



# Introduction: Beautiful world, where are you?

This volume brings together ideas and projects that emerged from the public programme of the 10th anniversary edition of Liverpool Biennial (July-October 2018), responding to a line from the poem *The Gods of Greece* by German poet Friedrich Schiller (1759–1805): ‘Beautiful world, where are you?’ The line evokes the lost grandeur, beauty and meaning embodied by mythical Greece, translated to our contemporary not-so beautiful reality.

At irregular intervals between May and October 2018, an eclectic list of speakers from fields as diverse as economics, biology, linguistics, media theory, architecture and painting were invited to directly address or indirectly refract Schiller’s question, as part of the new programme of talks curated for Liverpool Biennial 2018 by The Serving Library.[2] Designed to run in parallel with exhibitions and projects elsewhere in the city, the programme was presented at Exhibition Research Lab[3] alongside The Serving Library’s collection and an installation of Paul Elliman’s new work commissioned for Liverpool Biennial 2018 entitled *Vauxhall Astra 2020*. [4] Developed and expanded from this initial context, the contributions to this volume include **Morehshin Allahyari** in conversation with **Christiane Paul**, as well as from **Ryan Avent**, **Jessica Coon**, **Meehan Crist**, **Candice Hopkins**, **Mark Miodownik**, **Jussi Parikka**, **Alexander Provan**, **Forensic Architecture** (presented in the talks programme by Eyal Weizman) and **Paul Elliman**, whose graphic identity for Liverpool Biennial 2018 is represented in the cover image. The volume is conceived by Joasia Krysa.

The volume opens with **Jussi Parikka’s** text ‘Beauty: A Logistical Imaginary’ that introduces a discussion of the location of beauty and aesthetics – from the theories of Karl Marx and Theodore Adorno to Max Horkheimer’s ‘Culture Industry’ and Frederic Jameson’s writings on postmodernism, to Ned Rossiter’s ideas connecting software, labour and logistics today. Parikka goes on to focus on the recent film *Unravelled* 2017 by Unknown Fields Division, ‘a nomadic design research studio that ventures out on expeditions to the ends of the earth to bear witness to alternative worlds, alien landscapes, industrial ecologies and precarious wilderness’. [5] The film serves as a case study to unpack the logistical infrastructures of production and circulation of beauty through the lens of the fashion industry, tracking ‘the movement of bodies, movement of images and the movement of beauty as products across the geographical locations of the planet’.

In the edited excerpt from her talk ‘Climate Grief and the Visible Horizon’ (2018), **Meehan Crist** takes the story of Phaethon and Phoebus from Ovid’s *Metamorphoses* as a metaphor for climate change. But unlike in the more obvious reading (as in Ted Hughes poem), where the boy, Phaethon, depicts ‘human hubris and a desire to take control of a thing that was never meant to be ours and running the world into destruction’, for Crist, the attention shifts to ‘marginalised people who aren’t the ones responsible for the destruction they’re seeing and living through but who ultimately remain voiceless’. She asks: ‘What does it feel like to witness that kind of destruction?’ at a time when ‘collectively and individually we’re experiencing what no generation of humans has ever faced, which is grieving the on-going loss of the planet as we’ve known it’.

Marginalised people – those who have only recently begun to gain a voice – is also the subject of **Candice Hopkins’s** text ‘Outlawed Social Life?’ (originally published in 2016 in *The South as a State of Mind* magazine in connection with Documenta 14, Athens/Kassel 2017) that became the basis for her subsequent presentation for Liverpool Biennial 2018 entitled ‘Native Economies: from the Potlatch Ban to the Masks of Beau Dick’. Here, she focuses on Native people of Canada, and the complex stories that their objects such as masks and regalia tell as well as discussing social structures and governance, communities of sharing, of language and law, cultural and economic value, forms of control and inherent resistance, transformation and survival.

In ‘Re-figuring Ourselves’, curator **Christiane Paul** and artist **Morehshin Allahyari** discuss her works *Material Speculation: ISIS* (2015–16) and the series *SHE WHO SEES THE UNKNOWN* (2017–present), both responding to the cultural and political context of recent events in the Middle East. The latest work in the

Allahyari's series *SHE WHO SEES THE UNKNOWN*, entitled *The Laughing Snake* was co-commissioned for Liverpool Biennial 2018 with The Whitney Museum of American Art and FACT (Foundation for Art and Creative Technology). The conversation explores the works in terms of modes of archiving and documentation, engagement with the materiality of artefacts and figures, the recreation and reinvention of material forms and bodies (re-figuration), and ultimately activation and preservation – retrieving forgotten or destroyed stories. Employing 3D scanning and printing to recreate dark goddesses and monstrous female figures of Middle-Eastern origin, the latest work *The Laughing Snake*, uses the traditions and myths associated with them to offer what Allahyari describes as a 'ficto-feminist and activist practice to reflect on the effects of historical and digital colonialism and other forms of oppression and catastrophe' in contemporary societies.

**Forensic Architecture** is both the name of an agency established in 2010 at Goldsmiths, University of London, and a form of investigative practice into state violence and human rights violations that traverses architectural, journalistic and legal fields.[6] The contribution here entitled 'Forensic Aesthetics' is derived from the talk delivered by Eyal Weizman for Liverpool Biennial 2018 and expanded by extracts from the Forensic Architecture website. It catalogues briefly four projects that serve to unpack the term 'forensic aesthetics', one of several key concepts that underlie the group's approach, and the technologies of weapons and tools of recording.

The question of technologisation and industrialisation, advances in science and technology, and the ultimate sense of loss of meaning and mystery in the world are the subject of **Ryan Avent's** 'Technology, Magic and the Quest for Meaning' (2018). In his abstract, while 'today's advances in Artificial Intelligence mean that much of how technology will work in the future is entirely mysterious to all but a few experts, [...] creating spirited creatures, like cars that drive themselves and robots that walk among us' is not necessarily dystopian and there are perhaps ways to turn it into something beautiful and affirming, too.

**Mark Miodownik's** contribution 'Self-Repairing Cities' reviews the science behind new understandings of matter, and material technologies resulting from blurring the distinction between animate and inanimate in a new materials age: 'Bionic people with synthetic organs, bones and even brains are becoming a reality. Just as we are becoming more synthetic, so our man-made environment is changing to become more lifelike: buildings, objects and materials that heal themselves are being developed. The question then becomes whether ... creating self-repairing cities is achievable.'

**Jessica Coon's** 'Alien Speaks', [7] based around the recent science-fiction film *ARRIVAL*, touches on speculative and real questions: if aliens arrived, could we communicate with them? How would we do it? What are the tools that linguists use to decipher unknown languages? How different can human languages be from one another? These questions attempt to offer another set of tools to understand the world through the lens of the linguist.

Following the thread of language and communication, **Alexander Provan** presents what can be described simply as a playlist – a list of chart-toppers, with their lyrics and number of Spotify plays, as a response to the question: why (more) Katy Perry? His 'Outside the Hit Factory: The Playlist', originally presented as performance talk, serves to reflect on the use of consumer-behaviour data and neurobiology research in the production of pop songs to guarantee pleasing as many listeners as possible.

Finally, this volume's cover image draws upon the work of **Paul Elliman**, who worked with Sara De Bondt and Mark El-Khatib on the graphic identity of Liverpool Biennial 2018. It is based on letter-like shapes and symbols gathered as part of a durational work – a 'found font' – what Elliman calls *The Day Shapes*. [8] Like these shapes on its cover, the diverse contributions in this volume offer a snapshot of a current state of things – the world that is complex and unpredictable, entangled and fragmented, in turmoil – yet with some sense of hope emerging from the chaos.

[1] The 10<sup>th</sup> edition of Liverpool Biennial was held between July – October 2018. The full programme of talks is available at <https://www.biennial.com/events/series/public-programme>

[2] The Serving Library is a non-profit organisation founded in New York in 2011 to develop a shared toolkit for artist-centred education and discourse through related activities of publishing and collecting. It comprises an annual journal ( *The Serving Library Annual*) published simultaneously online and in print, an archive of framed objects on permanent display, and a public programme of workshops and events. It is run by Francesca Bertolotti-Bailey, Stuart Bertolotti-Bailey and David Reinfurt. For Liverpool Biennial 2018, The Serving Library curated a series of free public talks hosted at Exhibition Research Lab, part of the John Lennon School of Art and Design at Liverpool John Moores University. <https://www.biennial.com/2018/exhibition/artists/the-serving-library>

[3] Exhibition Research Lab (ERL) is an academic research centre and public exhibitions venue, founded in 2012 as part of Liverpool John Moores University's School of Art and Design. ERL is uniquely positioned across academic research and cultural ecology of Liverpool, underpinned by collaborative posts held by staff with cultural organisations in Liverpool including [Tate Liverpool](#), [FACT](#)(Foundation for Art and Creative Technology), [RIBA North](#) (The Royal Institute of British Architects), John Moores Painting Prize, and [Liverpool Biennial](#). ERL develops work through research projects, fellowships and residencies, education programmes on postgraduate and doctoral level, as well as a year-round programme of exhibitions, public events and publications. <https://www.ljmu.ac.uk/research/centres-and-institutes/art-labs/expertise/exhibition-research-lab>

[4] Paul Elliman's installation for Liverpool Biennial 2018 entitled *Vauxhall Astra 2020* is a re-construction of the forthcoming and newest model of a car available since 1979 when General Motors launched the Vauxhall/Opel Astra, now the only car produced at Ellesmere Port. The Astra 2020 is offered as a constellation of raw materials, half-a-dozen boulders and rock-like lumps of the car's constituent parts at original scale, made of steel, iron ore, glass, plastic, aluminium, rubber and electrical components. The installation was presented at the LJMU's Exhibition Research Lab, Liverpool School of Arts and Design. <https://www.biennial.com/2018/exhibition/artists/paul-elliman>

[5] Quoted from: <http://www.unknownfieldsdivision.com>

[6] Forensic Architecture: <https://www.forensic-architecture.org>

[7] Originally commissioned by and published in *Sloan Science & Film* as part of its 'Peer Review' series, 2016, <http://scienceandfilm.org/articles/2802/alien-spea...>

[8] Pursuing the mechanisms of language as a mode of economic production, Elliman has spoken about how the origins of his work with object letters began when thinking about the path of his father's migration: from the Merseyside car industry (1962–78) via a year in Detroit in 1979, to California's Silicon Valley, where he worked for Apple as a production engineer from 1982–2005. <https://www.biennial.com/video/paul-elliman-liverpool-biennial-2018>

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## Joasia Krysa

Joasia Krysa is Professor of Exhibition Research at Liverpool John Moores University, a position she holds in partnership with Liverpool Biennial. Formerly, she served as Artistic Director of Kunsthall Aarhus, Denmark (2012-2015); co-curator of Documenta 13 (Kassel 2012) and Liverpool Biennial 2016. Recent publications include edited books *Systemics, or Exhibition as a Series* (Sternberg Press, 2017), *Writing and Unwriting Media Art History* (MIT Press 2015, co-edited with Jussi Parikka) and chapters in *Networks* (Whitechapel/MIT 2014) and *Routledge Companion to Art and Politics* (2015). She is Series Editor of *DATA* Bowser books (Open Humanities Press) and Commissioning Editor of online contemporary art journal *Stages* (Liverpool Biennial).

# Beauty: A Logistical Imaginary (1)



The theme of this year's Liverpool Biennial – 'Beautiful world, where are you?' – suggests that questions of beauty are questions of location: where does one find beauty, what is the logistical infrastructure for beauty as location? If one were to ask Google, the answer would be easy: beauty is locatable at the addresses providing services for the maintenance of beauty, from skin care to nails. It's amusing to a freelancing philosopher of aesthetics to find a parallel history of philosophy on the web pages that a search for 'beauty', 'aesthetics', or 'truth' produces, but questions of beauty are not entirely resolvable through the corporate data services of search.

Schiller's poem, and the line 'Beautiful world, where are you?' that gave the focus for the Liverpool Biennial 2018, begs the question as to what sort of framework or philosophy can provide the necessary breadth to respond to our concerns regarding the location of aesthetics. Here, we can move from Romantic poetry to the less romantic field of political economy and nod to the usefulness of Marx's work as the scaffolding for a longer-term political question that starts to refashion the question. As Jonathan Crary has pointed out,[2] by the latter half of the nineteenth century, classical theories of apperception, sensation and aesthetics were gradually turning into the mediated forms of packaging these phenomena that became discreet units of production and consumption and would later be called the 'culture industry'. Aesthetics then turned into a media industry by way not only of classical and early modern theories of beauty, but also the technical work of pioneers such as Thomas Alva Edison.



Unknown Fields, *Unravelled* (film still), 2017

This line of thought also leads to the prescient answers found in Theodor Adorno's and Max Horkheimer's theses on the culture industry.[3] Fredric Jameson develops these ideas in relation to what he coined the 'postmodern' sphere of commodities, or: 'what Benjamin still called the "aestheticization" of reality (he thought it meant fascism, but we know it's only fun: a prodigious exhilaration with the new order of things, a commodity rush, our "representations" of things tending to arouse an enthusiasm and a mood swing not necessarily inspired by the things themselves)'. [4] Jameson specifies, however, that the postmodern is not merely a replication of the notion of the culture industry: 'any sophisticated theory of the postmodern ought to bear something of the same relationship to Horkheimer and Adorno's old "Culture Industry" concept as MTV or fractal ads bear to fifties television series.' [5] In the context of

contemporary global industries of media and aesthetics, we can raise the stakes of this parallel: contemporary forms of theorisation of aesthetics and beauty should bear the same relationship to Jameson's ideas as advanced planetary systems of data extraction and delivery (Google, Facebook, Amazon) bear to 1980s science-fiction cyberpunk.

Questions of location persist as a central dilemma of theory and politics throughout the twentieth and twenty-first centuries, and cultural geographers have been at the forefront of critical voices articulating the link between capital and location (or, well, space). In David Harvey's words: 'Capital strives to produce a geographical landscape favourable to its own reproduction and subsequent evolution.' [6] As Harvey narrates, and as history of science and technology backs up, this has meant 'innovations in transport and communications technologies' and the subsequent 'profit opportunities' that can be distributed across the planetary space. Or in other words, it has meant relocations – relocations according to the availability of raw materials or cheap labour, the sort of intensive search that capital performs as part of its primary dynamic – something that over the past years has been discussed in multiple ways in theory, including using terms such as 'capitalocene'.



Unknown Fields, *Unravelling* (film still), 2017

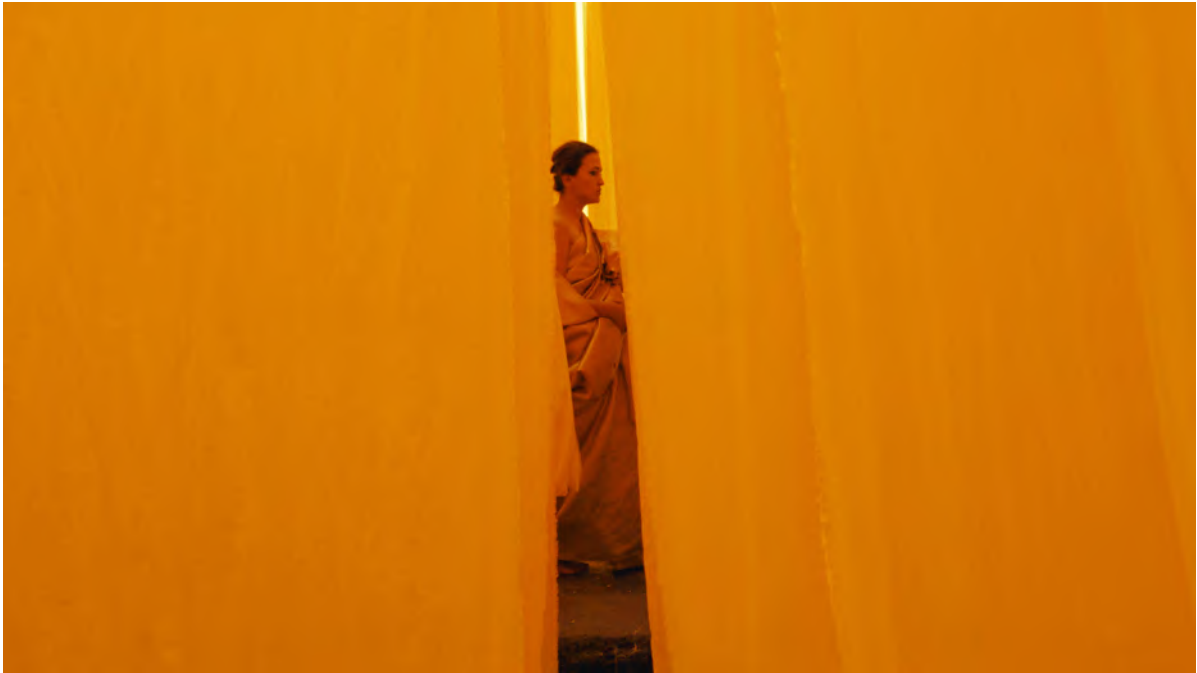
Art and design projects have played their own part in this theorisation and visualisation. The speculative design studio Unknown Fields Division's project *Unravelling* (2017) is an expression of the location, relocation and movement of contemporary goods of beauty. *Unravelling's* focus on the trade of textiles, garments and fashion resonates with some other recent audiovisual work including documentaries such as Rahul Jain's *Machines* (2016), which also addresses an Indian textile factory. *Unravelling*, however, produces its own audiovisual version of the 'planetary conveyor belt' (to use Unknown Fields Division's Liam Young's words). [7]

The project began with a 2017 expedition led by Young and Kate Davies:

For our 2017 Expedition we pick at a loose thread on the garment we are wearing and unravel it across continents from wardrobe to warehouse, from factory to field, in search of the landscapes behind the runway dreams and street blue jeans. Before we wear them, our clothes make journeys of tens of thousands of miles in their process of production, making textiles the most globalized industry on the planet. The garment trade has for a long time played a critical role in the evolution of developing nations. As labour costs rise in China we follow the threads and travel through the factory floors and fabric mills now manufacturing in India and Bangladesh. Here iconic rivers run with the colours of the season as chemicals used in the dye process are dumped untreated to poison the land along the rainbow banks that will mark our trail from mountains to the sea, as we embark on a waterborne journey down river from India



to the Ganges Delta in Bangladesh. We will visit the 'T-shirt cities' and 'textile valleys' that span from field to factory and will pick from vast cotton crops and silk-worm cocoons and draw yarns across deafening shuttles as rows and rows of automated looms weave the fashion fads of a distant world. Plain t-shirts, haute couture and throwaway high street chic all begin their lives in these landscapes.[8]



Unknown Fields, *Unravelled* (film still), 2017

The resulting four-screen video installation, *Unravelled*, was exhibited in the early half of 2018 in *After the End of the World* at the CCCB in Barcelona.[9] This group exhibition was thematically focused on the Anthropocene in theoretical and artistic contexts. It continued the studio's earlier work on planetary scales of design culture, this time honing in on fashion, especially in its extended sense. Beauty becomes understood as an administrative operation of logistics: labour, production, packaging, transport, marketing, sales, from the factory to the high street. *Unravelled* uses garments to approach planetary logistics and the postcolonial or neocolonial contexts of their production. The images speak of fabrics but also of the logistical imaginary,[10] including that of location – where, where to, where from.



Unknown Fields, *Unravelled* (film still), 2017

This focus on infrastructure, technological culture, and planetary production establishes the investigation of movement across borders while at the same time relying on specific locations and labouring bodies of colour. The video installation and its images raise the question: what sort of movement is this? The movement of the fabric as garment, the movement of bodies, movement of images and the movement of beauty as products across the geographical locations of the planet.

One can relate *Unravelled* to the broader infrastructural turn in critical design and media and film studies, which is relevant for our wider theme of location and relocation, and technologies that define such locations.[11] Unknown Fields Division's speculative architectural angle addresses non-urban infrastructures – the 'dislocated city' – including data-intensive ways of understanding planetary movement of goods and information, the governing role of logistics and the conditions of existence of technological culture. One can therefore locate these moving images amongst a bundle of works in recent art and design that aim to articulate the logistical imaginaries of industries of art, beauty, creativity – the relocated sites of labour that respond to the question, where is beauty made?

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[1] Excerpt from the talk, *The Fabric of the Planetary Surface*, presented by Jussi Parikka as part of The Serving Library's programme during the Liverpool Biennial, September 2018.

[2] Jonathan Crary, *Suspensions of Perception. Attention, Spectacle and Modern Culture* (Cambridge, MA: The MIT Press, 1999).

[3] See: Theodor Adorno, Max Horkheimer, 'The Culture Industry: Enlightenment as Mass Deception', chapter in *Dialectic of Enlightenment*, 1944.

[4] Fredric Jameson, *Postmodernism, or, The Cultural Logic of Late Capitalism* (Durham: Duke University Press, 1991).

[5] Ibid.

[6] David Harvey, *Seventeen Contradictions and the End of Capitalism* (Oxford: Oxford University Press, 2014), p. 146.

[7] *Unravelled* was made in collaboration with the Architectural Association. Textile designed by Unknown Fields and produced in collaboration with Shashi Kant/Varanasi Weavers and Artisans Society. Film directed by Unknown Fields and Tushar Prakash, director of photography Ravi Kiran Ayyagari, starring Monica Jha.

[8] See: <http://www.unknownfieldsdivision.com/winter2017india+bangladesh-unravelled.html> (accessed November 2018).

[9] See: <http://www.cccb.org/en/exhibitions/file/after-the-end-of-the-world/224747> (accessed April 2018).

[10] See also Ned Rossiter, *Software, Logistics, Labor: A Media Theory of Logistical Nightmares* (London and New York: Routledge, 2016).

[11] See, for example, Lisa Parks and Nicole Starosielski, eds., *Signal Traffic: Critical Studies of Media Infrastructures* (Champaign, IL: University of Illinois Press, 2015). John Durham Peters defines infrastructuralism as follows: 'Its fascination is for the basic, the boring, the mundane, and all the mischievous work done behind the scenes. It is a doctrine of environments and small differences, of strait gates and the needle's eye, of things not understood that stand under our worlds.' Peters, *Marvelous Clouds. Toward a Philosophy of Elemental Media* (Chicago and London: The University of Chicago Press, 2015), p. 33.

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## Jussi Parikka

Jussi Parikka is Professor in Technological Culture & Aesthetics at the Winchester School of Art (University of Southampton) and Docent of Digital Culture Theory at the University of Turku, Finland. His work has addressed a wide range of topics contributing to a critical understanding of network culture, aesthetics and media archaeology of contemporary society. His books include the media ecology trilogy *Digital*

*Contagions* (2007 and 2016), the award-winning *Insect Media* (2010) and most recently, *A Geology of Media* (2015), which addresses the environmental contexts of technical media culture.

**Excerpt from  
'Climate Grief and  
the Visible Horizon'**

The talk today is titled 'Climate Grief and the Visible Horizon', and I thought we might start with a story from Ovid. This is the story of Phaethon and Phoebus. The second book in Ovid's *Metamorphoses* opens with this story, which is the longest in the book. Phaethon is the son of Phoebus, who is the Sun god, and is also the son of a mortal woman. He's living on earth with his mortal mother and feeling as if he's not being recognised by the god as his rightful son. Phaethon goes up into the sky to visit Phoebus and asks him to bestow some kind of sign that he is indeed his father. Phaethon wants to prove to everyone back down on earth that he is the person he says he is. So, Phoebus says, 'Ask me whatever favour you want, and I'll bestow it.' The boy says, 'I want to drive the chariot.'

The chariot crosses the sky every day, drawn by magnificent horses, taking the sun through the day. In order to do this, it has to pass through the zodiac along the way. Phoebus says, 'Please ask me for anything else. Don't ask me for something that can only end in your demise. You're too young, not strong enough. Even the other gods cannot control this chariot.' But the boy is headstrong and bent on driving the chariot, and finally his father relents and gives him the reins and off he goes into the sky. The horses take one look at the terrifying things up there in the celestial firmament and they bolt. The kid can't control them; he goes way out into the darkest outer reaches of space, and comes back down, far too close to Earth, and the flaming ball of the sun begins scorching the Earth. There are these really beautiful passages – this is from the translation by David Raeburn:

*The earth now burst into flames on all of the hills and the  
mountains,  
split into huge wide cracks, and dried as it lost its moisture.  
The corn turned white and the trees were charred into  
leafless skeletons;  
Parched grain offered the perfect fuel for self-destruction.  
These losses were trifling. Destruction fell upon great  
walled cities;  
mighty nations with all their peoples the conflagration  
turned into ashes...  
Phaëthon now looked down on a world in flames ...  
Wrapped in the pitchy darkness, he didn't know where he was going.*

So, there's this moment when he hung in the sky with these horses running wild, and he looked down and saw everything on fire. Then there's a very moving part of the story where the Earth, scorched and parched-lipped, calls out to Jupiter, saying, 'You have to do something. I'm dying.' The earth beseeches the 'king of the gods':

*Look round at the two poles:  
Smoke is pouring from each. If they suffer from  
fire,  
the halls of the gods will collapse. See, Atlas himself is in  
trouble:  
his shoulders can barely sustain the weight of the white-hot  
vault.  
I beg you to rescue what is left from the flames. Take thought for the good  
of the universe!*

*Jupiter hears this plea and fires a thunderbolt at the boy and the chariot. Phaethon is instantly killed, and his corpse comes raining down from the heavens, with his hair on fire like a comet, and the horses go plunging into the ocean.*





Johann Liss, *The Fall of Phaeton*, early seventeenth century. Collection of the National Gallery. Sourced from The Yorck Project

Phaethon's father is stricken with despair and doesn't want to ride the chariot anymore, but the other gods get together and say, 'You have to. You're the only one that can do this. We need the day. You must take the chariot across the sky', and he agrees to drive it again.

I'm drawn to this story, because there's a very obvious way to read this as a metaphor for climate

change. These days, it seems a little bit too on-the-nose. I don't know if you saw on the news this week: the Arctic Circle is on fire, as happens in the story. Japan had its hottest temperature in recorded history: 106 degrees Fahrenheit. Anyone who has been following climate change news, or just the news, knows that things are dire. To go back to the story of Phoebus and Phaethon, there's a way to read this, where humanity is the boy: human hubris and a desire to take control of a thing that was never meant to be ours and running the world into destruction. Ted Hughes wrote a poem based on this story as a climate-change metaphor. But I think we can read it a little differently. I'm interested in shifting the identification from the boy to the people on Earth, because, much like climate change now, the 'on-the-noseness' of this story involves marginalised people who aren't the ones responsible for the destruction they're seeing and living through, and they remain basically voiceless in this poem. What if we, as readers, shift our identification to the people on Earth and start imagining the people in those cities and fields that are burning to the ground, where the rivers are drying up – what does it feel like to witness that kind of destruction? What kind of horror and what kind of grief do they feel? I'm particularly interested in this question of grief, in part because we're all feeling it in different ways.

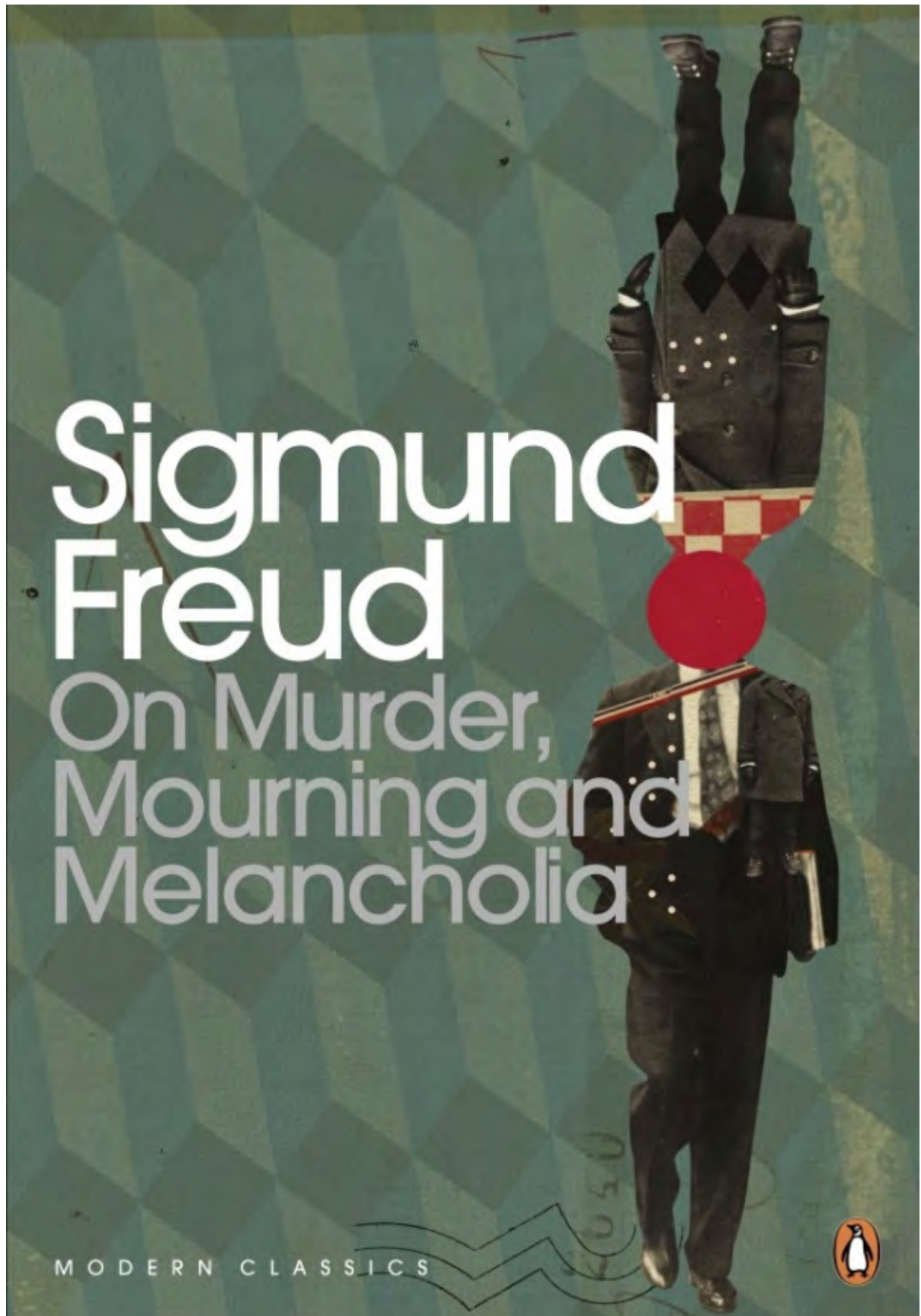
Is anyone in here familiar with the Jet Stream? Is anyone worried about the dawn of a new Ice Age in Europe? Because that could happen. It could happen sooner and faster than previously thought.

Collectively and individually we're experiencing what no generation of humans has ever faced, which is grieving the on-going loss of the planet as we've known it. This can mean loss of homes to fire and flood, but it can also mean things like loss of your favourite childhood beach, a place with which you identify, that feels like home and part of who you are that's now gone and you can never go back to. It also means loss of jobs, income and food security. When fisheries collapse because there are no fish in the sea, you're losing whole towns, cities, industries, cultures that are based on these fish existing. We don't really have good language for talking about this kind of grief and we don't really know what it looks like yet – the contours are still blurry. We don't know how to think about and therefore process this grief in a way that might enable us to move forward.



I thought I'd look at a few of the grief paradigms we do have to see how they can help us to understand this particular moment. Freud's *On Murder, Mourning and Melancholia* includes a classic essay in which he defines the difference between mourning and melancholia. Mourning is a totally normal human reaction to loss, 'the reaction to the loss of a loved person, or to the loss of some abstraction which has taken the place of one, such as one's country, liberty, an ideal, and so on'. So, it's the loss of something meaningful, and mourning that loss is a normal process.

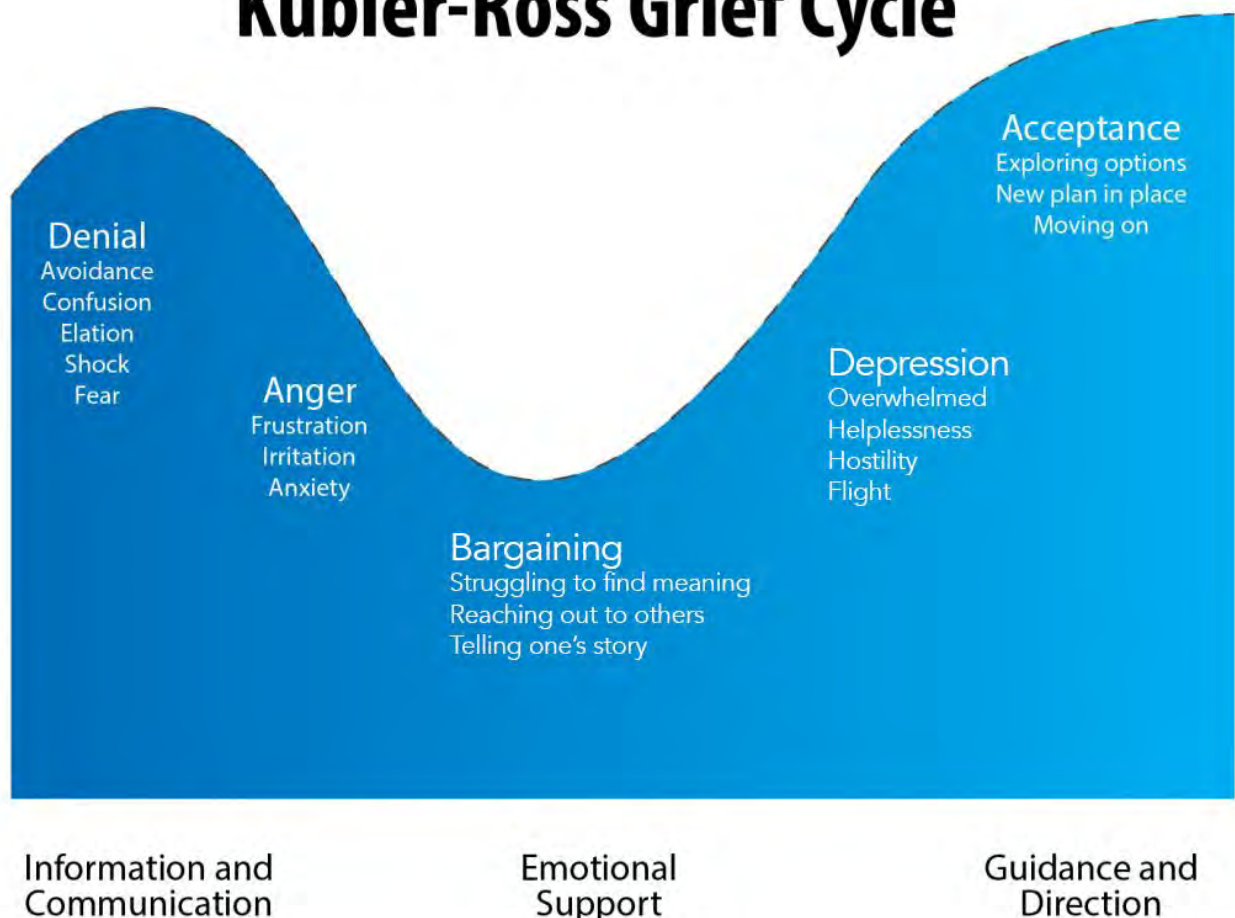




Sigmund Freud, *On Murder, Mourning and Melancholia*, Penguin Classics, 2005

Melancholia is different. It includes a prolonged period of mourning, and all the same features, but with a pathological skewing of self-regard – you basically start to hate yourself a little bit. Freud writes, ‘Profound mourning, the reaction to the loss of someone who is loved, contains the same painful frame of mind, the same loss of interest in the outside world – in so far as it does not recall him – the same loss of capacity to adopt any new object of love (which would mean replacing him).’ This is really interesting, this idea that you’re hanging on to the thing or person that was lost because if you let them go to love something else, it’s like a rejection of that previously loved thing. Then there’s what Freud calls ‘a disturbance of self-regard’. So, other than the disturbance of self-regard, mourning and melancholia are very similar processes, but melancholia just won’t end. You stay transfixed and frozen in melancholia, unable to move forward.

## Kübler-Ross Grief Cycle



Elizabeth Kubler Ross and David Kessler, *Five Stages of Grief*, 2005. Image sourced from psychom.net

Moving a little later in time, we have the classic Elisabeth Kübler-Ross ‘five stages of grief’: denial, anger, bargaining, depression and acceptance. I rather like this image because the ‘acceptance’ hill is higher than the first hill, so there’s some implication here that you’ve actually moved up and forward and ended up somewhere better than you were before. This paradigm roughly aligns with Freud’s idea of mourning, but breaks it into stages.

There’s another paradigm that came up in the 1990s: ‘complicated grief’. This describes prolonged grief associated with a death, more like melancholia. If Kübler-Ross’s model is similar to mourning, this is more like melancholia. The symptoms of complicated grief are the same as those of normal grief, but the defining element is the duration of the feelings. You get stuck in this form of very acute grief where the

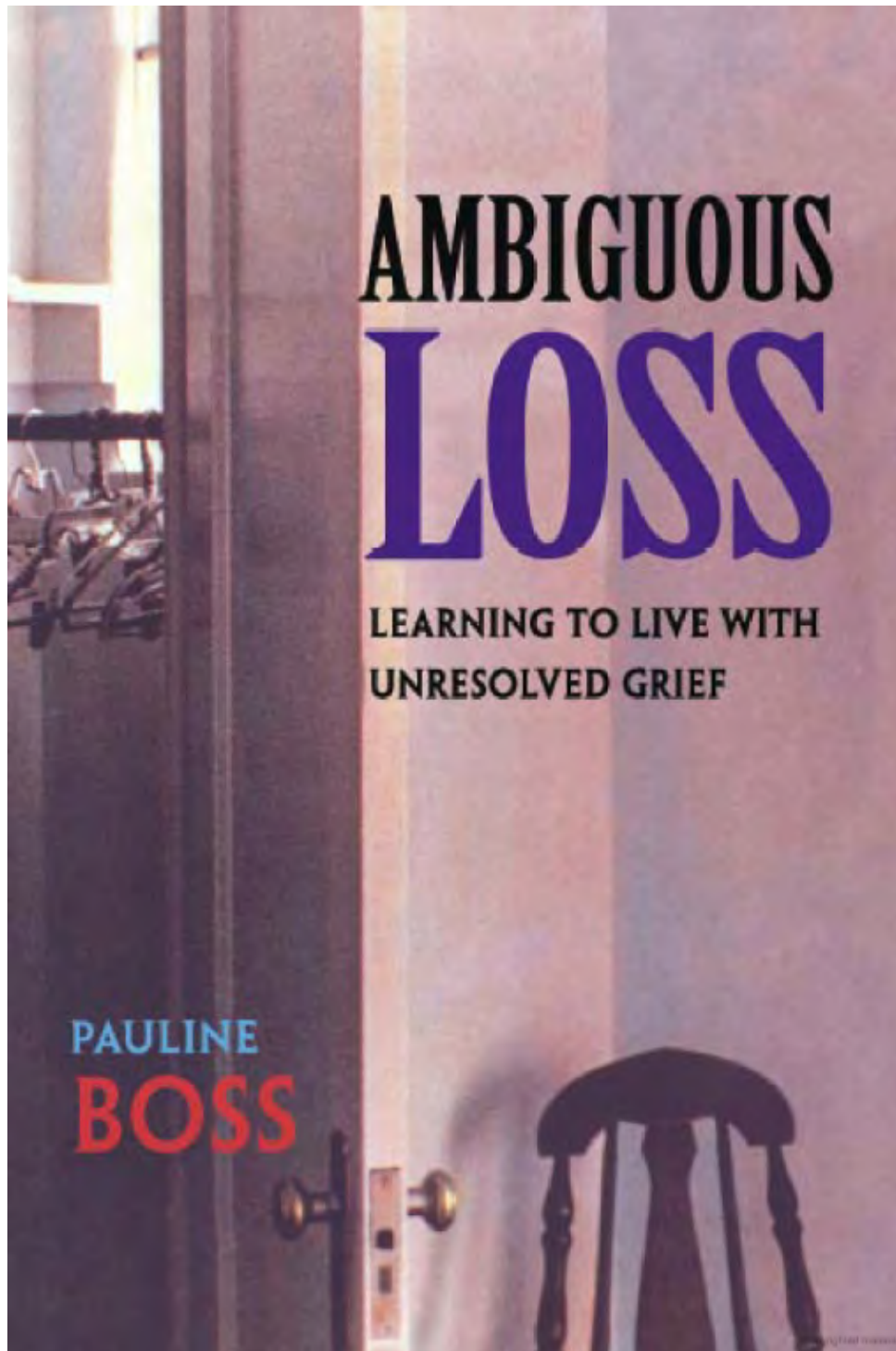


future seems bleak and empty. That idea, and the feature of pathological mourning, seems useful for us when thinking about climate change. Complicated grief is one where the griever 'experiences their negative symptoms as a way of remaining connected to the lost loved one'. Again, there's an echo of Freud: that grief is a form of love; if you stop grieving, you've stopped loving and that in itself is painful.

According to Dr Katherine Shear at Columbia University, complicated grief occurs in only a small percentage of people. For people who suffer complicated grief, their other relationships tend to be very difficult. The diagnosis is most often reserved for those who have a family or personal history of mental-health disorders. Grief can be complicated for many reasons, but fundamentally the griever has an inability to process the grief, to emotionally handle it in the more 'normal' sense of mourning.

Both the Kübler-Ross paradigm and this complicated grief paradigm stress finality. Someone has died. Something is gone and there's been a very concrete loss. It's the job of the mourner to grieve appropriately and move on. This doesn't really map on to climate change, because we don't know what the loss is – or will be. If you look at sea-level rise (if we go back to our map over here) we don't know if the flooded areas here represent a worst-case scenario, and it's not clear that this map shows the end point. Flooding might end somewhere sooner than this, or in 200 years it may have moved much further inland than this. So we don't have that finality with which to grapple and which can actually help us decide how to move forward.

'Ambiguous loss', I think, is a more useful grief paradigm for us. This was a psychological paradigm established in the 1970s by Pauline Boss, who was studying and working with people whose family members had gone missing in action. In classic grief paradigms, the object of attachment has gone and has to be mourned, but with ambiguous loss, the object of love is physically absent, but without a sense of finality – as such, it remains psychologically present. It seems as if it, or they, might be able to come back. A friend of mine recently told me a story about a friend of her mother's who had a son who went missing in action, and twenty years later someone in uniform was walking up to the house and she went racing out of the front door thinking it might be him. There's no end to the possibility that the object of love might return, which is one type of ambiguous loss.



Pauline Boss, *Ambiguous Loss: Learning to live with Unresolved Grief*, 2000, Harvard University Press

The other type of ambiguous loss is where the object of your love is still physically present but psychologically absent. For example, someone with Alzheimer's. The person is still there; you can still sit by them and hold their hand. You can still feel love for them and be in the same room with them, but at the same time, they're not there. And they're not there in a complicated, shifting, sliding way where you're never sure how much they are or are not there at any given moment. How do you grieve the loss of someone who's sitting right in front of you?

Even ambiguous loss doesn't map perfectly to the loss felt as a result of climate change, because the end point is still known. With the Alzheimer's patient, you know that they're going to die – at the end of that process, there's going to be a finality. With ambiguous loss, and this is a quote from Boss, 'There is no closure. The challenge is to learn to live with the ambiguity.'

When it comes to climate change, we don't have a paradigm for grief that requires us to embrace both ambiguity and finality. We don't have a paradigm for grief that is both personal and global. That is, both your home and the Arctic are on fire. Climate change presents us with a lot of kinds of grieving to try to put into one coherent psychological space, both as individuals and as a collective humanity, such that we might be able to move forward. And so, we're stuck in this gap, which feels like chaos but also makes some sense, psychologically. The question becomes, how do we decide what to let go of, what to mourn, so that we can move forwards?

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### Meehan Crist

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# Outlawed Social Life

Candice Hopkins

*U'Mista* and *Nuyumbalees*. Kwak'wala words. Names bestowed on two new cultural centres in Alert Bay, British Columbia, founded to house masks and dance regalia repatriated after the potlatch ban (1885–1951) in Canada. *Nuyumbalees* means stories from the beginning of the world. *U'mista* is a term given when something returns to its place of origin. In the past, people who came home after being taken captive during a raid were said to have *u'mista*. Although not originally used this way, the masks and regalia that have come back to Cape Mudge and Alert Bay now also have *u'mista*, while the objects at Nuyumbaleescan once again tell their stories.

In 1889, German-American anthropologist Franz Boas interprets Alert Bay and the Kwakwaka'wakw people as existing on Europe's outer edge.[1] For him, they represented the conceptual and geographic limit of European civilisation. He had to travel far to find it. In the larger cities on Canada's west coast, Native people, particularly those in European dress, were considered both 'totally other and yet the same'. [2] So Boas went further up to the island in his failed search for absolute difference – something he would have to actively invent as much as discover so as to make the case that the Kwakwaka'wakw were not only at Europe's outer edge, but that they were at the very boundary of European knowledge itself.

This limit played itself out in different ways, often through misunderstanding, much of which revolved around the potlatch. In early European texts, these ceremonies – which traditionally each have their own name, individual characteristics, and social functions – were called medicine feasts. The European authors understood that for Native people healing was an irreducible part of the communal sharing of food and other goods. The early spelling of 'Patlach' emerged first in quotations, as though the namers were unsure of the name, struggling with what to call what they were witnessing. Whether the communal sharing of wealth was simply a gift (with no expectation for repayment) or an act of reciprocity was also a point of contention. If reciprocal, it brought the practices of the 'uncivilised' uncomfortably close to those of civilised society, which necessitated that those in power busy themselves in generating more distance between this custom and European traditions. Another motive for the ban was that in the months leading up to a ceremony, people were so occupied with the important task of accumulating things to give away, as well as with making new regalia, that they didn't take part in other 'work'. The labour generated by the potlatch ceremony was clearly not on a par with the labour of working in canneries or other industrial pursuits. Potlatches also set in motion a separate system of governance and social structure that colonisers could not countenance. A Native chief gains and confers rank in the ceremony through displays of wealth, complex social contracts between hosts and guests, and surplus and debt. There was no room for two systems of governance on the frontiers of colonialism. '[T]he thing called the Patlach is the point where the logic of colonialism comes to crisis'. [3]

Once the name was settled, attempts to stop the practice began in earnest. 'To give a name is always, like any birth (certificate), to sublimate a singularity and to inform against it, to hand it over to the police'. [4] This was also true of the potlatch. In 1884, amendments were made to Canada's Indian Act to officially ban the potlatch and to prosecute those taking part or aiding in the ceremony – amendments that consolidated the power to prosecute, judge and act as jury to a single individual, the Indian Agent. The ban dictated that:

Every Indian or other person who engages or assists in celebrating the Indian festival known as the 'Potlatch' or in the Indian dance known as the 'Tamanawas' is guilty of a misdemeanour, and liable to imprisonment for a term of not more than six nor less than two months ... ; and every Indian or persons who encourages ... an Indian to get up such a festival ... shall be liable to the same punishment. [5]

Policy is directed towards the poor and the dispossessed. Policy amendments come about in response to the failure of control. The potlatch, despite the repeated dictate and assumption that it would die out, and its subsequent renunciation by Native peoples under duress, adopted new forms and carried on.

The ban came at the time of another anxiety, this one economic. 1884 marked the beginning of a



recession in British Columbia, condemning the displays of wealth as particularly wasteful, as was competitive gift-giving, for which the guest of a potlatch was then expected to respond with an even greater display of wealth during the next ceremony, essentially bankrupting the chiefs and the host community. However, the social contract – the reciprocal bond of ceremony – ensured that this debt was paid back in the future *with interest*. In the early 1900s the potlatch also changed because of the influx of money. Native workers profited in industries including fish canneries and then used this monetary wealth to purchase more things to give away, including blankets, furniture, boats and other modern conveniences. The Western economy enabled the Native one; for the Indian Agents, it pushed it to new, intolerable limits.

In 1921, during the week of Christmas, Dan and Emma Cranmer hosted a five-day ceremony in Village Island to enable Emma's family to repay the property that her husband gifted when they were first married. In the largest group arrest to take place during the ban, forty-five people were arrested and twenty-two were jailed. In place of incarceration, a plea deal set up by the defence offered the surrender of masks, coppers, regalia and headdresses to the crown, along with the public renouncement of the potlatch. The surrender of material and the renouncement of the potlatch were not limited to those initially arrested, but extended to the entire 300 people taking part in the ceremonies. Sentences were handed out in neighbouring communities as well. The arrests, too, were steeped in Christian ideologies. It was believed that 'they had renounced the gift, and their renunciation brought them over to the "civilized" side of the border between civilization and barbarity'. [6]

One of the first people to try and get back the regalia and objects – understood by some as beings – was Chief James Sewid. In 1967, after initial conversations failed, he offered to buy them back for the same price for which they were originally sold to museums. As Michael Ames observes, once objects enter museums they become bound by museological protocols as well – which they then carry with them when they are eventually returned to their place of origin. [7] The Royal Ontario Museum, for example, argued that Sewid not only pay the purchase price of the objects, but also for the 'care' and restoration they underwent while in their holdings. These were objects transformed: they carried the context of the museums back with them when they were returned to Cape Mudge and Alert Bay, contexts that predicated their display, their use and their care.

At the U'Mista Cultural Centre, in Alert Bay, objects are organised around the edges of the room, on stands; they are not positioned behind glass cases. The order in which they are displayed roughly corresponds with their role in a potlatch. In the centre of the museum is an open area for dances and ceremonies. The returned objects oversee the proceedings like sentinels. By contrast, ownership is on display at Nuyumbalees Cultural Centre. Information about the familial heritage of the returned masks and regalia is prioritised, as is the role of other high-ranking people in the 1921 potlatch. The objects returned exhibit something of a homesickness – contained in their exile is a constant longing for re-appropriation.



A collection of dance masks. Photo taken in an Anglican Church parish hall in Alert Bay, British Columbia. Reference code H-03994, 1922. Photographer: William Halliday. Courtesy Royal BC Museum and Archives, Victoria, Canada

Of all of the photos of the confiscated items from the Alert Bay potlatch ceremonies, this one circulates most. Masks perform different roles in the potlatch. Of those pictured, some are chiefs' headdresses; others are not worn but displayed at the appropriate time as a sign of high rank; the remainder are danced. In the centre of the image are the transformation masks, created with elaborate pulley systems. Their wearers switch between different beings mid-performance, thus enacting the thin line between the human and the spirit worlds. Here, these masks are displayed in a fixed position, open with their inner faces exposed. The large mask shown in the lower-left corner of the photograph is of Dzunuk'wa, the wild woman of the woods. She is often carved with her mouth open and adorned with a mess of long, black hair. She is a cannibal, capturing children in her cedar basket for later eating. On either side of the upper ledge are carved skulls. Representations of life and death are integral to potlatch ceremonies.



Indian ceremonial masks, Alert Bay, British Columbia. Photographer unknown. Reference code: D-02021. Courtesy Royal BC Museum and Archives, Victoria, Canada

The objects taken from the Memkumlis village and surrounding communities are gathered together like sinners in the Anglican Parish Hall in Alert Bay. Arranged on white sheets by Indian Agent William Halliday, the masks in the photograph are presented as evidence of supposedly fugitive practices. The photographs exist because of the ban, but they are another kind of evidence as well – that of the white obsession with the potlatch. When the masks were shipped from Village Island to Alert Bay and assembled in the church, they became commodities. Before the objects were dispersed, viewers paid admission to view the goods on display in the parish hall. Treated with relative indifference in the 1860s, by the 1870s they were ‘the subject of a moral crusade’.[8] Now trafficable objects, they entered the holdings of museums via Halliday, and were then sold to individuals including George Gustav Heye and Andre Breton; a small number remained in the personal collection of Indian Agent Duncan Campbell Scott. While the potlatch was described as ‘worthless’ by Indian Agents, the masks clearly were not. Taken from the hands of their rightful owners, they became commodities, and later vessels for others to project their ideas of the supernatural, of the primitive and the surreal. They began to stand in for the limits of European knowledge.

Central to this image are two large masks. Spread out, they reveal three faces: two on the outside and one, human-like, in the centre. The masks are of Sisiyut?, the two-headed serpent. Always depicted with horns, the creature turns those who cannot face their own fears into stone. Perhaps in line with its double-headed nature, Sisiyut? also bestows power and wealth – warriors and chiefs still employ his image as a crest on their regalia for protection.



John Drabble with potlatch items at the Alert Bay, BC, Anglican Church parish hall. Reference code: H-03974, ca. 1922. Courtesy Royal BC Museum and Archives, Victoria, Canada

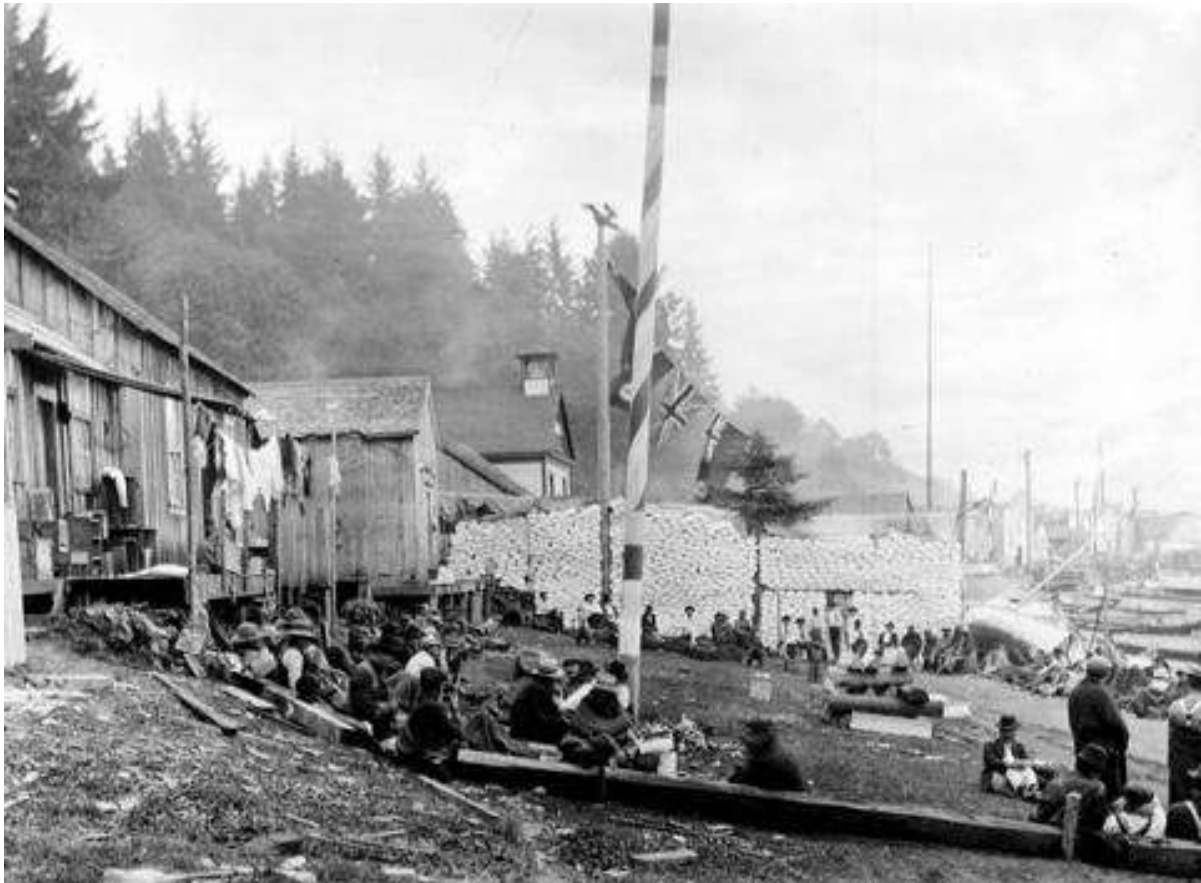
Halliday's evidence of fugitive practices included people along with the objects he sought. In this photograph, a chief holds two *T?akwa*, or coppers, a whole and a partial piece. *T?akwa* are cut for specific reasons – either as an act of shaming or to demonstrate the status of a chief who bestows a cut portion of the top of the copper to his primary rival. On 16 April 1919, an Alert Bay man named Wawip?igesuwe wrote a letter on behalf of the 'Namgis First Nation to petition the potlatch ban. In it, he appealed to Western economic models as a way of explaining the value of *T?akwa*:

Each tribe has its own coppers, and each copper has its own value. In the old days there was no money and these coppers were a standard of value but increased in value each time they changed hands. When the white man came and we could earn wages in cash for our labour we invested our savings in coppers and used them the same as a white man would do with a bank and would always expect more back than we put in. We are giving you a list of the coppers belonging to the 'Namgis Tribe and their values, other tribes have their own coppers so that you will see the great financial loss that would entail on us if our custom is suppressed.[9]

The object was now doubly invested, with both cultural value and an economic one, in the Western economic sense, and this value continued to accrue the more that the coppers circulated. This great investment didn't transfer with the coppers confiscated in 1922, however. Unlike the masks and regalia, no compensation was given to the owners of the coppers, since they were not assigned a dollar value in



Indian Agent ledgers.



Scene at Alert Bay: bags of flour to be given away at a potlatch. Reference code H-03980. Courtesy Royal BC Museum and Archives, Victoria, Canada

During the ban, potlatches went underground, where their outward character was disguised. At times, potlatch goods were given at Christmas time as ‘presents’, while in the 1930s communities began hosting deliberately disjointed ceremonies: dances and speeches were held on separate days from the distribution of goods (gift-giving was banned when undertaken in the context of ceremony). At other times, potlatches were modelled on the giving of relatively banal European goods: the 1500 sacks of flour in this image, for instance. In place of the usual potlatch rituals that accompanied distribution, when giving the sack of flour shown here, the offerer simply said, ‘Here is some flour to help you over the hard winter.’ Christian ideas of charity were also added to the ceremony to dispel any concerns over questionable behaviour. This was a calculated decision, given that these Native communities had notoriously resisted assimilation to Christianity. Nevertheless, this choice provided the guise of conversion while the communities quite transparently carried on their own spiritual practices. When 900 sacks of flour were given away in Fort Rupert in 1933, the police were told: ‘[I]t was an act of Christian charity.’ Given the number of sacks (implying the great wealth of the person who purchased them), their deliberate display beforehand, and the communal gathering, the giving of flour was likely a means to repay a debt owed to another family because of a recent marriage, or a change of status. In this sense, the potlatch, reframed, brought about another crisis in colonial logic. Indian agents were well aware that this was a potlatch, yet the strict description of the ceremony in their documents could not account for the changes in form and the inherent creative resistance. What the whites had worked so hard to name had once again evaded their definitions; springing out of the colonial shadows of language and law, the potlatch necessitated yet



another correction, another form of control.



Left: A potlatch dancer in regalia. Photo taken at the Anglican Church Parish Hall in Alert Bay, BC. Reference code: H-03977 Archives code(s): HP099695. Courtesy Royal BC Museum and Archives, Victoria, Canada

Right: Photographer: Anonymous. Date: Not recorded; 1895 or before. Notations on back of photograph of exhibit (USNM Kwakiutl no Number): 'U.S.N.M. Rept. (1895) Plate 29 Hamats'a coming out of secret room', and 'Kwakiutl Indian ceremony for expelling cannibals'. Cited as: Negative MNH 8300, National Anthropological Archives, Smithsonian Institution. Local number: OPPS NEG MNH 8300

Much of what was written about the Hamat'saceremony – the secret society that purportedly involved the ritualistic eating of human flesh – is used as evidence of the savagery of Native people and further justification for the criminalisation of the potlatch. Originally held as part of Tsetseka, or winter ceremonials, young male initiates enacted their possession of the man-eating spirit Baxbaxwalanuxsiwae'. Over the course of the ceremony, the young men are rid of the spirit. The Hamat'sa was central for Kwakwaka'wakw to reiterate the power of the living relative to the dead (the ability to consume the dead, while not succumbing to death), and to the wild forces of nature. There is another form of reciprocity at work here, that being between the human world and the supernatural. While spirits are sacrificed to enable the survival of human life as a part of the ceremony, the very offering of human life signified through the simulated eating of flesh is understood as necessary to enable the ongoing survival of the supernatural. The ceremonies of the potlatch brought about another form of possession as well – that of the Indian Agents and perhaps even of the anthropologist Franz Boas himself.

On the left, Boas is seen modelling for a diorama on the Hamat'sa. He is depicted as the 'wild' dancer emerging from the threshold of the supernatural and out of the mouth of Baxbaxwalanuxsiwae'. The diorama itself was based on an enactment of the ceremony that was very much out of time. In 1893 a group of Kwakwaka'wakw were brought to Chicago as part of the World Columbian Exposition. Here they performed the Hamat'sa over and over again to an uninitiated audience, setting in motion a cycle of repetition and reiteration of the ritual that carries through to the present.



© Vickie Jensen/U'mista Cultural Society, U'mista Cultural Centre, Alert Bay, British Columbia



Nuyumbalees Museum, Alert Bay, British Columbia. Images courtesy Royal BC Museum and Archives, Victoria, Canada. Item: J-00559

The Kwakwaka'wakw people make clear that dance is not only a celebration; it is an integral part of their judicial system and governance. They declare that: 'a strict law bids us to dance'.<sup>[10]</sup> In 1975, when the return of the first set of objects taken after the potlatch of 1921 was made official, people in Cape Mudge and Alert Bay celebrated with dances that were not simply celebratory.

Part of the agreement for the objects to come home was that they had to be housed in museums. With this came an opportunity for the community to rethink the role of the museum, and how it might display objects and present their complicated stories.

At U'Mista Cultural Centre in Alert Bay, the objects are arranged around an open area within the architecture of a large house. They are not placed in vitrines but out in the open, grouped together and arranged in approximately the same order as they would take in the potlatch. An emphasis is placed on the meanings of different masks and regalia with a continual reiteration of their relationship to the 1921 potlatch and the Cranmer family. In the Nuyumbalees Cultural Centre, the emphasis of the display is on the individual families who are the caretakers of the specific objects. The 1921 potlatch was not Dan Cranmer's alone, but a collaborative venture with his wife Emma, as well as Cape Mudge Chief Billy Assu. Unlike at U'Mista, the main audience in Cape Mudge remains the community.





Despite the predictions of authorities and policy makers that the potlatch would disappear, which at the height of the ban were constantly repeated by policy makers and by the accused (as a way to placate the authorities), the potlatch never died. As a system, it proved remarkably malleable. At times it was split into two parts, strategically incorporating European goods and ideologies as a disguise or going underground, while remaining very much itself. Potlatch objects circulate now mainly in the form of masks: some are carved specifically for the art market; others circulate as part of a ceremony. Beau Dick is a maker of masks. Of Kwakwaka'wakw descent, he lives and works in Alert Bay. The frequent subject of his carvings, many of which are sold to collectors, is Dzunuk'wa, the cannibal. In this context, eating the other is a stand-in for cultural consumption. In 2012 Dick tried to short-circuit this desire for consumption when he removed forty of his masks from the walls of his commercial gallery in Vancouver and took them back to his home community, where they were ceremonially burned in front of witnesses who included artists and collectors. The burning of the masks was not simply an act of destruction, but set in motion the creation of a new set of masks, which after their four years of use in potlatch will also be set ablaze.

There is a story about a community of people who decided to do something about Dzunuk'wa, so they captured and killed her. To ensure that she wouldn't come back to life, they built a large fire to burn her body. At the moment her body was scorched and black, she transformed into a swarm of mosquitoes. The transformation and dispersion of Dzunuk'wa is something like the potlatch itself – a practice that survived because of its own transmutations during the apex of colonial violence and control.

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[1] Franz Boas, from an 1889 report to the Geographical Society of Berlin cited in Christopher Bracken, *The Potlatch Papers: A Colonial Case History* (Chicago and London: The University of Chicago Press, 1997), p. 6.

[2] *Ibid.*, p. 8.

[3] Christopher Bracken, *The Potlatch Papers*, p. 46.

[4] Jacques Derrida, *Glas* (Lincoln: University of Nebraska Press, 1986), p. 6–7.

[5] *An Act further to amend 'The Indian Act, 1880'*, sc 1884, c. 27, s.

[6] Christopher Bracken, *The Potlatch Papers*, pp. 42–43.

[7] Michael Ames, *Cannibal Tours and Glass Boxes: The Anthropology of Museums* (Vancouver: University of British Columbia Press, 1992) pp. 139–50.

[8] Christopher Bracken, *The Potlatch Papers*, p. 35.

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## Candice Hopkins

Candice Hopkins is a curator and writer originally from Whitehorse, Yukon, and based in Albuquerque, New Mexico. She is co-curator of the forthcoming SITE Santa Fe biennial, *Casa Tomada*, as well as co-curator of the Canadian Pavilion at the 58th Venice Biennale. She was a curator for documenta 14 in Athens, Greece, and Kassel, Germany. Hopkins's writing is published widely and recent essays include 'Outlawed Social Life' for *South as a State of Mind* and 'The Gilded Gaze: Wealth and Economies on the Colonial Frontier' for the documenta 14 Reader. She is the recipient of several awards and has lectured on contemporary art, sound, indigeneity, native economies and vernacular architecture. Hopkins is a citizen of Carcross/Tagish First Nation.





# Re-figuring Ourselves - A Conversation

**Christiane Paul:** Over the past years, your work has consistently engaged with ideas and processes of 're-figuring' – the recreation and reinvention of material forms and bodies. In *Material Speculation: ISIS* (2015–16) you use 3D modelling and printing to reconstruct twelve statues from the Roman-period city of Hatra, and Assyrian artefacts from Nineveh that were destroyed by ISIS in 2015. Embedded in these recreations are flash drives storing the destroyed artefacts' contexts – images, maps, pdf files and videos gathered in the last months of their existence – making them function as archives that exist outside of institutionalised structures. In *SHE WHO SEES THE UNKNOWN* (2017–present), you employ 3D scanning and printing to recreate dark goddesses and monstrous female figures of Middle-Eastern origin, using the traditions and myths associated with them to explore colonialism and oppression in contemporary societies from a feminist perspective. What brought you to acts of re-figuring as an artistic practice and to this specific engagement with the materiality of artefacts and figures?

**Morehshin Allahyari:** A major aspect of my work as an artist and activist in the last decade has been archiving and documentation. *Material Speculation: ISIS* and *SHE WHO SEES THE UNKNOWN* are both about archiving, as well as the non-binary connection between history and technology. Re-figuration for me is about activation and preservation. It's an act of going back and retrieving the forgotten or destroyed histories – from the ones destroyed by ISIS in 2015 to the female/queer figures from ancient Middle-Eastern mythical narratives and texts that are usually misrepresented. Through re-figuration, certain acts of decolonisation can happen. In all these practices, I've been interested in alternative, poetic and practical forms of archiving. I think my fascination with archiving or collecting knowledge comes from a love of making marks and leaving traces behind in the context of history and a 'bigger picture'. For me, it's important to remember what we live and how we live it and that this time and place we get to be in is a tiny chunk of what then becomes a 'past'. This thought is what makes archiving a remarkable practice for me: hoping those who come after us will know and remember this past and our stories. For me, re-figuring is going back and re-imagining the past so that we can create and re-imagine alternative futures and worlds; so that we can collapse the political notion of linear space and time as an act of resistance. Re-figuring is a ficto-feminist and activist practice to reflect on the effects of historical and digital colonialism and other forms of oppression and catastrophe.

**CP:** Your projects use 3D modelling and printing technology, now commonly employed for fabrication in commercial sectors, as a tool for documentation, reconfiguration and resistance. In *The 3D Additivist Cookbook* (2016), created and edited in collaboration with Daniel Rourke, you compiled a compendium of 3D .obj and .stl files, designs, templates, texts from over 100 artists, activists and theorists as additive/activist 'recipes' for living in contradictory times. What attracts you to 3D printing as a tool and how would you describe its potential?

**MA:** I've always thought of the 3D printer as a metaphor and point of departure to delve into and overlap with other disciplines and worlds. In both *The 3D Additivist Manifesto* (2015) and *The 3D Additivist Cookbook* we used #Additivism as a network of forces: economic, social, political, material, infrastructural. The 3D printer is a machine that offers the promise of being able – one day – to make copies of itself – a radical metaphor for the capacity of life breathed into the world of inert matter. #Additivism sought to wrest control of 3D printer narratives away from the white tech males who dominate the field. So it's a call to those on the 'outside' to seize control and multiply the possible spaces and worlds they inhabit, from fablabs to commercial spaces. For me, 3D printing is just another technology that has the potential to be used as a tool for resistance and activism.

**CP:** Your hypertext narrative *The Laughing Snake* (2018) – co-commissioned by Liverpool Biennial, the Whitney Museum of American Art and FACT Liverpool and part of the *SHE WHO SEES THE UNKNOWN* series – uses a jinn, a supernatural creature or monstrous figure in Arabian mythology, to explore the status of women and the female body in the Middle East. In terms of medium, the work differs from the other pieces in the series in that it takes the form of an interactive online narrative rather than a sculpture

and accompanying video narrative. What kind of possibilities did this particular form create for your ongoing exploration of jinn?

**MA:** I come from a creative-writing background, so in general, fictional writing has always been an important part of thinking and creating for me. In a visual time-based medium like video, the options for a certain kind of storytelling are limited. Once an option like interactivity is available, it expands the possibilities of writing in fascinating ways (another reason why I love the possibilities of technology in relationship/collaboration with more traditional media and forms). For example, I've always been really into open-ended writing. And, for me, one of the most exciting aspects of web art and hypertext narrative has been its potential as a format for playing around with this kind of storytelling and narrative-building. *The Laughing Snake* starts as a non-linear narrative, but as the viewer clicks forward, the narrative gets more and more non-linear and complex. Choice, accident and randomness all become components of experiencing the story through passages that range in tone from poetic to autobiographical. The only way to understand the full narrative, to travel back and forth between past, future and present, is to spend a good amount of time with the piece, which adds mystery and different kinds of relationships to the text, and ways of connecting to other content (sounds, visual, poetics).

**CP:** According to the original myth appearing in the fourteenth- and fifteenth-century Arabic manuscript *Kitab al-bulhan* (Book of Wonders), the seemingly invincible Laughing Snake had taken over a city, murdering its people and animals, until an old man finally destroyed her by holding up a mirror to her, making her laugh so hard at her own reflection that she died. What drew you to this particular jinn and her story from a feminist perspective?

**MA:** I came across the story of *The Laughing Snake and Mirror* in *The Book of Felicity* and *The Book of Wonders*. The illustration shows a female snake in a beautiful landscape looking at a group of men who are holding a mirror in front of her. But unlike the myth of Medusa, who turns into stone when she sees herself in the mirror, the Laughing Snake dies from seeing her reflection in the mirror – laughing at it hysterically until she self-destructs. I wanted to turn this story around, to embrace the monstrosity, to change this image and the structure. So in my new story about the Laughing Snake, I chose to show that she isn't laughing at her own reflection, but rather at her reflection *within* the world she lives in. Her laughing and her death are powerful gestures to take her reflection back. And I use that to tell real personal stories about the past and present of my life and an imagined future. They're stories about sexual experiences in Iran, the ownership of a female body in a patriarchal culture and society, and laughter as the rejection of that history, and a way to re-imagine a different kind of world for the women of the Middle East. The power of this work is to remind women, the people of the Middle East, that our figures and our stories, fictional and actual, matter – not just for the present but for claiming an alternative future that isn't exclusively white or western.

**CP:** I think your work is very successful in striking a delicate balance: on the one hand, it has its roots in your personal history as a woman being born and raised in Iran and is very specific; on the other, it manages to transcend the personal and resonates on a more general cultural level in its engagement with colonialism, oppression and femininity. How has your unique perspective as an Iranian woman living in the US informed your work process?

**MA:** I think this is a balance that took a while to build. When I first immigrated to the US from Iran in 2007, a lot of my work was about the experience of censorship in Iran and self-exile as a response to oppression that I experienced growing up. But then, after some years, I wanted to figure out how to connect my life as an immigrant in the US to my background of growing up in Iran, to the world around me as I lived/struggled through it. For me, the answer wasn't to make work directly about my identity but rather to find elements and stories that were poetic, personal and collective, then find ways to connect them to issues that were of concern to me. So as much as my work comes from a personal place, it also tries to avoid the simple binary representations of who I am (a woman/woman of colour/woman of colour

from Iran etc.) and how I am in the world. I decided early on that I wanted my work to go beyond identity politics and I think my love of history and storytelling and my hatred of stereotypical orientalist work really helped me achieve this space in a unique way.

**CP:** *SHE WHO SEES THE UNKNOWN*, in particular, falls into the genre of speculative fiction, which has recently gained a lot of traction. Incorporating supernatural, magical or futuristic elements, this form of narrative fiction opens up playgrounds for contemplating scenarios both grounded in and transcending our realities. Your work is a particularly poetic engagement with this form. What led you to explore this poetic-speculative storytelling?

**MA:** Science fiction is a genre that doesn't really exist in Iran. We have a lot of mythical stories and tales in our literature, a lot of poetry and imaginary thinking about the past, but almost no imaginary thinking about the future. I don't think I even realised this until 2012, when I started to work on *Dark Matter* (2014) and the #Additivism project and fell in love with futuristic-thinking, speculative fiction and content such as Afrofuturism, Ethnofuturism etc. So the almost nonexistence of this kind of language and imagination in Iran/the Middle-East made me really curious and tempted me to make work that could build a platform for this. We (as Middle-Easterners) have to be able to imagine/re-imagine ourselves in the future – a future that's mostly built for the Western white demographics with no/very little room for us. And when I talk about the future, I don't necessarily mean the far future. I mean tomorrow, a month from now, next year. That kind of understanding of time and space-building is extremely important to me and the kind of speculation/imagination I want to create with and for it.

**CP:** Related to time and space-building in your work is the endeavour to repair history and memory, which seems to have enormous cultural urgency. We're living in a time when concepts of fact and truth have become contested territory and history is frequently rewritten for political purposes. What does the process of mending history and memory entail and why is it important to you?

**MA:** Growing up in Iran, I remember I was constantly reminded that there are many versions of the truth and history. One version is that told by the government and fed to us in schools, media and public spaces; another is that told by my non-religious parents; yet another is told by the Western media ... and the list goes on. From a very early age I learned that I have to search for reliable information, and when studying media and social sciences for my degree in Iran, I learned a lot about propaganda and agenda-setting as it relates to news and facts; how there's no such thing as passive technology and 'one truth'. So art (and to be more clear, art-activism) became a fascinating way for me to play with these power structures and to find a voice for resistance. Archiving became a position and practice that I took very seriously as part of this process. And so, for example, the re-creation of the destroyed artefacts by ISIS and the re-figuration of the female/queer monstrous figures of the Middle East in *She Who Sees The Unknown* became a methodology for challenging the limitations and possibilities of remembering and forgetting.



Restart

All eyes on her  
They held a mirror in front of her  
"When she saw her reflection *within* the world  
She burst into laughter from *the image: Them, holding a mirror*  
She laughed *hysterically* for days and nights  
Until she died."





Morehshin Allahyari, *SHE WHO SEES THE UNKNOWN: The Laughing Snake*, 2018. Hypertext narrative. Commissioned by Whitney Museum of American Art, Liverpool Biennial and FACT. Images courtesy the artist

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### Morehshin Allahyari & Christiane Paul

Morehshin Allahyari lives and works in New York, USA. Allahyari is an artist, activist, and educator. Her work deals with the political, social and cultural contradictions we face every day. She thinks about technology both as a philosophical tool to reflect on objects and as a poetic means to document our personal and collective life struggles in the 21st century. Her modelled, 3D-printed sculptural reconstructions of ancient artefacts destroyed by ISIS, titled *Material Speculation: ISIS*, have received widespread curatorial and press attention and have been exhibited worldwide.

Christiane Paul is a curator, professor and writer who lives and works in Brooklyn, New York. She is Chief Curator/Director of the Sheila C. Johnson Design Center, Professor of Media Studies at The New School and Adjunct Curator of Digital Art at the Whitney Museum of American Art. She is the recipient of the Thoma Foundation's 2016 Arts Writing Award in Digital Art, and her recent books are *A Companion to Digital Art* (Blackwell-Wiley, 2016); *Digital Art* (Thames & Hudson, 3rd edition 2015); and *Context Providers – Conditions of Meaning in Media Arts* (Intellect, 2011). At the Whitney Museum she curated exhibitions including Programmed (2018), Cory Arcangel: Pro Tools (2011) and Profiling (2007), and is responsible for artport, the museum's portal to Internet art. Other curatorial work includes Little Sister (is watching you, too) (Pratt Manhattan Gallery, NYC, 2015) and What Lies Beneath (Borusan Contemporary, Istanbul, 2015). Christiane Paul (b. 1961, Attendorn, Germany) is a curator, professor and writer who lives and works in Brooklyn, New York. She is Chief Curator/Director of the Sheila C. Johnson Design Center, Professor of Media Studies at The New School and Adjunct Curator of Digital Art at the Whitney Museum of American Art. She is the recipient of the Thoma Foundation's 2016 Arts Writing Award in Digital Art, and her recent books are *A Companion to Digital Art* (Blackwell-Wiley, 2016); *Digital Art* (Thames & Hudson, 3rd edition 2015); and *Context Providers – Conditions of Meaning in Media Arts* (Intellect, 2011). At the Whitney Museum she curated exhibitions including Programmed (2018), Cory Arcangel: Pro Tools (2011) and Profiling (2007), and is responsible for artport, the museum's portal to Internet art. Other curatorial work includes Little Sister (is watching you, too) (Pratt Manhattan Gallery, NYC, 2015) and What Lies Beneath

(Borusan Contemporary, Istanbul, 2015).

# Forensic Aesthetics

This contribution draws upon a talk entitled *Forensic Architecture* by Eyal Weizman, part of Liverpool Biennial 2018 public programme curated by The Serving Library.[1]

Forensic Architecture is both the name of an agency established in 2010, and a form of investigative practice into state violence and human-rights violations that traverses architectural, journalistic and legal fields.

The piece highlights four projects that featured in the talk: *Killing in Umm Al-Hiran* (2017), *Saydnaya* (2016), *Torture and Detention in Cameroon* (2017) and *The Gaza Platform* (2015). Progressing through these projects as case studies, it serves to unpack the term 'forensic aesthetics', one of several key concepts that underlie the group's approach. Typically associated with illusionary trickery and subjective sentiment, the notion of 'aesthetics' seems at odds with the definition of truth as something that is objectively given. Yet Weizman sees forensics as an aesthetic practice because the modes and means by which incidents are understood and evidence is presented involve aesthetic considerations.

## ***1. Killing in Umm Al-Hiran [2]***



Forensic Architecture, *Killing in Umm Al-Hiran*, 2017

Shortly before dawn on 18 January 2017, Israeli police raided the Bedouin village of Umm al-Hiran. Their aim was to demolish several houses, part of efforts to force Bedouin communities away from land earmarked for new Jewish settlements.

Two people were killed during the raid: Yakub Musa Abu al-Qi'an, a Bedouin and resident of the village, and Erez Levi, an Israeli policeman. Israel's government and police claimed the deaths were the result of a 'terror attack' by al-Qi'an, and suggested that he had links to the terrorist group ISIL.

Reports from eye-witnesses, however, appeared to contradict those claims. Forensic Architecture (FA) worked with a group of documentary photographers, [Activestills](#), to scrutinise the allegations against al-Qi'an, exposing glaring inconsistencies and forcing politicians and the police to change their story repeatedly.

The results and progress of our investigation are currently displayed at the Tate Britain's Turner Prize 2018 exhibition. The material displayed will be submitted in support of a legal appeal in Israel against the closure of a formal investigation of the police responsible for al-Qi'an's death.

The story of our investigation, and that of the case itself, unfolded over more than a year. The timeline below follows that story, from the morning of the attack until the eviction of the village of Umm al Hiran in April 2018.



## ***II. Saydnaya [3]***



Forensic Architecture, *Saydnaya*, 2016

Since 2011 thousands have died in Syria's prisons and detention facilities. With anyone perceived to be opposed to the Syrian government at risk, tens of thousands of people have been tortured and ill-treated in violation of international law.

In April 2016, Amnesty International and Forensic Architecture travelled to Istanbul to meet five survivors from Saydnaya Prison, near Damascus. In recent years, no journalists or monitoring groups that report publicly have been able to visit the prison or speak with prisoners.

## ***III. Torture and detention in Cameroon [4]***



Forensic Architecture, *Torture and detention in Cameroon*, 2017

Since 2014, Cameroon has been at war with Boko Haram, an armed extremist group responsible for thousands of murders and abductions across the Lake Chad Basin.

Trained and supported by US and European governments, and armed by Israeli private companies, the Cameroonian security forces act with increasing impunity against civilians in the country's Far North region.

Between 2015 and 2016, [Amnesty International](#) collected evidence of over a hundred cases of illegal detention, torture and extra-judicial killing of Cameroonian citizens accused of supporting or being a member of Boko Haram, at around twenty sites across the country.

Using testimony and information supplied by Amnesty International, Forensic Architecture reconstructed two of these facilities – a regional military headquarters, and an occupied school – in order to confirm and illustrate the conditions of incarceration and torture described by former detainees.

#### ***IV. The Gaza Platform [5]***



Forensic Architecture, *The Gaza Platform*, 2015

The Gaza Platform enables its users to explore a vast collection of data, collected on the ground by the Al Mezan Center for Human Rights and the Palestinian Centre for Human Rights (PCHR), as well as Amnesty International, during and after the 2014 conflict.

Produced through a year-long collaboration between Forensic Architecture and Amnesty International, the Gaza Platform is a new gateway to this precious, first-hand information: it not only gives access to a large quantity of otherwise dispersed data, but helps to make sense of it.

The Gaza Platform is the most comprehensive public repository of information about attacks carried out during the 2014 Gaza conflict to date. At the time of its launch on 8 July 2015, it featured over 2,750 individual events, recording the deaths of more than 2,200 people, including 1,800 civilians and 600 children. As a digital interface, it enables access not only to text reports, but also to photos, videos, audio recordings and satellite imagery documenting the war – all in one place.

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[1] It also draws upon the Forensic Architecture website with respect to project descriptions.

[2] See: <https://www.forensic-architecture.org/case/umm-al-hiran/>

[3] See: <https://www.forensic-architecture.org/case/saydnaya/>

[4] See: <https://www.forensic-architecture.org/case/cameroon/>

[5] See: <https://www.forensic-architecture.org/case/the-gaza-platform/>

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### Eyal Weizman

Eyal Weizman is an Israeli intellectual and architect. He is Professor of Spatial and Visual Cultures at

Goldsmiths, London, and Director of the Centre for Research Architecture – a 'laboratory for critical spatial practices' that he created within the Department of Visual Cultures. In 2011 he established the agency Forensic Architecture, an interdisciplinary team of investigators that provides advanced architectural and media evidence to civil-society groups such as truth commissions, courts and human-rights reports. Forensic Architecture is nominated for the Turner Prize 2018.

# Technology, magic and the quest for meaning



When I was young, I loved to read fantasy novels: Lewis, Tolkien and the like. The appeal of such works, at least in part, is in the way they transport the reader to places and times that are more elemental, raw, and thus beautiful, than the real world. This is by design. Often enough, the authors themselves were disenchanted with the world they found around them, were bothered by the ugly, mechanical environment in which they lived, the dehumanising nature of the market, the destruction of mystery that occurred in a world designed by engineers and economists. You see this, for instance, in the figure of Saruman, the wizard gone bad in Tolkien's *Lord of the Rings*, who uses fire and earth to build an evil army. He is defeated, in a scene that is apposite today, by a force of tree creatures called Ents, which are outraged by Saruman's despoilation of nature. Saruman later returns and works to industrialise the Shire: the realm of the Hobbits, and Tolkien's stand-in for England. But the Shire is soon purged of Saruman's influence and reverts to the happy countryside it was before.

Fantasy writers were not the only ones to harbour misgivings about the changes wrought by economic modernity. William Blake famously imagined a heaven established in 'England's green and pleasant land', in contrast to its 'dark satanic mills'. Prior to that, Friedrich Schiller, whose work *The Gods of Greece* contributed the theme to this celebration in Liverpool, lamented the loss of beauty and of the fullness of life that accompanied the rise of modern science, religion and commerce. Schiller's work anticipated in many ways that of Marx, who found in capitalism a relentlessly dehumanising system, bent on separating men and women from their true essence.

As a young person, I didn't have the words, the poetry or Marxist language, to help me work through the way I felt about my own environs, in comparison with the worlds I read about in books. But the sentiment was similar. I grew up in what was more or less an idealised version of life in American capitalism circa 1980. I lived in a good-sized suburban home, on a cul de sac, in a quiet subdivision on the outskirts of a prosperous mid-sized city. We weren't rich, but we might as well have been. We had two big cars, colour television, a personal computer and a video-game system. I went to good schools, played sports, enjoyed beach vacations in the summer. We went to church every Sunday, to sit for an excruciatingly boring two hours surrounded by other middle-class white people being just as middle class and white as one could possibly be.

And all of it, every bit of it, felt like nothing. It was a world without beauty, without ecstasy, without history or character. We travelled by bland automobile from the land of bland, manicured lawns, to the bland shopping centres surrounded by acres of parking, and it was all seemingly designed to prevent anyone from feeling excitement, ever. This was the American dream.

It can seem churlish to complain about such things. I lived in comfort, and didn't have to worry about where my next meal might come from or whether we might be set upon by armed men in the middle of the night. I had access to modern medicine and education. I was given opportunities to succeed, to ultimately move away and build a career and have the chance to come and talk to audiences like this one about the impressive blandness of my hometown. I was not unaware, as a young person, that there was hardship elsewhere in the world. As I've grown older and seen more of the world, it has become clear just how unreasonably lucky I was to grow up the way I did. I also learned how the luxuries I enjoyed depended in turn on the mystery-destroying institutions of the modern world: technocratic governments and market economies.

Liberals and modernisers have always been exasperated by those complaining about the dark satanic mills and longing for the old days of greenness and mystery: of constant, life-threatening poverty, crushing ignorance and oppressive superstition. You want magic? Here's magic: billions of people now populate earth, most of them living much longer, healthier, richer lives than even the kings of old enjoyed, because of science, because of the dehumanising force of the market. This is the trade-off. We are (most of us) spared the horrors of hunger and sickness and war that plagued us for millennia, and all we have to do in exchange is live spiritually meaningless lives under the inhuman thumb of the market. It's good that we

no longer live in constant material deprivation, such that beauty and mysticism are all we have to cling to. On the other hand, now that we're here, there's the great looming question: what is it all for? Is the machine simply turning for its own sake?

One thing progress affords us, however, is the luxury of asking whether things must be so. Is there not some more beautiful world out there, in which we can all be free of the ills that dogged us in the past – hunger and oppression – without having to give up our full humanity, pretend all our lives that we care about delivering value to shareholders, in the hope that we can save up enough to have a comfortable retirement?

In fact, there must be. More than that, I think it's important for the future of society that we work towards realising that world. What we've learned over the past decade is that comfort isn't enough to satisfy us. Yes, the past ten years haven't been easy, economically. But the hardship that people in the rich world have suffered, even in the places hardest hit by recent crises, is nothing compared with what people went through in the 1930s. Despite the setbacks, the rich world remains richer, healthier and better off than at just about any time in history.

And yet people are angry. They're angry enough to vote for politicians who stir up racial and ethnic discord; for politicians who promise to make life in rich countries better by punishing the most vulnerable members of society; for politicians who seek to break apart the system of international institutions that made us rich in the first place. Comfort is clearly not all that matters. A sense of purpose matters too. The things we believe about ourselves and the world around us matter. The ability to feel like a fully realised human being matters. Comfort is important, but if that's all society provides, then society puts itself at risk. We need more than that. We need to enable people to have satisfyingly human lives: lives of beauty and magic and meaning and wonder.

Is that possible? To understand whether it is, it's useful to recall the ways in which our imperfect modern institutions enrich us: to understand the logic beneath the dehumanising machinery. It all begins with the insight that Adam Smith described in his discussion of the pin factory. Smith pointed out that by breaking the production of pins into small tasks, and assigning those tasks to workers who would specialise in that one thing, a team of workers could produce many hundreds of times more pins per day than if each worker instead produced pins from start to finish. The message was: through specialisation and trade, we can become far more productive and far richer than we can through self-sufficiency.

Specialisation and trade is in part about the creation and dissemination of new knowledge. The modern economy is possible because of the accumulation of vast amounts of scientific and technical know-how; far more of it than any one person could hope to master. As industrialisation unfolded, it became ever more important for workers to accumulate specialised knowledge, and for skilled workers to bunch together in factories and cities, within which many different kinds of expertise could be brought to bear in production, and within which areas of specialised knowledge could cross-pollinate, fuelling the process of innovation. And so in that way, modern growth demanded that we become intellectual specialists rather than creatures who ought to seek to understand all of creation.

In production itself, specialisation became particularly important. Factory managers broke production processes down into small series of tasks. This made it easier to replace lost workers: hiring someone to make the same weld over and over again is much easier than finding someone with the skill set to build an entire machine. Hyper-specialisation boosted productivity: workers doing the same task over and over again became extraordinarily adept at it, and didn't lose the time involved in switching from one task to another. A worker given the job of inserting the same screw into the same spot over and over again might lose his mind from the monotony, but he'll also get incredibly good at inserting that screw into that spot.

What's more, breaking processes into small, discrete chunks allowed firms to better engineer their production systems. It became easier to monitor workers, to specify what techniques workers should

follow in order to produce more, and, ultimately, to automate tasks.

This process of specialisation, of the construction of ever larger, more complex systems of production that could nonetheless use modestly skilled labour because of the fracturing of production processes, was wildly, magnificently productive. Even as mechanisation squeezed employment out of manufacturing, this process continued across service industries. We all have our little role to play, our tiny plot of land, our little bit of specialised knowledge, which we contribute to the operation of the global economy.

The upshot of this is that we've all found ourselves embedded deep within the belly of the machine. Industrialisation brought massive factories, in which people became cogs alongside the equipment around them. Today, some of us are more closely connected to the end products of our work than others. Nurses and therapists are able to observe the effect that their work with patients has. As a journalist, I'm involved in the production of my wares from beginning to end. Yet even in such cases, the broader shape of one's career is governed by distant forces: the operation of inhuman medical bureaucracies, for instance, or the distribution of an article by the impenetrable algorithms of a giant social network.

Marx would say that we've all become alienated. We're subject to fickle, anonymous market forces. We work within soulless corporate bureaucracies. For most of us, the craft aspect of the work we do matters far less than our ability to deliver tangible, measurable contributions to management.

Indeed, aspects of a job that can be considered 'craft' in nature are signs of inefficiency! The more art there is than science to doing a task well, the less able firms are to analyse and optimise those tasks, to break them into pieces that can be done by more easily replaceable workers, or, in the limit case, to automate them. A worker with a unique, difficult-to-define, valuable skill-set might be hailed as an asset by his employers, but don't be fooled: that worker is a pain in the firm's rear. That worker represents aspects of the business that can't be scaled, optimised and computerised. That worker is an obstacle to progress.

This is the modern economy. The more we love a job, appreciate its subtleties, commit ourselves to it out of sheer passion, the less well we fit within the machinery of modern capitalism. The economy wants us to be cogs, able to move easily to wherever we're most productive, to change jobs or employers or cities when market conditions change, and not to be sentimental about it. If you become too attached to where you live, or what you're doing, you might become reluctant to move to the spot where you can contribute the most to production. The more bland and disposable the settings around us, the less likely we are to become attached to them.

Our society valorises all of this. We describe it as 'dynamism'. I work for a publication that's constantly clamouring for structural reforms. The point of structural forms is to boost flexibility: to increase the extent to which people flow across jobs and places. And again, we don't do this for no reason, or because we're sadists, but because this is the way to boost income growth. And the more income we have, the more problems we can solve, the more people we can bring out of poverty and so on. But there is an inescapable human tension, which most of us feel in our bones, even if we don't know exactly what its source is. The drive to be what we fundamentally are not makes us miserable. The drive to pretend that it doesn't matter that we have to choose between being close to family and being where the good jobs are eats away at us, or many of us, at least. Money makes up for some of the strain, but at some point it's worth asking whether such trade-offs are really necessary in the first place.

That brings us to artificial intelligence and the new technological revolution that's beginning to transform the world economy. Now, let's be clear, AI certainly has the potential to make all of the old industrial problems even worse. Most of what we call AI today is built on machine learning, which is when computers, given massive amounts of data, learn to recognise simple patterns. Let me give you an example. Suppose, for instance, that hospitals equipped doctors and nurses with devices that gathered data on where they were at all times, what they said in interactions with each other and with patients and so on. By devices, we could just mean phones, or you could imagine something like Google Glass. Pool all

the data, alongside figures about patient outcomes or hospital spending, and you could begin to use algorithms to detect patterns, like whether pairs of doctors and nurses attending to patients are better than a doctor or nurse alone, or whether the amount of time spent with a patient matters, or whether the kind of language the nurse uses or what path she takes through the hospital hallways matters, and so on. Pretty soon you begin to generate guidelines for how those workers should behave. Perhaps you feed those guidelines to them through a headset, issuing them instructions on what to say and how to say it as they meet with a patient. And there you are: AI has turned a job based on human interactions into one in which the human becomes a cog in a machine. The more this occurs, the more data is gathered, the more patterns are identified, the more efficiencies can be found. And there we all are, marching to the beat of our AI overlords in pursuit of higher productivity.

If that's not a nightmare vision of dehumanising labour, I don't know what is. And these sorts of scenarios are another reason why now, more than ever, we must try to imagine something better. The good news is that AI might also make it easier to achieve that 'something better' than ever before.

This might occur in relatively prosaic fashion. As AI improves, the productivity of the human cogs will grow, meaning that it takes fewer people to do the same amount of work. And just as the turning of individuals into cogs during industrialisation paved the way for lots of automation, the breaking down of service-sector tasks into analysable pieces might well hasten the time until an AI can do the job all on its own. So while the dehumanising effect of AI will be unpleasant, it will also mean that lots of people will need to find new jobs.

That sounds bad. People in this part of the country don't need me to tell them that the loss of industry work took an enormous toll on many communities. The loss of service-sector work could as well. And if the structure of the social safety net is such that when people are displaced by machines they have to find other work in order to feed themselves and put a roof over their heads, then that's not a very beautiful or magical outcome. But the rising productivity generated by new AI will mean that society as a whole will be richer. And if those riches are distributed evenly: perhaps through the adoption of a universal basic income, then a large share of the population will enjoy the financial freedom to remove themselves from the machine.

What happens after that is a choice that society will have to make. John Maynard Keynes, the great British economist, reckoned that what to do once material scarcity ceased to be a concern was in fact humanity's great problem. And perhaps many people will choose to spend their time in destructive ways: caught up in unmanageable drug addiction or violence. But many people will not. And maybe, if the social norms surrounding how one ought to spend one's time evolve in the right way, most people will not.

Instead, most people can choose to indulge their basic humanity. In their book *How Much is Enough?* (2012), Robert and Edward Skidelsky suggest that when the constraints of scarcity are repealed, governments might want to instruct people in how to spend their free time well: to teach people to write and enjoy poetry or paint landscapes. That seems unnecessary to me. Do you need instruction in how to spend your free time well? We would sleep more. In the modern world, that sounds bad, but sleep is lovely and most of us get too little of it. We might spend more time reading and watching television or playing video games. This distresses some people, but why should we regret a world in which people spend more time at idle entertainment and less moving packages around warehouses, or manning call centres, or engaging in risky financial schemes that endanger the world economy?

And of course, we would do other things: caring for family members and friends, tending our gardens and taking walks, indulging in our hobbies. Plenty of people would choose to engage in business – an interest in commerce is written deep in our DNA – but given a liberation from the machine, we could engage with the market on our own terms. We could produce things for the love of doing it: craft goods, home-brewed beer or home-made cheese, or indeed landscape paintings. People would do so because they wanted to, not because they feared hunger or falling behind. If only a few items sold each month,

there would be no risk of bankruptcy.

Talking about it feels so frivolous, but the aversion to frivolity was built into our psyche by the desperate need to survive. When there was an urgency to working hard, because survival depended on it, indulging in silliness or leisure was immoral. But when there was abundance ...? We have a difficult time understanding what life was like in the days before agriculture, when hunting and gathering tribes were spread thinly across the land. Most of what we know comes from studying the modern hunter-gatherers who continue to live in places that the modern economy has not yet touched, like the deep Amazon or the Kalahari. And studies of those Indigenous tribes suggest that their lives are, if not exactly a utopia, more relaxed and frivolous than our own. In abundant years they can work as little as twenty hours a week to obtain the diet they need, and appear to spend a healthy portion of the daytime sleeping. When nature is less forgiving, their lives are correspondingly harder. But technology stands to free us from lean years, and return us, in some sense, to the world we inhabited for 200,000 years. We can – and hopefully will – learn to take the opportunity to indulge our basic humanity.

Yet that doesn't solve the problem of an absence of purpose, of meaning, of a sense that we're cosmically and mystically engaged in some broader, tantalising, energising mission. That was the attraction of the fantasy novels I read as a child. It was the attraction of, or at least the solace provided by, pre-industrial conceptions of humanity's place in creation. That was the thing of which modern industrial growth so clearly deprived us. And what, ultimately, could restore that?

Here I would propose that we're entering a world not so very different from the ones contained in those fantasy novels. It's a world of magic. Are we not able to speak a few words in order to generate music from thin air, or summon to hand something that we want or need? Don't we communicate with mischievous fairies and pixies, who sometimes assist us and sometimes cause trouble: creatures with names like Siri and Alexa? Aren't there powerful wizards who seek to use this magic to shape the world around us in ways we scarcely understand? Doesn't it seem as though some of these wizards, carried away by power or a sense of their own destiny, threaten to cast the realm into darkness?

And we – we are the heroes of the story; not great sword-wielding warriors, but heroes like Tolkien's hobbits, normal people of no particular ambition who have been given an important task: to make sure that the good magic triumphs over the bad, and that everything works out in the end.

Does that sound silly? Perhaps it does, but I think it's worth taking seriously.

What does our quest entail? First, we must all recognise that our true task is not the work we do as cogs in a machine, trying to earn a little more and buy a little more. Our true and enduring task is more important: to keep our realm peaceful, free and prosperous. We have to find allies who are willing to help us, to build fellowships with beings of all sorts. We have to work together to overcome setbacks, and to try to understand when and how magic can be used well and when it's too dangerous and corrupting to be trusted to wizards or, perhaps, to anyone. We have to resist temptation, because power-hungry users of dark magic can offer us rich inducements to abandon our quests. We have to recognise that dark forces never rest for long, and so we need to build institutions – sisterhoods and brotherhoods – that will survive for generations and help future heroes in their quests.

To make it a bit less abstract: technology is in many ways like magic. It's wielded by people who study its dark arts and utter phrases that most of us cannot understand. It can give us unusual powers and be used for good and evil. It is, increasingly, all around us. The industrial machine of which we've been a part doesn't see technology as magic; it sees it as a tool that can be used to produce ever more. According to the logic of the machine, technology will get better until maybe none of us need to work, and then we have to figure out what to do with ourselves.

But that's not right. Rather, the more powerful technology becomes, the harder we must all work to keep society from being overwhelmed by it. We have a very real, very crucial quest ahead of us, to protect ourselves from being destroyed by dark magic. We have to work together to build fellowships in order to



learn about and manage this magic and make sure it's used for good. Call those fellowships what you want: orders, guilds, unions, parties, movements, whatever. But it's critical that we all understand that reclaiming our humanity, and making the world a beautiful place, means working to build up society and affirm our own strength as participants within it. It's a job for heroes, and perhaps, if we do it well, they'll sing songs about us in the future, telling our tale.

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### Ryan Avent

Ryan Avent is Senior Editor and Free Exchange columnist at *The Economist*, where he has covered the global economy since 2007. His work has appeared in *The New York Times*, *The Washington Post*, *The New Republic*, *The Atlantic* and *The Guardian*. In his latest book, *The Wealth of Humans: Work and its Absence in the Twenty-First Century*, he disputes the idea that the digital revolution is different from any other, and in addressing the difficult questions about the increasing abundance of labour and what this means politically, economically and socially, he argues that our age is very much like that of the industrial revolution.

# Self-repairing Cities



Image courtesy of Ruby Wright

So much of human history has been taken up with inventing and making new stuff, that now we have rather a lot of it: it fills our homes, our offices, our hospitals – which is all fine except that looking after it all has become onerous. Our cars have become more reliable, more economical and more comfortable, but they've also become more complicated – so much so that repairing them requires specialist diagnostic equipment. Similarly, when our phones break, it's beyond most people's ability to repair them. Even manufacturers would rather replace something than repair it. Infrastructure still gets repaired, but this too is becoming increasingly difficult and expensive. So what is the answer? Should we try to call a halt to this increasing complexity of our material world? There are many who advocate this, but I'm not one of them. My research aims do the opposite: to help create materials and engineering systems that are complex enough to sense when they're damaged, and are able to repair themselves. The main drivers of such self-healing technology are economic and environmental, and it promises to yield cities that are more like forests, in that they're self-sustaining eco-systems.

In the twentieth century, materials were invented that can respond to changes in their environment – they're called 'smart materials'. Later, it was realised that smart materials had been around for thousands of years. A good example is the lime mortar that was historically used to cement bricks and stone together to create buildings and bridges. It starts off as a liquid – a mixture of calcium hydroxide, sand and water –

which, through a chemical reaction, transforms into a hard ceramic that binds masonry together. So far, so normal, but what happens next is interesting. If the foundations of a building move over time, or the building experiences an earthquake, cracks open up between the lime mortar and the masonry. This allows a wall, for instance, to shift instead of collapse. Then, over time, the cracks heal up and the new shape of the wall becomes permanent. The autonomous repair comes about as a result of a crystallisation process inside the material that harnesses damp air to react with unreacted lime inside the mortar. What this means in practice is that walls can maintain their integrity through thousands of years in the face of changes in their stress loading.

The idea of engineering new smart materials that react to damage in a similar way to lime mortar has accelerated in the past decade. The aerospace industry has been developing self-healing composites as a way to deal with microscopic cracks that grow in aircraft fuselages. Such self-healing materials not only offer improved safety, but also increase the life-span of the aircraft, and so reduce ownership costs. These technologies work by incorporating microcapsules of liquid resin inside the material and by coating the reinforcing fibres inside the composite with a catalyst. In the event of a crack forming, the microcapsules burst open and liquid resin flows into contact with the fibres; the catalyst then causes the resin to solidify rapidly and so heal the crack. At present, this only works for micro-cracks because the resin capsules are so small. But there have been versions developed in which the liquid resin is continuously pumped through tubes inside a composite material, in much the same way that our blood is pumped through our veins. By imitating the clotting mechanism that our bodies employ to heal a wound, these smart composites are able to self-repair.

Mimicking a vascular system is just one way in which the growing sector of self-healing materials takes inspiration from biological organisms. The development of self-healing concrete is another example. It began when scientists started to investigate the types of life forms that can survive extreme conditions. A bacterium called *bacillus pasteurii* was discovered to be able to withstand highly alkaline environments, as high as those found in concrete. The bacterium also has another extraordinary property: it excretes a mineral called calcite, a constituent of concrete. These unusual properties have made the production of self-healing concrete viable through the incorporation of the *bacillus pasteurii* inside the concrete. Under normal conditions, the bacteria lie dormant, and can do this for decades. But if a small crack opens up in a bridge, tunnel or building made from this self-healing concrete, the bacteria are exposed to humid air and so wake up. They look for food and find it in the form of starch capsules left inside the concrete when it was manufactured. They eat the food and excrete calcite. Then they eat their way out of the crack, arriving at the surface to leave pristine material behind them. This self-repairing mechanism has been shown to restore 90% of the concrete's strength.

Infrastructures are a major application for self-healing materials not just because they're associated with major repair bills – in the UK alone it's estimated that the repair and maintenance of structures costs £40 billion a year – but also because during repair, the services provided by such infrastructures become unavailable. This impact is felt particularly by users of rail and road, which are used continuously, and so closing parts of a rail network even on the weekends is very disruptive. Similarly, lane closures of motorways causes disruption, economic impact and pollution due to traffic jams. Wouldn't it be nice if our roads, and indeed all infrastructures, repaired themselves? This is the aim of a major grand challenge project funded by the UK's Engineering and Physical Sciences Research Council, led by Leeds University, and with the engineers from Southampton, Birmingham, and my institute at UCL all part of a research consortium. The research project also includes Leeds City Council. They're making the city a test-bed for the new technologies we develop. The reason why the Council is so enthusiastic is that it's painfully aware of how much of its annual budget goes on repair and maintenance – it runs into tens of millions of pounds. It sees an opportunity to slash this bill drastically by creating city-wide autonomous repair systems that do more than repair roads and bridges and act like a metropolitan immune system.

To see how this can work in a city environment, consider a pothole that develops in one of the city's streets. At the moment, this must be manually identified, reported, added to a list of road repairs that need to be carried out. An assessment of the urgency, the cost of closing the road, and the cost of sending out a truck and a repair crew must be carried out. The outcome of this assessment affects the likelihood of this repair being performed in that financial year. But of course, if not dealt with, the pothole isn't going to heal itself; in fact, it will only get bigger and more expensive to repair. Now, consider an alternative future where information from a driverless vehicle that continually surveys the city infrastructure identifies the pothole at an early stage. The information of the size and shape of the nascent pothole is relayed to another autonomous vehicle that's deployed at night when traffic flow is low. It locates the pothole, stops for a few minutes using hazard lights, and then uses a 3D printer to deliver tar to exactly repair the hole. By repairing it at an early stage before it has become big, it saves money by preventing the congestion caused by road closure.

But is it possible to 3D print tar accurately into a hole of a defined size? Working out how to do that is our job in the research consortium. We're making good progress on this, but what has already become clear is that we needn't be confined to repairing the roads. Our 3D printing systems fit on a drone, and so using tar to repair flat roofs and other hard-to-access infrastructure is possible too. In fact, repair drones look very promising as a way for complex cities like Leeds to reduce their repair bills. Take, for example, something as seemingly trivial as a roof gutter blocked by falling leaves. After a while, if not addressed, water overflows and pours down the outside of the building, this causes water infiltration, dampness, peeling plaster and internal mould growth. Finally, after several years the situation gets bad enough for the Council to act, but now the cost is a hundred times higher than clearing a gutter. A drone equipped with the ability to clear leaves and repair a leaky drain sounds like an insignificant piece of technology, but its impact on the repair and maintenance bill of cities like Leeds could save them millions. That's why Leeds City Council is in the project: it sees the future of infrastructure repair as being more autonomous.

This all seems a long way from the simple self-healing lime mortar, but in my view, not only is it a possible future, it's the only future we can afford. Cities today are complex assemblies of services delivering electricity, water, gas, transport, food and healthcare. As expectations have increased for higher quality of life, so has the complexity of infrastructure that supports it – in effect, the amount of infrastructure per person has increased. But as material complexity has increased, our ability to manage that complexity, and in particular, to repair interrelated systems has not kept pace. If you compare a city to a living organism, the difference is obvious. In our bodies, most of the repair that goes on is autonomous: our bodies detect damage and employ systems to repair it. Occasionally, of course, we do need radical intervention that requires surgery, but the reason why we live so long is that our bodies are constantly self-repairing. Crucially, our body's repair systems intervene before a problem becomes critical.

Material complexity isn't just a challenge of large engineering systems like cities; it's also manifest in smaller objects such as cars, computers and phones. As the electronics and power requirements have become ever more complex, so it has become expensive to repair a car or a smart phone. This has led to shorter lifespans for these technologies. For instance, smartphones are used on average for eighteen months before being replaced. This business model may be lucrative for manufacturers, but it doesn't make much economic sense for the rest of us. Nor is it good for the environment, since the material complexity makes it more difficult and energy-intensive to recycle. Why can't a phone last for ten years like a car, and why can't a car last for a hundred years like a house? It all comes down to the cost and viability of repairs. A truly 'smart' phone would repair itself, and surely, as with cities, this is the only economically sustainable future.

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### Mark Miodownik

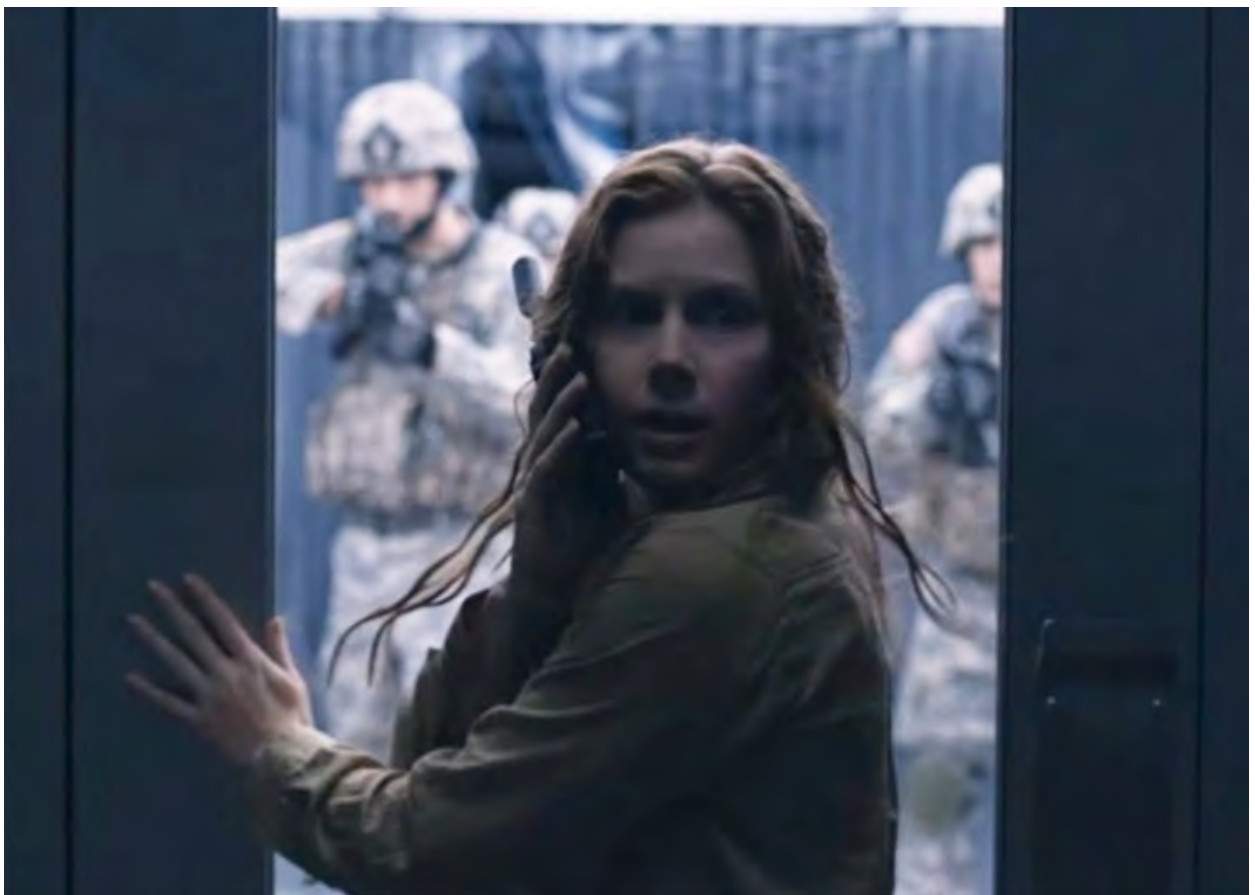
Mark Miodownik is a materials engineer and Professor of Materials and Society at University College London, where he directs the Institute of Making. His current research interests are animate materials, innovative manufacturing and sensoaesthetic materials. He has written for *The Observer*, *The Times*, *The Wall Street Journal* and *The Guardian*, and is a regular presenter of science and engineering programmes on BBC TV. His *New York Times* bestselling book *Stuff Matters: The Strange Stories of the Marvellous Materials that Shape Our Man-made World* won the 2014 Royal Society Winton Prize for Science Books.

**Alien Speak:  
Linguist Dr Jessica  
Coon on  
Villeneuve's  
ARRIVAL**

*[Sloan Science & Film Editor's Note: Science & Film commissioned this article from McGill University Professor of Linguistics Dr Jessica Coon because she advised on the character played by Amy Adams – a linguist named Dr Louise Banks – in Denis Villeneuve's film ARRIVAL. In the film, Dr Banks tries to communicate with an alien spacecraft that has landed in the United States. ARRIVAL premiered at the Venice Film Festival and is in wide release.]*

Just after finishing my sophomore year in college, I arrived in Chiapas, Mexico, for my first summer of linguistic fieldwork. My linguistics professor, renowned Mayanist John Haviland, drove us for six hours down winding mountain roads from the city of San Cristóbal de las Casas into the hot Chiapan lowlands, to a Ch'ol-speaking Mayan village called Campanario. After negotiating my stay with a surprised host family to be, Haviland got ready to head back to the city. Overwhelmed, with only rudimentary Spanish and my courage quickly slipping away, I asked him to remind me again what exactly I was supposed to do. 'Make some friends', he said casually. 'Learn some Ch'ol'.

I have to imagine that Dr Louise Banks (played by Amy Adams), the fictional linguist and protagonist of the movie *ARRIVAL*, knows the feeling. A similar mixture of panic, excitement and self-doubt must have begun to settle in as she was being rushed by military helicopter from her comfortable university office to the site of an enormous alien spaceship. There, she is tasked with deciphering the language of the recently-arrived Heptapods. In many ways, though, the comparison is hardly fair; I had Universal Grammar on my side.



Language sets humans apart from all other species. Human babies – remarkably unskilled at basic tasks like tying their shoes and adding sums of numbers – effortlessly learn any language to which they are sufficiently exposed. While children make mistakes along the path of acquisition, even these mistakes follow certain patterns and developmental trends. By the age of five, nearly every child has mastered a complex system that organises sounds into sentences, and can produce and comprehend an infinite

number of novel utterances – a feat that anyone who has tried to learn a new language as an adult can appreciate.

What linguists call ‘Universal Grammar’ is the human capacity for language: core principles that all human languages share. At first glance, languages show a high degree of variation – the grammar of English is different from the grammar of Japanese, which is different from the grammar of Inuktitut –but linguists have discovered that languages vary in limited and constrained ways. In fact, languages tend to follow certain recipes in their grammars. The syntax of Japanese looks remarkably like the syntax of Quechua, an unrelated language indigenous to the Andes mountains in South America. Niuean, a Polynesian language spoken on the island of Niue, shares a number of grammatical properties with Ch’ol, the Mayan language that I had arrived to study. Findings like these lead linguists to hypothesise that variation is constrained to certain parameters. Children acquiring language have a head-start: they come hard-wired with the basic building blocks of language.

Linguists working on under-studied human languages benefit in different ways from the same head-start. A linguist who learns that a subject of a transitive sentence in Ch’ol triggers a special prefix on the verb is not surprised to also learn that possessors trigger an identical prefix on a possessed noun – because exactly this pattern is found in unrelated languages around the world. But when it comes to describing the grammar of *ARRIVAL*’s Heptapods, even the most basic human language distinction, like the difference between ‘nouns’ and ‘verbs’, is no longer a given. Linguists who coined the term ‘Universal Grammar’ had only the universe of human beings – not Heptapods – in mind.



In *ARRIVAL*, Dr Banks approaches the daunting task of deciphering the Heptapod language as any good fieldworker would. Inside the Heptapod shell, she takes off her space suit and approaches the glass divide. While theoretical linguists are interested in the abstract properties of language – the formal system that allows us to put sounds together to make words, and words together to make sentences – access to that system is not direct, but must be done by careful work with native speakers of the language in question. As Dr Banks knows, establishing a positive working relationship is the first step in any data-gathering activity. Dr Banks also knows that progress doesn’t happen overnight. Despite the urgent orders of military generals to get to the point – why are they here? – Dr Banks insists that she must start with the

basics. Even seemingly benign concepts, like asking a question, may have no direct correlate in Heptapod.

It is this uncertainty about how an alien language might differ from human language that makes the premise of *ARRIVAL* so thought-provoking. The film, based on a short story by Ted Chiang, draws on the Sapir-Whorf Hypothesis: the idea that the language we speak constrains our view of the world. Among human languages – which follow the same underlying principles, and differ in interesting but ultimately constrained ways – this proposal has been shown to be not only wrong, but dangerous. (John H. McWhorter’s book *The Language Hoax: Why the World Looks the Same in Any Language* offers an accessible and fascinating look into why.) In fact, based on the deep commonalities among human languages, Noam Chomsky (the linguist shown in the photograph above Dr Banks’ desk) has famously stated that a visiting Martian (or in the case of *ARRIVAL*, Heptapod) would view all human speech as essentially dialects of the same language. But when it comes to the language of the Heptapods, even the most skilled linguist has to admit that all bets are off. Will aliens have nouns and verbs, as we do, or understand the difference between a statement and a question, as we do?



Over the years since my first summer in Chiapas, I have continued working on Ch’ol. While learning Ch’ol did not alter my perception of reality, aspects of Ch’ol grammar have helped to shape linguistic theory. The scientific study of human language is relatively new, and many of the working theories about the principles and parameters of human language were developed on the basis of better-studied languages like English and French. Though huge leaps in understanding have been made in recent decades, it is crucial that linguists develop and test theories on a typologically and genealogically diverse set of languages. The theory of human language must account for the fact that children can acquire any language with ease – Niuean and Ch’ol as well as Russian and Spanish. In order to fully understand Universal Grammar, detailed work on the world’s under-studied languages is critical.

This study is urgent. It is predicted that of the more than 6,000 languages spoken in the world today, up to 90% will no longer be spoken by the end of this century – unless big steps are taken to reduce current trends of language loss. In addition to contributing to our understanding of the range and limits of possible



language variation, a growing body of research has shown that the health of a community's indigenous language is a good predictor of other health and wellness factors. For indigenous communities, language reclamation may lead to a strengthened cultural identity and the empowerment of a historically marginalised population.

Though in the end it is communities, not outsider linguists, who revitalise a language, linguists can help. That first summer in Chiapas I did make friends – lifelong ones, along with a handful of god-children, one of whom is already a vocal advocate for education in Ch'ol, and is planning to be a linguist herself someday. As the film *ARRIVAL* shows, language is a powerful tool.

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### Jessica Coon

Jessica Coon is Associate Professor of Linguistics at McGill University and holds the Canada Research Chair in Syntax and Indigenous Languages. Her research focuses on topics in syntactic theory, with a special focus on languages of the Mayan family. In addition to theoretical work, she leads collaborative language documentation and revitalisation projects with Indigenous communities in Canada and Latin America. In 2015 she worked as the scientific consultant for the film *Arrival*, which stars Amy Adams as a linguistic fieldworker who is recruited by the military to decipher the language of the recently arrived Heptapods. Since the film, Coon has helped create a public dialogue about linguistics and endangered languages through interviews and written work in outlets including *Wired Magazine*, *The Washington Post* and CBC's *The Current*.

# Outside the Hit Factory: The Playlist

A list of chart-toppers entitled “Outside the Hit Factory”, this contribution is a response to the question: why (more) Katy Perry? It reflects on the use of consumer-behaviour data and neurobiology research in the production of pop songs that are guaranteed to be pleasing to as many listeners as possible – and to avoid confronting listeners with songs that they haven't already been conditioned to like. The producers of hits like “Roar” and “Can’t Feel My Face” might design insipid products that manipulate our basic impulses, but they also devise an emotional Esperanto that merges all our voices into a single chorus. You might ask: do I want to hear a song that perfectly conforms to a numeric representation of my personality? Or a song that transports me to a club where nearly all of humanity mouth the words and grin as if just graduated?

1. Katy Perry, ‘Roar’, *Prism*, 2013. Written by Perry, Lukasz Gottwald, Max Martin, Bonnie McKee and Henry Walter. Produced by Dr. Luke, Martin and Cirkut. Spotify plays: 405,193,069.
2. Ariana Grande featuring Zedd, ‘Break Free’, *My Everything*, 2014. Written by Grande, Zedd, Max Martin and Savan Kotecha. Produced by Zedd and Max Martin. Spotify plays: 447,848,205.
3. Judy Garland, ‘Over the Rainbow’, *The Wizard of Oz*, 1940. Composed by Harold Arlen with lyrics by Yip Harburg. Spotify plays: 8,299,404.
4. Britney Spears, ‘...Baby One More Time’, *...Baby One More Time*, 1999. Written by Max Martin. Produced by Martin and Rami. Spotify plays: 175,471,000.
5. The Weeknd, ‘Can’t Feel My Face’, *Beauty Behind the Madness*, 2015. Written by Ali Payami, Savan Kotecha, Max Martin, Abel Tesfaye and Peter Svensson. Produced by Martin and Payami. Spotify plays: 860,427,035.
6. Rihanna, ‘Bitch Better Have My Money’, 2015. Written by Jammie Pierre, Bibi Bourelly, Rihanna, Travis Scott, Kanye West and WondaGurl. Produced by Deputy with West, Scott and WondaGurl. Spotify plays: 394,080,268.
7. Novo Talos, ‘Carry On’, 2018. Instrumental track created by and for Spotify. Spotify plays: 6,831,990.
8. Benoît Carré with Flow Machines (Sony CSL), ‘Daddy’s Car’, 2017. Produced by Flow Machines. Spotify plays: not listed on Spotify.
9. Lil Miquela, ‘Not Mine’, 2017. Spotify plays: 1,656,698.
10. Katy Perry and Migos, ‘Bon Appetit’, *Witness*, 2017. Written by Katy Perry, Quavious Marshall, Kirsnick Ball, Kiari Cephus, Max Martin, Shellback, Oscar Holter and Ferras Alqaisi. Produced by Martin, Shellback and Holter. Spotify plays: 156,028,180.

## **1. Katy Perry, 'Roar', *Prism*, 2013. Written by Perry, Lukasz Gottwald, Max Martin, Bonnie McKee and Henry Walter. Produced by Dr. Luke, Martin and Cirkut.**

I used to bite my tongue and hold my breath  
Scared to rock the boat and make a mess  
So I sit quietly, agree politely  
I guess that I forgot I had a choice  
I let you push me past the breaking point  
I stood for nothing, so I fell for everything

You held me down, but I got up (HEY!)  
Already brushing off the dust  
You hear my voice, you hear that sound  
Like thunder gonna shake the ground

You held me down, but I got up (HEY!)  
Get ready 'cause I've had enough  
I see it all, I see it now

I got the eye of the tiger, a fighter, dancing through the fire  
'Cause I am a champion and you're gonna hear me roar  
Louder, louder than a lion  
'Cause I am a champion and you're gonna hear me roar  
Oh oh oh oh oh oh oh  
Oh oh oh oh oh oh oh  
Oh oh oh oh oh oh oh  
You're gonna hear me roar

Now I'm floating like a butterfly  
Stinging like a bee I earned my stripes  
I went from zero, to my own hero

You held me down, but I got up (HEY!)  
Already brushing off the dust  
You hear my voice, you hear that sound  
Like thunder gonna shake the ground  
You held me down, but I got up (HEY!)  
Get ready 'cause I've had enough  
I see it all, I see it now

I got the eye of the tiger, a fighter, dancing through the fire  
'Cause I am a champion and you're gonna hear me roar  
Louder, louder than a lion  
'Cause I am a champion and you're gonna hear me roar  
Oh oh oh oh oh oh oh  
Oh oh oh oh oh oh oh  
Oh oh oh oh oh oh oh  
(You're gonna hear me roar)  
Oh oh oh oh oh oh oh  
Oh oh oh oh oh oh oh  
(You'll hear me roar)  
Oh oh oh oh oh oh oh  
You're gonna hear me roar...

Ro-oar, ro-oar, ro-oar, ro-oar, ro-oar

I got the eye of the tiger, a fighter, dancing through the fire  
'Cause I am a champion and you're gonna hear me roar  
Louder, louder than a lion  
'Cause I am a champion and you're gonna hear me roar  
Oh oh oh oh oh oh oh  
Oh oh oh oh oh oh oh

Oh oh oh oh oh oh oh  
(You're gonna hear me roar)  
Oh oh oh oh oh oh oh  
Oh oh oh oh oh oh oh  
(You'll hear me roar)  
Oh oh oh oh oh oh oh  
You're gonna hear me roar...

## **2. Ariana Grande featuring Zedd, 'Break Free', *My Everything*, 2014. Written by Grande, Zedd, Max Martin, and Savan Kotecha. Produced by Zedd and Max Martin.**

If you want it, take it  
I should've said it before  
Tried to hide it, fake it  
I can't pretend anymore

I only wanna die alive  
Never by the hands of a broken heart  
Don't wanna hear you lie tonight  
Now that I've become who I really am

[x2:]  
This is the part when I say I don't want ya  
I'm stronger than I've been before  
This is the part when I break free  
'Cause I can't resist it no more

You were better, deeper  
I was under your spell  
Like a deadly fever, yeah, babe  
On the highway to hell, yeah

I only wanna die alive  
Never by the hands of a broken heart  
Don't wanna hear you lie tonight  
Now that I've become who I really am

[x2:]  
This is the part when I say I don't want ya  
I'm stronger than I've been before  
This is the part when I break free  
'Cause I can't resist it no more

No more, baby, ooh

Thought on your body



I came alive  
It was lethal  
It was fatal  
In my dreams it felt so right  
But I woke up every time

Oh, baby

[x2:]

This is the part when I say I don't want ya  
I'm stronger than I've been before  
This is the part when I break free  
'Cause I can't resist it no more

### **3. Judy Garland, 'Over the Rainbow', *The Wizard of Oz*, 1940. Composed by Harold Arlen with lyrics by Yip Harburg.**

Somewhere over the rainbow way up high  
There's a land that I heard of once in a lullaby  
Somewhere over the rainbow skies are blue  
And the dreams that you dare to dream really do come true

Someday I'll wish upon a star  
And wake up where the clouds are far  
Behind me  
Where troubles melt like lemon drops  
Away above the chimney tops  
That's where you'll find me

Somewhere over the rainbow bluebirds fly  
Birds fly over the rainbow.  
Why then, oh, why can't I?

If happy little bluebirds fly  
Beyond the rainbow.  
Why, oh, why can't I?

### **4. Britney Spears, '...Baby One More Time', *...Baby One More Time*, 1999. Written by Max Martin. Produced by Martin and Rami.**

Oh, baby, baby  
Oh, baby, baby

Oh, baby, baby,  
How was I supposed to know  
That something wasn't right here?  
Oh, baby, baby,  
I shouldn't have let you go

And now you're out of sight, yeah

Show me how you want it to be  
Tell me, baby,  
'Cause I need to know now, oh, because...

My loneliness  
Is killing me and I  
I must confess  
I still believe, still believe  
When I'm not with you I lose my mind  
Give me a sign  
Hit me, baby, one more time

Oh, baby, baby  
The reason I breathe is you  
Boy, you got me blinded  
Oh, pretty baby,  
There's nothing that I wouldn't do  
It's not the way I planned it

Show me how you want it to be  
Tell me, baby,  
'Cause I need to know now, oh, because...

My loneliness  
Is killing me and I  
I must confess  
I still believe, still believe  
When I'm not with you I lose my mind  
Give me a sign  
Hit me, baby, one more time

Oh, baby, baby  
Oh, baby, baby  
Ah, yeah, yeah

Oh, baby, baby,  
How was I supposed to know?  
Oh, pretty baby,  
I shouldn't have let you go

I must confess  
That my loneliness  
Is killing me now  
Don't you know I still believe  
That you will be here

And give me a sign?  
Hit me, baby, one more time

My loneliness  
Is killing me and I  
I must confess  
I still believe, still believe  
When I'm not with you I lose my mind  
Give me a sign  
Hit me, baby, one more time

I must confess  
That my loneliness  
Is killing me now  
Don't you know I still believe  
That you will be here  
And give me a sign?  
Hit me, baby, one more time

**5. The Weeknd, 'Can't Feel My Face', *Beauty Behind the Madness*, 2015. Written by Ali Payami, Savan Kotecha, Max Martin, Abel Tesfaye and Peter Svensson. Produced by Martin and Payami.**

And I know she'll be the death of me, at least we'll both be numb  
And she'll always get the best of me, the worst is yet to come  
But at least we'll both be beautiful and stay forever young  
This I know, (yeah) this I know

She told me, 'Don't worry about it.'  
She told me, 'Don't worry no more.'  
We both knew we can't go without it  
She told me, 'You'll never be alone.'

I can't feel my face when I'm with you  
But I love it, but I love it, oh  
I can't feel my face when I'm with you  
But I love it, but I love it, oh

And I know she'll be the death of me, at least we'll both be numb  
And she'll always get the best of me, the worst is yet to come  
All the misery was necessary when we're deep in love  
Yes, I know (yes, I know), girl, I know

She told me, 'Don't worry about it.'  
She told me, 'Don't worry no more.'  
We both knew we can't go without it  
She told me, 'You'll never be alone.'

I can't feel my face when I'm with you  
But I love it, but I love it, oh  
I can't feel my face when I'm with you  
But I love it, but I love it, oh

I can't feel my face when I'm with you  
But I love it, but I love it, oh  
I can't feel my face when I'm with you  
But I love it, but I love it, oh

She told me, 'Don't worry about it.'  
She told me, 'Don't worry no more.'  
We both know we can't go without it  
She told me, 'You'll never be alone.'  
Whoa

I can't feel my face when I'm with you  
But I love it, but I love it, oh  
I can't feel my face when I'm with you  
But I love it, but I love it, oh

I can't feel my face when I'm with you  
But I love it, but I love it, oh  
I can't feel my face when I'm with you  
But I love it, but I love it, oh

**6. Rihanna, 'Bitch Better Have My Money', 2015. Written by Jamille Pierre, Bibi Bourelly, Rihanna, Travis Scott, Kanye West and WondaGurl. Produced by Deputy with West, Scott and WondaGurl.**

Yayo, yayo  
Moo-la-lah  
Yayo

Bitch better have my money!  
Y'all should know me well enough  
Bitch better have my money!  
Please don't call me on my bluff  
Pay me what you owe me  
Ballin' bigger than LeBron  
Bitch, give me your money  
Who y'all think y'all frontin' on?  
Like brrap, brrap, brrap

Louis 13 and it's all on me, nigga you just bought a shot  
Kamikaze if you think that you gon' knock me off the top  
Shit, your wife in the backseat of my brand new foreign car

Don't act like you forgot, I call the shots, shots, shots  
Like blah, brrap, brrap  
Pay me what you owe me, don't act like you forgot

Bitch better have my money!  
Bitch better have my money!  
Pay me what you owe me  
Bitch better have my (bitch better have my)  
Bitch better have my (bitch better have my)  
Bitch better have my money!

Turn up to Rihanna while the whole club fuckin' wasted  
Every time I drop I am the only thing you're playin'  
In a drop top, doin' hundred, y'all in my rearview mirror racin'  
Where y'all at? Where y'all at? Where y'all at?  
Like brrap, brrap, brrap

Louis XIII and it's all on me, nigga you just bought a shot  
Kamikaze if you think that you gon' knock me off the top  
Shit, your wife in the backseat of my brand new foreign car  
Don't act like you forgot, I call the shots, shots, shots  
Like blah, brrap, brrap  
Pay me what you owe me, don't act like you forgot

Bitch better have my money!  
Bitch better have my money!  
Pay me what you owe me  
Bitch better have my (bitch better have my)  
Bitch better have my (bitch better have my)  
Bitch better have my money!

Bitch better have my money!  
Bitch better have my money!  
Pay me what you owe me  
Bitch better have my (bitch better have my)  
Bitch better have my (bitch better have my)  
Bitch better have my money!

Bitch better have my money!  
Bitch better have my money!  
Bitch, bitch, bitch better have my money!  
Yo, that bitch better have my money!  
Hold up  
My money!  
Yo, my money!  
That bitch better have my money!  
Bitch better have my money!



## 7. Novo Talos, 'Carry On', 2018. Instrumental track created by and for Spotify.

No lyrics.

## 8. Benoît Carré with Flow Machines (Sony CSL), 'Daddy's Car', 2017. Produced by Flow Machines.

Ahhhhhh ahhhhhh ahhhhhh

Ahhhhhh ahhhhhh ahhhhhh

Take me to the diamond sky (take me to the diamond sky)

Now I'm gonna figure out (Now I'm gonna figure out)

In daddy's car, it sounds so good

Like something new, it turns me on

Good day sunshine in the backseat car

I wish that road could never stop

Down on the ground

The rainbow led me to the sun

Please mother drive, and then play it again

The taxman unveiled tomorrow, never know

Now I see the other side

Take me to the diamond sky

Now I'm gonna figure out

Take me on a distant sky

Yks dnomaia a no em ekat (x2)

Every day I gotta work downtown

I'm drowning in, the traffic jam

Down on the ground

The taxi leads me to nowhere, man

Please mother drive me, play it again, in your car

There's nothing here, nothing there, and everywhere

Ahhhhhhh

Ahhhhhhh

Ahhhhhhh

Now I see the other side

Take me to the diamond sky (take me to the diamond sky)

Now I'm gonna figure out (Now I'm gonna figure out)

Take me on the distant sky (Take me to the diaaaaamond)

Sky-yyy-yyyyykS  
(eht ot em ekaT) tnatsid a no em ekaT  
Tuo erugif annog m'l woN  
Tuo erugif annog m'l woN  
Yks dnomaid eht ot em ekat  
Yks dnomaid eht ot em ekat  
Eht ot em ekat  
Yks tnatsid a no em ekat  
Tuo erugif annog m'l woH  
Tuo erugif annog m'l woh...

## 9. Lil Miquela, 'Not Mine', 2017.

Not mine, you just wanna waste my time  
Can't let you get away on my dime  
I'm falling, I'm falling, I'm fine  
I'm fine, you know I'll be just alright  
I'm cool, I'm just out here living my life  
    I'm too gone to fall for you  
Came too far to follow you  
You see that I can't be used  
Won't work now, so what's the use?  
Can't keep getting caught up in your issues  
Can't keep calling me with all your bad news  
Got my own problems trying to work through  
And I know what I'm worth so I don't need you  
    Not mine, you just wanna waste my time  
Can't let you get away on my dime  
I'm falling, I'm falling, I'm fine  
I'm fine, you know I'll be just alright  
I'm cool, I'm just out here living my life  
    Why you wanna waste my time  
I been on the grind, yeah  
Should've saw the signs  
Guess they tell me love is blind  
You should choose  
'Cause I'm really not the one you wanna lose  
So gassed up I'm in the club with my pack  
Always had my back when I don't know where you at  
Where you at?  
I can't be your side like that  
We ain't going out like that  
    Not mine, you just wanna waste my time  
Can't let you get away on my dime  
I'm falling, I'm falling, I'm fine  
I'm fine, you know I'll be just alright  
I'm cool, I'm just out here living my life

**10. Katy Perry and Migos, 'Bon Appetit', *Witness*, 2017. Written by Katy Perry, Quavious Marshall, Kirsnick Ball, Kiari Cephus, Max Martin, Shellback, Oscar Holter and Ferras Alqaisi. Produced by Martin, Shellback and Holter.**

Ay, yeah

Katy Perry, Migos, ay

'Cause I'm all that you want, boy

All that you can have, boy

Got me spread like a buffet

Bon a, bon appétit, baby

Appetite for seduction

Fresh out the oven

Melt in your mouth kind of lovin'

Bon a, bon appétit, baby

Looks like you've been starving

You've got those hungry eyes

You could use some sugar

'Cause your levels ain't right

I'm a five-star Michelin

A Kobe flown in

You want what I'm cooking, boy

Let me take you

Under candle light

We can wine and dine

A table for two

And it's okay

If you take your time

Eat with your hands, fine

I'm on the menu

'Cause I'm all that you want, boy

All that you can have, boy

Got me spread like a buffet

Bon appétit, baby

Appetite for seduction

Fresh out the oven

Melt in your mouth kind of lovin'

Bon appétit, baby

So you want some more

Well I'm open 24

Wanna keep you satisfied

Customer's always right

Hope you've got some room

For the world's best cherry pie

Gonna hit that sweet tooth, boy

Let me take you

Under candle light

We can wine and dine  
 A table for two (for two)  
 And it's okay  
 If you take your time  
 Eat with your hands, fine  
 I'm on the menu  
     'Cause I'm all that you want, boy  
 All that you can have, boy  
 Got me spread like a buffet  
 Bon a, bon appétit, baby (bon appétit)  
 Appetite for seduction  
 Fresh out the oven (fresh out the oven)  
 Melt in your mouth kind of lovin' (yeah)  
 Bon a, bon appétit, baby  
     'Cause I'm all that you want, boy  
 All that you can have, boy  
 Got me spread like a buffet  
 Bon a, bon appétit, baby (bon appétit)  
 Appetite for seduction  
 Fresh out the oven  
 Melt in your mouth kind of lovin'  
 Bon a, bon appétit, baby (Quavo)  
     Sweet potato pie (sweet)  
 It'll change your mind (change)  
 Got you running back for seconds (running)  
 Every single night (hey)  
     I'm the one they say can change your life (Takeoff)  
 No waterfall, she drippin' wet, you like my ice? (Blast)  
 Said she want a Migo night, I ask her, 'What's the price?' (Hold on)  
 If she do right, told her get whatever you like (Offset)  
     I grab her legs and now divide, aight  
 Make her do a donut when she ride, aight  
 Looking at the eyes of a dime, make you blind  
 In her spine and I'm on some diamonds change the climate  
     Sweet tooth (sweet), no tooth fairy (no)  
 Whipped cream (whip), no dairy (yeah)  
 She got her hot light on, screaming, 'I'm ready' (hot)  
 But no horses, no carriage  
     'Cause I'm all that you want, boy (all that you want)  
 All that you can have, boy  
 Got me spread like a buffet  
 Bon a, bon appétit, baby (eat it up, eat it up, eat it up)  
 Appetite for seduction  
 Fresh out the oven  
 Melt in your mouth kind of lovin'  
 Bon a, bon appétit, baby (bon appétit)  
     Under candle light

Bon appétit, baby

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### Alexander Provan

Alexander Provan is the Editor and Co-founder of *Triple Canopy* and a contributing editor of *Bidoun*. He is the recipient of a 2015 Creative Capital | Andy Warhol Foundation Arts Writers Grant and was a 2013–15 fellow at the Vera List Center for Art and Politics. Provan's writing has appeared in the *Nation*, *n+1*, *Art in America*, *Artforum*, *Frieze* and in several exhibition catalogues. His work as an individual and with *Triple Canopy* has recently been exhibited and presented at the 14th Istanbul Biennial; Whitney Biennial; Museum Tinguely (Basel); the 12th Bienal de Cuenca; the New Museum (New York); and Kunsthalle Wien (Vienna). His sound work *Measuring Device with Organs* was recently published by Triple Canopy as an LP.

# Colophon



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