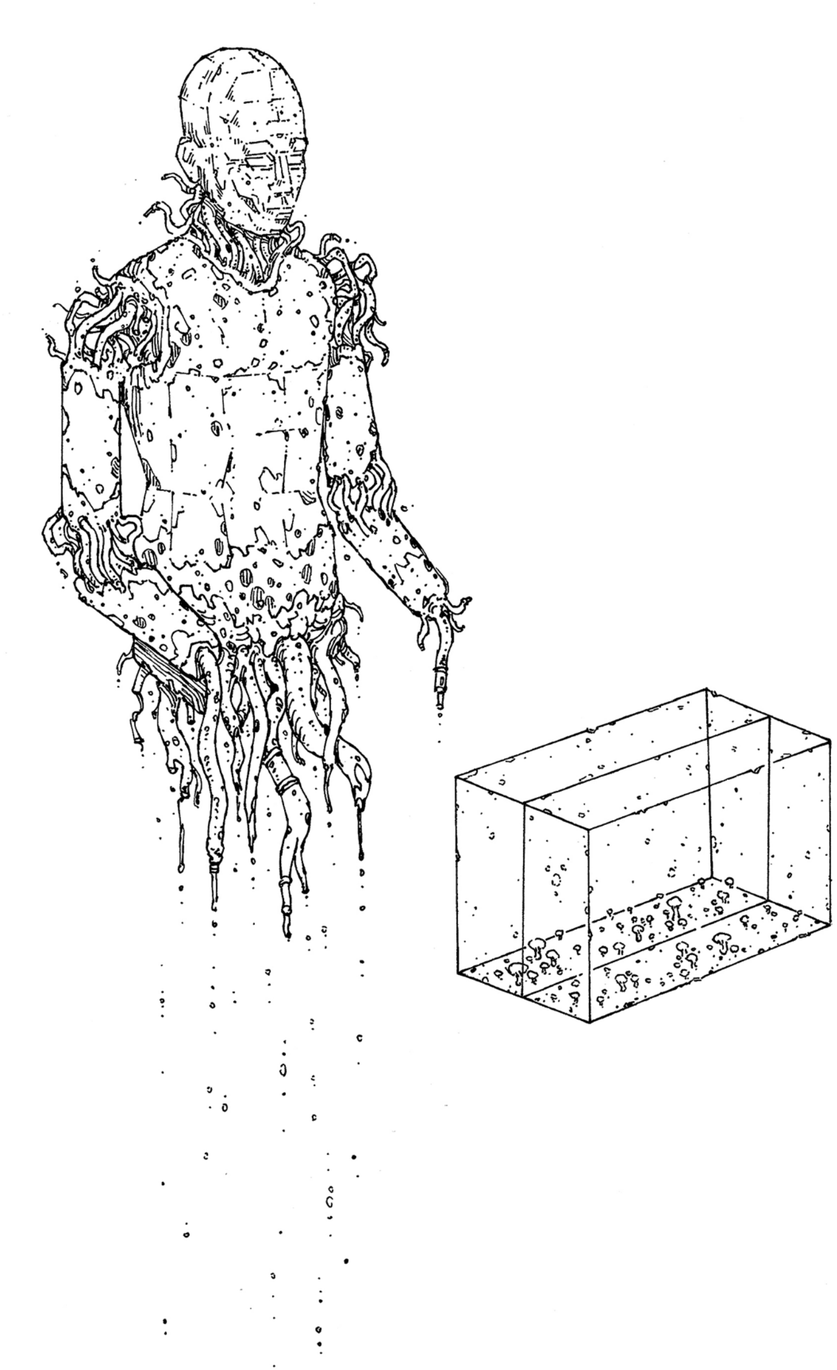
Such responsibility! This is, after all, our Family. Berta could contain a microscopic sliver of my genomic best hits, cut and pasted from my Family-extension contributions. I was going to say that she could be my daughter, or a fraction of my daughter, but that would sound really Dark Ager. It reminds me of the way that Dandan was talking about her 'family' when we met for a catch-up a couple of days ago. It had been so long, I almost didn't recognise her. She has put on weight, she has big bags under her eyes, and she dresses in supermarket styles.

No matter, she looks happy, still shining like she always did, even after all she has gone through. A dead-end job, a disabled child, a divorce, such confined horizons now! Still, it was like she couldn't wait to get back to her grubby home, to her locked-in life. Admirable actually, I don't know how she does it. I suppose there is something to be said for all that stubborn resilience. It might be obsolete now, but it put humanity in the position to take it to the next level, which is what we are doing.

Ok. I better stop speculating and get on with the schedule for Berta. She needs a platform like the one I was given once. She needs nudging. She needs a game-changing moment, and I am going to give it to her. Because it doesn't matter that I found out about her and her hopes and her anxieties just 30 minutes ago. I have the data, I have the incentives, I am her Family, and that's all that matters.

Interface K1

by Stathis Tsemberlidis



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