



Turbulence

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Vivan Sundaram, *Signs of Fire*,
1984-85. © Vivan Sundaram.
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featured in this issue.

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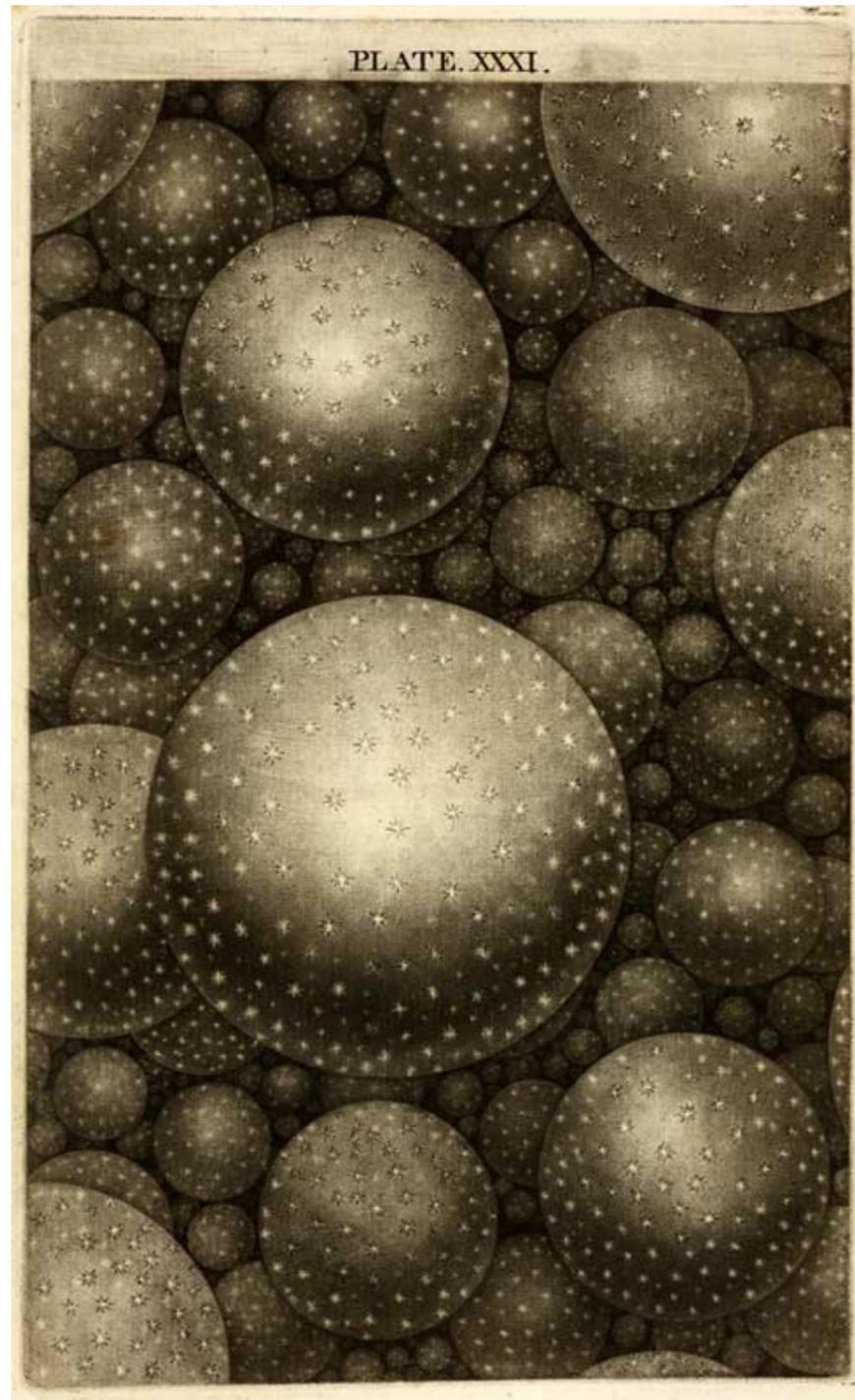
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What could be more turbulent than a virus, wagging its invisible path through our habits: of life, of thought, of space and time? As I write this foreword from Lockdown London, I feel my routines turned upside down, my sense of distance and proximity collapse (never have those nearby seemed so remote and those faraway so close and connected) and my sense of time overturned (how long will this last? what is a long time now? how do we live without knowing where the beginning and the end reside?).

Thinking with turbulence seemed like such a good idea a couple of years ago when our lives (at least in the overdeveloped and privileged world) had a semblance of order. And it has unleashed so much wonderful speculation and thought, from accounts of scientific unpredictability and the joy of unknowability to the graphic inscription of cosmic forces and flows. Artists have gifted us with their images ranging from imaginary ruins and urban chaos culled from commodities and waste to recycled tropes and figures, seized and subverted from canonical histories and genres. Landscape and literature collide, science and fiction face off and up. ‘Turbulence’ serves as a force of iconoclastic upheaval, shifting stale paradigms and sedimented realities. Explosive, exploratory, experimental: it challenges and accosts our assumptions. There is no rest, whether of the earth’s surface or the mind’s depths. In a turbulent imaginary, conflict and contingency are all.

Thinking from our present moment, though, I feel humbled and awed, not only at the creative energy that has led to the production of this issue, but at the exponential rise of the stakes under discussion. We present it at a time when home and work environments have collapsed into one another, our bodies are besieged by sanitization and seclusion, our horizons have shrunk and our imaginations have soared, our anxieties, our fears, our hopes, all mixed in what can only feel like the most tumultuous of times. We had no idea when we set out that we would be tested this way. Perhaps that’s what it means to live in turbulent times. ●



Thomas Wright, *An Original Theory or New Hypothesis of the Universe*, 1750, Lithograph and photographic collage on paper. By permission of the British Library (49 E 15)

Véra Ehrenstein
and Lucy Bollington

Editorial

Violent and unsteady movement of fluids, conflict, confusion,¹ uproar, disturbance, crowd, mob,² agitated and disturbing,³ stormy and unruly,⁴ unstable matter, disorder, messiness.⁵ Grappling with the slippery meaning of turbulence, our attention was drawn to a series of conversations between Michel Serres and Bruno Latour.⁶ In these conversations, the term ‘turbulence’ comes up frequently as Serres comments in one of his books, recently translated in English under the title *The Birth of Physics*,⁷ where he proposes a rereading of *On the nature of things* by Lucretius (c. 60 BCE). Serres identifies in the ancient scientific poem a proto-science of liquids that, for him, resonates with contemporary fluid dynamics. In discussion with Latour, Serres suggests that for Lucretius, ‘turbulence isn’t a system, because its constituents fluctuate, fluid and mobile. Rather, it is a sort of confluence, a form in which fluxes and fluctuation enter, dance, crisscross, making together the sum and the difference, the product and the bifurcation, traversing scales of dimension. It recruits at the very heart of chaos by ceaselessly inventing different relations; it returns to it as well.’⁸ We highlight this definition (of a sort) here for its evocative quality, to help us think about the many forms of turbulence explored in this issue, both physical and cultural turbulences, individual and collective, marking landscapes and moving bodies.

While we originally thought to order the issue to circulate smoothly from the natural world to politics and aesthetic, we eventually chose to really embrace the idea of turbulence. The dream (or

fantasy) of linearity is thus abandoned for more irregular motions and possible countercurrents. We begin with Arthur Petersen, who introduces us to fluid dynamics, a scientific discipline whose purpose is to understand turbulent flows. In these flows, fluid particles move neither in an orderly fashion nor in straight lines. Instead, particles are mixed laterally, circular patterns appear, chaotic changes occur, as in the air turbulence familiar to every aeroplane passenger. Turbulent flows can be observed in many situations, at different scales, in natural or engineered processes. Some are planetary, like the phenomenon of atmospheric convection examined by Petersen; others more ordinary, like water whirling down a sink drain. These fluid motions elude full scientific mastery, which may be a reason for the sense of beauty to which they give rise among those who study them. As Alison Wright shows, this tension between technical control and awe can already be identified in the work of the prolific engineer and artist Leonardo da Vinci. His drawings of whirlpools and unleashed climatic show the force of ‘fortuna’ and present natural disasters as signs of political troubles. Da Vinci’s deluges are then put into conversation with Vivan Sundaram’s fires and charred landscapes. These landscapes are rendered through the very materials - charcoal and burned engine oil - capable of causing such devastation as combustible substances and resources over which wars are declared. Wright points out that, though they were produced in response to acts of human violence, Sundaram’s artworks take on new meanings in the Anthropocene, when, in part due to the burning of fossil fuels, the distinction between natural and manmade disasters has become harder than ever to recognize.

Grand physical phenomena give place to the power of everyday resistance in Katie Stone’s piece. Stone brings together the works of Octavia Butler and Ursula Le Guin to foreground two female figures: Martha, a scrupulous writer chosen by

God to help humankind out of its self-destructiveness, and Odo, a short, elderly philosopher and anarchist who started a revolution. Both are from the margins and come to be the ones through whom imperfect improvement is possible. Personal practices of political turbulence need not be dramatic or 'big' to be world-changing, an idea powerfully captured by Zanele Muholi's lying Black and blackened naked body. Their dreaming echoes the story of Martha allowing people to seek personal satisfaction in their dreams so that when awake they can be wiser. By escaping the viewer's gaze, the dreaming face resists control and the picture can also be read as a subversion of objectification. The trouble with deciding for others and doing good is further explored in Mohammed Rashed's piece on psychiatry. Rashed argues that the willingness to help cannot be innocent. The psychiatric encounter is inherently turbulent as it imposes its framing of what normal behaviour ought to be upon a person who is considered to be deviating from it. The piece is a call for a better psychiatry, one that acknowledges (and maybe mitigates) its own violence and limits.

We then return to physical science, technological hubris and landscapes. Whereas Sundaram's *Black Gold* provided a representation of flooded cities being tested by the intensification of extreme weathers, Polly Gould and Agnès Villette weave together fragments of history, conceptual thinking, and potent images, to take us on a journey across landscapes that might look more serene at first. With Gould we embark on an expedition to Antarctica, in the footsteps of late nineteenth- and early twentieth-century British explorers and scientists. In that unpopulated, apparently still and lifeless continent, the future of humanity is now at stake: its ice sheets' rapid melting may greatly accelerate the rise of sea levels on our warming Earth, producing a tipping point for the climate. Environmental damage is also at the centre of Villette's piece, which draws our attention to the great acceleration (post-

1950 global changes) and the nuclear age in France. As we wander with her across the Norman Peninsula, empty roads, fences, pipes, a glimpse of a distant industrial facility, and a Geiger counter make us perceive the invisible but destructive work of radioactivity. Spent nuclear fuel is brought from across the world to this eerie, seemingly unspoiled landscape to be reprocessed, while radiotoxic isotopes move in the opposite direction, flowing away through the river's water. This is low-key turbulence.

The issue ends with two pieces tackling pressing political questions. The conversation between Ama Budge and Xine Yao on trans inclusion puts the insightful work of Sci-fi/Speculative Fiction novelist Octavia Butler centre stage again. Budge and Yao raise a series of issues about reproduction, power, sex, race, and gender. Denoting fluidity, the blurring of boundaries, and the crossing of divides, the prefix 'trans' opens up new avenues for thinking about turbulence. The concluding piece by Maja Fowkes circles, or rather spirals, back to earthly matters. By focusing on Eastern European art, Fowkes alerts us to the close relationship between two emergencies: the climate emergency and the democratic emergency.⁹ In both pieces, the political potency of art is called upon to make us feel the need to remain vigilant in these turbulent times, when taken-for-granted achievements are just not enough and can also rapidly be undone.

To end this editorial, Serres's evocative style and ecological thinking can be helpful again, as when he suggests that '[w]e have become the tragic deciders of life or death, masters of the greatest aspects of our former dependence: Earth, life and matter, time and history, good and evil. [...] We are now, admittedly, the masters of the Earth and of the world, but our very mastery seems to escape our mastery. We have all things in hand but we do not control our action. Everything happens as though our powers escape our powers.'¹⁰ Using the indeterminate pronoun 'we' is always problematic; responsibilities for

the current situation(s) are unequally distributed across the world and within societies.¹¹ Serres's diagnosis is nevertheless a useful warning against the flawed idea(1) of linearity and control, a reminder that 'projects, sometimes good and often intentional, can backfire or unwittingly cause evil.'¹² Acknowledging such turbulences is necessary; it requires for us, in academia, to be turbulent, and to 'stand up, run, jump, move, dance! Like the body, the mind needs movement, especially subtle and complex movement.'¹³ And this is precisely what this issue aims to do.

*
Postscript: We were finalizing this publication when all of sudden our daily routines, like those of billions other people across the world, were profoundly disrupted. Recruiting at the very heart of chaos, to paraphrase Serres, genetic mutations allowed a virus to jump from animal species to humans and thrive in its new hosts. The theme of turbulence could not be timelier as the pandemic caused by SARS-CoV-2 unfolds, revealing what 'life without the promise of stability', as Tsing puts it,¹⁴ feels like.

1 Nouns used in the OED definition of 'Turbulence'

2 Turba (Latin)

3 Turbare (Latin)

4 Turbulentus (Latin)

5 Our own interpretations

6 Michel Serres and Bruno Latour, *Conversations on science, culture, and time* (Ann Arbor: University of Michigan Press, 1995)

7 Michel Serres, *The birth of physics* (Manchester: Clinamen Press, 2000)

8 Serres and Latour, *Conversations*, p.107

9 Bruno Latour, *Down to Earth: Politics in the new climatic regime* (London: Polity Press, 2018)

10 Serres and Latour, *Conversations*, p.171

11 Kathryn Yusoff, *A billion black Anthropocenes or none* (Minneapolis: The University of Minnesota Press, 2018)

12 Serres and Latour, *Conversations*, p.171

13 Serres and Latour, *Conversations*, p.107

14 Anna Lowenhaupt Tsing, *The mushroom at the end of the world: On the possibility of life in capitalist ruins* (Princeton University Press, 2015), p. 2

Arthur Petersen 'Big Whirls have Little Whirls'

The phenomenon of 'turbulence', in the sense of turbulent flow, is omnipresent in the natural and engineering sciences. Turbulent flow, as opposed to smooth (called 'laminar') flow, is characterized by its irregular, unpredictable behaviour. Still, some important physical regularities can be observed, such as the scaling laws captured in verse by Lewis F. Richardson: 'big whirls have little whirls that feed on their velocity, and little whirls have lesser whirls and so on to viscosity'.¹

Scientists can experience beauty and intuit transcendence, that is, they can wonder. The emotion of wonder can make one appreciate what is great in science, and depends on an aesthetic sense of intellectual beauty. It comes with joy, delight, and pleasure. This can happen when we study the equations that describe the early universe, but also when we study a non-esoteric phenomenon such as turbulence. I illustrate this here with two examples from my own research, the first relating to equations, the second to patterns.²

The Navier–Stokes equations, which were derived in the middle of the nineteenth century, account for all fluid dynamical phenomena, including turbulence. It is the 'nonlinearity' of these equations, the $u_j u_i$ terms (multiplicative terms including velocities in all three directions, represented by the subscripts, which have values 1, 2, and 3) in the equations shown, that make them both analytically intractable and phenomenologically featuring the turbulence.

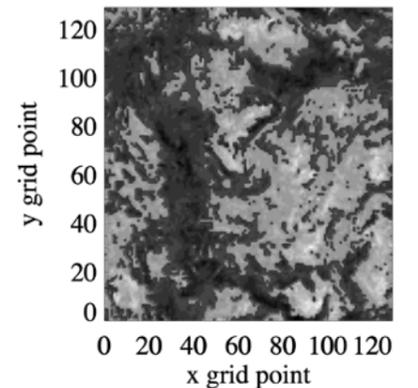
Since the middle of the twentieth century, numerical mathematics and computer science have made it possible to simulate turbulent flow using models that approximate the Navier–Stokes equations. What

$$\frac{\partial u_i}{\partial t} + \frac{\partial u_j u_i}{\partial x_j} = -\frac{1}{\rho_r} \frac{\partial p}{\partial x_i} + \frac{g}{\theta_{v,r}} (\theta_v - \bar{\theta}_v) \delta_{i3} + \frac{\partial}{\partial x_j} \left(\nu \frac{\partial u_i}{\partial x_j} \right)$$

$$\frac{\partial \theta_v}{\partial t} + \frac{\partial u_j \theta_v}{\partial x_j} = \frac{\partial}{\partial x_j} \left(\kappa \frac{\partial \theta_v}{\partial x_j} \right)$$

is remarkable, indeed astounding, is that all turbulent flows can be simulated on the basis of these equations.

The swirling patterns that arise in turbulent flow can be enjoyed both for the understanding of complex phenomena they make possible and for their beauty. Studies of the history of science document scientists talking about this visual beauty of fluid dynamics.³ The American Physical Society even awards an annual prize for the most beautiful videos or poster of fluid motion.⁴ Let me here give an example from my own work. Using the Cray supercomputer in the Netherlands at the end of the 1990s, I simulated turbulence in the convective atmospheric boundary layer (for instance, the bottom one and a half kilometres of the atmosphere on a sunny day in summer). In the figure [below/above], the vertical movements of the air at 1300 metres are shown in a section of a convective atmosphere boundary layer six by six kilometres wide and one and a half kilometres high (discretised using a three-dimensional grid of 128 by 128 by 66 boxes). Light and dark shades correspond to upward and downward velocities, respectively. The figure therefore makes visible a large-scale organisation of air moving upwards, in 'updrafts', and air moving downwards, in 'downdrafts'. What I find particularly striking about the behaviour of updrafts and downdrafts in convective turbulent flow is that their behaviour features universal regularities. Apparently, in terms of their physical behaviour and resulting patterns, it does not fundamentally matter whether the Navier–Stokes equations are describing convection of warm air in the earth's atmosphere or of extremely hot hydro-



gen and helium gas in the sun. Of course, there are differences between different types of turbulent flow and there will always remain uncertainties in representing turbulent flow in simplified mathematical models. But fundamentally, the simplified equations that I developed for the earth's atmosphere can also be used to describe convection in stars! ●

1. Lewis F. Richardson, *Weather Prediction by Numerical Processes* (Cambridge: Cambridge University Press, 1922) p. 66.

2. Arthur C. Petersen, *Convection and Chemistry in the Atmospheric Boundary Layer* (PhD thesis, Utrecht University, 1999).

3. Lorraine Daston and Peter Gallison, *Objectivity* (New York: Zone Books, 2007).

4. Cf. this annual prize in the following website gfm.aps.org.

Arthur Petersen participated in IAS Turbulence: Engaging with Turbulence — A panel discussion on 7 May 2019.

Arthur Petersen is Professor of Science, Technology, and Public Policy at UCL. He trained as a physicist, philosopher, and social scientist, and is Editor of *Zygon: Journal of Religion and Science*. In June 2019, he was elected as a Member of Academia Europaea, the European Academy of Humanities, Letters, and Sciences.

Representing Turbulence

The discussion ‘Engaging with Turbulence’ that prompted this historical consideration was publicized under an ecstatically energetic drawing of a deluge by Leonardo da Vinci (figure 1). It is perhaps the most decorative and legible of a series of works produced towards the end of his life, for his own satisfaction, with no commission in mind. These ‘finished’ drawings are the culmination of a lifelong interest in natural forces, their movements and their effects. They are also visionary, even apocalyptic, meditations at the limit of life, the visible and the representable. At the panel I contrasted the effects of ambitious fifteenth-century gold-ground painting, notably the ‘apocalyptic’ gilded grounds of images of the Passion, and the pictorial order in which Leonardo produces his representations of turbulence. In the former, the cosmic rupture of the death of God is figured in the flash of gold which, seen at an angle, will turn dark to re-enact solar eclipse and disrupt perspectival vision. At the moment of writing this, Leonardo’s obsessive late returns to cataclysm appear together — all about the same size and landscape format — in the Queen’s Gallery in London and they prompt closer investigation of viewpoint.

In the polite hush of the gallery, visitors peer in to their layered and atmospheric depths, perhaps to distinguish signs of human life beneath the tumbling elements. Most will struggle to read the inverted writing in the clouds which are Leonardo’s orderly directive to the painter: ‘Of rain. You will show the degrees of falling rain at various distanc-

es and of varying degrees of obscurity, and let the darkest part be closest to the middle of its thickness.’ While gathered clouds or falling rain are experienced as phenomena of light, the body feels and hears but does not see a gust of wind, a peal of thunder or a sudden drop in temperature. Still less can a human subject, caught up in turbulent — especially destructive — forces, find the shape of the storm or sense where it may be sweeping them. The loss of orientation, control and threat of bodily annihilation are total. To conjure up these impossibly beautiful storms, dropping like curls of hair (figure 2), Leonardo was sitting safe somewhere searching his imagination, experience and pushing at the boundaries of drawing, as much as any memory of ‘nature’. Black chalk, in its nuanced smoke (*sfumatura*), clouds the white paper with powdery films that evoke the dust caught up in the air. Ink reinforces coiled, claw-like or cuboid forms (toppling columns of exploded rock, figure 1). Though imminent in effect, the imagined vantage point of the draughtsman is lofty, even as scale is hard to gauge. Some ‘views’ open up sublime distances by offering glimpses of cities overwhelmed, others suggest the collapse of mountains, most show trees flattened to the ground, or clumped, peaceable but doomed, in the foreground. In one only do tiny figures appear, naked wind gods perhaps, riding and merging with the clouds, intimating that they or their masters have unleashed the disaster upon the earth to satisfy inscrutable urges.

Though conceived with very different ends, these drawings of deluge bear

clear visual similarities in their ornamental analysis of movement and turbulent flows to those Leonardo produced as an engineer and early natural scientist.¹ Alongside notes that complement the scrolling or wheeling forms of water in a controlled, first-hand observation or, more radically, viewed in plan from above, Leonardo sought to reveal the motive force of flowing water and the effects of its obstruction (figure 3). Part of the fascination of turbulence in Leonardo’s draughtsmanship is the way its force combines ornament and violence. It is the order of ornament, described by scrolling flow and internal coiling, that conjures the all-important relation between the macrocosmic and the microcosmic, between the great forces and the storm in the teacup — or water conduit.

Together these analyses of fluid motion and turbid weather systems raise a host of still contemporary questions, above all in their relation to unpredictable and dramatic, as well as slowly mounting, environmental change that threatens existence, human and non-human. What surfaces in turbulence? Or rather: what does it allow to be seen (figure 4)? Can forces on the edge of present understanding or control — cosmic, microcosmic, economic — be represented and what do the attempts to do so show of the effects and limitations of our image systems, our world view or cosmos? What is the relation of turbulence to ‘order’? Are turbulent events temporary fluctuations, or do they presage some more permanent or irreversible damage? And how does turbulence challenge human power and capability?



Figure 1 (top). Leonardo Da Vinci, *A deluge* c.1517-18, Black chalk, pen and ink, wash, 16.2 x 20.3 cm (sheet of paper). By permission of the Royal Collection Trust / © Her Majesty Queen Elizabeth II 2020 [RCIN 912380]. Figure 2 (bottom). Leonardo Da Vinci, *A deluge*, c.1517-18, Black chalk, touches of pen | 16.5 x 20.4 cm (sheet of paper). By permission of the Royal Collection Trust / © Her Majesty Queen Elizabeth II 2020 [RCIN 912384]. Figure 3 (following page). Leonardo Da Vinci, *Studies of water*, c.1510-12, Black chalk, pen and ink, 29.0 x 20.2 cm (sheet of paper). By permission of the Royal Collection Trust / © Her Majesty Queen Elizabeth II 2020 [RCIN 912660]



Can mounting storms be resisted by force, by ingenuity, by technology or is the best one can do to try to ride them out? Leonardo's viewpoints on flow and its disruption offer contrasting, but always 'masterly' or mastering, responses to turbulence of a kind that have proved central to western scientific method, as well as to modern subject formation, in particular its fascination with destructive force and fantasies of control.

The London exhibition includes a drawing for the Florentine government representing, from above, a stretch of the river Arno showing the disruption of its flow produced by a weir and its consequences (figure 5). Leonardo's pen develops a persuasive, fluid notation for the repeated eddies or reeling waters produced by currents moving at different speeds, and he maps them to measure the systems at play. Erosion at two points downstream appears as the progressive result of an emboldened flow of water, undermining artificial attempts to contain the bank. It is a flow which has an order of behaviour that Leonardo visualises, analyses and so makes available for application elsewhere. Ultimately, Leonardo was keen to direct these forces (as a further drawing bears witness with a megalomaniac scheme to bypass the river altogether) where they served both trade and warfare. Looking at his ambitions to understand 'natural laws', and to harness them to the interests of the territorial state, one is easily encouraged to another leap of scale, recalling what has since been realized, over staggering distances and giant environmental impacts, along the Yangtze river. And from this post twentieth-century perspective the Deluge drawings begin to evoke man-made cataclysm, like the massive flooding required for the Three Gorges Dam — or indeed, a terrible vision of dam burst, as at Guajataca or Jakarta.

As a painter, Leonardo's imaging and imagining of great waters relates to a longer trajectory of depicting turbulence in

ancient poetry and the Judaeo-Christian tradition. Several early-fifteenth-century descriptions of a lost mosaic by Giotto, and a painting by 'Stefano' assert the mimetic power of depiction to induce awe at fictive storms at sea, threatening shipwreck to terrified mortals. Such works showed Christ's disciples on the sea of Galilee and were referred to as a 'Navicella', making them a theopolitical allegory of the Ship of the Church. An unnamed painting in Venice by Gentile da Fabriano suggests a more secular viewpoint, noted simply for 'a whirlwind overturning uprooted trees and other things [...] it induces fear and horror'.² The peculiar mixed emotion provoked by observing the terrible at a distance would become a lynchpin of aesthetic theory as it emerged in the eighteenth century. The sublime 'delight' of horror, especially the spectacular fantasy of limitless power unleashed, continues to be recycled and snowball across 'immersive' film and gaming screens under technocapitalism. Leonardo's own verbal ekphrasis of an ideal painting showing a deluge has no God, but rather the epic thrust of a disaster movie curiously morphing into a lecture on hydraulics:

And into the depths of a valley the fragments of a mountain have fallen, forming a shore to the swollen waters of its river, which has burst its banks and rushes on in monstrous waves, striking and destroying the walls of the towns and farmhouses in the valley. The ruin of these buildings throws up a great dust, rising like smoke or wreathed clouds against the falling rain. The swollen waters sweep round them, striking these obstacles in eddying whirlpools, and leaping into the air as muddy foam. And the whirling waves fly from the place of concussion, and their impetus moves them across other eddies in a contrary direction.³

He goes on to imagine with horrible specificity the array of the desperate, human and animal, surrounded by the bobbing carcasses of the dead.

Tellingly, the word Leonardo uses to describe this scene is a 'fortuna', a term perhaps best translated as a natural disaster or accident. *Fortuna* was also represented allegorically in this period as a powerful, fickle woman whose turning wheel could elevate or cast down, acting cyclically then, but essentially by chance. Even the hall of the Florentine Priors, elected to head the state for short periods and by lot, boasted an image of Fortuna with this very warning of changing fortune attached to it.⁴ While in some representations Fortuna has a forelock that could be grasped, the natural misfortune imagined by Leonardo has rather the sense of an irresistible *force majeure*. It is to this sense — of a disastrous storm — to which Giovanni Rucellai speaks in his family commonplace book when he recorded at length a 'marvellous fortuna' that devastated the country towns around Florence on the Monday morning of 22 August 1456:

It appeared in Valdelsa beyond Lucardo on the said Monday before dawn, a great quantity of black clouds with great storm and ruin, and they came towards San Casciano and Santa Maria Impruneta [...] it rose and spent itself after a passage of about 20 miles and it was about 2/3 of a mile wide. The which clouds were very black and dark moving low over the land [...] each one fighting the other like a skirmish and battle, they made a great and terrible noise, fearful and terrifying. Their force was marvellous; more than winds they seemed rather a bombardment, and [...] there was in them throughout or in part a great quantity of matter and vapours of arrows ['spetie di saetta'], as one can comprehend from the damage done as I will narrate [...]



figure 4. Enhanced satellite image of Hurricane Dorian at 5pm on 1 September 2019 [Arstechnica website <https://arstechnica.com/science/2019/09/dorian-reaches-175-mph-bringing-devastating-conditions-to-the-bahamas/?comments=1>]

figure 5. Leonardo Da Vinci, *A weir on the Arno east of Florence*, 1504, Pen and ink, blue wash, 23.6 x 41.6 cm (sheet of paper).

By permission of the Royal Collection Trust / © Her Majesty Queen Elizabeth II 2020 [RCIN 912680]

Rucellai is at pains to authorize this marvel: 'You can be sure of [the truth of] this because Giovanni Rucellai mounted a horse in company with Bartolomeo Ridolfi and took the day to search about the countryside and we saw with our own eyes and heard and saw all these things.'⁵ His eye-witness account of flattened buildings, possessions spread across the landscape, trees and orchards scoured of leaves ('sbarbati' or de-bearded) and reports of farm workers caught up into the air, is the product of an early form of disaster tourism. But the inevitable slip into metaphor reveals it as more than that. Rucellai muses conventionally on the cruelty of this 'fortuna' and his precision as to time and date suggests a common undercurrent of concern as to whether such events were symptoms of cosmic turbulence that pointed to some larger, political misfortune on the horizon. Was such sudden disaster, like plague or flood, a sign of God's displeasure, an ill wind? Rucellai, who had been denied political office because of his Strozzi father-in-law's exile, chose a windblown and untethered sail as his personal insignia and was an avid consulter of authorities who might help him understand how to act nobly in the face of turbulent fortuna.⁶ Weighing the options like an early Renaissance Hamlet, he at one time absorbed Marsilio Ficino's advice that it was ultimately best to conform to Her will and submit to the 'slings and arrows of outrageous fortune'. At another he preferred the image of the wise steersman who tries to ride the flood.

To study the representations of Leonardo and Giovanni Rucellai is to be reminded that turbulence is always a sign of the times. The representation of turbulence and its effects has, since the Renaissance, most often invoked a sovereign male subject position that observes and measures at a distance, imagines and orders its forces, surveys the results with sympathy or awe and tries to account for it. What complex interrelation of forces natural, political and social are at play, he asks, and how might they be played or directed? For those caught in the storm, or trying to access the boat, weathering turbulence is a very different matter. ●

1 Irving Lavin's analysis of the water drawings as a conceptual continuum with other forms of study can be consulted in "Dietro lo Specchio," broadcast by RAI 2 (Turin, Italy, 21 October 1981) [and online in <https://www.ias.edu/ideas/lavin-leonardo-chaos>]

2 Creighton E. Gilbert (ed.), *Italian Art 1400-1500. Sources and Documents* (Evanston: Northwestern University Press, 1980), p. 177.

3 Martin Kemp (ed.) *Leonardo on Painting* (New Haven and London: Yale University Press, 1989), pp. 233-7.

4 Nikolai Rubinstein, *The Palazzo Vecchio 1298-1532: Government, Architecture, and Imagery in the Civic Palace of the Florentine Republic* (Oxford: Clarendon Press, 1995), p. 50.

5 Alessandro Perosa et al. (ed.), *Giovanni Rucellai ed is suo Zibaldone* (London: The Warburg Institute, 1960), I, p. 78.

6 Alessandro Perosa et al. (ed.), II, pp. 85-86; Alessandro Perosa et al. (ed.), II, p. 140; on Rucellai's sail device and fortuna see Aby Warburg, 'Francesco Sassetti's letztwilige Verfügung' (1907), translated in Aby Warburg, *The Renewal of Pagan Antiquity*, K.W. Forster (ed.), (Los Angeles, 1999), pp. 240-242.

Alison Wright participated in IAS Turbulence: Engaging with Turbulence — A panel discussion on 7 May 2019.

Alison Wright is Professor in Italian Art c. 1300-1550. She has curated exhibitions at The National Gallery, London and her most recent book *Frame Work: Honour and Ornament in Italian Renaissance Art* (2019) investigates the visual and ideological work of Renaissance framing in the context of ritual and across media.

Vivan Sundaram

Signs of Fire, The Long Night, and Black Gold



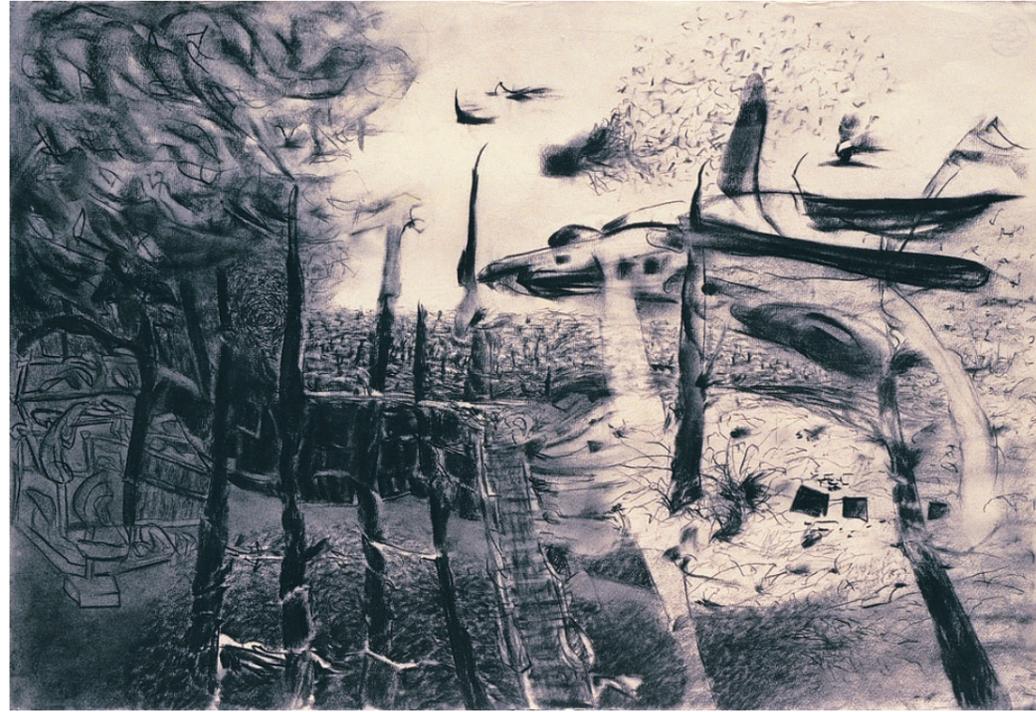
Even seeing only a quarter of the image I knew what it was. I think it was in 1983 that I saw in Germany an exhibition of Leonardo's *Deluge* series from the Queen's collection. The series haunted me for many years. I have a house in Kasauli that overlooks Chandigarh, where the English planted pine trees. Every other dry season forest fires engulf the small cantonment town which, in 1984, came near to burning down my hundred-year-old house. The charred hillside brought forth the *Signs of Fire* series. It was also a historic summer as in the city of Amritsar, armed militants had occupied the premises of the Golden Temple. The Army flushed them out by killing both the militants and pilgrims. Eighty-three soldiers and approximately four hundred ninety-two civilians died. Then on 31 October 1984, Mrs Indira Gandhi was assassinated by her two Sikh bodyguards. My work 'In the Box' refers to the violence that took place in the aftermath.

* The theme of 'Turbulence' appears in three of my other exhibitions: *Long Night*, 1989, drawings in charcoal, made after my visit to Auschwitz in 1989; *Journeys*, soft pastels; and finally, *Black Gold*, based on a large installation at the Kochi Muziris Biennale, 2012. Muziris is a port town in Kerala, which flourished from the second century BC to about the sixth century AD and traded with the Roman Empire. Black pepper was a major export from Kerala; later historians called it 'black gold'. There is speculation that floods destroyed this early 'urban' settlement, whose remains were discovered only in 2004. My 20 x 60 foot installation, an imaginary urban ruin, was made of thousands of discarded pot sherds from the excavation. I then flooded it by pouring twenty kilos of peppercorns over it. There are many expressions in Wright's text which resonate with these images. ●

Page 12: Vivan Sundaram, three drawings from the series 'Signs of Fire', 1984–1985. © Vivan Sundaram. Courtesy of the artist

Page 14: Vivan Sundaram, *Crash Site* and *Archaeology of War III*, 'Long Night: Drawing in Charcoal', 1987–1990. © Vivan Sundaram. Courtesy of the artist

Page 15: Vivan Sundaram, *Black Gold*, 2012–2013. © Vivan Sundaram. Courtesy of the artist



Alison Wright

Engine Oil and Charcoal

Vivan Sundaram's *Engine Oil and Charcoal on Paper* series (1990–1991), like the *Deluge* drawings by Leonardo da Vinci that inspired them, transform the pale, 'landscape' format sheet into a visionary, darkening disaster that is fully, sometimes explosively, in motion. Unlike Leonardo's black chalk with ink, they act as much on or against the paper as with it. While still probing the potential of the surface to open into ungraspable depth, the drawing materials and their manipulation take on a new significance. Charcoal, which is more friable than chalk, lends itself still better to 'smoked' (*sfumato*) effects by rubbing with the fingers. Produced by slow-charring wood, charcoal is an ancient fuel that produces heat intense enough to forge metal. Burned engine oil, introduced into Sundaram's drawings at the moment of the first Gulf War, is heavy, slick and penetrating — a spent fuel that continues to damage. By manipulating these materials energetically on the surface, Vivan moves us to see, perhaps smell, barrelling smoke, contamination, and singed bodies. As the materials lay waste to the paper, the analogy with the burning desert and the trace of devastation is absolutely direct. For me, the sepia stain also helps to align these events on paper with earlier acts of human or environmental holocaust, and with desert archaeology, but importantly, the oil is still active and ultimately corrosive, like the iron gall ink of the Renaissance. The continued political force of these drawings lies not just in their war critique, but in the way they remain physically eloquent of the forces of inhuman violence and expanding destruction, willed and otherwise. Nearly thirty years after their making, their environmental and geo-political condition seems even more our own. Even indiscriminate 'elemental' disasters, whether cataclysmic flood or forest fire, now emerge as every bit as man-made as burning fuel. ●



Vivan Sundaram, *100,000 Sorties*, 'Engine Oil and Charcoal on Paper', 1990–1991
© Vivan Sundaram. Courtesy of the artist

Katie Stone

Dreaming of Utopia: Reading Ursula K. Le Guin and Octavia E. Butler on ‘The Day Before the Revolution’

It’s the day before the revolution. An elderly woman named Odo is dreaming. In her dream, she is trying to make her way through a crowd of protestors, but she is struggling.

She was too short. A broad black-vested belly and chest loomed up, blocking her way.¹

Short or not, she is determined to get through.

Sweating, she jabbed fiercely with her fist.

It was like hitting stone. (344)

Her victim’s huge lungs let out a bellow, but she realises that this is not in response to her attack; rather it is a response to what is happening on the stage.

The speaker had said something, something fine about taxes or shadows. (344)

Odo greets this fine speech, where social policy rolls into aesthetics, or physics, or wherever else shadows touch, with a bellow of her own.

Thrilled, she joined the shouting – “Yes! Yes!” (344)

She is not sure what the speaker has said, and her main goal is still to get through the crowd, but still she joins them in their thrilling cries. Odo is a vital element of this crowd – of this Movement. For her, the crowd, their politics, this protest, are not separable from her individual struggles, or indeed from the ground beneath her feet, the shadow she casts, ‘the tall weeds with dry, white, close-floreted heads’, which nod all around her (344).

And so, Ursula K. Le Guin’s story ‘The Day Before the Revolution’ begins. It is a quiet story following a woman’s routine, how her plait comes untied, how she struggles to eat a peach, how she admires the beauty of a young man. For the elderly Odo, crowds and protests exist

now only in dreams.

The speaking tours and the meetings and the streets were out of reach for her now, but she could still write. (352)

This story acts as a prologue to *The Dispossessed: An Ambiguous Utopia* (1974), which is set several hundred years after what, in *The Dispossessed*, is termed the Odonian revolution. Or perhaps it is more productive to think of *The Dispossessed* as an epilogue to this story, as, in ‘The Day Before the Revolution’, Le Guin continually stresses the significance of the marginal, the small, of that which is easy to overlook. It is there that Odo – the woman who will give her name to the coming revolution, born of her writings and her dreams – roots her radical politics. Not in the fine things the speaker on the platform says, but in the ferocity of the woman who is too short to navigate the crowd. It is a quiet story but not one which welcomes a quiet response. It shows its readers the necessity of marching, of fighting, of attacking that which stands in their way, but it also shows us that this kind of revolution was not designed with everyone’s body in mind.

Le Guin prepares us for the turbulent times in which we now struggle by showing us that times have always been turbulent for those who are too small for the crowd; for whom the built environment of the contemporary capitalist city is disabling; whose bodies are racialized, deemed ‘illegal’, othered at the hands of the white supremacist, transphobic police state. And yet, it is those who are most at risk of being swept away who have always fought against the tide, in ways large, small, and strange. Unlike the charming mathematical genius Shevek, who dominates *The Dispossessed* and for whom the historical Odo serves as an inspirational forebear, the living Odo of ‘The Day Before the Revolution’ refuses to be straightforwardly charismatic, powerful, or strong. Nor does she abuse her position in the revolution, as Shevek does, to harass or assault those with whom she comes into contact. And this is why it is so significant that it is her words, her thoughts and ideas, and the ways she chooses to pass them on, share them, help them to

grow among her community, that guide the Movement that Shevek inherits in decidedly less turbulent times. This is a story which shows us that one does not need to be physically able to cut through or charismatically dominate the crowd in order to start a revolution.

At the day’s end Odo makes her way up the stairs of the disused bank which the Movement have transformed into their home. She does not stride. She cannot take the steps two at a time. And yet, inexorably, she makes her way up:

One by one, one leg at a time, like a small child. (357)

This is a mode of utopianism which refuses to settle on a static image of perfection. It is, as Le Guin has put it, an ambiguous utopianism in which the path walked by those who would imagine a better future is shown to be a treacherous one. And nowhere are the dangers of such a path more apparent than in the writing of Octavia E. Butler. If Le Guin is wary of embracing utopianism, Butler is actively suspicious of it. She writes:

I don’t like most utopia stories because I don’t believe them for a moment. It seems inevitable that my utopia would be someone else’s hell.²

In ‘The Book of Martha’ (2003), Butler grapples with this problem. She sends Martha a dream, or perhaps a vision, in which God demands that Martha imagine a utopia: a utopia that would work. Martha is tasked with the work of a utopian novelist, of a revolutionary, of someone in the business of crafting feminist futures. And the work is hard, unwanted, thankless. But, for Martha, as for Odo, this is the day before the revolution, and to refuse to shape the future is to surrender it to the forces of domination – misogyny, racism, queerphobia, capital – which have so horribly shaped the present.

If Martha doesn’t agree to transform the world then God will pick someone from all those who would, happily, do so.

And, instantly, [Martha] thought of some of these – people who would be happy to wipe out whole segments of the popu-

lation whom they hated and feared, or people who would set up vast tyrannies that forced everyone into a single mold [...] There were people like that. Martha knew people like that. (200-201)

Dreaming up new futures for the world is, as Martha sees, so often an exercise in purging, cleansing, removing not the causes of suffering but rather those who suffer. Against these sweeping, fear-driven, white supremacist modes of dreaming, Martha offers a utopia which is partial, gradual, small.

I don’t believe it’s possible to arrange a society so that everyone is content, everyone has what he or she wants. (202)

Again, there are echoes of Odo here.

There would not be slums like this if the Revolution prevailed. But there would be misery. There would always be misery, waste, cruelty. (354)

Martha formulates this partial vision, not by taking on a God’s-eye view but instead by bringing God into her home, literally, and sharing with them ‘the best tuna-salad sandwiches she could’ make (209). At the story’s opening her task seems to be to see through the eyes of a God who looks like ‘a twice-live-sized, bearded white man’ (190) and yet, by the end of this transformative dream, she sees God as a Black woman like herself – someone with whom she can comfortably share a sandwich and collaborate with in transforming the world. Martha doesn’t have to see more and know more – be bigger, or more important – to change the world, rather her challenge is to shift her perception of who is capable of shaping the future. Her dream allows her to break what she refers to as her ‘mental cage’ (209) and what God calls her ‘old habit’ (210) of locating power in maleness and whiteness. For this reason, it is in the practice of dreaming that Martha places her hopes for the future. Rather than a grand shift in society, Martha’s utopia is one which exists in dreams: ‘Powerful, unavoidable, realistic dreams.’

Each person will have a private, perfect utopia every night – or an imperfect one. (204)

This, Martha hopes, will combat the alienation, despair, and apathy she sees around her.

It will ‘take the edge off their willingness to spend their waking hours trying to dominate or destroy one another.’ (204)

There are many ways in which these dreams could be used to escape from, rather than transform, the structures of power in which we struggle.

Some people will be taken over by it as though it were an addictive drug. Some will try and fight it in themselves or others. Some will give up on their lives and decide to die because nothing they do matters as much as their dreams. (204)

These are the risks of daring to craft utopias and they are not trivial. But the risk of inaction – of being destroyed by the turbulence which currently has us in its grip rather than trying to create currents of our own – is greater still.

At the end of the story, Martha asks God to make her forget what she has done. It is not she who matters, but the change she has created. Just as Odo dies just as the revolution which she instigated begins, so Martha’s involvement in the utopian future she has dreamed into being ends before it has begun.

And here we are, without Le Guin and without Butler, our own world’s revolutionary dreamers, but with so many people across the world who have taken up their legacies. These thinkers, writers, activists, view the stories told by these now departed women, not as the final word on revolution, but as invitations to join them in the unenviable, exciting work of crafting feminist futures. People like adrienne maree brown³ and Walidah Imarisha, Ayana Jamieson and Moya Bailey, like Sophie Lewis and the Sons of Kemet, Patricia Piccinnini and Janelle Monáe, Nnedi Okrafor and N. K. Jemisin, Camae Ayewa, and Rasheeda Phillips. These people have joined Martha in ‘that sweet frenzy of creation that she lived for’ (190). They show us that queer, Black, feminist futures begin with a few words, a short burst of music, with the sleeping form of Zanele Muholi, pictured here, who seems to dream even as we look at them. These are the people who were listening when Butler said:

Tell stories Filled with Facts. Make Peo-

ple Touch and Taste and KNOW. Make People FEEL! FEEL! FEEL!⁴

As Le Guin once wrote: ‘Story is our only boat for sailing on the river of time, but in the great rapids and the winding shallows, no boat is safe.’⁵ What the writing of these women and their utopian descendants shows us is that despite the treachery of these waters, they are filled with people who are battling against the currents which threaten to drown them. They shine a light on even the smallest of struggles and show how each body moving against the tide, each dream in which we can find pleasure and meaning, creates ripples, opens new pathways and invites us to dream in still more daring, more strange, more utopian ways.

1 Ursula K. Le Guin, ‘The Day Before the Revolution’ (1974) in Pamela Sargent (ed.), *Women of Wonder The Classic Years: Science Fiction by Women from the 1940s to the 1970s* (San Diego: Harcourt Brace & Company, 1995), pp. 344-357 (p. 344). All further citations are to this edition and are given in the text.

2 Octavia E. Butler, ‘The Book of Martha’ in *Bloodchild and Other Stories* (1996), 2nd ed. (New York: Seven Stories Press, 2005), pp. 187-214 (p. 214). All further citations are to this edition and are given in the text.

3 It is the decision of the author to write her name uncapitalized.

4 Butler, ‘Notes on Writing’ in ‘So Be It, See to It: From the Archives of Octavia Butler’, *The Paris Review* (23 March 2018) <<https://www.theparisreview.org/blog/2018/03/23/so-be-it-see-to-it-from-the-archives-of-octavia-butler/>> [accessed 29 August 2019].

5 Le Guin, ‘Another Story OR A Fisherman of the Inland Sea’ in *A Fisherman of the Inland Sea: Science Fiction Stories* (London: Victor Gollancz, 1996), p. 147.

Katie Stone participated in IAS Turbulence: Feminist Futures for Turbulent Times on 6 February 2019. An audio recording of this event is available at ucl.ac.uk/institute-of-advanced-studies.

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Zanele Muholi, *Sindile II*, Room 206 Fjord Hotel, Berlin, 2017, silver gelatin print, image and paper size: 66.6 x 100 cm

© Zanele Muholi. Courtesy of Stevenson, Cape Town/Johannesburg and Yancey Richardson, New York

Conflict in the Psychiatric Encounter

They called me mad, and I called them mad, and damn them they outvoted me.¹

The psychiatric encounter is often the site of intractable conflict. Someone is brought to the clinic by the police, or is referred by a concerned family member, a general practitioner, or a social worker. Any number of events could have motivated these concerns. A typical example is a person who holds bizarre or persecutory beliefs, and who begins to profess his beliefs to other people, trying with insistence to convert them to his point of view. This leads to altercations and, ultimately, to police involvement and a mental health assessment. Another example is a person who hears voices and experiences occasional loss of control over her thoughts. She's increasingly distracted and her self-care has deteriorated, raising concerns about her wellbeing. In both cases, the path to the psychiatric encounter is determined by other people taking issue with the person's behaviour and mental states. The moment of the psychiatric encounter becomes a moment of conflict among several parties. Yet the medical and, subsequently, the legal scaffolding that permeates the encounter obscures the nature of this conflict by downplaying its interpersonal, familial, and social dimensions and apprehending it as individual psychopathology.

The psychiatric encounter as described is a far cry from the ideal clinical encounter.² In an ideal encounter, the doctor and the patient share a promise and a hope. The patient's hope is to return to the state of function and comfort he enjoyed prior to the onset of distress and disability. The doctor's promise is to work with the patient towards realising

this hope. Typically, the doctor takes a history, conducts an examination, and carries out some investigations. She then provides a diagnosis, information on the condition that afflicts the person, and proceeds to offer a treatment plan with predictions on prognosis. Implicit in this scenario is the idea that the condition diagnosed by the doctor is related to the challenges that motivated the person to attend the clinic. By managing or treating the condition, these challenges may be alleviated.

I have deliberately referred to this scenario as ideal because it unravels somewhat before the complexity of our experiences, the variability of our expectations, the nature and course of illnesses, and the limitations of medicine. After all, as doctors and patients know, promises and hopes are frequently shattered in medicine or, at least, not fully realised. But the psychiatric encounter is a particularly acute challenge to the ideal scenario as it eliminates its key features. For when the patient — or, rather, we must now say, the person — rejects the idea that he has a medical condition that requires treatment, he is rejecting the psychiatric construal of his experiences and situation. For this reason, he cannot share in the hope and promise that inform the clinical encounter, for whatever it is that he might hope for, it is not to be treated for something he does not consider himself to have. Yet if the legal standards specified by the Mental Health Act (MHA) are satisfied, he can be detained in hospital against his will and, depending on the section of the MHA, treatment can be forced upon

him. Which prompts us to ask, in such a situation whose hope and what promise inform the clinical encounter?

Given that the hope cannot be attributed to the person who is there in the clinic, it now becomes the family's or the community's hope who would like their son, daughter, spouse, neighbour, or friend to 'get better'. The hope could also be attributed to what the person would have wanted for himself had his judgement and insight not been impaired by the condition. The doctor's promise, then, is not to the person in the clinic, but to concerned others as well as to past or future versions of the person.

While the MHA provides the legal framework for this encounter, a central clinical concept that justifies it is 'insight', or more precisely the lack of it. Insight, in psychiatry, is defined as patients' awareness of having a mental disorder and their ability to identify aspects of their experiences as symptoms of that disorder. Insight, in this restricted sense, is typically absent in 'psychosis' and 'schizophrenia'. Ironically, then, the person's rejection of the idea that he has a medical condition becomes part of the justification for treating him for that condition. The upshot of this legal and clinical process is that the person right there in the clinic is effectively bypassed. Which leaves us with an encounter where the person's fate is being considered, yet where none of his hopes are entertained, and where promises are made to everyone but him.

are considered in normative ethics, and in moral and political philosophy.

Notwithstanding these theoretical and philosophical obstacles to any straightforward defence of goodwill in the encounter, my former colleagues' and current friends' well-meaning response that they 'just want to help' does not take sufficient account of the intractable conflict in which the encounter is mired. Whatever it is that you think 'being unwell' means, and no matter the extent of your conviction that it would be negligent not to take action, the fact is that there is a person sitting opposite you in the clinic who rejects the idea that he has a medical condition that requires treatment. No legal framework and no clinical notion of insight can get around this fact.

If we accept the person's position as a non-negotiable starting point, how is the clinical encounter to proceed? To address this, we need to return to the framing of the encounter, which at its most basic requires an answer to two questions: What kind of understanding of the situation should the clinical encounter aim for? What is the therapeutic aim of the encounter as a whole? If we were to prioritise a psychiatric framework, then typical answers would be insight into illness (as the aim of understanding) and symptom-control (as the overarching therapeutic goal). But if we were to start by respecting the person's rejection of a psychiatric framework, then these answers will not do. We must seek alternative answers within the perspective I have been arguing for.

To begin, we must recognise that there are certain challenges that led to the clinical encounter and to the conflict in which the clinician, the person, and concerned others find themselves. Instead of aiming towards an understanding of the situation grounded in the customary mental-state-examination-in-pursuit-of-illness, we can aim towards an understanding of the source

of conflict that led to the encounter and what to do about them: how did the conflict between the person and others begin? What norms have been violated and by whom? Whose norms are these? Can these problems be prevented from happening again? What do the various parties need to do towards a solution? Through these questions, we would be in a better position to recognise that each party in this conflict, the clinician included, bring their own hopes, expectations, and values. And without laying all this bare, it is unlikely we can begin to understand the nature of the conflict, let alone do something about it.

In this reimagined encounter, we must also expand our view of what would constitute its therapeutic aim. Alongside the management of distressing symptoms (where this is mutually agreed), the encounter can aim towards identity-making. For it is often the case that the person in the clinic is going through intense experiences and psychological states that challenge his self-understanding. And while he rejects the psychiatric construal of these experiences and states, he might be struggling to make sense of them. This is an ongoing concern in first-person accounts by individuals experiencing 'psychosis' — the literature abounds with examples where the psychiatric encounter suppressed people's nascent and tentative attempts to make sense of their experiences.⁴ This suppression was seen as a significant harm, an interruption of an important transformation, and a tragic loss of something potentially valuable. Part of the problem is the sparseness and negativity of the language of medicine when it is applied to certain experiences: it is not adequate for expressing the intensity and potential value of these experiences, a point repeatedly made by mental health activists.⁵ If the encounter is not to generate these harms, then clinicians need to assist individuals with developing an understanding of what they're going through, and for this to be a primary therapeutic aim of the clinical encounter.

When the person in the clinic rejects the idea that he has a medical condition that requires treatment, the encounter cannot proceed against this fact. We must recognise the ineliminable dimension of conflict that permeates the encounter, and we must acknowledge the distortion that a psychiatric framework can inflict upon people's emerging accounts of their intense, and often hugely significant, experiences and psychological states. I am aware that some clinicians, through individual excellence and wisdom, already practise the suggestions in this essay. But we cannot leave the encounter to the vagaries of luck. Psychiatry as an institution needs to rethink its entire response to the clinical encounter. For it won't do for clinicians to insist that they 'just want to help' if the person who is the target of their help has made it clear that he rejects it. ●

1 Nathaniel Lee, the 17th century English dramatist, on his incarceration at the mental institution then known as Bedlam.

2 In this essay I am only referring to the psychiatric encounter as described in the first paragraph, and not to encounters where both the clinician and the patient share a medical formulation of the relevant experiences and behaviours, and associated distress and disability.

3 *Nostalghia*, dir. by Andrei Tarkovsky (Sovinform, 1983).

4 Phil Barker, Peter Campbell and Ben Davidson (eds.), *From the Ashes of Experience: Reflections on Madness, Survival, and Growth* (London: Whurr Publishers, 1999).

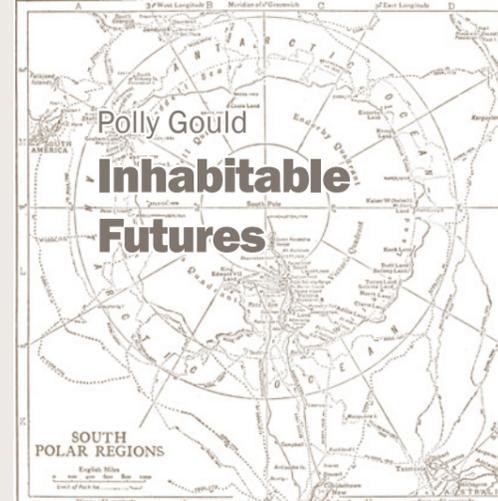
5 Mohammed Abouelleil Rashed, *Madness and the Demand for Recognition: A Philosophical Inquiry into Identity and Mental Health Activism* (Oxford: Oxford University Press, 2019).

Mohammed Abouelleil Rashed participated in IAS Turbulence: Engaging with Turbulence — A panel discussion on 7 May 2019.

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Still from Andrei Tarkovsky (Dir.), *Nostalghia*, 1983 © Courtesy of Rai Cinema



Our turbulent times can be understood as made up of ruptures in the smooth continuum of histories and of taken-for-granted values. The associated conflicts concern who gets to tell the story and how it is told. There is turbulence too in our previously familiar weather patterns and in the stability of liveable conditions. The melting polar ice provides iconic images of the fact of climate change. There are different ways for us to tell this story, to get from the beginning to the end, from A to B.

I have an interest in landscapes that are at the limit of human habitation. I like to look for them in archives. I use 'I' not to assert an identity as a mark of authenticity but in order to own what I write as a point of view. I collect old magic lantern slides that seem visually or topically of interest. I make from these encounters artworks and narratives that mix fictional, historical, cultural, and scientific accounts.¹

The archives of illustrious institutions such as the Royal Geographical Society and the Scott Polar Research Institute have provided me with access to documents and visual images of historical endeavours in exploration of extreme environments. The outmoded form of the magic lantern slide provides a past view of things, sometimes inscrutable. These archival materials and lantern images are most often Victorian or early twentieth-century in their orientation. The materials collected within them were first meant as documents of exploration, of travel, of colonial endeavours, of zoological and botanical collections. Nonetheless, an archive is not entirely stat-

ic, and one can bring a sideways glance to its foundational intention in order to mobilise alternative perspectives.

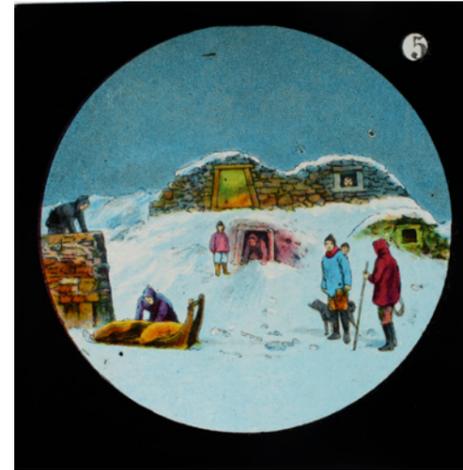
In 1895 the meeting of the International Geographical Congress urged upon the scientific communities the view that the exploration of the Antarctic region was the greatest piece of geographical exploration still to be undertaken. The great prize was the South Pole. In those days, prior to the era of mass air travel, an Antarctic journey entailed a long sea voyage followed by sledging with dogs or on foot. Getting from A to B was time-consuming, and travel was for the few.

Robert Falcon Scott (1868-1912) and his party reached the South Pole in January 1912, but they were not the first team to do so. The Norwegian team led by Roald Amundsen had arrived in December 2011 and left an empty tent as a marker of their success. Scott's party all perished, the last three of them freezing to death in a canvas tent of similar design. Edward Wilson (1872-1912) was among this tragic party. Alongside other roles he was the expedition artist. His subtle watercolours portrayed the never-before-seen landscape of Antarctica in pastel and rainbow-brilliant colours.

Viewing Wilson's work in the archive, I understood how his process was interrupted by the freezing conditions that made painting in the open air impossible. I painted my own versions as distorted copies of his watercolours on glass to be reflected in my mirrored glass globes, creating the illusion of miniature worlds. My indirect, sideways view of a place and time at a great remove was interpreted into anamorphic distortions. The anamorphic — an artistic technique in which distorted projections appear 'normal' only from certain positions or using particular mirrors or lenses — is like the sideways glance through the archive, or the transformative effect of science fiction upon social reality. As Donna Haraway writes, "The boundary between science fiction and social reality is an optical illusion."²

The Edward Wilson archives are among those that hold the memory of a specific type of heroic dead, the memorialization of a particular kind of masculinity, of imperial exploration, of ethnographic judgments, of colonial exploitation. How to travel from these nineteenth-century pasts towards feminist futures? We might make the journey from A to B via the work of Ursula K. Le Guin (1929-2018).³ Her short story 'Sur' is hardly Science Fiction, more in the Alternative History genre, but it is certainly Speculative Fiction. Haraway's *Staying with the Trouble* offers exactly this crossing over of Science Fiction, speculative fabulation, science and storytellers, to address the reimagining of the world.⁴ In the case of Le Guin's 'Sur', the speculation being is: what if it had been a party of women who had been the first to reach the South Pole, and non-Europeans at that? Le Guin was an admirer of heroic exploration narratives. (Her novel, *The Left Hand of Darkness*, is set in a world called Winter.) 'Sur' is a gentle but incisive parody of the masculine ambition for priority, first to the Pole (or first to the top). Le Guin's women arrived there without difficulty, and decided to leave no trace.

Antarctica, the empty continent, is the only territory on Earth devoid of an indigenous human population, and has consequently been entirely available to fantasies of self-invention, colonial or otherwise. It figures as the unbuilt environment outside of human history, in stark contrast to the built environment of the human world (the northern polar region, contrastingly, has known the dwelling practices of indigenous people). Scientific polar stations in the Arctic and Antarctica are often at the forefront of experimental architectures. These extreme environments, of the polar regions or the high altitude of mountain tops, pose a challenge to our human capacity to provide shelter. Their landscapes host the expedition hut, the mountain refuge, and utopian cities of the mind. Bruno Taut (1880-1936) proposed in his *Alpine Architecture* of 1917 a utopian architec-



Previous page: Figure 1. South Polar Regions exploration map, 1911. Public domain.

Above: Figures 2 and 3. Magic Lanterns illustrating igloo building in the Arctic and a quotidian scene, author's photo from glass slides, source unknown. Figure 4. Edward Wilson, Castle Rock (1400ft) near Discovery's Winter Quarters, Winter 1902, (watercolour on paper). © The Royal Geographical Society (with IBG) [S0022126], with permission.

ture built in coloured glass in the Alps, convinced of its socially transformative potential. Ironically, the modernist love-affair with glass enacted in our buildings of the last century has increased dependence upon energy-expensive air-conditioning, which contributes to the climate problem even as it tries to control the climate of our interiors. I have responded to Taut's watercolours of these fantastical structures with my own miniature versions, titled *Architecture for an Extinct Planet*, built from stained glass and lantern-slides and featuring genres of animals such as birds of paradise or sea creatures.

Around mountains or tall buildings alike, the distorted change in airflow caused by thermal convections is one cause of air flight turbulence. Smooth air flights from A to B are disturbed by turbulence, sudden changes in the air pressure that make the plane judder and drop. The exponential increase during the twentieth century of fossil-fuelled flight, too, has contributed to CO₂ emissions and climate change that will in its turn increase incidents of severe turbulence for air travel.⁵ Closed visions, stuck in a single perspective, seek a technological fix to the problem by modifying the design of the aeroplane, rather than addressing the cause by finding other ways to travel. We need to evaluate the more or less seamless versions of reality against the more or less turbulent and contested versions, and ask to what extent the problem to be solved changes depending on what is included in or omitted from the frame. Working with turbulence means disrupting our habits of thought and world views.

As our 'feminisms' address the turbulence of the world as we find it, we are confronted with turbulence internal to the practices and ambitions of those feminisms. There is turbulence in the fluid dynamics of a changing feminism in which the category 'women' is contested.⁶ I feel the sudden jolt, the ruptures between generations of feminisms, the drop in altitude, as the aspiration for solidarity fails to connect but instead encounters pockets of de-

fensive difference. Feminism is undergoing its own turbulent disruptions — diversity against unity, multiplicity against homogeneity. Can we allow for the contradictions rather than force consensus? Can we even constitute a viable 'we'?⁷ Might shared aims rather than shared circumstance now determine what we have in common and who might constitute that shifting collegium of 'we'? The feminist philosopher Rosi Braidotti finds a way, and likes to repeat during her talks and in her writing, without negating the reality of difference and in the spirit of the politics of hope: 'we are all in this together'.⁸

We are in this now, this turbulence of climate change, not on Le Guin's fictional planet called Winter, but in a warming world, a Summer, that in part is experiencing relentless heat and wildfires, disastrous and extreme weather patterns, storms and flooding, and thinning air. We are in a world where fact and truth are refashioned by fantasists and deniers, and in which previously glacial Greenland is transformed into a newly temperate green land, and a real-estate speculator posing as a statesman makes preposterous demands to buy a country from a nation that has no right to sell it — and then petulantly photoshops his branded tower onto a picture of the place. Trump's graphic tweet is as jarring as a sci-fi image, seeming to borrow the science fiction aesthetic strategy that splices together apparently distinct themes or images in incongruous montages or juxtapositions.

In our present time, the greatest piece of geographic work still to be undertaken is the discovery of a sustainable planetary future; the great prize, an inhabitable world. What is needed is the willingness to bring the optical illusion of science fiction to the social reality of this world, to bring different ways to tell this narrative, via disruptive shifts from fact to fiction, from past to future. Who gets to tell the story and how it is told, determines how we will get from A to B, how we will travel from our current turbulent time towards our inhabitable future. ●

1 See my performative lecture *Penguin Pool*, 2015, in which I used re-collated citations with magic lantern slides to explore climate change and the archive. Available at <http://www.daniellearnaud.com/events/event-penguin-pool.html>.

2 Donna Haraway, 'A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century' 1985; and *Simians, Cyborgs and Women: The Reinvention of Nature* (New York: Routledge, 1991), p.149.

3 I was introduced to the work of Ursula K. Le Guin (1929-2018) by Sandra Gilbert (b. 1936).

4 Donna Haraway, *Staying with the Trouble: Making Kin in the Chthulucene*, (Durham: Duke University Press, 2016).

5 Simon H. Lee, Paul D. Williams & Thomas H. A. Frame, 'Increased Shear in the North Atlantic upper-level jet stream over the past four decades' in *Nature*, 7 August 2019.

6 I recall here a reference to the work of Luce Irigaray, 'The "Mechanics" of Fluids' in *This Sex which is Not One* (New York and Ithaca: Cornell University Press, 1985), pp. 106-118.

7 "We have to allow for a certain turbulence, contradiction, and chunkiness rather than thinking that if we could just find the one right frame and get everyone to stand within its terms, everything would be alright." Emma Golberg quoting Maggie Nelson in 'What's the future of Feminist Movement? 12 Leading voices respond', *Vice*, 1 March 2019 [https://www.vice.com/en_us/article/zmayzx/future-of-feminism-roxane-gay-bell-hooks-longpath].

8 Rosi Braidotti, 'Are "WE" in this together?', keynote lecture at Planetary Poetics Conference, IAS, UCL, London, 21 September 2017 [www.youtube.com/watch?v=BW6VN10HX-mY]

Polly Gould participated in IAS Turbulence: Feminist Futures for Turbulent Times on 6 February 2019. An audio recording of this event is available at ucl.ac.uk/institute-of-advanced-studies

Polly Gould is an artist and writer. She shows with Danielle Arnaud. She has a PhD in Art and Architecture from the Bartlett School of Architecture, London and has recently been Post-doctoral Research Fellow in Design-led Architectural Research, Newcastle University. Gould has a forthcoming monograph published by Bloomsbury titled *Antarctica, Art and Archive*.

Agnès Villette

The Radioactive Ruins of La Hague



Figure 5. Polly Gould, *Castle Rock and Mount Erebus*, 2012 (coloured and mirrored hand-blown glass, watercolour on sand-blasted glass, 40 x 40 cm x D. 15) Courtesy of the artist.

The toponym 'La Hague' has undergone a considerable lexical shift. It is currently known for its eponymous nuclear fuel reprocessing plant, which has been operating since 1966 on this site at the tip of the Norman peninsula. Before the name became associated with the French nuclear programme of the Cold War, however, La Hague defined a region, distinct by its geography, fauna and flora from the rest of Normandy. It is a hybrid territory surrounded by the sea. Lonely moors expand on an elevated plateau that looks out to the Channel Island of Alderney. Until the construction of the nuclear plant in the 1960s, the peninsula was scarcely inhabited, ancestrally rural, and had been mostly forgotten by twentieth-century modernity. Then, during the 1970s, anti-nuclear protests and controversies drew media attention to the region, now intimately associated with the nuclear industry, radiotoxic contamination, and repeated cover-ups. The entanglement of La Hague with French nuclear history runs deep, engendering an assemblage of narratives which have rarely been addressed. Today, the peninsula is considered one of the most nuclearized zones on the planet, hosting four major nuclear installations vital to France's post-war nuclear programme.

One way to define the beginning of the Anthropocene epoch is to use fissile isotopes as markers; these were distributed worldwide after the atom bombs were dropped on Japan in 1945 and after the numerous nuclear tests conducted since the Manhattan Project. At the very end of WWII, de Gaulle's provi-

sional government launched its nuclear programme, which was seen as a path to regain the prestige that had been lost under the German invasion: exercising technological and scientific expertise, it would allow the state to count itself among the nations possessing nuclear weapons. The French nuclear programme, what Gabrielle Hecht refers to as 'the Radiance of France',¹ was celebrated widely by the press in December 1948, when Zoé — the first experimental nuclear reactor — underwent its first chain reaction. The following year, France secured its first milligram of homegrown plutonium, and tested its first nuclear weapon in 1960, at Reggane in the Algerian desert. La Hague was profoundly shaped by the Cold War, when civil and military nuclear production were particularly interdependent. The entanglement between landscape, science and technology are both expressed in the Cold War nature of La Hague and Hecht's definition of 'nuclearity' as:

'[a] contested technopolitical category. Its parameters depend on history and geography, science and technology, bodies and politics, radiation and race, states and capitalism. Nuclearity is not so much an essential property of things as it is a property distributed among things.'²

Analysing the geological materialities of La Hague's ecosystems unlocks various narratives about the 'slow violence' operating on the territory.³ And new regimes of visibility are required to explore its toxic landscape.

La Hague can be approached as a frontier territory like the Soviet and American atomic cities analysed by Kate Brown, where plutonium was produced for military weapons.⁴ To De Gaulle's government, the Norman peninsula offered isolation, inexpensive land, access to water, and a vast pool of labour. The taciturn character of its in-

habitants happened also to be a strong asset. Nowadays, La Hague is saturated with high security, technological barriers - containment against radiotoxic spreading - which enforce the military industrial complex of the nuclear Cold War directly onto the territory long after its expedient historical moment has passed.

Different historical and geographical layers of technological and scientific installations overlap in La Hague. Apart from uranium extraction, secured in France's former colonies of Niger and Gabon, the nuclear cluster illustrates a complete nuclear-electricity production cycle that merges military and civil nuclear programmes: from electricity production to waste management. Programmed as early as 1959 by the Commissariat à l'Énergie Atomique (CEA), the reprocessing facility extracts plutonium and uranium from fission materials for both civil and military purposes.⁵ Built near the small town of Beaumont-Hague, it was the first nuclear installation to be constructed in the peninsula; nuclear-propelled submarines were developed at the same period in the military naval arsenal of the nearby town of Cherbourg. Twenty kilometres south, at Flamanville, EDF (Electricité de France) started operating two reactors in 1977. The EPR (Evolutionary Pressurised Reactor), a third-generation reactor, supposed to open in 2012, is still under construction, its opening postponed due to faulty installations. Nuclear waste started stockpiling during the 1980s as vast industrial extensions of the reprocessing plant were initiated to accommodate fissile fuels from several plants in France and abroad, rendering the plant economically viable. Whereas nuclear waste had previously been stored without specific installations within the perimeter of the reprocessing plant, it became necessary to provide a long-lasting, purpose-built facility which was to become the adja-



cent repository of ANDRA (National Agency for Radioactive Waste Management), opened in 1975. ANDRA became the first French low- and medium- radioactive waste repository to be sealed. In 1994, it received its last radioactive waste containers and a decade later, in 2003, the repository entered its final surveillance phase, which is meant to last for the next three hundred years. Lasting uncertainty surrounding the governance of radioactive residues has forced vast amounts of radioactive fuels to be stockpiled at La Hague's reprocessing plant, where high radioactive waste is currently stored in water pools and piling in temporary confined storages while the construction of a deep geological repository in Bure, in the east of France, is under development. Bure, programmed to open in 2030, has already encountered several setbacks, postponing previous initial opening dates.

Paul Virilio demonstrated that accident, disaster, and failure are pre-emptively encoded in the machinic assemblage, creating a continuum of disasters. This is what Michael Watts, quoted by Rob Nixon in *Slow Violence*, names the "violent geographies of fast capitalism".⁶ Distinct from the media coverage of major nuclear disasters, La Hague offers the long continuity of nuclear incidents, spills, and breakages, which, due to the schist and granite of its geology, offer a problematic conduit that disseminates radiotoxic materials in aquifers and rivers before ending up in the ocean. The agency of radiotoxic isotopes relies on different temporalities and distributed

geographies; they evolve differently depending on the soil, flora, aquifer, sea currents, and modes of contamination. This is what Rob Nixon addresses with the concept of 'slow violence':

Attritional catastrophes that overspill clear boundaries in time and space are marked above all by displacements — temporal, geographical, rhetorical, and technological displacements that simplify violence and underestimate, in advance and in retrospect, the human and the environment costs. Such displacements smooth the way for amnesia, as places are rendered irretrievable to those who once inhabited them, places that ordinarily pass unmourned in the corporate media.⁷

The deep time of radioactive isotopes such as plutonium, which has been reprocessed and stocked at the La Hague plant, with its 24,000-year half-life, forces us to apprehend spans of geological time that invite different forms of memory and narration. As Nixon writes, 'slow violence' challenges scientific, legal, political, and representational dimensions. In the slow pace of time between the emergence of an accident and its delayed effects, the memory of the catastrophe fades away, leaving a legacy where casualties are left 'untali- ed and unremembered'.⁸

The historicity of the nuclear installations, well recorded with the various phases of progressive industrial and security extensions, differs from the landscape's 'longue durée'. Radiotoxic

temporalities are non-linear, shaped by various isotopes that lie dormant for decades in underground aquifers before being brought to the surface. Within the landscape, they operate through deterritorialization as isotopes are displaced with the help of meteorology, rivers and tidal currents. Temporal and spatial modes of exploration therefore operate on Derrida's concept of "hauntology"⁹ as persistent forms of past incidents that continue to inhabit the present in spectral form and linger into the future. In La Hague, the inherent invisibility of radioactive remains wraps the landscape in an eerie and mysterious presence. That of haunting invisible ruins. Appropriating the Situationists' and Walter Benjamin's term of 'dérive' (lit. 'drifting') and 'psychogeography', Jussi Parikka suggests the term 'psychogeophysic' to produce a *dérive* for the Anthropocene era, mobilizing 'the four terrestrial elements of soil, fire, air, water within biopolitics and environmental contexts' that design and draw new cartographies of what he names the 'persistence of materials'.¹⁰ In La Hague, rivers and springs have progressively become the natural, organic archive for continuous nuclear contamination. The St Hélène river, which happens to spring within the plant's security perimeter, provides a long history of recurrent pollutions by americium, tritium, caesium, and strontium. It has become a natural repository for narratives and data for investigations of long-term contaminations. As demonstrated by Crutzen, who pointed to the radioactive markers as a tool, among others, to date our entry into the Anthropocene,

in La Hague isotopes function as chemical signatures, as ‘material witness’ as demonstrated by Susan Schuppli.¹¹ Tracking their presence through forensic analysis permits identification of the time and place a spill took place within the industrial premises.

Puffer fish around the Marshall Islands, shadow-bodies of Hiroshima, and pine trees in the Red Forest near Chernobyl’s reactor 4, all became “radical contact prints” for a planet that had entered the atomic age. Within nuclear aesthetics, radioactivity functions as a disruptive active presence within the photographic process, as Ukrainian film director Vladimir Shevchenko understood when he watched the images that he was allowed to film while flying above reactor 4 while covering the Chernobyl liquidators at work, three days after the accident in April 1986. Flares, static interference, and noise pockmarked his 35mm film. Radiation, recalled Shevchenko, ‘has no odour, nor colour. But it has a voice. Here it is. We thought this film was defective. But we were mistaken. This is how radiation looks.’

To render the various radionuclides embedded in La Hague’s ecosystems visible, it is relevant to coalesce the data obtained by different national agencies and NGOs monitoring the zone with the narratives of the local river’s material memory archive. Sys-

tems of visualization through forensic tracing of radiotoxicity allow the slow violence operating around the territory to become visible. It also turns natural ecosystems – water, sediments, or soil - into a medium, that opens up overlaying complex networks of entangled narratives. The research adopts the format of an investigation, conducted sometimes several decades after the incident, by tracking the isotopes in their travel upstream, from the river and sediments obtained by the river’s banks, back to the nuclear plant’s inner perimeters, where leakages and spills took place. It is also a journey into the future as it embraces the long-lasting consequences of those radiotoxic materials that are being embedded in the natural environment. Tracing and retracing those stages, mapping occurrences, and overlapping temporalities within the half century of La Hague’s techno-industrial activities connects two archives: that of the ecosystems and that of the stakeholders, state agencies, and nuclear industries operating in the zone. Through the dual dimensions of narratives and visualization, artistic practices demonstrate their ability to establish ‘epistemological claims.’^{xiii} ●



1 Gabrielle Hecht, *The Radiance of France: Nuclear Power and National Identity after World War II* (Cambridge: MIT Press, 1998).

2 Gabrielle Hecht, *Being Nuclear: Africans and the Global Uranium Trade* (Cambridge: MIT Press, 2012), p. 14.

3 Rob Nixon, *Slow Violence and the Environmentalism of the Poor* (Cambridge, MA: Harvard University Press, 2011).

4 Kate Brown, *Plutopia: Nuclear Families, Atomic Cities, and the Great Soviet and American Plutonium Disasters* (Oxford and New York: Oxford University Press, 2013).

5 Created in 1945 at De Gaulle’s initiative, the CEA designed the military nuclear research programme and provided along with the expertise for civil nuclear technology’s defeat against Germany.

6 Rob Nixon, *Slow Violence*, p. 7.

7 Rob Nixon, *Slow Violence*, p. 7.

8 Rob Nixon, *Slow Violence*, p. 8.

9 Jacques Derrida, *Spectres of Marx* (London and New York: Routledge, 1994).

10 Jussi Parikka, *A Geology of Media* (Minneapolis and London: University of Minnesota Press London, 2015), p. 64.

11 Susan Schuppli, *Material Witness, Media, Forensic Evidence* (Cambridge and London: MIT Press, 2020)

12 Geoff Cox and Jacob Lund, *The Contemporary Condition: Thoughts on Contemporaneity and Contemporary Art* (New York and Aarhus University: Sternberg Press, 2016), p.1.

13 *ibid.*

Agnès Villette participated in IAS Turbulence: Chemical on 6-7 June 2019.

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Ama Josephine Budge & Dr. Christine ‘Xine’ Yao in Conversation Of Parables, Patterns, and Progeny: Rethinking Trans Theory with Octavia E. Butler

The following conversation took place via email over a series of weeks between Ama Josephine Budge, and Dr Christine ‘Xine’ Yao. After meeting on a panel at the IAS on 6 February 2019, Ama and Xine have become friends, correspondents, collaborators, and allies. This conversation on the work of the incredible Octavia Butler is a minuscule window through which to view a fraction of the wonderful, weird, empowering, and inflammatory challenges/corroborations that have since taken place.

Octavia Butler (1947-2006) was an acclaimed writer of speculative fiction, the first to win the MacArthur Genius Grant. Her work has been a major influence on many literary traditions, including the creative and critical practices of Black speculative imagining which is sometimes called Afrofuturism. Butler’s canon remains for Black folx worldwide, as Professor Zenzele Isoke commented at the 2019 National Women’s Studies Association Conference, akin to a biblical text. Her rigorously detailed, complex, nuanced, and vast explorations of race, gender, capitalism, biopolitics, affect, class, borders, and American history through both her published and unpublished fiction and non-fiction works make up a painfully unacknowledged core of Black history which nevertheless continues to inform and inspire writers, artists, researchers, politicians, scientists, and, of course, readers worldwide.

Xine Yao: So let’s be frank: the most turbulent issue in UK feminism right now is trans inclusion. How can we read Octavia Butler’s work with trans in mind? Moreover, Butler allows us to address another structural issue that cannot be separated from trans inclusion: race and the legacies of colonial science.

In her iconic essay ‘The Race for Theory’ (1987), Black feminist literary scholar Barbara Christian writes,

For people of colour have always theorized – but in forms quite different from the Western form of abstract logic. And I am inclined to say that our theorizing (and I intentionally use the verb rather than the noun) is often in narrative forms, in the stories we create, in riddles and proverbs, in

the play with language, since dynamic rather than fixed ideas seem more to our liking.

Following Christian’s insight into the relationship between storytelling and theorizing for Black feminism, Octavia Butler’s science fiction is itself beautiful, complicated speculative thinking. She writes about the past, the future, and presents almost parallel to our own: foregrounding trans possibilities in our reading, how does she enable us to disrupt an essentialist deracinated universal Woman as well as trouble investments both in archival genealogy and projections of the distant future that depend upon the presumption of a (white) reproductive futurity and its nostalgic corollary?

Ama Josephine Budge: So, naturally, I would reply that the most turbulent issue in UK feminism right now is in fact the way that gender binaries, transphobic ‘feminisms’ (I use inverted commas because I do not consider them to be feminist) and trans rights have become the central issue in contemporary feminism rather than the patriarchy and its control of minoritized bodies – which is to say, essentially, power. One of the most exciting aspects of Butler’s work is her ability to continuously re-centre structural issues of power, domination and, at times, so slippery, seductive oppression over segregated ‘single-issue’ arguments. For me, that ability continues to be so much more radical than many of the ‘trans’ (gender/human/racial) conversations in the West which are so often still dominated by colonial, racialized, classed, and patriarchal modes of relation.

I love the Barbara Christian quote you invoke to open this dialogue and I’d like to bring some critical attention to the gender theories that Butler experiments with and asserts throughout her fiction. Of particular interest to me, and perhaps a good example of the sticky and subtle politic I’m trying to insinuate in the paragraph above as well as in response to your excellent question, would spring from *The Patternist Series*. It begins with Anyanwu (later known as Emma) who, amongst many other things, is able to change her shape. At the start of the first book in the series *Wild Seed*, she meets Doro, another ‘human’ with extraordinary abilities: Doro cannot die. Yet rather than being able to shape and re-shape his own form, Doro must take the bodies of others. He

has been, during the hundreds of years of his life, white, Black, male, female, child, elder, dying, healthy, powerful, poor.¹ He has learnt to wear identities like a cloak, like a tool to achieve a purpose. As the only being he's ever met who can change and heal her own body enough to outmanoeuvre death, Doro becomes obsessed with Anyanwu, trying to control her and her 'seed'. One thing he insists on, that Anyanwu finds completely repugnant and unthinkable, is that she should take the form of a man in order to make love to him in the body of a woman. Eventually she is forced to do this and Butler writes how he tries to pleasure her with his mouth in 'female' form.

So whilst their relationship goes on to become more nuanced and mutually invested, at this point we have the very image of the undying, parasitic, abusive, controlling, patriarchal 'male' in our minds eye forcing the one he wishes to oppress to take the body of a man so that he, as a woman, might pleasure and be pleased by 'him'. Suddenly we aren't talking about gender any more, we're talking about power. It remains one of the most affecting analogies of the ways in which patriarchy does not trans-cend but is woven throughout the complexities of gender, race, and origin. She highlights both its centrality to their existence, as well as the way patriarchy is so persistently forced from view as we 'call in' and 'call out',² ostracize and reinforce 'black and white' delineations of ally and enemy, self and Other. Ever pushing one another's heads under the water so that we in turn are further from drowning. We are so uncomfortable in the turbulence.

XY: Love this reading of Doro and Anyanwu! The turbulence of bodies but the persistence and malleability of power. Butler shows how biological 'sex' is not an essential determinant of these hierarchical relations. Both main characters have fluid selves – so one might say gender-fluid but all aspects are fluid – yet it is striking how she writes the manifestations of their power in such different ways: transmutation versus possession. In that scene between Anyanwu and Doro there are tensions between the characters' pronouns and how we might read their bodies in that moment in cis-heteronormative phenotypical ways. Their identifications do not have to map onto stable configurations of gender ex-

pression and sexual orientation. I think this is so important given expectations about the legibility and therefore the viability of one's identification as trans or queer or non-binary.

To your use of 'parasitic' I am reminded of her classic *Bloodchild*, which she has called her 'pregnant man story'. Pregnant trans men are perennial subjects of media fascination in ways that hold each case up as an exceptional curiosity. For instance, in September 2019 there was a legal case in the UK where a trans man was unable to be registered as the father of the child he had borne. Do you have thoughts more broadly about representations of reproduction in Butler's work?

AJB: I mean there's so much in here isn't there? Even the use of the term 'seed', which at least in gendered conversations, is usually reserved for semen and dates back to social beliefs that cis men created all the traits perceived as 'good' in babies (usually gender binary so strong/meek, clever/compliant, handsome/beautiful, confident/timid, etc), whilst the feminized body that bore them were responsible for any and all ills, deviations or mishaps – i.e. 'he's strong like his father' or 'he's weak and sickly, like his mother'. These beliefs were of course reinforced by medical professionals and publications who valorized or initiated the punishment and institutionalization of women through acts such as declaring women infertile, unsuitable/unsafe mothers, hysterical, etc. Yet for Butler, seed is power or magic. She initiates the conversation with particular prevalence with 'Earthseed communities' in the *Parable* duology, continued really beautifully by Junauda Petrus in *The Stars and the Blackness Between Them* (2019), about returning Black and oppressed people to the land, to growth, to agriculture, through a dynamic other than slavery. Returning to the *Patternist* series, Butler also creates an interesting reproductive dynamic because those that are later called the Patternists (who are essentially telepathic, amongst other things) cannot raise their own children. They are paired, first by Doro, then by themselves based on compatibility of power – what combinations of ability would make the strongest, most magically talented children. Yet their hyper-sensitivity to one another makes them unable to parent safely; they often brutalize, abuse, or simply abandon their babies and children.

So I suppose my question might be rather... if gendered behaviour is a construct – learned, performed, mimicked, forced, re-inforced, conditioned, and punished if deviated from – are we (or was Butler) working towards a gender-fluid – as you put it – future, in which the bearing of children becomes generalized, possible for some bodies without medical assistance (just as it is currently for some cis women), not possible



"ARE WE CURSED TO ALWAYS BE IN A STATE OF WAR?"

"I HAVE NO ANSWERS TO THAT QUESTION. BUT WHAT I DO KNOW IS, IF THIS HUMAN WAR AGAINST NATURE GOES ON, WE WILL LOSE. WE WILL GO INTO EXTINCTION. AND NATURE WILL CARRY ON AS IT HAS CARRIED ON BEFORE WE APPEARED ON THE FOOD CHAIN."

"THE MARINE ELDERS HAVE DONE THEIR BEST FOR CENTURIES TO SOFTEN THE BLOW OF THE HUMAN WAR ON NATURE. ARMAGEDDON'S INEVITABILITY HAS BEEN DELAYED BY THEIR ANCIENT POWERS."

"BUT IN WAR THERE ARE INEVITABLE CASUALTIES. AND SOMETIMES THE BLOW OF THESE CASUALTIES HITS REALLY HARD. LIKE NOW. IT IS HEART-BREAKING HEARING NEWS OF DEATHS IN THE ASUME AREA. SO MANY RIVER LIVES LOST."

"THIS MEETING HAS DELEGATES FROM RIVER ASUME, AS WELL AS THE COUNCIL OF THE MARINE ELDERS OF THE PANTHEON OF MAMI WATA. THE QUEEN HERSELF WAS NOT GOING TO BE THERE BUT WILL OF COURSE STILL BE PRESENT, FOR WHERE EVEN A MOLECULE OF WATER IS, SHE IS."

Akosua Hanson, 'Underwater Dreams', *Moongirls*, vol. 3, p. 10 [available at moongirls.live/comics/] © Drama Queens Ghana. Courtesy of the artists.

for others? Then, subsequently, those best suited to parenting do the child rearing and those that have children don't necessarily raise them? Butler lived and died in and out of poverty, she would have seen young families, young children torn apart by illness, oppression, racism, abuse, violence, addiction, the judicial system and more, perhaps for Butler it was more about responsibility, about joy, about safety than the specifics of identification and genetic family. In many ways, the early Patternists return to an 'it takes a village' child-rearing model.

And I worry too that as queer community, our consistent (and often necessary) reaction to the policies that are consistently made and re-made to confine us, to hem in all that we can be, is just a way to keep us playing their game, just a distraction from being or becoming free. For example, take the continued and important fight by queer womxn and lesbian couples to access scientific methods of reproduction that either include two sources of ovum (one from each party) as well as sperm, or manipulate the eggs' chromosomal make-up so that no sperm is required for germination. I myself am a part of this conversation – how much my partner and I want to be able to conceive a child without a (possibly unknown) third party – and yet, does this not continue to force us into nuclearized, isolated family models that prioritize genetic (and therefore at least historically patriarchal) ties and understandings of legacy? Such models can undermine notions of queer family-making, of de-gendering genetics, of de-prioritising 'blood relations' in favour of adoption and fostering models, etc. I see Butler playing with all these dynamics and contradictions in ways that can offer extremely generative challenges and critiques to modern understandings of gender, reproduction and family-making. She reminds us through the Patternists that we must always pay attention to who is benefitting from particular genetic unions, relationships and even family-unit households.

XY: In *Bloodchild*, the ostensibly cismale human protagonist offers his body as the incubator for the ostensibly cisfemale alien's eggs that she injects into him by penetrating him with her ovipositor. This is her 'pregnant man' story: she blurs distinctions between parasitic and symbiotic dependencies. Any human can incubate these alien eggs. Our attention is directed to ungendered human reproductive labour. Nonetheless, what we would consider heteronormative human reproduction still persists: the alien race Tlic have a vested interest in the continuation of the human species because their own reproductive cycle is dependent upon warm mammalian bodies that can incubate their young – and it is better if the hosts are willing, an arrangement in which the ideal of free consent is dubious. Butler forces us not to get comfortable with an easy understanding of 'queer' that could be co-opted into a homonormative agenda.

There's a difference between abolishing gender roles and abolishing gender itself. Butler claimed that the story was not about slavery but about 'how the rent gets paid' if we as humans did find other life forms. Still, to use Saidiya Hartman's phrase, the 'afterlife of slavery' endures in Butler's imagining of a human future. The persistence of gender as a means of identification is not reducible to a simplistic approach to bodies or labour. New configurations of these relations cannot fully divest from the old. In this regard, taking Butler's narratives as theory I think we can discern that she would agree that trans does not reify the gender binary nor does it seek a naive abolition. There has always been turbulence: it is neither good nor bad. It's just that some of us have always realized it more than others. ●

1 In capitalizing 'Black' but not 'white' we follow a political practice that references an interdisciplinary history of the Black Radical Tradition both within and outside of academia. In brief, this practice follows Du Bois, Angela Davis and many others who argue that Black folk are still not seen as human equals; therefore, to capitalize Black here is an acknowledgement that whilst the others are of course categories with which power/privilege/dominance is afforded, Black remains a politicalized category built solely on the construction of a violently dehumanized labour force, the afterlife of which continues today.

2 'Call in' and 'call out' are vernacular ways of naming practices of calling people to accountability: the first is intimate, the other public.

Ama Josephine Budge and **Christine 'Xine' Yao** participated in IAS Turbulence: Feminist Futures for Turbulent Times on 6 February 2019. An audio recording of this event is available at ucl.ac.uk/institute-of-advanced-studies

Ama Josephine Budge is a speculative writer, artist, curator, and pleasure activist whose work navigates explorations of race, art, ecology, and feminism. Ama is a PhD candidate in Psychosocial Studies with Dr Gail Lewis at Birkbeck College, University of London. Her research takes a queer, decolonial approach to challenging climate colonialism in Sub-Saharan Africa.

Dr. Christine 'Xine' Yao is Lecturer in American Literature to 1900 at University College London. Her book *Disaffected: The Cultural Politics of Unfeeling in Nineteenth-Century America* is under contract with Duke University Press. Her work has appeared in *J19*, *Occasion*, and *American Quarterly*. Xine is the co-host of PhDivas Podcast.

Maja Fowkes

Working with Trouble: Climate emergency, democratic emergency



Natalia LL, *Consumer Art*, 1974, photograph 88x80cm © Natalia LL. Courtesy of lokal30 gallery, Warsaw.

The notion of turbulence as tempestuous and stormy weather has intensified in our times of climate breakdown, when extreme weather events such as droughts, floods, or disastrous gale winds are becoming a unifying experience of living on Earth. Air turbulence, in the colloquial sense of the violent movement of air that causes aeroplanes to shudder, has been rendered significantly more extreme by climate chaos, whose effects on planetary jet streams have been scientifically observed. Although political disturbance, manifest in the upsurge of populism across the globe, might seem unrelated to ecological crisis, it is increasingly evident that recent changes in political 'climate' are related to actual climate change. Canadian political scientist Kevin MacKay has analysed the relations between oligarchic elitist rule and the ongoing manipulation of corporate media and the political arena, including the 'relativizing' of the scientific evidence of anthropogenic climate disruption.¹ Working with trouble, a notion which shares turbulence's etymological roots in the thirteenth-century French verb *troubler*, meaning 'to stir up', 'make cloudy' and 'disturb', is a regular state of affairs for art historians dealing with contemporary art histories.

The East European revolutionary changes of 1989 saw political and ecological programmes coalesce, with environmental degradation across the Bloc and the Chernobyl nuclear disaster of 1986 becoming a priority for the civic movements that brought down the Communist system. Since these political transformations, dealing with trouble in Eastern Europe has predominantly been understood as a historical question, directed towards processing retrospectively the traumas of the turbulent twentieth century, rather than a characteristic of the present. However, the right-wing populist governments that have recently come to power in several countries of the region are intentionally destabilizing the democratic achievements of the post-communist period. Working with trouble is, therefore, also required of art historians dealing with the fragile regional histories of art in Eastern Europe, which are currently becoming sites for propagandistic agendas. In Hungary, for in-

stance, academic courses in curatorial as well as gender studies have been discontinued by state decree, while the autonomy of universities has been undermined to the extent that some have been coerced to relocate, as in the case of Central European University's forced move from Budapest to its new home in Vienna.

In Poland, the art world was shaken in the spring of 2019 by the decision of the new management of the National Museum in Warsaw to remove from display certain feminist artworks in their permanent collection. One of those temporarily taken down was Natalia LL's photographic series *Consumer Art* (1974), which features recorded sequences of a female figure lasciviously consuming a banana. Public protests following its removal, with participants demonstratively eating bananas and social media flooded with banana-related memes, eventually resulted in the museum revoking its controversial decision. Natalia LL's neo-avant-garde work was disturbing to the right-wing populist mindset because it disrupted patriarchal visual codes. However, beyond the immediately apparent gender references of *Consumer Art*, the work also critically addressed consumerism as part of the artist's wider exploration of political and environmental interconnectedness and of the embeddedness of individuals in their specific socio-political geographies.²

In another recent essay on artistic practices that call for radical social and ecological justice in order to address climate chaos, Reuben Fowkes and I consider Central and East European artists and social movements as co-producers of alternative platforms for democratic responses to social and environmental transformation.³ In this vein, Slovak artist Oto Hudec's *Flag of the Blue Planet* (2019) was conceived as a reinterpretation of the flag that peace activist John McConnell designed in 1969 for the first Earth Day celebration. While the original featured the planet at its centre, Hudec's version left a gaping hole where the Earth should be. This indicates the dra-

matically changed circumstances and scale of the current ecological crisis, where it is no longer just a matter of warning about the dangers of limits to uncontrolled economic growth, but of pointing to the actual threat to the continuity of biological life itself on the imperilled planet. The disobedient act of cutting out symbols from national flags is a recurring phenomenon in East European revolutionary histories, as a means for protestors to express their radical discontent with the system. By combining the legacy of political uprisings in Eastern Europe with the unprecedented threat of environmental emergency, Hudec signals that thirty years and a generation after 1989, our turbulent times call for new alliances, fresh political imagination, and radical solidarity in order to work through, as well as with, trouble.

1 Kevin MacKay, *Radical Transformation: Oligarchy, Collapse and the Crisis of the Civilisation* (Toronto: Between the Lines, 2017).

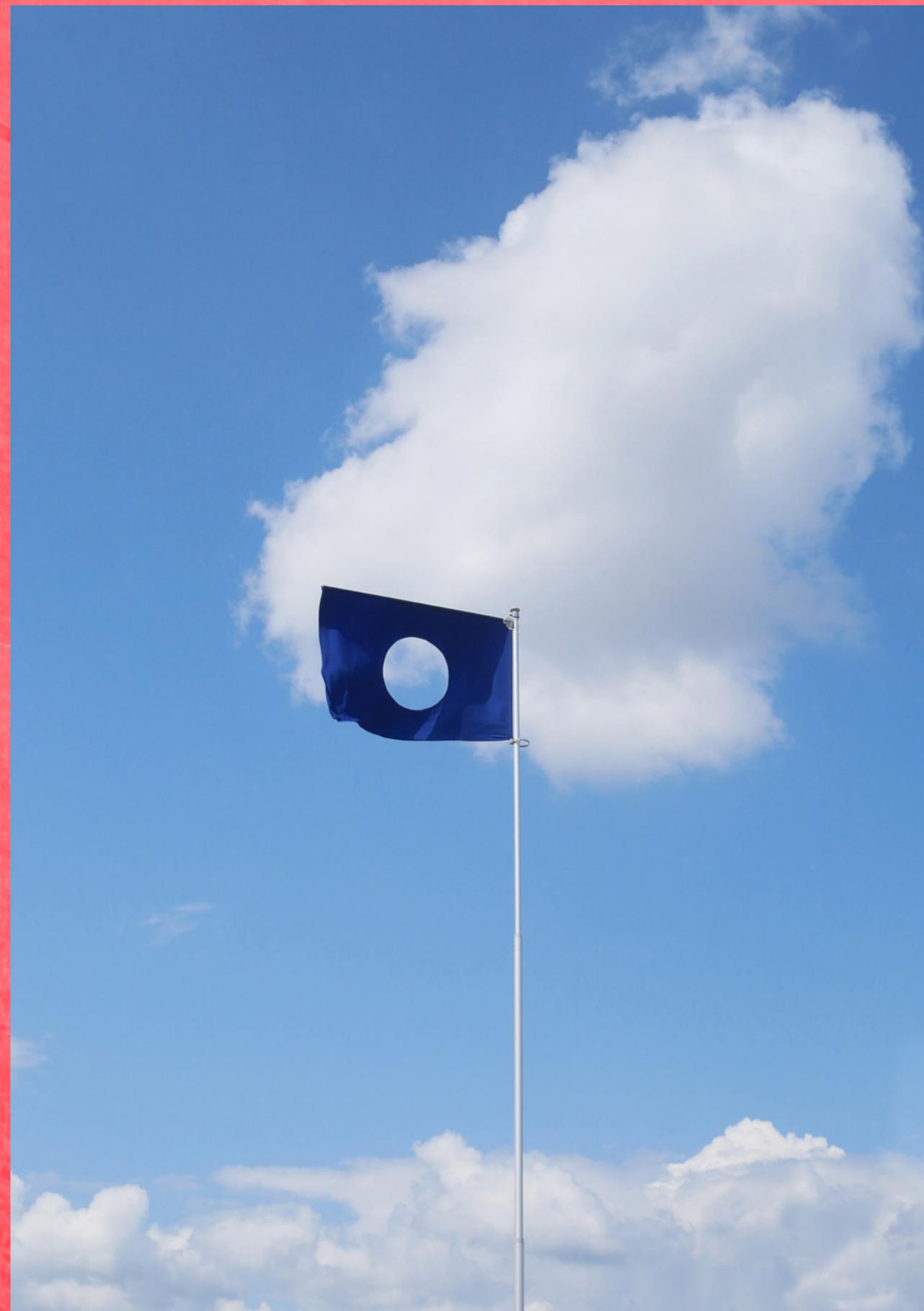
2 See also, Maja and Reuben Fowkes, 'I live on Earth: Cosmic Realms and the Place of Nature in the Work of Natalia LL,' in Agata Jakubowska (ed.), *Natalia LL: Consumer Art and Beyond* (Warsaw: Ujazdowski Castle CCA, 2017), pp. 104-127.

3 See also, Maja and Reuben Fowkes, 'Raising the Ecological Emergency Flag,' in Barbara Ciprova and Karina Kottová (eds), *Art is On Fire* (Brno: Moravian Gallery, 2019), pp. 5-6.

Maja Fowkes participated in IAS Turbulence:

Engaging with Turbulence — A panel discussion on 7 May 2019.

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Oto Hudec, *The Flag of the Blue Planet*, 2019 © Oto Hudec. Courtesy of the artist

#Turbulence Events at the IAS

Political Turbulence

Helen Margetts (Oxford)

Turbulence: An Interdisciplinary Symposium on the Work of W.G. Sebald

Stephen Watts (poet), Angharad Price (novelist and critic), and Simon Faithfull (artist)

The Turbulent Future of the Past: Media and Environment in 1970s Sweden

Dominic Hinde (Queen Margaret, Edinburgh), and Claire Thomson (UCL)

Turbulence in the Museum

Anselm Franke (Haus der Kulturen der Welt), Larne Abse Gogarty (UCL) and Ayesha Hameed (Goldsmiths)

Feminist Futures for Turbulent Times

Ama Josephine Budge (BBK), Polly Gould (Newcastle & UCL), Christine 'Xine' Yao (UCL), Katie Stone (Birkbeck) and Véra Ehrenstein (UCL)

On the Video Essay in Contemporary Film and Screen Studies

Catherine Grant (Birkbeck)

Turbulent Geohistories of Sugar

Ilona Németh (artist), Daniel Fernández Pascual & Alon Schwabe (Cooking Sections / Goldsmiths), Leon Wainwright (Open University), and Maja and Reuben Fowkes (UCL)

Engaging with Turbulence

Maja Fowkes (UCL), Arthur Petersen (UCL), Mohammed Rashed (Birkbeck), and Alison Wright (UCL)

Pontianak theory: Malay horror and postcolonial aesthetics

Rosalind Galt (KCL) and Lucy Bolton (QMUL)

An ethnographic amplification of malaria eradication

Ann Kelly (KCL)

Chemical

Emma Cardwell (Glasgow), Deborah Dixon (Glasgow), Peter Forman (Lancaster), Jennifer Gabrys (Cambridge), Christelle Gramaglia (IRSTEA), Jonas Köppel (Geneva), Nathalie Jas (INRA), Brice Laurent (Mines ParisTech), Javier Lezaun (Oxford), Alice Mah (Warwick), Astrid Schrader (Exeter), Agnès Villette (independent), and Claire Waterton (Lancaster)

Screen Media and Theory Workshop: Uncertainty, Turbulence and Moving

Image Archives

Manu Luksch (artist), Rose Butler (artist), Katrine Dirckinck-Holmfeldt (artist), Daniela Agostinho (Copenhagen), Erika Balsom (KCL), Erica Carter (KCL), Jenny Chamarette (Queen Mary), Rafael Dernbach (Futurium, Berlin), Ece Elbeyi (Copenhagen), Lee Grieveson (UCL), Rhiannon Harries (Nottingham), Pepita Hesselberth (Leiden), Ekaterina Kalinina (Södertörn), Leila Mukhida (Cambridge), Maria Poulaki (Surrey), Vid Simoniti (Liverpool), and Kristin Veel (Copenhagen)

Turbulent Matters: Posthumanism, Agency and the Anthropocene

Martin Crowley (Cambridge), Joanna Page (Cambridge), Mara Polgovsky Ezcurra (Birkbeck) and Lucy Bollington (UCL)

Turbulent Topology: Violence, Space and Landscape in Visual Culture

Emily Baker (UCL), Paulo Drinot (UCL), Geoffrey Kantaris (Cambridge), John Krniauskas (Birkbeck), Alasdair King (Queen Mary), Nuala Finnegan (University College Cork), Ricki O'Rawe (Queens' University Belfast), Stephanie Schwartz (UCL), Patricia Sequeira Brás (Birkbeck), Olga Smith (Warwick) and Joey Whitfield (Cardiff), and Macarena Gómez-Barris (Pratt Institute).



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