Speculative Ecologies

Plotting Through the Mesh

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Introduction

The collection aims to explore some of the contemporary strands of philosophical praxis orientated towards mapping and theorizing the notion of the 'environment' as a geological, organic and social construct. Upon this ground, it formulates the concept of 'speculative ecology' as a transdisciplinary form of discursive practice embedded within materiality. The acceptance of the existence and the imposing limitations of the material world functions as a point of departure for the contributors to speculate and experimentally navigate the topology of their surroundings in various, multi-tiered modalities. The main focus is placed upon exploring the integral materiality through digital projects and aesthetic production and is best encapsulated by the three overarching concepts which also create the publication's basic thematic framework – Representations, Systems and Speculations. These three concepts provide the envelope within which a speculative form of ecological thinking might best function. The integral materialism of such a speculative ecology retains complicity with a stratigraphy of social, semiotic, technological, or economic relations and in this way tries to open space for tentative post-human design.

If the human is a construct created and shored up by its own processes of extrapolation, then such future orientation might tend towards the framing of infrastructures which would offer new affordances and dispositions. The bootstrapping of such cognitive and normative platforms is often less about radical breaks with the past than it is about a spinning of the future, a topological shift of perspective which seems uncanny at the moment of observation. It is these strange circuitries that the publication aims to develop, while constantly keeping in

view the pressing need for a progressive environmental politics. The publication in this way tries to develop on the 'speculative' and 'materialist' turns whose fallout still haunts contemporary Humanities discourse and salvage what is possible and productive for moving ahead.

Speculative Ecologies aims to adopt the textual landscape of recent humanities discourse as a matrix which allows access to certain forms of material praxis. The preoccupation with the embodiment of informational exchange allows for a more robust framework for speculation, insofar as it introduces and embraces the rhythms, tempos, speeds, directions, scales and other diverse features of complex system dynamics. As the homo sapiens moves forward into the 21st century, the potential for abrupt changes in environmental and social conditions show pressing need for interventions which might work towards making "one world strategically fall apart into another."[1] Accepting the integral embodiment of both mental and physical activity opens a plot for speculation which works within productive constraints, and thus favors those projects and representations which are relevant for contemporary society and its modes of praxis.

The collection thus tries to fill out a space in humanities discourse which might move away from the specters of judgement and criticism, and rather take a proactive approach to the material possibilities which our epoch provides. *Speculative Ecologies* thus works towards developing Rosi Braidotti's take on the "posthumanities discourse,"[2] which understands the homo sapiens as a valuable node of intensity, but one which is nevertheless always inscribed within an otherwise disinterested and non-anthropocentric material mesh. The post-

[1] Benjamin Bratton, *The Stack* (MIT Press, 2015).
[2] Rosi Braidotti, *The Posthuman* (John Wiley & Sons, 2013).

human ethics of such a debate try to develop a new tool set for dealing with the presently changing environmental conditions.

The essays in this collection attempt to frame a platform for addressing the environment and the mind's place within it, thus hoping to point in the most relevant directions for traversing the complex mesh for those who wander.

Vít Bohal and Dustin Breitling, 2019

Technology at the Service of Environmental Ethics: Hypertext and Multicentrism

KATEŘINA KOVÁŘOVÁ

Technology is often perceived as an antithesis to nature and as such is incorporated into the cultural side of the nature-culture dichotomy. The various environmental movements often tend to simplify this binary and perceive it in moral terms, assigning nature the role of the good, the fragile, while labelling culture (and thus technology) as the bad, the destructive. However, various media and technologies have always been used either to promote the environmental movement or to make changes in diverse industries to make them more ecologically friendly; hence to make a real difference in the ongoing ecological crisis. This paper focuses on cases where technology was, and possibly is, at the service of environmental ethics, a branch of ethics concerned "with human beings' ethical relationship with the natural environment."[1] Using an example of the role of photography at the beginning of the modern environmental movement, this paper discusses the connections between hypertext theory and contemporary ecological thinking, specifically Anthony Weston's concept of multicentrism.

In 1968, the crew of Apollo 8 took the very first colour photograph of Earth from outer space called *Earthrise*. "That photograph of Earth in its fragile beauty helped to inspire the nascent environmental movement. Truly having stepped outside of Earth for the first time, we could look back on the home planet and see it as a whole."[2] Another photo, this time of the Earth in its entirety, called Blue Marble followed in 1972 and became one of the most reproduced pictures in the

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[1] Alasdair Cochrane, "Environmental Ethics," *Internet Encyclopedia of Philosophy*, accessed 12 February 2019 <www.iep.utm.edu/envi-eth/>.
[2] Anthony Weston, *The Incompleat Eco-Philosopher: Essays from the Edges of Environmental Ethics* (State University of New York Press, 2009) 163.

world. While black and white pictures of the parts of the Earth had been taken before, none of them had had such an impact. Even though taking pictures of the Earth was not the main mission of either crew, these images have arguably provoked the strongest cultural impact of the missions. There is a slight irony in the fact that the missions focused on exploring outer space are known for looking back at where they come from. Timothy Clark notes that:

> [s]ince late 1968 one defining icon of modernity has been the Apollo photographs of the whole Earth seen from space. The image has already become the obvious emblem of the Anthropocene. Ironically, however, one can argue that it is the very plurality, contradictoriness and evasiveness of interpretations of the image that make it appropriate for this purpose. It has been read as an icon of life's almost unbearable fragility; as the achievement through technology of the age-old dream of a god's-eye view; an instance of the contingent privilege of vision on the human sense of what something 'really' is ('... but what does it *look* like?'); a terrifying view of its target from a weapons platform. [...] The Apollo images have usually been read in terms of humanity's conception of itself, as if the planet were no more than a gigantic mirror in which the human could study its own features.[3]

The mere existence of the picture of the whole planet we inhabit has changed our perception of it as it brought a whole new perspective, a view from outside which had up to that point been inaccessible. Clark rightly points out that the Earth photographs are repeatedly read and interpreted and that their interpretations are necessarily influenced by Western cultural history which accepted the photograph medium as a true representation of reality,[4] a notion which would be soon

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[3] Timothy Clark, *Ecocriticism on the Edge: The Anthropocene as a Threshold Concept* (Bloomsbury Publishing, 2015).
[4] Clark 31

challenged by the medium of digital photography.[5] Despite the influence the pictures had on environmentalism and the spread of its message among the public (e.g. the first Earth Day celebrated in 1970), their readings are predominantly anthropocentric, using the planet as a "mirror" for humankind.

Both Weston's and Clark's comments focus on the content of the pictures and ignore the importance of photography as a medium for the impact of the Apollo photographs. Photography as a medium had proven itself more than valuable in various campaigns for nature protection, because it mediated the beauty of a certain place which would be hard to translate into words. Photography seems to be the ideal medium for such purposes, since it achieves transparency in the sense that it almost erases itself as a medium "so that the user is no longer aware of confronting a medium, but instead stands in an immediate relationship to the contents of that medium."[6] It has perfected the linear perspective and eliminated the artist. Photography made possible what painting would never achieve. The usual viewer does not think about the mechanical and chemical processes of the analogue photograph, instead they believe that they encounter the object immediately and directly.[7]

Marshall McLuhan argues that photographs "isolate single moments in time",[8] while Vilém Flusser claims that "they replace events by states of things and translate them into scenes."[9] Both Flusser and McLuhan emphasize that the photographs separate time from space as they mediate the four dimensions of a real world into two-dimensional abstraction. However, they also transfer their content to cultural phenomena,[10] which was the case with the Earth photographs, since

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[5] Jay Davis Bolter and Richard Grusin, *Remediation: Understanding New Media* (MIT Press, 2000) 72.

[6] Bolter and Grusin 23-24

[7] Bolter and Grusin 25

[8] Marshall McLuhan, *Understanding Media: The Extensions of Man* (MIT Press, 1994) 188.

[9] Vilém Flusser, *Towards a Philosophy of Photography* (Reaktion Books, 2006) 9.

[10] Vilém Flusser, *Towards a Philosophy of Photography*, 8 and 23-24.

they were turned immediately into cultural and environmental icons. The photograph is a very pressing medium, which makes it almost impossible not to look at it.[11] All the above-mentioned characteristics are crucial for the impact photography made in the conservationist and environmental movements. However, the Earth images mark the change in perspective in these movements. The conservationists throughout the 20th century used photography to emphasize the beauty of a certain place and by mediating the aesthetic quality evoked the emotion in the public, since the environmental groups and preservationists have depended on providing an attractive image of the place they wished to save.[12] Places such as Grand Canyon or Yellowstone, once almost lost to demands of civilization, became cultural icons as the wilderness protection campaigns were based on their visuality. The Earth photographs represent a turning point connecting the movements concerned with nature protection by bringing in a perspective hitherto inaccessible. Instead of the up to now unlimited place, the viewer is confronted with the Earth as whole, not only with its beauty, but also its "unbearable fragility."[13] Hence, consequently the visual policy of American environmentalism changed. Since the late 1960s (and particularly after the first Earth Day in 1970) the visual campaigns "signaled the emergence of a new form of environmentalism, one that emphasized the dynamic connections between human society and the natural world."[14]

However, nearly half a century has passed since the first Earth Day and the ecological crisis is still very present and the scientists' prognoses are in fact worse than ever. It is rather obvious that activism and partial changes embedded in the anthropocentric paradigm are rather part of the issue

[11] Vilém Flusser, *Into the Universe of Technical Images* (University of Minnesota Press, 2001) 53.
[12] Alison Byerly, "The Uses of Landscape: The Picturesque Aesthetic and the National Park System," *The Ecocriticism Reader: Landmarks in Literary Ecology*, eds. Cheryll Glotfelty and Harold Fromm (The University of Georgia Press, 1996) 63.
[13] Clark 30
[14] Finis Dunaway, "Gas Masks, Pogo, and the Ecological Indian: Earth day and the Visual Politics of American Environmentalism," *American Quarterly* (vol. 60, no. 1, 2008) 67.

than a sufficient solution to the whole situation.[15] Thinkers such as Anthony Weston believe that the true solution requires not only action, but a change of perspective. Photography and other media, despite their power, have not led to this change of paradigm. The linear perspective actually reinforces anthropocentrism. For centuries it enabled humankind to watch the world from distance, both in science and art, and seemingly objectively.[16]

Anthropocentrism is the "assumption or view that the interests of humans are of higher priority than those of non-humans,"[17] placing humankind in the centre of the world and establishing it as a norm. The value of the nonhuman is subsequently determined by its utility for human beings. One of the direct consequences of the anthropocentric perspective on the world is objectifying nature, understanding it as a resource, as man's possession. Anthropocentrism is a spectrum from strong to weak, in which the weak form considers the possibility of biocentric values or understanding of the value of the nonhuman.[18] As a discipline of applied ethics, environmental ethics faces the challenge of extending the originally human-oriented concepts to non-human creatures and the environment itself. This task is much more complex and precarious than it may seem at first sight due to man's anthropocentric perception of the world. The anthropocentric perspective is strongly embedded in human (particularly Western) culture and represents a dominant, if not the only, way of perceiving the outside world which human beings are capable of.

Lynn White, Jr. traces the roots of the anthropocentric thinking to Christianity and its premise that the world was created for humans and everything else is subordinate to them as man is the master of nature: "Christianity […] not only established

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[15] Ronald E. Purser, Changkil Park and Alfonso Montuori. "Limits to Anthropocentrism: Toward an Ecocentric Organization Paradigm?" *The Academy of Management Review* (vol. 20, no. 4, 1995) 1080.
[16] Purser, Park, and Montuori 1055-6
[17] Lawrence Buell, *The Future of Environmental Criticism* (Blackwell Publishing, 2005) 134.
[18] Buell, *The Future of Environmental Criticism* 134.

a dualism of man and nature but also insisted that it is God's will that man exploit nature for his proper ends."[19] He also points out that we know only little about the history of ecological change apart from the fact that the Western unity of science and technology amplified the idea of human superiority to nature to the extent that led to the contemporary ecological crisis,[20] which forced humankind to re-think not only our actions but the way we perceive our surroundings and nature in general and how this perspective forms and influences our actions and the ethical dimension of our relationship with the world.

Weston argues that the role of environmental ethics should be not only to extend the ethical principles to a different area.[21] To ask why we have ethical obligations to the natural environment is crucial. The question is not only whether we should care, but the reason why we (should) care directly leads to different kinds of obligations. If we simplify the whole issue, "an anthropocentric ethic claims that we possess obligations to respect the environment for the sake of human well-being and prosperity."[22] Different kinds of obligations arise when we understand that we have ethical responsibility for the well-being of future generations of humans, and yet different ones when we take into consideration "the sake of entities within the environment itself, irrespective of any human benefits."[23] And when we want to extend the ethical responsibility towards the non-human, another question arises immediately: "What qualifies an entity for moral consideration?"[24]

Weston points out that although officially against it, a significant proportion of environmental ethics is still strongly anthropocentric.[25] Our binary thinking influences the idea of

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[19] *Lynn White Jr., "The Historical Roots of our Environmental Crisis," The Ecocriticism Reader: Landmarks in Literary Ecology*, eds. Cheryll Glotfelty and Harold Fromm (The University of Georgia Press, 1996) 10.
[20] White 4
[21] Weston 65
[22] Cochrane
[23] Cochrane
[24] Lawrence Buell, *Writing for an Endangered World: Literature, Culture, and Environment in the U. S. and Beyond* (Harvard University Press, 2003) 226.
[25] Weston 23

distributing ethics to "others," which means we already suppose our supremacy. The idea of using nature as a means is embedded in our thinking to such a degree that it is otherwise seen only as having an "end in itself."[26] Therefore, the concept of intrinsic value does not assign the natural environment any value other than its right for existence on the basis that it exists. We do not know any other way than to try to impose a sort of value on nature, be it economic or aesthetic. Assigning nature some sort of value necessarily means establishing a hierarchy, as some places are considered more valuable than others, some species deserve more protection, etc.

For centuries, anthropocentrism was a matter of course, which was neither noticed nor challenged in Western society. Only since Aldo Leopold's idea of "land ethics" suggesting that the human perspective might not be the only one, or the right one,[27] voices questioning humankind's supremacy have started to appear. Although Leopold's views were not necessarily non- or anti-anthropocentric, he sought a new approach towards nature in times when people saw its main value in its commercial use, urged others to understand the environment as "a community to which they belonged, not a commodity they possessed."[28] With the ecological crisis and the rise of environmental movement, the question of what might replace anthropocentrism started to occur more frequently, since the change of perspective might be actually the key to (not only our) survival. The anthropocentric perspective strongly affects not only humankind's relationship with the environment, but also with technology. In his book *Orality and Literacy*, Walter J. Ong, after putting emphasis on the fact that writing is a technology, observes that even a text is built in correspondence with the human form:

[26] Weston 24-25
[27] Aldo Leopold, *Sand County Almanac and Sketches Here and There* (Oxford University Press, 1989) 132.
[28] Roderick Nash, *Wilderness and the American Mind*, revised edition (Yale University Press, 1979) 192.

> Texts in various scripts around the world are read variously from right to left, or left to right, or top to bottom, or all these ways at once as in boustrophedon writing, but never anywhere, so far as is known, from bottom to top. Texts assimilate utterance to human body.[29]

While technologies are supposed to serve human purposes, many critics and theorists emphasize that they also influence, if not determine the way people think and act. Ong argues that "technologies are not mere exterior aids, but also interior transformations of consciousness."[30] McLuhan calls media and technologies "extensions of ourselves."[31] The question is: can technologies and media assist in transforming our perspective from anthropocentrism to a different paradigm?

While the analysis above suggests that photography made a significant impact on the environmental movement, its form reinforces the subject-object distinction and established anthropocentric hierarchy, since it employs a linear perspective and is strictly visual. The medium that very openly challenges the established hierarchy and linearity is hypertext, defined by Theodor Nelson as a "non-sequential writing – text that branches and allows choices to the reader, best read at an interactive screen... a series of text chunks connected by links which offer the reader different pathways."[32] Nelson's definition enhances three characteristics of hypertext: non-linearity, fragmentation, and involvement of the reader. Unlike photography, hypertext is an example of hypermediacy. Its form is unconcealed.

> Hypermedia and transparent media are opposite manifestations of the same desire: the desire to get past the limits of representation and to achieve the real. They are not

[29] Walter J. Ong, *Orality and Literacy: The Technologizing of the Word* (Routledge, 2002) 99.
[30] Ong 81
[31] McLuhan, *Understanding Media* 7
[32] Theodor Nelson, "Chapter Zero," *Literary Machines* (Mindful Press, 1987).

striving for the real in any metaphysical sense. Instead, the real is defined in terms of the viewer's experience; it is that which would evoke an immediate (and therefore authentic) emotional response.[33]

Hypertext does not hide the fact it is a medium and its structure and impact on the receiver defy the linear perspective. George P. Landow not only points out the similarities between hypertext theory and literary theory, but suggests broad political and societal implications of hypertext:

[They],[34] like many others who write on hypertext and literary theory, argue that we must abandon conceptual systems founded on ideas of center, margin, hierarchy, and linearity and replace them by ones of multilinearity, nodes, links, and networks. Almost all parties to this paradigm shift, which marks a revolution in human thought, see electronic writing as a direct response to the strengths and weaknesses of the printed book, one of the major landmarks in the history of human thought. This response has profound implication for literature, education, and politics.[35]

For Landow, hypertext represents a "revolution in human thought" challenging the idea of linearity and centre and subsequently modifying the paradigm established for centuries. The traditional hierarchy based on one centre and margin is replaced by various interconnected centres, each of the same importance. Landow also emphasizes that this revolution is not limited to technology or media and that the hypertext might influence other disciplines, and become, in the end, political.

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[33] Bolter and Grusin 53
[34] Landow refers to Jacques Derrida, Roland Barthes, Theodor Nelson, and Andries van Dam.
[35] George P. Landow, *Hypertext 3.0: Critical Theory and New Median in an Era of Globalization* (Johns Hopkins University Press, 2006) 1.

Hypertext in its structure and subversive nature resembles Anthony Weston's concept of multicentrism,[36] which also challenges an established hierarchical paradigm. Weston suggests that the paradigm replacing anthropocentrism cannot be nonanthropocentrism, since it is only a rejection without content.[37] However, he also claims that it will be neither biocentrism[38] nor ecocentrism,[39] two paradigms often listed as the most probable options. For Weston, these concepts are problematic because humankind remains in the centre of consideration and merely broadens the area of concern.[40] Weston calls these paradigms concentric and explores the possibility of a different approach:

> Concentrism is a natural and indeed generous way of framing environmental ethics. Yet it cannot be said to be the only possible approach. Even in purely geometrical terms, there is an obvious alternative: a *multicentered* vision according to which more-than-human others enter the moral realm on their own terms, rather than by expansion from a single center – a vision according to which there are *diverse* centers, shifting and overlapping but still each with its own irreducible and distinctive starting-point. For a multicentered ethic, then, the growth of moral sensitivity and consideration does not proceed through an expanding series of concentric realms, each neatly assimilating or incorporating the previous stage within a larger and more inclusive whole. No: instead we discover a world of separate though mutually implicated centers. Moral growth consists in experiencing more and more deeply the texture of multiplicity in the world, not in tracing the wider and wider circles set off from one single center.[41]

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[36] "Multicentrism: A Manifesto" was first published in 2004.
[37] Weston 93
[38] "The view that all organisms, including humans, are part of a larger biotic web or network or community whose interests must constrain or direct or govern the human interest" (Buell, *The Future* 134).
[39] "The view in environmental ethics that the interest of the ecosphere must override that of the interest of individual species" (Buell, *The Future* 137).
[40] Weston 92
[41] Weston 90

Weston claims that the anthropo- part in anthropocentrism might not be as problematic as the unified centrism. He argues that in this case the concentric ethics is always based on similarities. And the further away from the centre, the harder are these similarities to find, making extentionism no longer a functional perspective since the "extension of intrinsic value to the nonhuman world occurs only if entities measure up to the criteria that are defined by humans, criteria that must mimic or resemble humanlike attributes."[42] Weston points out that "[t]he search for a single, inclusive criterion of moral standing ultimately washes out nearly everything."[43] He argues that we should respect the world for what it is: a multiverse with many different centres which are connected in a way we might not know or understand yet.

While there is no proof that Weston was influenced by hypertext theory, and both concepts might be independent proofs of major changes in episteme,[44] they show striking similarities. Both hypertext and multicentrism challenge the established hierarchy with one significant centre and margins. Their decentralisation and antihierarchical character make them both very democratic,[45] in the case of the latter also outside the boundaries of humanity. Landow claims that "the use of communications technology is also a concretization of certain political assumptions. In particular, hypertext embodies assumptions of the necessity for nonhierarchical, multicentred, open-ended forms of politics and government."[46]

Both multicentrism and hypertext are described in geometrical terms and they undermine their traditional geometries. While hypertext opposes linearity, multicentrism challenges the "circle of moral consideration."[47] Both concepts employ

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[42] **Purser, Park, and Montuori 1069**
[43] **Weston 91**
[44] **Landow 1**
[45] **Landow 343**
[46] **Landow 345**
[47] **Weston 89**

the idea of several nonhierarchically interlinked centres which are discrete as well as interdependent.

> Hypertext, because of its openness – its fuzzy borders that are so easily permeated – makes the author's role as diffuse as the boundaries of the text itself. Hypertext does not typically have a beginning, middle, and end.[48]

This openness, the structure and linking of the centres, is interchangeable, meaning that there is not one "right" interpretation, but that various paths and perspectives are equally valuable. The implication in environmental ethics is that there is not one way of being, but there are many modes of existence which should not be considered and judged from human-centred point of view.[49] Both systems decentralize, which means they refuse to simply substitute one centre for another but insist on the multiplicity of centres.

The decentralization destabilizes the traditional subject-object or centre-margin hierarchy. The established hierarchy of author-reader or human-nature, which implies a sort of subordinance and passivity of the latter, is rejected. McLuhan argues that print entailed centuries of "uniformity, quiet privacy, and individualism."[50] Hypertext instead embraces cooperation and active readership and "provides an infinitely recentrable system whose provisional point of focus depends on the reader."[51] Not only does hypertext reading enable the reader to choose, it "requires the reader to make deliberate decisions about which path to take within a hypertext Web."[52] The more dialogical structure of hypertext is another link to multicentrism, which emphasizes the role of dialogue and encourages finding ways of communication with the world. The

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[48] Patterson 77
[49] Weston 92
[50] Marshall McLuhan, *The Gutenberg Galaxy* (University of Toronto Press, 1962) 118.
[51] Landow 56
[52] Patterson 77

idea of an objective and distant observer, utilized in positivist science, is no longer functional and should be replaced with a paradigm based on reciprocity.[53]

The transformation from imposition to dialogue implies participation in a community. Hypertext encourages the formation of communities around the texts, communities which can share, comment, and enter the discussion without distinction of authority. In this sense, hypertext is closer to orality,[54] or the Ongian concept of secondary orality

> Which diverts from individualism and isolation connected to print and attempts to make the language again an event not based simply on visual perception and passivity. This new orality has striking resemblances to the old in its participatory mystique, its fostering of a communal sense, its concentration on the present moment, and even its use of formulas.[55]

Similarly, multicentrism emphasizes the idea of human beings becoming again a part of the community and returning from their individualistic and anthropocentric isolation.

Finally, hypertext and multicentrism exceed their original fields and might have serious social, economic, and political consequences. As any other concept or medium, they enter "a network of technical, social, and economic contexts."[56] Landow points out that "[t]he appearance of any new information technology like hypertext provides conditions for major societal change, though any change, such as the democratizing effects of writing, which took millennia, can take a very long time to occur."[57]

The potential societal changes that multicentrism might cause are hard to predict. Multicentrism values discussion more

[53] Purser, Park, and Montuori 1060
[54] Landow 109-10
[55] Ong 133-4
[56] Bolter and Grusin 65
[57] Landow 29

than definite answers and this openness suggests that the democratization implied in hypertext should be taken to another level: across the boundary of species, or the land, to an "ecological democracy."[58] Multicentrism seems to almost be the embodiment of Ong's secondary orality, inviting the human back into the community, making communication an event which is based on reciprocity and not imposition, enhancing the multiple levels of meaning rejected with the adoption and acceptance of the linear perspective, only extending Ong's concept beyond the human.

While Bolter and Grusin suggest that virtual reality might serve the ability to imagine various points of view different from ours, insofar as it might "enable us to occupy the position, and therefore the point of view, of people or creatures different from ourselves,"[59] the question is to what extent this idea is achievable. Without the dialogue between and openness towards different perspectives, we might tend to simply anthropomorphize other species, as is often the case in their cultural representations. The creation of an avatar of a different species does not automatically create their perspective. "We are bound to misinterpret nature if we start with the assumption that her methods are all like our methods."[60] Idealization of nature "as a separate, beatific entity that must be preserved at all costs"[61] is not a functional perspective, since it leads to evaluating other forms of life on the basis of their aesthetic quality, which is, again, anthropocentric.

Considering that the two concepts of hypertext and multicentrism derive from completely different fields, they show many similarities in their structure, functions, and possible impact on social, economic, and political contexts. They share an enhancement of plurality and multiplicity, decentralization, and emphasis on the active role of the humans in the context either of a text or of a natural environment, as well as

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[58] Purser, Park, and Montuori 1080
[59] Bolter and Grusin 245
[60] Buell, *The Environmental Imagination* 190.
[61] Purser, Park, and Montuori 1058

the potential to shift human thinking from isolated individualism towards the direction of understanding humankind as a member of a community based in communication and dialogue. This openness of the experience is probably the most important point of intersection of both theories.

Hypertext is sometimes perceived as a threat to literature, to the existing thought paradigm. However, environmental ethics shows that the change in our perception is inevitable, if we are ever to change our ways towards the world around us. Technology and environmental ethics seem to be reaching a similar goal this time: to challenge the established order, to challenge humankind as the norm, and to displace its position as the only centre of reference.

Anthropocene Aesthetics: Sublime, Weird, and Queer

VÍT BOHAL

Preamble

There exist numerous –cenes (Capitalocene, Chthulhucene, Sociocene, Plantationocene, Technocene…),[1] there exist the "Good, the Bad and the Ugly"[2] scenarios of the Anthropocene, and there exist diffracted aesthetics and subjective experiences of what the 'age of man' might entail. To navigate this semiotic clinamen, this triptych essay offers an aesthetic toolbox which aims to provide perspectives on this cultural ground. Due to their historical genesis as tools which shoring up the master's house, the sublime, the weird and, arguably, the queer sensibilities are determined to be disposed of, and are here to be read as written under erasure; they are only part objects, each one of them too frail to grapple with the challenges posed by ubiquitous, long-term, and ever accelerating processes of environmental degradation. Like Margaret Atwood affirms in her essay of the same name – "It's not 'Climate Change,' it's Everything Change."[3] For the purposes of this paper, a kaleidoscopic vision of aesthetic categories is employed in order to better remix the manifest images of the real which humanity currently intimates in the hyperobject of climate change.

The Anthropocene manifests itself in various modalities and in particular iterations, while the paranoid subject of contemporary western capitalism works to repress the encroaching consciousness of the *planetary* (and, by implication, the *cosmic*) scale of reference. Moving away from the ballast of the symbol (most easily readable in the personification of the va-

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[1] See for ex. "The Plantationocene Series," *Edge Effects*< https://edgeeffects.net/plantationocene-series-plantation-worlds/>; Jason W. Moore, ed., *Anthropocene or Capitalocene?* (PM Press, 2016);

[2] Simon Dalby, "Framing the Anthropocene: Good, Bad, Ugly," *ResearchGate*, paper presented at the Association of American Geographers (Chicago: 2015).

[3] Margaret Atwood, "It's not Climate Change, It's Everything Change," *medium*.com, ac-

rious chthonic pantheons) towards the abstract plane of the sign, the moment of the Anthropocene exposes numerous manifest images which invest the relationship of the human figure to its milieu. The first such personification of the World as the good/bad/mourning/sublime mother must be shown as a shibboleth. Slavoj Žižek writes that "if there is one good thing about capitalism it is that under it, Mother Earth no longer exists."[4] The focus of academic and public interest has rightfully been shifting from the language of anthropocentric Oedipal narcissism, and has rather started working towards understanding the complex, multi-agent system which channels the alienated human.

This essay will work to unpack three such aesthetic sensibilities which grow from the corpse of the mother goddess – that of the sublime, the weird, and the queer. This triptych thus works through the plasticity of the language-interface aiming to excavate three deep scaffolds of the social unconscious.

Part I: The Planetary Sublime, or the Threat of the Inhuman

Merely employing the Anthropocene as a signifier has had at least one good effect on the level of the social unconscious: the death drive has seeped in through the floorboards and has soiled the master's chair. The politics which underwrite the current epidemic of environmental events, such as anthropogenic drought, the global spread of microplastics, or chemical pollution of ground water and crops[5] can on some level assert themselves as the sublime big Other – like the Biblical Seven Plagues coming from the vacuum of time, always underwriting the very condition for the return of the repressed. In its textual extreme, this is the apocalyptic vision, where swarms of

cessed 26 August 2019<https://medium.com/matter/it-s-not-climate-change-it-s-every-thing-change-8fd9aa671804>.

[4] Slavoj Žižek, "Ecology against Mother Nature: Slavoj Žižek on Molecular Red," *Verso Blog*, accessed 26 August 2019<https://www.versobooks.com/blogs/2007-ecology-against-mother-nature-slavoj-zizek-on-molecular-red>.

[5] These are just some of the particular cases where ecological deterioration is most palpable in the Czech Republic. See EEA< https://www.eea.europa.eu/soer-2015/countries/czech-re-public>

species, epidemics all work to reinstate a sense of impotence which, on the level of the imaginary, is complicit with retaining the dialectic of man and nature. 'Nature' as signifier in the age of the sublime Anthropocene curbs the specular freedom of a mythical, imagined 'humanity' and displaces the agency of choice on the object, with appropriate reaction formations on the part of the resurgent polis.

The capabilities of technical imaging and remote observation have ever more established the homo sapiens' evolutionary environment and fixed its position as a node of cosmic deep humus. At least since 1968's *Earth Rise* image, the biosphere has been shown to be a petri-dish permaculture nestled in the dark expanses of the cosmos and tethered to a raging sun. The sublimity of understanding one's position as inhabitant of the pinprick "Pale Blue Dot," is predicated on acknowledging the underlying materiality of the Earth system, and these changes profoundly shape the social imaginary. Understanding the Earth's fragility has opened up the logic of the zero/sum game which had motivated the ubiquitous "warlike" mode of being throughout the human's evolutionary history.[6] The continuing relevance of sublimity in today's political sphere is ensured precisely because of its insistence on the politics of space (the inside/outside, the village/the bush, Us/Other) over those of time. The reaction formation of localized societies may reinstate the politicization of the nature/culture or inside/outside dialectic which underpins the logic of regressive political movements. The aesthetic of the sublime is on this level complicit with a garrison mentality and has the capacity to instate a fascism of the hyperobject.

the fascism of the hyperobject

Building on the work of Edmund Burke and Emmanuel Kant, J.-F. Lyotard speaks of the sublime as that which inspires both "terror" and "pleasure." Lyotard writes that the sublime feeling emerges when "a very big, very powerful object which

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[6] Primož Krašovec, "Capital, War, and Love," *Šum #11: Hypersonic Hyperstitions* (May 2019) 1537.

when "a very big, very powerful object which threatens to de-prive the soul of any 'it happens,' strikes it with 'astonishment' [...] The soul is thus dumb, immobilized, as good as dead."[7] A political praxis predicated on such an approach is ethically suspect not because it accepts the credo that humanity is on a road towards "possible extinction,"[8] as Jem Bendell believes, but is rather suspect for succumbing to the fetish of the threat, and deriving a disavowed jouissance from it. In its posthuman mode this sensibility regards 'extinction' as pressingly inevita-ble, but wielded as a political tool, this extinction would ideal-ly apply only to those standing on the wrong side of the fence. This culture of threat has the capacity to mobilize large seg-ments of the otherwise politically inactive population, opening the way to scapegoating and victim blaming. It is when faced with such stressors and such a frame of paranoid dialectics that people might turn to a tribal mentality (us/them, fight/flight). Benjamin Bratton warns that in a situation of general emergency, "people will vote for sovereigns who promise to rebind them together and who claim powers to make reality obey the tribal narrative."[9]

The ethics which underpin the discourse of the sublime an-thropocene are perhaps analogical to Lacan's anecdote of the jealous husband: the pathologically jealous husband who might be suspecting that his wife is sleeping with other men is still a pathological case, even though his wife *is* in fact cheat-ing on him with other men. The underlying psychological mo-tivations for political action do matter, and it is necessary to acknowledge the thanatropic jouissance which certain minds and systems generate from espousing the nihil of 'no future.' No future for whom, and who decides? The recent rise of the very possibility of an ecologically conscious fascism, or what T.J. Demos calls authoritarian capitalism,[10] is a prime example

[7] Jean-François Lyotard, *The Inhuman: Reflections on Time* (Stanford: Stanford University Press, 1991) 100.
[8] Jem Bendell, "Deep Adaptation: A Map for Navigating Climate Tragedy," *IFLAS Occasional Paper 2* (July, 2018) accessed 26 August 2019< https://www.lifeworth.com/deepadaptation.pdf>.
[9] Benjamin Bratton, "On Anthropolysis," *E-flux* (January, 2016) accessed 26 August 2019< https://www.e-flux.com/architecture/superhumanity/68640/on-anthropolysis/>.
[10] T. J. Demos, "The Agency of Fire: Burning Aesthetics," E-flux (March, 2019) accessed 26 August

of such an uneasy overlap between espousing ecological responsibility in the face of encroaching stressors, and the utter ethical negligence which oftentimes underpins these public efforts.[11]

Lyotard further defines the experience of the sublime as "terror at one remove." For the "terror to mingle with pleasure and with it to produce the feeling of the sublime, it is also necessary that the terror-causing threat be suspended, kept at bay, held back [...] This is still a privation, but a privation at one remove."[12] If the sublime is indeed predicated on a sense of suffering mingled with delight,[13] there is no greater sublimity than to see a spectacle of ecological, social, personal suffering 'at one remove.' The sublime approach to ecological catastrophe draws a clear line between the inside and the outside, between 'the people' and the encroaching Other, and is fitting for a polis inoculated with a garrison mentality predicated on holding back the chaos from the walls of civilization. The sublime of nature stares back at the culture which frames it, and such a mirroring breeds the fascist political subject. The lines are drawn. '*You've brought this down upon us*!'

Longinus' text *On the Sublime*, dating to the 1st century AD, already sees the sublime being determined not only by the perception of grandeur and immensity, but also being evoked by artful speech. In the classical canon, the category of the sublime is thus rather weighted on the level of political art, than it is on the sublimity of the environment. Longinus describes the sublime as an aesthetic category which mostly consists in evoking in people a "noble inspiration," and thus introduces an art of the political sublime. The 'sublime' has in this sense always come as doubly inscribed: on the one hand, it resonates on the level of artful speech as propaganda for the polis while on the other it has come to be defined as a sub-

2019< https://www.e-flux.com/journal/98/256882/the-agency-of-fire-burning-aesthetics/>.

[11] For a historical case study documenting one of the most well-documented convergences between green politics and fascism, see Janet Biehl, Peter Staudenmaier, *Ecofascism: Lessons From the German Experience* (AK Press, 1995).

[12] Lyotard 99

[13] Edmund Burke, *A Philosophical Inquiry into our Ideas of the Sublime and*

jective post-human experience inscribed within a logic of alienation. There is a sublime of the post-human predicated on the aesthetics of lack, while the political sublime is always the object of the centripetal spin of political ideology which tends towards endemic coherence and a 'strength through unity.'

finding deep time

The outside of the sublime hyperobject of climate change resides in the aphanisis (the disappearance of the sex drive) which underpins the aesthetics of the inhuman. Rather than insisting on modeling an ideal polis, the inhuman dissipates some of its specular force (embodied in the maxim of blood and soil) within an aesthetics of the Real. The desert of the Real is thus a bitter remedy to political paranoia insofar as it acknowledges the missed encounter of the ideal-I with the ideal political subject. The dialectic of the sublimity of climate change thus rests on the mutual counterweight between political fascism and an inhuman sensibility.

Some of the earliest echoes of this inhuman aesthetic can be found in the work of the American poet Robinson Jeffers who, in works such as *The Inhumanist*, *The Double Axe and Other Poems* (1948), or *Carmel Point* (1954) largely fostered the aesthetic of inhumanism. In *The Double Axe and Other Poems*, Jeffers defines inhumanism as

> a shifting of emphasis and significance from man to not-man; the rejection of human solipsism and recognition of the trans-human magnificence. [...] This manner of thought and feeling is neither misanthropic nor pessimist. [...] It offers a reasonable detachment as rule of conduct, instead of love, hate and envy.[14]

Beautiful (Penguin, 2004).
[14] Robinson Jeffers, *The Double Axe and Other Poems* (Liveright, 1986).

In his poem *Carmel Point*, Jeffers speaks of the need for humans to "uncenter our minds from ourselves" when faced with a nature which can never accept the human construct on its own terms: "Does [this place] care?/ Not faintly. It has all the time. It knows that people are a tide/ That swells and in time will ebb, and all/ Their works dissolve."[15]

The thin moment of the Anthropocene in this way constitutes a change of quality in the temporal frame of the sapiens. It is a rift in deep time, one where the time-scale of humanity and that of the planet for a relatively brief moment intersect, and it is this moment which breeds specters of the inhuman. As Dipesh Chakrabarty writes: "The Anthropocene debate [...] entails a constant conceptual traffic between Earth history and world history,"[16] or what Bratton terms the "planetary" and "anthropocentric time"[17] where the former indexes deep time while the latter is isomorphic with the human semiosphere. It is the moment when the human subject understands the material processes which underpin the very possibility of human signification as functioning within a multi-tiered gradient of evolutionary development accreting at the tempo of deep time. From the homo sapiens' vantage point, however, seeing the horizon of deep time telescope into both the past and future recursively dwarves the human scale and "uncenters" human experience.

The centrifugal logic of such telescoping is anathema to the paranoid politics of the polis. The aphanisis which such an inhuman aesthetic engenders is a direct threat to the mechanisms which sustain the reproductive mandate and the cohesive ideological narrative of the given society. This rift establishes the fundamental dialectic of the planetary sublime.

<p style="text-align:center">***</p>

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[15] Robinson Jeffers, "Carmel Point," *poets.org*, accessed 26 August 2019<https://poets.org/poem/carmel-point>.
[16] Dipesh Chakrabarty, "Anthropocene Time," *Wiley Online Library* (March 2018) accessed 26 August 2019< https://onlinelibrary.wiley.com/doi/full/10.1111/hith.12044>.
[17] Bratton "On Anthropolysis"

Language approaches the hyperobject of climate change as a neurotically enumerated assemblage of things, objects, effects, affects, and dispositions, without it ever coming into clear focus as a thing-in-itself.[18] The shimmer of the real can in this sense easily translate into a political threat "at one remove," and can breed protectionism and fascism as an attempt to stem the decentered flows of products and people in favor of returning to 'the way things were.' But the planetary sublime inevitably eats the tale of those modernities which allowed it to develop in the first place. As Nigel Clark writes: "[The Anthropocene] confronts the political with forces and events that have the capacity to undo the political," encouraging humanists to "embrace the fully *inhuman*" in order to put them in "sustained contact with times and spaces that radically exceed the conceivable human presence."[19]

This epistemic evacuation of what it positively means to embody the 'human' in favor of the a post-human ambivalence to the very question constitutes the antithesis to the fascist call to order and, on a subjective level, provides a robust ethical inoculation against the politics of blood and soil.

The revelation of deep time then poses a challenge to the global population: in order not to regress to a properly tribal political ethos predicated on the in-group/out-group binary and sustained through reproductive ideology, the homo sapiens, faced with accelerating climate threat, must integrate an understanding of planetary time and of planetary space (so far the vestige of marginal entities, such as poets, scientists, schizophrenics) into the political unconscious. The conception of the inhuman must be smuggled out of the fascist imaginarium

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[18] Here is also where the aesthetics of 'the unnameble' in much of H.P. Lovecraft's fiction ("The Shadow out of Time, "The Unnamable," "At the Mountains of Madness," and many others). The world turning in on itself and eating its own 'weird tale' is very similar to the overlaps and transgressions which accompany the subject's encounter with the 'outside' or the 'out of time' in the age of Anthropocene. The sublime experience of horror in the Anthropocene has been well described by Eugene Thacker in his *Horror of Philosophy* (Zero Books, 2011, 2015, and 2015) trilogy.

[19] Nigel Clark, "Geo-politics and the disaster of the Anthropocene," *Sociological Review* (June 2014) accessed 26 August 2019< https://journals.sagepub.com/doi/abs/10.1111/1467-954X.12122?journalCode=sora>.

and its maxim of reproduction and must address the diverse assemblage of present threats and challenges in ways which are politically progressive, and which are able to harness the productive nihil of contemporary inhumanism.

Part II: The Weird and the big Other

The tentacle in the door, raining toads, a jellyfished polar bear – on the level of human semiosis, "global weirding"[20] is experienced as a melding of thresholds, a deconstruction of oppositions which unravels the mesh of normativity in a kaleidoscope of pareidolia. Earth systems accelerate their divergent drift, the repressed seeps in through the panes and things get weird. The Anthropocene debate figures as a stage for navigating the complex overlaps which dissolve the very logic of mere binary oppositions, such as nature/culture, man/animal, techné/poésis. The creation of a virtual twin which underwrites the drive towards planetary computation[21] similarly melds the rigid category of the real and the virtual and tightens the relationships between seemingly disparate occurrences. This mobious sensibility is that of the weird.

The Anthropocene has been termed a "thin moment"[22] when "the global environment, [...] is shaped by humankind,"[23] and when "the global economy is the new geomorphic force at work in the biosphere."[24] The acceleration of extraction and digestion of the Earth's diverse resources (water, minerals, animals, knowledge..) has be come noticeable on the level of political discourse, and has been further interfaced and integrated by means of the digitization of tools, and large-scale

[20] A term coined by Hunter Lovins and popularized by Thomas Friedman in "The People We Have Been Waiting For," *The New York Times*, 2 December 2007, accessed 26 August 2019< https://www.nytimes.com/2007/12/02/opinion/02friedman.html>.
[21] Such as the Cisco/NASA joint project Planetary Skin: see "NASA and Cisco's 'Online Global Nervous System,' Planetary Skin" accessed 26 August 2019<
https://atelier.bnpparibas/en/smart-city/news/nasa-cisco-s-online-global-nervous-system-planetary-skin>.
[22] Bratton "On Anthropolysis"
[23] Lucy E. Edwards, "What is the Anthropocene?" *Eos* (30/11/2015) accessed 26 August 2019< https://eos.org/opinions/what-is-the-anthropocene>.
[24] Dalby 2

predictive computation. The circuits of resource extraction and consumption which throughout the Holocene had remained temporally dilated and did not necessarily register as 'change' or 'information' for the Homo sapiens, have now become noticeable due to the accelerating difference which they generate.

On the level of the social, the originary tempos of hunter-gatherer societies, or later pre-modern farming communities, have been disrupted: the non-linear acceleration of material energy transfer and telematic processes work to contract the aesthetic experience of space and time, and this thinning of the experience of time generates noise.[25] Time in the Anthropocene seems out of joint, and the extraction of knowledge, resources, energy from the monad of the World works for the simultaneous destruction of the human project which originally engendered it.[26] It is this strange syncretism of the past and future coalescing around the atemporality of possible extinction which opens up the circuitry of the weird, as the recursive overlap of human and planetary time has inaugurated a ubiquitous weirding of bodies and their relations. This relatively brief moment (just how brief this moment is still remains to be seen) of conscious countdown constitutes the weird Anthropocene.

intimations of the big Other

The Anthropocene is thus precisely the moment when the political imaginary of space encounters the 'temporal outside' of planetary time. Such is one of the many integrated circuits on which the social imaginary subsists, and 'the weird' functions as a reminder of the mobious tautology which underpins the exchange dynamic between the adoption of imaginary relations to their real material conditions. It is the weird which puts its foot in the door, and leers at us from beyond the panes of the human's heimlich abode of production. Mark Fisher

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[25] Paul Virilio, *Open Sky* (Verso, 2008).
[26] Bratton "On Anthropolysis;" Chakrabarty "Anthropocene Time"

writes that "It is the irruption into *this* world of something from outside which is the marker of the weird,"[27] and elsewhere in his seminal text *The Weird and the Eerie* he writes that "the weird is that *which does not belong*."[28] A thing can thus never be weird without an imaginary context predicated on belonging, and this threshold, this space between the worlds, is the realm of the weird.

Fisher however approaches the weird not only in terms of space, predicated on the inside/outside split, but adds the layer of time when he writes that "one of the archaic meanings of 'weird' is fate. The concept of fate is weird in that it implies twisted forms of time and causality that are alien to ordinary perception."[29] Time becomes siphoned into space, and an alternative underlying syntagmatic logic is thus inaugurated for the subject. The ground of the material environment becomes manifest as a sedimentation of time while the level of time telescopes out into a transcendental horizon of 'fate.'

The weird is that which on the one hand does not belong in the space – it is a foreign invasion from the outside – but on the other is the harbinger of a temporal *nomos* which encroaches and rewires the best laid schemes. It can be constructed as the big Other, the paranoid Deus Ex Machina which comes *from out of time.* Fisher's subject thus regards the weird as an ambivalent concept, always swerving between intimations of its parasitic imposition as well as its right-hand guise of divine invasion. That which imposes itself on the subject is the big Other whose binary dialectics (the good/bad phallus/mother) again makes the weird into a fetish. The logic of the big Other is on this level identical to that of a conspiracy construct,[30] insofar as both are supported by a paranoid sensibility which reintegrates the big Other into the subject's being-in-the-world. It is then mobilized or, from the perspective of the subject, irrupts in times of personal and social crises.

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[27] Mark Fisher, *The Weird and the Eerie* (Repeater Books, 2017) 10. [Online version]
[28] Fisher 7
[29] Fisher 7
[30] Vít Bohal, "The Grand Conspiracy: A Lacanian Reading of Contemporary Conspiracy Theories," MA Thesis (2015)<https://is.cuni.cz/webapps/zzp/detail/140114/?lang=en>.

The moment of the weird is a node which couples the subject's free signification of the Ideal-I into the paranoid syntax of the transcendent big Other.

Mark Fisher writes that the paradox of time travel, which he identifies as a staple feature of weird fiction, "plunges us into the structures that Douglas Hofstadter [*GEB: The Eternal Golden Braid*, 1979] calls 'strange loops' or 'tangled hierarchies,' in which the orderly distinction between cause and effect is fatally disrupted."[31] A transcendent force of God and government, or of non-split sovereign power, is intimated from signs and idiosyncrasies. It is these moments of magical intensity which reflect on the subject as 'the weird.' The weird effect is thus a structurally paranoid intimation of a syntax which lies beyond the integrated circuit. On the subjective level, this specter always resonates as transcendent and beyond time, while simultaneously manifesting in space as a thing 'for us'. The weird can be tracked to bird signs, synchronic pareidolia, or signs which exist in the interstitial fold where human and planetary time frames collapse. The weird Anthropocene, or "global weirding," can be understood as human time becoming abducted by planetary space. This transcoding of time into geological space closes the loop between figure and ground and marks the moment of the weird Anthropocene.

beyond the big Other

The anthropogenic notion of the big Other is not commensurate to the Real – where the Real is that which ultimately inflicts physical change, the big Other is bound as an anthropocentric interface, an evolutionary and linguistic tool for accounting trauma. The big Other is in this sense complicit with the rejection of the queering of power, as it attempts to retain the syntax of the Master Signifier, only now fixing its place not with the fascist polis, but with the weird *outside*.

[31] Fisher 18

The Real, once liberated of the tribal structure of the Oedipal unit, can become non-complicit, meaning that its generation of difference becomes commensurate with planetary time and its inhuman processes of molecular exchange. The weird is thus a nostalgic reminder of the lost big Other and Is based on the intimation that sometime, somewhere, the big Other remains whole.

This logic of the big Other and its latent inclusion in the conception of 'global weirding' stands orthogonal to Joe Romm's notion of "Hell and High Water." Romm critiques the notion of 'global weirding' and, vicariously, also that of the transcendental weird of the big Other when he writes that

> the word 'weird' strongly implies something either supernatural or bizarrely unexpected. What's happening to the planet is pure science[32] and has been predicted for decades — nothing weird about that except maybe it's happening faster than most scientists projected.[33]

Although the statement that what is happening to the planet is "pure science" could be contested on terms of its epistemology, the idea that there is an unapproachable layer beyond the interpellation of the big Other is sound. Indeed, hell and high water very well encapsulates one of the probable scenarios for the coming decades and centuries of life on planet Earth.[34] The weird is thus a fading luxury which allows to read into the fractures in the facade of the big Other, but does not challenge its existence structurally. The weird is merely a fissure in time which whispers of the outside to those trapped within the thin layer of a reeling biosphere.

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[32] What's "happening to the planet" is not quite "science" however. Science is rather an interface onto the molecular processes at work which sustain the ambivalent concept of the Real.

[33] Joseph Room, "NYT's Tom Friedman is Wrong on 'Global Weirding'," *Huffington Post*, 25 May 2019, accessed 26 August 2019<https://www.huffpost.com/entry/nyts-tom-friedman-is-wron_b_75290>.

[34] Demos "Burning Aesthetics;" See also the interview with Newton Harrison in this volume.

Part III: Global Queering (Spinning the Future)

The telescoping of deep time has ushered in an inhuman frame of temporal reference. Such a motion has recourse for western sexual politics which have in select modalities become unmoored from the imperative for reproduction.[35] Staring into the abyss of planetary time and seeing the inching impacts of climate change have made many people reappraise their capacity and their mandate for reproduction, and the old anthropocentric narratives based around the promulgation of a given cultural syntax have become fundamentally relativized by contact with the deep conditions of society's very existence - *'Madame Frankenstein, I presume.'*

The postanthropocene works in tandem with the queer/posthuman subject towards a matter-of-fact displacement of the human sexual complex. This displacement of personal and societal reproductive norms may be called a 'global queering.'

The posthuman aspect of the queer as aesthetic category works directly to unravel sexual politics, and the category of 'the queer' will in this essay be closely linked to the structural dynamics of Rosi Braidotti's posthuman subject. Braidotti describes the posthuman subject as a nomadic entity which moves "across established categories and levels of experience: blurring boundaries without burning bridges."[36] This transient, posthuman, and consciously feminist subject is not only immanently material, but also always hybrid and unstable from the vantage point of social ideology, offering a vantage point to think about the potential beings and becomings of queering the postanthropocene – a time when both social and

[35] Ash Sanders, "I Chose Not To Have Kids Because I'm Afraid For The Planet" *Buzzfeed*, 24 June 2019, accessed 4 October 2019<https://www.buzzfeednews.com/article/ashsanders/ birth-strike-no-kids-climate-change-population>; or Stephanie Bailey "BirthStrike: The people refusing to have kids, because of 'the ecological crisis'", CNN, 26 June 2019, accessed 26 August 2019<https://edition.cnn.com/2019/06/05/health/birthstrike-climate-change-scn-intl/index.html>.
[36] Rosi Braidotti, *Nomadic Subjects: Embodiment and Sexual Difference in Contemporary Feminist Theory* (Columbia University Press, 1994) 4.

geopolitical cartographies are being redrawn as a result of the processes of climate change and its resulting political upheaval.

As Sara Ahmed notes, 'orientation' is just as much a spatial as it is a sexual trope.[37] The material landscape of the planet thus shows the posthuman sensibility as one of nomadic optimization within a fundamentally geopolitical mesh of power relations, where the queer sensibility has an insistent mandate for micromanaging power relations. The discursive dynamics of evasion, merging, splitting, or departure on the part of the queer subject are shared with Braidotti's nomadic subject which constitutes the foundation of her theory of the posthuman sensibility, and are similarly immanent to the dynamics of Ahmed's project of "queer phenomenology." It will be the task of this essay to better detail the overlaps between the queer and the nomadic, and elucidate how they tie into the construction of a postanthropocene future.

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Cases where the resistance to reproducing the gender binary is punishable by incarceration or death, often necessitating the spatial relocation and asylum-seeking on the part of the afflicted,[38] provide the evidence for reflecting on the latently fascist mandate of the state apparatus to keep binary sexual orientation. The question of 'orientation' can in this sense be traced not only to its use in sexual politics, but can also be closely linked to the choices which allow a society to "move forward" within a given geo-political landscape. It equally translates into the plight of the queer immigrant who might feel persecuted, ostracized, or displaced by the geopolitical system in which she/he/they find themselves.

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[37] Sara Ahmed, *Queer Phenomenology: Orientations, Objects, Others* (Duke University Press, 2006).
[38] Yvette Tan, "Brunei Implements Stoning to Death," *BBC*, 3 April 2019, accessed 26 August 2019<https://www.bbc.com/news/world-asia-47769964>; or Nataliya Vasilyeva, "Reports: Several Gay Men and Women Detained in Chechnya," AP News, 11 January 2019, accessed 26 August 2019<https://apnews.com/88929f353d494b3a87843002d02ad155>.

From the perspective of state-level governance, which is always integrated within a paranoiac structure of power relations, cultural and social movements are always bidding for the future within a hyperstitional logic and are always posited in relation to the mandate of the Master Signifier. The territorial and paranoiac state-apparatus reads the queering of the future as a misalignment of values which threatens the fracture of the social body, and which, through its fundamental insistence on intersectionality, taint the purity of the cohesive ideology – the resistance to queerness is never *just* about being anti-Catholic, 'sick,' or about western 'homosexualism' or feminism, but rather always works within a logic of vilification of the protean Otherness. Evoking Freud, Ahmed states that "queer is a 'death threat'" to the state apparatus, as "*queer desire threatens to discontinue the father's line.* To bring such queer desire in line is to continue the father's line"[39] (italics original). Although such a statement might seem anachronistic in the context of contemporary post-feminist politics, it is necessary to keep in mind that people indeed still do get ostracized, maimed and killed for their "orientation" which diverges from the traditional and sanctioned binary gendering. The fear of losing out to a queer future thus oftentimes goads the paranoiac apparatus into action, both on the political as well as the intersubjective level, and this perceived deviancy can be mobilized for political ends – both as a reaction-formation as much as a power strategy.

Ahmed paraphrases be Beauvoir, saying that "One is not born, but becomes straight,"[40] explicitly establishing the claim on sexuality exercised by state power which disciplines the polymorphous perversity of the subject. The spectrum of deviancy is in this sense cast as a political player insofar as it is in a metonymic relation to an imagined ideology and its legitimacy of power. Queering in this way reworks the sanctioned cultural syntax which conditions the stages of a subject's development towards integration and reproduction (both in labor as well as

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[39] Ahmed 76
[40] Ahmed 74

in sex) for the benefit of the corporate-state complex. This control over the syntax and temporal structuring of the future often readily discounts those experiences which are perceived as misaligned and do not form heterogeneous economic relations within the culture itself, if only through their dedication to non-reproductive forms of habitation. This does not mean that queer subjects cannot work, have children, or take part in communal life, but rather that they are always politically marked while doing so – being queer means that they never work, reproduce or interact *as they should*. Large social megastructures predicated on ideological reproduction (such as the state) have trouble identifying the unheimlich production of sensibility which threatens their unspoken maxims of power.

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The impact of queerness on state-level ideologies is one of the major battles facing the LGBT movement in countries such as Russia, Iran, Brunei, or China. But the force of what Keller Easterling has called the microscopic "chemistry of power"[41] cannot be discounted in its asymmetrical struggle with the mandate of the Master Signifier. As Foucault writes, "Power is everywhere, not because it embraces everything, but because it comes from everywhere,"[42] and this tactical infrastructure which works largely on the level of micro-politics (occasionally tending to the meso-politics, as espoused by the Xenofeminist project)[43] needn't directly threaten the logic of the Master Signifier and aim to 'discontinue the father's line,' as warned by Ahmed. The question of *queering* power thus rather feeds into the question of *alignment* with power – queer aesthetics spin and displace the mandate of the Master Signifier in subtle ways, and in their praxis can stray from its variously rigid ideological tautologies by incremental levels, through the various aesthetics of satire, travesty, irony, pastiche, or simply exit. As the Laboria Cuboniks collective writes, a truly con-

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[41] Keller Easterling, *Medium Design* (Strelka Press, 2018).
[42] Michel Foucault, *The History of Sexuality, Vol I.: The Will to Knowledge* (Great Britain: Penguin, 1998) 93.
[43] Laboria Cuboniks, *Xenofeminist Manifesto*, accessed 26 August 2019<http://www.laboriacuboniks.net/20150612-xf_layout_web.pdf> 9.

temporary feminism needs to adopt the strategy of the "parasite" which should be "as virulent as host-engagement can endure."[44] The noise which such a parasite engenders within the imagined dominant ideology can thus work in variously minute levels of intensity and can work strategically to spin 'misaligned' or queer social futures. Braidotti writes that "if power is complex, scattered and productive, so must be our resistance to it,"[45] and the Xenofeminist project consciously develops on this approach through their drive to make such micro-political substrate into the eventual stuff of meso-politics. This dynamic of cohesion and dissipation must be regarded as a valuable partisan strategy for working against the state apparatus.

Slavoj Žižek has identified the quantum level of ideology in establishing that each ideological metatext is organized around a *point de capiton* sustained by tautology.[46] Ideology can in this sense be regarded not as a robust scaffolding upon which normativity is stretched like a screen, but rather can be imagined as a matrix of interference patterns between the nodes of various techno-political tautologies which bid for the future within an overarching hyperstitional logic. The abstract intertextual fields of the nodal points structure the wider discourse in ways which have, through processes of globalization and ubiquitous digitization, increasingly become unmoored from geopolitical state lines, and are rather akin to the logic of what Benjamin Bratton calls the *nomos* of the Cloud.[47]

Rosi Braidotti's project of posthumanist nomadic subjectivity similarly stresses "the self-organization (or auto-poetic) force of living matter"[48] which tends toward the 'natural' saturation of society with queer aesthetics. It is in this sense that queer-

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[44] Laboria Cuboniks, "Alien Contagion:An interview with Laboria Cuboniks," *Accessions*, accessed 26 August 2019< https://accessions.org/article2/alien-contagion-an-interview-with-laboria-cuboniks/>.
[45] Rosi Braidotti, *The Posthuman* (Polity, 2013) 27.
[46] Slavoj Žižek, *The Sublime Object of Ideology* (Verso, 1989).
[47] Benjamin Bratton, *The Stack* (MIT Press, 2015). The cloud will here be understood rather metaphorically as a shared space of sensibility which can be accessed and departed, activated, entered into and checked out of. The cloud is thus abducted from the register of what it is to the speculation on what it does on the level of society.
[48] Braidotti, *The Posthuman* 3.

ness may be conceived as a structural feature of posthuman subjectivity itself: queerness has become an integral feature of politics insofar as it works by spinning the dominant narratives and practices (based around growth, nation, unity, strength...) peddled by the powers that be (state, corporate, imperial, bureaucratic...) in favor of a nomadic, skewed, and problematic relation to hegemonic 'society' and its structures of signaling and signification. This alternate syntax of becoming no longer need be relegated to the level of micropolitics, or to what goes on 'behind closed doors,' but has effectively achieved a threshold moment beyond which it is transposed into a newtwork which no longer remains isometric with the best laid plans of state-level ideology. The queer cloud diffuses the boundary of the in-group / out-group; it blurs it without necessarily burning its bridge, and makes the cloud a fitting metaphor for the queer and nomadic infrastructure of signifying relations and their tension with territorial and nationalistic constructs predicated on the politics of essence and reproduction.

The power of 'the queer' to misalign the mandate of the Master Signifier is however always threatened with reterritorialization within a centralized nomos, either through commodification and the promulgation of identity politics (as in the West), or through various levels of ostracization and bodily harm administered in various Eastern and Arab nations. The power 'to queer' and to spin social development is predicated on a nomadic subjectivity which runs parallel and overlaps with the Overton window, and this cloudy logic of metastability thus constitutes the fundament of a truly queer planetary sensibility which might resist cooptation by macro-power structures through various cunning means – camouflage, masquerade, displacement, flight... The truly queer aesthetic thus always works through abduction and is capable of spinning a future that is 'misaligned' with the plans for further developing the Master's house.

When Things Take Time

MATT COLQUHOUN

The immensity of the effort that must be made, the necessity of again putting into question all of the values to which we are attached, of returning to a new barbarity in order to break with the polite and camouflaged barbarity that serves as our civilisation, the unknown toward which we direct ourselves—for we absolutely do not know what man could be—the terrible violence that the inequality in the satisfaction of needs provokes, the enslavement to things, the governance of things, as well as the dialectic proper to technology, the inertia, finally, the fatigue: everything would contribute to putting off the realization of such a movement to the time of reckoning of a dream (or of blood), if the pressure of needs did not represent a force, a reserve of great duration. One could say that the speed of the movement's progression is surprising, but in any case, time is required for it...[1]

Maurice Blanchot, in this river-like passage, which flows and unfolds without stopping across contentions, challenges and difficulties, all on the issue of how we might begin to approach communism as our "material search for communication,"[2] in arguing that "time is required for it", is not simply asking his reader for their patience (although I might do well to ask you for yours). What Blanchot is building here is an "impossible" project and one that still resonates with us today, faced as we are with our own impossibilities – the impending climate crisis looming large as the most unassailable obstacle of all.

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[1] Maurice Blanchot, "On One Approach to Communism," *Friendship*, trans. Elizabeth Rottenberg (Stanford: Stanford University Press, 1997) 94-95.
[2] Blanchot, *Friendship* 93. Blanchot acknowledges that this phrase has been borrowed from his friend, the political activist and essayist Dionys Mascolo, although its original context is not cited in the text.

We should note, first of all, that Blanchot's communism is principally focused on a new communality; a new collective subjectivity; on radical friendships and infinite conversations; on subjective relations that escape the bounds of capitalist utilitarianism; that escape our understanding of human lives as tools for production with benefits and costs. For Blanchot, the innate violence of capitalism occurs when a man who accepts his *thingness*, his *toolness*, his *usefulness* for the system of which he is a part "not only breaks off communication with one who is similar or dissimilar to him but breaks off communication with himself,"[3] having little sense of the self that he is outside the restrictive context of economic relations. It is this interpersonal sense of alienation, most fundamentally and foundationally, that communism as the material search for communication must first seek to remedy today.

Despite our best intentions, the apparent impossibility of succeeding in this search comes from our total capture by capitalist modes of relation. Capitalism is so entangled with our language and modes of communication that we struggle to think and articulate the benefits of a life outside its grasp in terms that the system has not already captured for its own uses. The consequences of this capture continue to echo down the centuries. All that we have ever held sacred – all that exists beyond economic value – for Blanchot, the poetic and the artistic most explicitly – "loses and obscures itself as soon as it is satisfied in value."[4] Indeed, as so many on the political left have noted and mourned over the years, it was this very process that killed the counter-cultures of a 20th century avant-garde, an event that our processes of cultural production have still not yet fully come to terms with.

[3] **Blanchot 93**
[4] **Blanchot 93**

This paradoxical process is not limited to the commodification of artistic pursuits, however. It is a process to be found at every level of contemporary being and experience. This is a result of capitalism's well-documented and total co-option of time and the necessity of time for everything that we do. No matter what it is that we are producing – be it capitalist commodity or avant-garde artwork, disciplinary regimen or revolutionary movement, or even life itself – time is required for its growth and development. It is in our entanglement with these disparate forms of time that the impossibility of Blanchot's project most clearly reveals itself. However, this impossibility is not an obstruction. As Blanchot writes, it is not his intention to put off "the realization of such a movement to the time of reckoning of a dream."[5] His project is instead radically positive in its impossibility, wherein the impossible is not a horrifying non-Euclidean space of complacent capture – of the sort that the artist M.C. Escher so famously depicted, for instance – but rather a concept that offers us an opportunity for reflection in our consideration of it, allowing for new perspectives on our own libidinal desires as we seek to exit the tempo-capitalist loops that any given subject finds itself trapped within today, and allowing for such a capture and its projected exits to be confronted on their own absurdist terms.

It is precisely this sort of exit that requires the "immensity of effort" that Blanchot describes and this immensity cannot be understated. As Blanchot's friend Georges Bataille would write of his own (very similar) conception of the impossible: "Only the extremism of desire and of death enables one to attain the truth" that the impossible contains.[6] Death looms large here as a morbidly negative dimension of this formulation. However, for Bataille, the unthinkable nature of death provides philosophy with a foundation on which to build a new ethics, echoing the more contemporaneous observations of ecological activists and political theorists such as Donna Haraway and Mark Fisher, for example. As Fisher would write, death and our experience of it – and "not just individual

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5 **Blanchot 95**
6 **Georges Bataille,** *The Impossible*, **trans. Robert Hurley (San Francisco: City Light Books, 1991) 9.**

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death, but hyper-death, and not just the unexperienceable, but the evaporation of the very possibility of experience" – with humanity's extinction as a result of the climate crisis being the most pressing example – "becomes a speculative and cognitive challenge."[7] For Fisher, the stakes of this challenge are made most accessible to us through "the alienating power of the arts of modernism" which frequently provided us with experiences that made "one question one's own experience."[8] Likewise, echoing Fisher's famously borrowed provocation from his 2009 book *Capitalist Realism*, that 'the end of the world is easier to imagine that the end of capitalism,' Bataille would himself write: "Modern realism admits death, making human life, from the cradle onward, prey to an impossible nothingness."[9] However, since "we cannot limit ourselves to postponing this deadline" that our own mortality represents, "in the end we can only face the impossible."[10] In contending with the enforced realism of our time, we must all, then, become surrealists, imagining and enacting other forms of life beyond the prescribed realisms of our capitalist present.

To approach life and death in this way – following another friend of Blanchot's, Emmanuel Levinas – we must understand the latter alternatively as "the disappearance in being of [...] those movements that are always *responses*."[11] Within this definition we find a two-fold understanding of death. It is, on the one hand, that thing towards which we cannot respond once it has taken us. On the other hand, emphasizing death's place "within being," it is also that which is primarily encountered second-hand, through the death of the other, an experience that demands change and new forms of life for those still living. This is to say that, culturally, we have long understood death to be its own form of departure: death as a *movement* of its own, as a "departure toward the unknown, a departure

[7] Mark Fisher, "Practical Eliminativism: Getting Out of the Face, Again" in *Speculative Aesthetics*, eds. Robin Mackay, Luke Pendrell, James Trafford (Falmouth: Urbanomic, 2014) 91.
[8] Fisher 92
[9] Bataille 20
[10] Bataille 20
[11] Emmanuel Levinas, *God, Death, and Time*, trans. Bettina Bergo (Stanford: Stanford University Press, 2000) 9.

without return, a departure 'with no forwarding address."[12] The importance of this distinction – for Levinas, Blanchot and Bataille alike – is that it emphasizes death's "impact upon the duration of the time that we live, its irruption within time" and "its irruption outside of time."[13] It is another death beyond which time does not end.

What becomes of time, then, in this formulation of the impossible? Time, we might once again note, is required for many things. It is a requirement of being, as a category of experience, but its (measurable) mechanisms are also at the very heart of capitalism itself. It is here that the surreality of temporal capture comes to bear on the modern subject. It is, internally, how we understand experience, memory and speculative thought. It is, externally, that which we sell as part of our labour. Does this mean that any anti-capitalism is ostensibly anti-subjective in its abolition of the category of time? No – *time is still required for it* – but it is a time that is largely unfamiliar to the overbearing clock-time of our capitalist present. To return to Blanchot, he is likewise uninterested in capitalist time, restrained and compartmentalized. What interests him is time *in itself*, in its "metaphysical nudity" – "not only the time that shows itself to human consciousness but the time that is the basis of all consciousness, not time that is expressed in history but time in which history is made."[14] It is not just a *present* time, in both senses of that word, but also an *absent* time, signifying a broader "absence of the world in which we act and work (that of the possible, which constantly denies being in order to transform it, through work, into livable reality)."[15]

Resonating with Fisher's adoration for modernism and its questioning of quotidian experience, Blanchot considered Virginia Woolf's *The Waves* to be the most daring and affecting poeticization of this new temporality, with the symbolism

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[12] **Levinas 9**
[13] **Levinas 9**
[14] **Maurice Blanchot, "Time and the Novel"** *Faux Pas*, **trans. Charlotte Mandell (Stanford: Stanford University Press, 2011) 249.**
[15] **Maurice Blanchot, "The Museum, Art, and Time"** *Friendship*, **trans. Elizabeth Rottenberg (Stanford: Stanford University Press, 1997) 32-33.**

of relentless oceanic torpor capturing the thalassic life and death drives that connect human subjectivity to the natural and unnatural worlds of which we are always already a part. This symbolism is perhaps all the more resonant for us today with the rising tides of the climate crisis echoing the increased fervor of our unconscious sociopolitical undertows.

As with Woolf then and with Blanchot here now, the challenge laid down before us seems to be that the only way out of time – out of capitalism, out of work, out of our own impending ecological doom – is *through time* itself (albeit an amorphous form of time that capitalism persistently denies us access to). Here we might hear an echo of a familiar phrase: *The best way out is through*. It is a phrase, first uttered by American poet Robert Frost, that is arguably most readily associated today with the political philosophies of "accelerationism" – that controversial catchall used to demarcate various arguments that suggest we must escape capitalism by exacerbating the outward-reaching flows it incessantly produces for itself but also cannot but obstruct. By constantly seeking to expand into its own outsides, capitalism opens up egresses to other forms of life that it must quickly capture and subsume within its own mechanisms. With this in mind, the broad church of accelerationism is perhaps best understood as a consideration of the ways in which the capitalist subject is able (and unable) to hack and control capitalism's own life and death drives – the internally produced forces that keep it alive, on the one hand, and those that likewise threaten its own existence on the other. It is also, more importantly, a consideration of the ways that we ourselves are hacked and controlled by these very same inhuman forces.

More specifically, neoliberalism – that term used haphazardly to refer to our contemporaneous political realities which function in the service of capitalist economics – approaches capitalism's death drive by affixing a control value to its various material and libidinal instantiations, releasing just enough of the tension capitalism produces so as to keep its own internal

processes of entropy at bay. When we consider the contemporary climate crisis such an argument comes up against various ethical impasses. The climate seems to be a blind spot for neoliberalism's control valve. Despite decades of reports to the contrary, our political institutions have largely ignored capitalism's detrimental affects upon the climate. We might also say that, at best, neoliberalism's attempts to remedy the situation *just enough* – balancing the health of both the earth and the parasitic system of capitalism that is stubbornly attached to it – have been repeatedly humiliated by their own shortsightedness. Today there is little room for humiliation left with many believing that we are on the precipice of a point of no return. As such, the agentic capacity of the capitalist subject – that which, today, we all are by default – becomes an increasingly important consideration for accelerationism as a philosophy to deal with. We might ask ourselves: what sort of project do we *have time for* that can produce a radically new subjectivity? In many ways, accelerationism is a response to this contemporary dilemma explicitly, but the popular understanding of "the only way out is through" often leads to many believing that any accelerationist view on the crisis at hand is innately nihilistic, as if the response is to "do nothing and see what happens." In fact, the reality is far more nuanced.

We should emphasize here that Blanchot's deployment of the impossible in relation to a deathly desire for communism is likewise an attempt to place the communist movement, as the "death" of capitalism, within time itself – not as an end point or as that which lies beyond empirical knowledge, but rather as an event-horizon that ruptures our present closed-circuit understanding of temporality *as such* (whilst nonetheless being integral to it in the first instance). It is time understood *cyberpositively*. The death of capitalism, then, is not a future-past but a concept to be thought actively in the becoming-present – and it is in this sense, most explicitly, that we can understand time as being required for its movement. This is an insight that is likewise central to philosophies of accelerationism, which we should recognize here as being, first and

foremost, *a theory of time*, and one that does not function well when transposed onto the "frenzied stasis" – the cybernegative reality – of contemporary politics. As arch-accelerationist Nick Land would write in a recent summative essay on the marginal philosophy he helped develop:

> In philosophical terms, the deep problem of acceleration is *transcendental.* It describes an absolute horizon – and one that is closing in. Thinking takes time, and accelerationism suggests we're running out of time to think that through, if we haven't already. No contemporary dilemma is being entertained realistically until it is also acknowledged that the opportunity for doing so is fast collapsing.[16]

Likewise, when Blanchot says that "time is required" for the development of any communist movement, he is not simply saying, "Hold your horses; be patient – these things *take time.*" On the contrary, he is instead demanding an antipraxis of time that echoes of the accelerationist coupling of "the implosion of decision-space to the explosion of the world – that is, to modernity,"[17] rethinking time beyond the inertia of time's capitalist capture.

Rather than resting on this diagnosis, as many self-described accelerationists are today satisfied to do, Blanchot emphases the innately tempo-ethical dimension of communism and of Karl Marx's particular "search for the right direction and the determination of a possible future."[18] He is suggesting that we, ourselves, must *take time*; we must *seize time* as the means of production, but also, in a more radical sense, as the ground of all creation. We must seize anew the temporality – the speed; the time signature – of our present moment. And so, Blanchot's challenge to us becomes a new understanding of the communist movement as the Great Duration – as time itself.

[16] Nick Land, "A Quick-and-Dirty Introduction to Accelerationism," *Jacobite*, 25 May 2017, accessed 8 October 2019<https://jacobitemag.com/2017/05/25/a-quick-and-dirty-introduction-to-accelerationism/>.
[17] Land
[18] Blanchot, "On One Approach to Communism" 95.

But to what extent is our seizing of time even possible? Put another way: how is a politics of time possible at all? We are in no position, at present, to broach such a topic and recent attempts to do so anyway – with so-called left-acceleration-ism chief amongst them – have only emphasized this point. This is precisely the impossibility that we are faced with under the contemporary climate crisis – the impossibility of a politics of time. Instead, perhaps what we need first is an *ethics of time* through which we might broaden the political scope of our accelerationist philosophies. Faced with the politics of capitalist time – wherein time = money – which cannot but consider themselves in terms of qualities and quantities – we must reorient ourselves to understand time differently – that is, anti-capitalistically.

In hoping for the quick establishment of a politics of time, we are likely to assign far too much agency to ourselves, as if the propulsive teleology of the techonomic processes of modernity were open to affectation by 'us' at all; as if time itself were susceptible to our wills. What is required instead, as Gilles Deleuze would write most infamously, is that we "accelerate the process" by *entering into* the process. We must view ourselves from within the depths of things in order to fully recognize the flows that flow through, with and around us. In this sense, our task is only to make ourselves worthy of the process. We must attempt to become, as Deleuze would write in his 1969 work *Logic of Sense*, "the quasi-cause of what is produced within us."[19] Alternatively, as Levinas writes, we must allow our being to exceed itself by "flowing toward an I that approaches it, but flowing toward it infinitely without running dry, burning without being consumed."[20] We must enter into wholly new ways of being.

Many such ways of being have already been described for us, by Virginia Woolf most memorably. We must understand consciousness as Woolf does – and capitalism too, for our

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[19] Gilles Deleuze, *Logic of Sense* (London and New York: Bloomsbury Revelations, 2015)153.
[20] Levinas 221

benefit and to its detriment – collectively and fluidly, finding it to be cyclical and repetitive but unstable nonetheless. We must enter into a collective consciousness and find outside-ness within and without. Here we may find hope, as Blanchot does in Woolf – "What does it matter, then, that the end is nearing! What does it matter that death is coming!"[21] This hope must not be mistaken for an apolitical nihilism. It is more akin to Nietzsche's *amor fati*. "Each moment is a step towards the end of being, but it is also a moment in which the being asserts itself; each moment that is a progress towards death is a moment saved from death."[22]

As Woolf would write from the depths of her novel's templex-ity: "How to describe the world seen without a self? There are no words."[23] What an opportunity for the ever-present xeno-poetics of late capitalism, for there is no time here either and, for capitalism, as for us, time is all there is.

[21] Blanchot, "Time and the Novel" 251.
[22] Blanchot, "Time and the Novel" 251.
[23] Virginia Woolf, *The Waves* (London: Penguin Classics, 2000) 221.

Brave New Weird: Anthropocene Monsters in VanderMeer's *Southern Reach* Trilogy

GRY ULSTEIN

In the 2013 article "Love Your Monsters," Bruno Latour evokes one of cultural history's most famous monsters: the creature in Mary Shelley's *Frankenstein*. Dr. Victor Frankenstein's monster has become a trope beyond cliché, but the feelings of dread, pity, shame, and foreboding still resonate almost two centuries after its publication. Consumed by delusions of grandeur, Dr. Frankenstein believes he can trick the forces of God and Nature and give life to the dead, but abandons his creature in disgust and fear once it is born. Dr. Frankenstein's creature, as Latour notes, is frequently used as "an all-purpose modifier" for technological or environmental crimes.[1] However, Latour argues that not only do we often confuse the creature for its creator, we have also "forgotten Frankenstein's real sin [...] he *abandoned the creature to itself*" (emphasis added).[2] In one of the scenes from Shelley's novel, the creature explains to its master that it only truly became a monster after its creator left it: "I was benevolent and good; misery made me a fiend."[3] Latour therefore reads Dr. Frankenstein's sin as a "parable for political ecology," because like Frankenstein, "our sin is not that we created technologies but that we failed to love and care for them."[4]

"Love Your Monsters" joins a cornucopia of critical, journalistic, and scholarly work from the past decade dealing with the "Anthropocene" (literally "the human age"), which in August 2016 was formally recommended by environmental scientists as the name of the pla net's current geological epoch.[5] Latour

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[1] Bruno Latour, "Love Your Monsters," *Love Your Monsters: Postenvironmentalism and the Anthropocene*, ed. Michael Shellenberger and Ted Nordhaus (Oakland: The Breakthrough Institute, 2011) 21.

[2] Bruno Latour, "Love Your Monsters" 21.

[3] Mary Shelley, *Frankenstein* (New York: Norton, 2012) 291.

[4] Bruno Latour, "Love Your Monsters" 21.

[5] Damian Carrington, "The Anthropocene Epoch: Scientists Declare Dawn of Human-Influenced Age," *The Guardian*, 29 August 2016, accessed 8 October 2019< https://www.

connects Anthropocene issues like climate change and global warming to the image of the monster, rejuvenating the old "warning" of Frankenstein by pointing out that it is not the monster itself we should fear, but Frankenstein's negligence of it. Just like Dr. Frankenstein, humanity has turned away in dread, shame, and self-righteousness at the birth (and growth) of their own many-headed monsters: global climate change, deforestation, mass pollution, and species extinction.

To overcome the "terror of trespassing Nature,"[6] Latour emphasizes the importance of a global shift in mentality from the modernist fable of emancipation from nature, to *attachment to nature*: in the age of the Anthropocene we must learn to take care of our monsters. Ecocritic Timothy Clark also evokes the figure of the monster when he recalls Thomas Hobbes's famous Leviathan as a metaphor for humans in the Anthropocene. As he writes, however, "the tragic environmental Leviathan" representing the planetary force of humanity is more like a "psychopath" compared to Hobbes's mighty figure, which represented the new, liberal commonwealth of seventeenth-century Britain.[7] Prevalent as it is in recent discussions on the Anthropocene, the contemporary fascination with the monstrous is also ubiquitous in critical cultural analysis, and has been much discussed in, for instance, feminist discourse.[8] Donna Haraway's iconic 1992 article "The Promises of Monsters" is particularly important in this regard, as she uses there the monster figure as an allegorical means to move beyond thinking in binary oppositions,[9] thereby establishing herself as one of the first cultural theorists to argue that culture and nature are deeply intertwined, rather than separated, sites of

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theguardian.com/environment/2016/aug/29/declare-anthropocene-epoch-exerts-urge-geo-
logical-congress-human-impact-earth>. <https://www.theguardian.com/environ-
ment/2016/aug/29/declare-anthropocene-epoch-experts-urge-geological-congress-hu-
man-impact-earth>.
[6] Latour, "Love Your Monsters" 24.
[7] Timothy Clark, *Ecocriticism on the Edge: The Anthropocene as a Threshold Concept* (London: Bloomsbury Academic, 2015) 15.
[8] See for instance Rosi Braidotti, "Signs"; Margit Shildrick, *Embodying the Monster.*
[9] I here use "binary opposition" as Jacques Derrida defines the term: a "classical philosophical opposition" run by "a violent hierarchy" in which "[o]ne of the two terms governs the other (axiomatically, logically, etc.)" in Jacques Derrida, *Positions*, trans. Alan Bass (Chicago: University of Chicago Press, 1981) 41.

knowledge.[10] Both Latour and Clark (and as we shall see many others) argue that a similar shift away from the (Western) modernist, binary-ridden way of thinking about the world is necessary if Anthropocene issues such as climate change are to be tackled. The monster thus emerges as a figure through which differences can be productively re-examined. Philosopher Stephen T. Asma likewise calls the monstrous a "cultural category,"[11] and Marina Levina and Diem-My T. Bui go as far as to call monstrosity a "condition of the twenty-first century."[12] The realm of monsters is the realm of individual and cultural (mis)representation, (literary) imagination, psychology, morality, and essentially – as Haraway reminds us – difference.

I have dwelt on monsters for a while because I want to argue that it is in the conceptualized, tension-fraught space between that which is (perceived as) "real" and "normal" and that which is (perceived as) "imagined" and "weird," that "Anthropocene monsters" can be found. Although Anthropocene monsters have kinship with Frankenstein's creature as it is read by Latour, they are more closely related to what Timothy Morton calls "hyperobjects" – events and objects such as global warming that are massively and unfathomably distributed in time and space.[13] Morton's hyperobjects are monstrous because, by encompassing and affecting the planet and humanity while simultaneously vastly exceeding human time, space, and comprehension, they evoke an "oppressive, claustrophobic horror."[14] Morton at one point uses H. P. Lovecraft's iconic monster Cthulhu to elucidate the scary nature of hyperobjects:

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[10] Donna Haraway, "The Promises of Monsters," *The Haraway Reader* (New York: Routledge, 2004) 63-124; Brian Johnson, "Prehistories of Posthumanism: Cosmic Indifferentism, Alien Genesis, and Ecology from H. P. Lovecraft to Ridley Scott," *Age of Lovecraft*, ed. Carl H. Sederholm and Jeffery A. Weinstock (Minneapolis: University of Minnesota Press, 2016) 66.

[11] Stephen T. Asma, *On Monsters: An Unnatural History of Our Worst Fears* (Oxford: Oxford University Press, 2009) 13.

[12] Marina Levina and Diem-My T. Bui, M*onster Culture in the 21st Century: A Reader* (London: Bloomsbury Academic, 2013) 12; See also W. Scott Poole, Monsters.

[13] Timothy Morton, *Hyperobjects: Philosophy After the End of the World* (Minneapolis: University of Minnesota Press, 2013) 1.

[14] Morton, *Hyperobjects* 132.

> By understanding hyperobjects, human thinking has summoned Cthulhu-like entities into social, psychic, and philosophical space. The contemporary philosophical obsession with the monstrous provides a refreshing exit from human-scale thoughts. It is extremely healthy to know not only that there are monstrous beings, but that there are beings that are not purely thinkable, whose being is not directly correlated with whatever thinking is.[15]

Lovecraft's Cthulhu is famous for the cosmic horror it represents; its vast proportions and inconceivable existence make humans feel powerless and insignificant in comparison. Like Latour and many other (eco)critics discussing the Anthropocene, Morton argues that the scale on which we conceive of the world should expand. *Hyperobjects* moreover contains several references to the horror genre,[16] and Morton constantly comes back to the dread evoked by hyperobjects. As will be shown below, delving into current ecocriticism reveals a prevalence of horror-evocative words, and fear and paralysis emerge as the most important emotional reactions when confronting Anthropocene issues.

Building on Morton's hyperobjects, I introduce "Anthropocene monsters" as a term that invites us to read monsters of cosmic horror such as Lovecraft's Cthulhu as metaphors for ecological issues like climate change. Academics and (eco)critics discussing Anthropocene issues often use words and imagery associated with fear, comparable to (cosmic) horror-apocalyptic imagery in the "weird" literary tradition of Lovecraft. Lovecraft's stories have, moreover, seen an upsurge in popularity almost simultaneously with the rise of the Anthropocene discourse – alongside the development of "new weird." Crudely put, traditional weird fiction, closely tied to Lovecraft,

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[15] Morton, *Hyperobjects* 64.
[16] Notably David Lynch's *Twin Peaks* (30), *The X-Files* (106), and China Miéville's *Perdido Street Station* (175).

is all about encounters with, and escapes from, inconceivable monsters whose mere existence drives people mad. The *new* weird has adopted the cosmic horror of the old weird, but typically approaches it in different ways; often it is more about researching, articulating, and embracing the monster rather than escaping it. This paper will therefore analyze and compare the horror-evocative language of recent works of ecocriticism and cultural criticism to Jeff VanderMeer's new weird trilogy *The Southern Reach*, to underline the parallels between contemporary cosmic horror narrative and the Anthropocene discourse. The paper argues from the standpoint that while Lovecraft's monsters lend themselves well to Anthropocene allegory due to the coinciding fear affect, the new weird movement experiments with ways to move beyond cosmic fear. As such, the (sub)genre of new weird seems promising for future ecocritical thought.

Monsters and the Anthropocene

Jeffrey Jerome Cohen attempts to establish a "method of reading cultures from the monsters they engender."[17] As he writes, "monsters ask us how we perceive the world... [how] to reevaluate our cultural assumptions about race, gender, sexuality, our perception of difference, our tolerance towards its expression. They ask us why we have created them."[18] The figure of the monster may thus be used to question, disturb, and alter the cultural conventions it helps us analyze. To go back to the cliché: Frankenstein's creature is often read, in allegorical terms, as the monstrous result of Western society's technological hubris since the beginning of the Industrial Revolution (Shelley's novel was published in 1818). But Shelley's novel can also, as Latour suggests, be read as an eco-political parable, urging us to take care of, rather than fear, the monsters that we have unknowingly unleashed upon the pla-

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[17] Jeffrey Jerome Cohen, "Monster Culture (Seven Theses)" *Monster Theory: Reading Culture*, ed. Jeffrey Jerome Cohen (Minneapolis: University of Minnesota Press, 1996) 3.
[18] Jeffrey Jerome Cohen 20

net: climate change, global warming, species extinction, pollution, deforestation, ecocide, and overpopulation. Enter Anthropocene monsters: the ominous, seemingly out-of-control creatures with the promise of apocalypse trailing behind them in the smog. As opposed to Frankenstein's creature, they do not have voices of their own, and yet their questions are screaming to be heard. They not only ask us why we created them, but also how we can survive them.

In "Love Your Monsters" Latour emphasizes that the inherently modernist way of viewing the environment as the "reserve on which to discharge all bad consequences of collective modernizing actions" is the reason why for instance global warming is now being received with such paralysis and passivity: "The return of [environmental] consequences, like global warming, is taken as a contradiction, or even a monstrosity, which it is, of course, but *only according to* the modernist's narrative of emancipation [from the natural world]"[19] (emphasis in original). In other words, Latour suggests that confronting and treating Anthropocene issues necessitates a complete turnaround of typical binaries such as society and wilderness, human and nonhuman, as well as a reorientation away from the old modernist fable of human excellence towards a collective narrative of attachment to rather than emancipation from nature. What is interesting for the present paper is how literature, and particularly weird fiction, comes into play in such an attempted collective shift in contemplating the universe. Although articles and books on the Anthropocene are virtually flowing out of press in all disciplines at the moment, and the term has been gaining traction within ecocriticism, there are only a handful of books that consider the role of literature in discussing Anthropocene issues. Adam Trexler ties Latour's actor-network theory to the new literary genre climate fiction (more popularly called cli-fi"), and writes in his conclusion of

[19] Bruno Latour, "Love Your Monsters" 26.

Anthropocene Fictions that climate change "changes the literary potentialities of setting, conflict, the organization of characters, and the fundamental way that diverse characters and nonhumans interact in narratives."[20] In *Ecocriticism on the Edge* (2015) and *The Value of Ecocriticism* (2019), Timothy Clark deconstructs environmental criticism itself, impatient with the idealist notion often found among ecocritics that literature can "save the world." Clark sees the Anthropocene as a "threshold concept" which can more effectively help ecocritics and others expand and thereby improve their perception of the position of humans in the world and the environment. As he writes, the Anthropocene "enacts the demand to think of human life at much broader scales of space and time [...] Perhaps too big to see or even to think straight (a "hyperobject," certainly), the Anthropocene challenges us to rethink counter-intuitive relations of scale, effect, perception, knowledge, representation and calculability."[21] Clark's "counter-intuitive relations" (by which he means relations too large in scope or scale to fathom) should be read alongside Morton's hyperobjects and "ecomimesis."

In *Hyperobjects*, but also in earlier and later works,[22] Morton argues for a philosophical reconceptualization of the very concept of nature or environment. Also in *Hyperobjects* the focus is on developing what Morton calls a "weird ecomimesis." In *Ecology without Nature*, Morton describes "ecomimesis," or ecological writing, as a rhetorical device by which one attempts

> to undo habitual distinctions between nature and ourselves. It is supposed not just to describe, but also to provide a working model for a dissolving of the difference between subject and object, a dualism seen as the funda-

[20] Adam Trexler, *Anthropocene Fictions: The Novel in a Time of Climate Change* (Charlottesville: University of Virginia Press, 2015) 234.
[21] Timothy Clark, *The Value of Ecocriticism* (London: Cambridge University Press, 2019) 13.
[22] *Ecology without Nature* (2007); *The Ecological Thought* (2010); *Dark Ecology* (2016).
[23] Morton, *Hyperobjects* 6.

mental philosophical reason for human beings' destruction of the environment. If we could not merely figure out but actually experience the fact that we were embedded in our world, then we would be less likely to destroy it.[24] (emphasis in original)

Weird ecomimesis, then, is the rhetorical device seeking to encompass hyperobjects in this non-dualistic way of thinking about existence – about *co*-existence. Morton actively refers to and treats both literature and various other art forms as examples of such ecomimesis in relation to the Anthropocene, and evokes the same question of scale as Clark when he argues that there has been a "gradual realization by humans that they are not running the show, at the very moment of their most powerful technical mastery on a planetary scale."[25] But in addition to Clark's "counter-intuitive relations," Morton shows that Anthropocene issues expose humanity as a geological agent without agency. This paradox is inflated by the historical habit of viewing nature in binary opposition to humanity, a view which the Anthropocene has finally revealed to be regressive. Therefore, Morton's undoing of "habitual distinctions between nature and ourselves" can be read as one example of rethinking counter-intuitive relations, as Clark suggests. The issue of (larger) scales, of attempting to think outside the hubris-haunted box of humanity, of recognizing our attachment to – or as Morton would call it, enmeshment in[26] – nonhuman entities from the most trivial act of eating a salad to contemplating the inconceivable cosmos, is a common denominator for Anthropocene-oriented ecocriticism. However, there are some who point out the weak points in this development in Anthropocene discourse.

[24] Timothy Morton, E*cology without Nature: Rethinking Environmental Aesthetics* (Cambridge: Harvard University Press, 2007) 63-64.
[25] Morton, *Hyperobjects* 164.
[26] Timothy Morton, *The Ecological Thought* (Cambridge: Harvard University Press, 2010) 28.

Although clearly in favor of Anthropocene as a term, Claire Colebrook points out that the product of human imagination will always be for humans, even if it pretends to be otherwise: "The positing of an anthropocene era [...] deploys the idea of human imaging – the way we have already read an inhuman past in the earth's layers – but does this by imagining a world in which humans will be extinct."[27] Thus, claims Colebrook, any imagined future in which humanity is (going) extinct, just "like the thought of extinction itself – will always be *for us*, and are always co-opted by the narrative lures they fragment."[28] Colebrook, engaging specifically with the often paradoxical projection of human extinction in art and philosophy, nevertheless argues along the same lines as Latour, Clark, and Morton, calling for a global modification of largely human-centered histories, philosophies, sciences, and politics. As she argues, we talk about climate change, but "assume that the climate is what environs us, and that change – or the danger of change – needs to be calculated according to the degree to which it enables or precludes ongoing existence of humans."[29] It is clear, in other words, that the concept of the Anthropocene as perceived in ecocriticism and in the humanities in general, demands an attempt to think on a larger scale – preferably a scale that is planetary in scope. The question is whether such a broadening of the human attention is in any way possible, and how it can be productive.[29]

Dissonant Discourse

The language of Clark, Colebrook, Morton, and Trexler is strikingly horror-evocative and apocalyptic. Clark uses words and terms like "bewildering,"[30] "large-scale,"[31] "crisis of scale

[27] Claire Colebrook, *Death of the PostHuman: Essays on Extinction*, Vol. 1 (London: Open Humanities Press, 2014) 28.
[28] Colebrook 28
[29] Colebrook 22
[30] Timothy Clark, *Ecocriticism on the Edge* 9.
[31] Timothy Clark, *Ecocriticism on the Edge* 21.

and agency,"[32] "destructive,"[33] Anthropocene disorder,"[34] and "hopelessness."[35] Colebrook, critical of the strange paralysis exhibited when contemplating our own extinction, talks about "climactic terrors,"[36] "sublime annihilation,"[37] "malevolence,"[38] and the Anthropocene as a "radical intrusion."[39] Morton, whose hyperobjects are essentially horror-evocative, applies terms like "ecological trauma," "daunting, horrifying coincidence," and "unreal, spectral." Trexler, the more optimistic of the four, calls the Anthropocene "anticipatory,"[40] "transformative,"[41] "threatening,"and "complex."[42] The Anthropocene is thus on the one hand perceived as a time of disorientation and chaos, of overwhelming confusion and terrifying realizations; it demands a reorientation away from anthropocentrism and individualism, and its massive scope seems to require new definitions and ideals.

On the other hand, Clark and Colebrook (Trexler and Morton as well, but less explicitly) also discuss the odd general *lack* of reaction to the crises embedded in the Anthropocene in the world society at large – the extreme pole of which is represented by climate change deniers. More commonly, however, people appear to ignore or dismiss the issues presented by the Anthropocene due to the massive scale on which they play out. As Colebrook writes: "now that life appears to be in danger of disappearance, diminution or mutation beyond recognition, living humans indulge both in greater and greater insistence on the sanctity of life, *and* seem incapable of directly confronting the intensifying threats that menace the present" (emphasis in original).[43]

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[32] Timothy Clark, *Ecocriticism on the Edge* 139.
[33] Timothy Clark, *Ecocriticism on the Edge* 147.
[34] Timothy Clark, *Ecocriticism on the Edge* 139-54.
[35] Timothy Clark, *Ecocriticism on the Edge* 154.
[36] Colebrook 62
[37] Colebrook 90
[38] Colebrook 137
[39] Colebrook 87
[40] Trexler 1
[41] Trexler 5
[42] Trexler 220
[43] Colebrook 186

Clark explains this by using the term "Anthropocene disorder," which he presents as the affliction caused when attempting to consider the enormous scale of the Anthropocene, and failing. Using the example of an SUV, Clark writes that scale effects "inhabit, contaminate and destabilize the meaning of an individual action or object such as an SUV, precisely in that its significance as an individual object is in a kind of suspense, depending on just how many other sources of pollution there are or may be."[44] Morton uses the even more trivial example of changing "a confounded light bulb" forcing him to think about global warming: "The enormity of very large finitude hollows out my decisions from the inside."[45] The dizzying sense of insignificance in other words causes a kind of cognitive dissonance when (not) dealing with Anthropocene issues, one that leads to either rejecting as false the information which caused the uncomfortable emotion (denial), or trying to act, but being forced to accept that the large-scale issues will remain inherently inconceivable and that therefore it is best to do nothing until we understand more (paralysis).

Clark moreover "diagnoses" both Morton and Colebrook with the "Anthropocene disorder," Morton due to his hyperbolic language,[46] and Colebrook due to her "clash" in language. "Colebrook's version of 'Anthropocene disorder,'" writes Clark, "draws on the denunciatory force of more moralistic kinds of environmental ethic even while denying their plausibility," which Clark suggests is due to the "unresolved and perhaps unresolvable conflicts revealed by thinking the world of the Anthropocene at different scales."[47] Interestingly, diagnosing academics with Anthropocene disorder is not unheard of in the environmental humanities. In a 2013 article in *Cultural Geographies*, Paul Robbins and Sarah A. Moore identify the condition "ecological anxiety disorder" (EAD) in certain academic communities as a result of "recent anxiety, discom-

[44] Clark, *Ecocriticism on the Edge* 142-143.
[45] Morton, *Hyperobjects* 124.
[46] Clark, *Ecocriticism on the Edge* 144.
[47] Clark, *Ecocriticism on the Edge* 154.

fort, conflict, and ambivalence experienced by research scientists in fields confronting ecological novelty in a quickly-changing world."[48] The application of a clinical diagnosis normally used for mentally ill individuals to entire communities or a whole society might seem radical (and is certainly not scientifically correct), but it nevertheless says something about the general perception of Anthropocene issues as fearsome, monstrous, and threatening.

Engaging with Jacques Lacan's psychoanalysis, Robbins and Moore suggest that by "directly confronting what we *want* as scientists and citizens and acknowledging where these desires put us relative to others in the world, we can begin to sort through what to measure and what to change, what to alter and what to preserve"[49] (emphasis in original), and thereby move beyond the "phobias" and "anxious paralysis" caused by Anthropocene issues.[50] In other words, there is an odd tension between the unproductive fear found in scholarly Anthropocene discourse, and the broader public response to Anthropocene issues as too big to concern them; in both cases, denial or paralysis appear to be the main resulting reactions. The most important reason for this paralysis seems to be the confrontation with planetary-size issues extending across space and time, and from which emerges, disruptively, the cosmic scale on which humans are asked to understand existence.

Underlying the Anthropocene discourse and the horror-evocative language in the works discussed here is thus the bracing question of human significance.[51] This question, or challenge, is, I argue, the most important analogy between Anthropocene discourse and cosmic horror, because they can both be characterized by their use of human *in*significance when faced with planetary- or cosmic-scale (Anthropocene) monsters – and, as we have seen, the fearful, panicked, impotent response

[48] Paul Robbins and Sarah A. Moore. "Ecological Anxiety Disorder: Diagnosing the Politics of the Anthropocene," *cultural geographies* (Vol. 20, no. 1, 2012) 4.
[49] Robbins and Moore 16
[50] Robbins and Moore 12
[51] Colebrook 12; Clark, *Ecocriticism on the Edge* 198.

elicited by them. It is therefore high time to introduce the specificities of the literary genre in which the insignificance of the human is the most important source of fear: namely weird fiction, of which Lovecraft was the pioneer.

The Weird Ecology of *The Southern Reach*

Literary critic and Lovecraft expert S. T. Joshi writes that the distinction of weird fiction is the shift in the "locus of horror from the terrestrial to the cosmic."[52] Brian Stableford notes that the tradition of cosmic horror can "be regarded as a heroic but doomed attempt [at communicating] the incommunicable."[53] Lovecraft was, of course, a forerunner in this style of writing, and his definition in "Supernatural Horror in Literature" is still influential:

> The true weird tale has something more than secret murder, bloody bones, or a sheeted form clanking chains according to rule. A certain atmosphere of breathless and unexplainable dread of outer, unknown forces must be present; and there must be a hint, expressed with a seriousness and portentousness becoming its subject, of that most terrible conception of the human brain – a malign and particular suspension or defeat of those fixed laws of Nature which are our only safeguard against the assaults of chaos and the daemons of unplumbed space.[54]

Lovecraft thus implies that the weird is the genre, and cosmic horror is the rhetorical device which the genre favours. Moreover, when Lovecraft writes of weird fiction, there is a sense that it is not sup posed to be "just" horrible – that it can also be awesomely, terribly, beautiful. This suggests that Love-

[52] Brian Johnson, "Prehistories of Posthumanism: Cosmic Indifferentism, Alien Genesis, and Ecology from H. P. Lovecraft to Ridley Scott," *Age of Lovecraft*, ed. Carl H. Sederholm and Jeffery A. Weinstock (Minneapolis: U of Minnesota P, 2016) 100.
[53] Brian Stableford, "The Cosmic Horror," *Icons of Horror and the Supernatural: An Encyclopedia of Our Worst Nightmares*, Vol 1., ed. S. T. Joshi (Santa Barbara: Greenwood, 2007) 71.
[54] H. P. Lovecraft, "Supernatural Horror in Literature," *H. P. Lovecraft: The Complete Fiction* (New York: Barnes & Noble, 2011) 1043.

craft believed there were deeper qualities to weird fiction than"merely" its ability to scare the reader. In the introduction to *The Weird: A Compendium*, Ann and Jeff VanderMeer accordingly note that the weird can also contain "the strangely beautiful intertwined with terror" (n. pag.). Furthermore, the VanderMeers emphasize the strong connection between the weird and the monstrous: "The Weird can be transformative – sometimes literally – and it entertains monsters while not always see [sic] them as monstrous. *It strives for a kind of understanding even when something cannot be understood, and acknowledges that failure as sign and symbol of our limitations*"[55] (emphasis added). The last part of this statement characterizes the weird as fiction that tries to think the unthinkable, and emphasizes, when read in the context of the Anthropocene, how the genre of (cosmic) horror can be valuable when contemplating, for instance, climate change. Moreover, it ties into monster studies and the general scholarly contention that monsters are metaphorical constructs that are used in different societies as responses to cultural tensions, or as demands to re-evaluate or help (re)conceptualize assumptions or ideals. Ann and Jeff VanderMeer have also edited a volume containing twenty-first century stories which they argue belong to the new weird, and Jeff VanderMeer defines it as follows:

> New Weird is a type of urban, secondary-world fiction that subverts the romanticized ideas about place found in traditional fantasy, largely by choosing realistic, complex real-world models as the jumping off point for creation of settings that may combine ele ments of both science fiction and fantasy. [New Weird] has a visceral, in-the-moment quality that often uses elements of surreal or

[55] Ann VanderMeer and Jeff VanderMeer, "The Weird: An Introduction," review of T*he Weird: A Compendium of Strange and Dark Stories*, by Jeff VanderMeer and Ann VanderMeer, *Weird Fiction Review*, 6 May 2012, accessed 8 October 2019<http://weirdfictionreview. com/2012/05/the-weird-an-introduction/>.

transgressive horror for its tone, style, and effects. [It is] acutely aware of the modern world, even if in disguise, but [is] not always overtly political [...][56]

To summarize and simplify, the "old" weird as defined (and partly developed) by Lovecraft, demands from a story first and foremost a sense of cosmic horror (described above), and the features of place, characters, and style are not emphasized, although the latter is perhaps hinted at by the characteristic wordy style that Lovecraft employs even in *Supernatural Horror in Literature*. The "new" weird does not emphasize cosmic horror as a necessary factor (although it is common), it involves a reaction to and movement away from traditional fantasy, and it requires a distinct urban or modern setting. Although Lovecraft's Cthulhu has been evoked by many scholars, cosmic horror in the tradition of Lovecraft cannot seem to get further than the paralysis its monsters inflict. This is also a criticism offered by ecocritics such as Colebrook and Clark regarding reactions to Anthropocene issues. Levina and Bui's observation in *Monster Culture in the 21st Century* is therefore pertinent:

> We must see our ontologies reflected in the figure of the monster. But on the other hand, monstrosity as an imaginary also offers a possibility of monstrosity as a destabilizing change to the known regimes of truth. Precisely because monstrosity can never be, because it must exist in the future outside of the realm of the possible, it offers ways of becoming that are not known, not domesticated, and not appropriated by the existing discourses of power.[57]

This understanding of the monstrous reflects the upsurge of new weird fiction in the twenty-first century, which tends to use Lovecraft's established weird tradition (explicitly or implicitly) as motivation to move beyond the limits associated

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[56] Jeff Vandermeer, "Introduction," *The New Weird* (San Francisco: Tachyon Publications, 2008) xvi.
[57] Levina and Bui 7

with the weird's cosmic horror. By close-reading VanderMeer's *Southern Reach* trilogy, the remaining half of this paper will address how new weird fiction attempts to perform that shift in mentality proposed by Haraway in "Promises of Monsters" and Latour in "Agency in the Anthropocene": to break open binaries, question convention, and embrace, in Levina and Bui's words, other ways of becoming that are unknown, *weird*. As shown above, the Anthropocene discourse is full of monsters, brimming with imagery directly or indirectly tied to the (cosmically) monstrous. New weird fiction both incorporates and moves beyond this monstrous-apocalyptic way of thinking about the world.

The Strangling Fruit of Area X

The Southern Reach (*Annihilation*, *Authority*, *Acceptance*) follows a set of characters whose fates intertwine through their relation with the mysterious "Area X," a land suffused in secrets since an alleged environmental catastrophe occurred there thirty years before the plot takes place. The Southern Reach is the name of the government research facility set up near the strange border to Area X, and all three books chiefly take place in or around the Southern Reach and Area X. *Annihilation*, the first volume, follows a woman known only as "the biologist," joining a psychologist, an anthropologist, and a surveyor on the twelfth (and last) expedition into Area X to try to decipher its secrets. It quickly becomes clear that whatever is happening on the other side of that strange border is not from Earth. *Authority* then takes on the perspective of John Rodriguez, known as "Control," who is sent to the Southern Reach as functioning director after the previous director disobeyed orders and joined the twelfth expedition in *Annihilation*, in guise as "the psychologist." *Acceptance* merges the viewpoints from several of the characters introduced in the previous two books: the biologist, Control, the previous director Gloria, the biologist's doppelgänger Ghost Bird, and the old lighthouse keeper Saul Evans. The third book also merges

past and present, all the while building up to finally solving, or perhaps getting solved by, the mystery of Area X.

The first sentence of VanderMeer's trilogy sets the tone of the books: "The tower, which was not supposed to be there, plunges into the earth in a place just before the pine forest begins to give way to swamp and then the reeds and wind-gnarled trees of the marsh flats."[58] The ominous sense of something which is *not supposed to be* is combined with the picture of pristine wilderness, creating an uncanny expectation of what is to come. Upon entering the "Tower," the biologist breathes in spores from the florescent fungi covering the inner, flesh-like wall of the tower, fungi forming strange sentences, and this contamination triggers a form of organic transformation in her which is linked to the later creation of her doppelgänger. Area X appears to be the attempt by an alien entity to colonize and improve Earth by way of biological decomposition and subsequent cyclic reproduction. As Whitby, one of the researchers at the Southern Reach, notes in a report: "Area X has been created by an organism left behind by a civilization so advanced and so ancient and so alien to us and our own intent and our own thought processes that it has long since left us behind, left everything behind."[59] The driving force behind the transformative process of Area X is a monstrous alien slowly sliding its way down to the center of the Tower while ceaselessly "writing" the florescent, fungal sentences covering the walls. The biologist calls the creature the "Crawler."

The Tower plunging into the ground is suspected to be the "engine" of Area X's transformation, driven by the Crawler's slow descentwhile it shapes the phosphorescent fungi on the walls into words, forming a spiralling sentence without pause:

> *Where lies the strangling fruit that came from the hand of the sinner I shall bring forth the seeds of the dead to*

[58] Jeff VanderMeer, *Annihilation* (London: Fourth Estate, 2014) 3.
[59] Jeff VanderMeer, *Acceptance* (London: Fourth Estate, 2014) 209.

> *share with the worms that [...] gather in the darkness and surround the world with the power of their lives while from the dim-lit halls of other places forms that never could be writhe for the impatience of the few who have never seen or been seen. [...] There shall be in the planting in the shadows a grace and a mercy that shall bloom dark flowers, and their teeth shall devour and sustain and herald the passing of an age.*[60] (emphasis in original)[61]

The image of a "strangling fruit" which will gracefully and mercifully plant in the shadows in order to "herald the passing of an age," sounds ominously like a prediction of what will befall the planet if Area X takes over. After taking samples of the fungi and inspecting them, the biologist suspects the words to be some sort of randomized, biological "building material" for Area X,[62] but cannot exclude a ritualistic, more conscious effort by the Crawler to communicate something to the Tower that would trigger some reaction. When finally encountering the alien creature on its way down the Tower, the biologist attempts to describe it, but her five senses are not enough; human language is not enough to convey its weirdness. And yet she tries, though beholding the creature almost drives her mad:

> As I adjusted to the light, the Crawler kept changing at a lightning pace, as if to mock my ability to comprehend it. It was a figure within a series of refracted panes of glass. It was a series of layers in the shape of an archway. It was a great sluglike monster ringed by satellites of even odder creatures. It was a glistening star. My eyes kept glancing off it as if an optic nerve was not enough. Then it became an overwhelming *hugeness*.[63] (emphasis in original)

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[60] VanderMeer, *Annihilation* 46-67, 170.
[61] The rest of the recital (200-300 words more) is given in pieces throughout Annihilation and the subsequent books, but is too large to cite in its entirety here.
[62] VanderMeer, *Annihilation* 92.
[63] VanderMeer, *Annihilation* 176.

The hugeness, the oddness, the overwhelming of the senses: this passage not only recalls Lovecraft's Cthulhu, but also Morton's hyperobjects, and is not far from Clark's "Anthropocene disorder" discussed above. However, the terrible weirdness approaching cosmic horror meets in the biologist a surprisingly unafraid and quizzical mind, one that is prepared to view the monstrous as something potentially positive. As Siobhan Carroll writes in a review: "whereas a Lovecraftian story would exclaim in horror at a challenge to humanity's place in the universe, *Annihilation* asks whether 'the human' is a stable category to begin with."[64]

Area X is already in the beginning of *Annihilation* experienced by the biologist as a positive opposition to Earth: "The air was so clean, so fresh, while the world back beyond the border was what it had always been during the modern era: dirty, tired, imperfect, winding down, at war with itself. Back there, I had always felt as if my work amounted to a futile attempt to save us from who we are."[65] When the biologist grimly suspects the Southern Reach research facility of keeping up the fruitless expeditions because they assumed that was the only way they could keep the "monster" dormant, it easily reads as a satirical analogy for humanity's failed confrontation with Anthropocene issues: "Feed Area X but do not antagonize it, and perhaps someone will, through luck or mere repetition, hit upon some explanation, some solution, before the world *becomes* Area X"(emphasis in original).[66] Change a couple of words, and the sentence directly applies to the current ecological crisis: keep feeding global warming blindly and wait for someone to figure out what to do, before the world irrevocably changes. Despite the Southern Reach's best or worst efforts, Area X cannot be infiltrated: rather, it mimics the expeditions sent in and infiltrates the world in turn. The biologist is the only one of VanderMeer's characters ready to accept this colo-

[64] Siobhan Carroll, "The Ecological Uncanny: On the 'Southern Reach' Trilogy," rev. of *Annihilation* by Jeff VanderMeer, *Los Angeles Review of Books*, 5 October 2015, accessed 8 October 2019<https://lareviewofbooks.org/article/the-ecological-uncanny-on-the-southern-reach-trilogy/>.
[65] VanderMeer, *Annihilation* 30.
[66] VanderMeer, *Annihilation* 159.

nization and transformation. As she explains in her last words as human in a journal entry, her old world seems "a hazy, indistinct sphere radiating a weak light [...] a kind of mythic tragedy [...] a disembodied globe of light [with] all the poison that leaked out of it."[67] This embracing attitude towards the weird ecology of Area X might be what allows the biologist to withstand the metamorphosis imposed upon her by Area X for so long. Moreover, it might be the reason for her doppelgänger's comparative success.

Every time an expedition has entered, Area X has absorbed the members' DNA, mimicked and remade them in some mysterious way, and sent human copies out beyond the border with the purpose to spread its own, alien genes. Control realizes this at the end of the second book: the "invasion had been under way for quite some time, had been manifesting for much longer than anyone could have guessed."[68] The biologist's doppelgänger is found in an empty parking lot in the "real" world and brought to the Southern Reach for questioning, with the biologist remaining in Area X, completing her transformation. The locations at which the doppelgängers from the twelfth expedition are found serve as spreading sites for Area X's contamination; "[t]he kind that cleanses everything."[69] Upon entering the Southern Reach in a desperate attempt to clean up the mess, Control reads in the reports that samples taken by one of the expeditions, showed that "no trace of human-created toxicity remained in Area X. Not a single trace. No heavy metals. No industrial runoff or agricultural runoff. No plastics."[70] It is almost as if Area X is attempting to "fix" the planet upon which it has been unleashed. In a sense, Area X thus represents the ultimate revenge of Gaia (or humanity's unloved monsters), striking back and colonizing the human world in the same way that humans have possessed and exploited nature for centuries.

[67] VanderMeer, *Acceptance* 156.
[68] VanderMeer, *Authority* 314.
[69] VanderMeer, *Authority* 303.
[70] VanderMeer, *Authority* 125.

Nonhuman Perspectives: Becoming Monster

In *Annihilation*, the biologist narrates the plot from the first-person perspective in the form of her journal or field report. Acceptance revolves around Control, Ghost Bird, and the Southern Reach assistant director Grace trying to find the biologist in Area X, and also includes the first "phase" of Area X's history as a parallel narrative timeline. Most striking in the final book, however, is the viewpoint of "Ghost Bird," the organic doppelgänger of the biologist.[71] Ghost Bird reaffirms the biologist's antagonistic attitude towards human ecological behavior several times, and in one particular scene she appears to get a glimpse of the wretched future of the world if Area X had not interfered. On her journey into Area X through a kind of wormhole, Ghost Bird sees "the blackened ruins of vast cities and enormous breached ships, lit by the roaring red and orange of fires that did nothing but cast shadow and obscure the distant view of mewling things that crawled and hopped through the ash."[72] The critique in this passage is clear, and can be read in accordance with VanderMeer's essayistic relation of how the trilogy came to be, where he professes his "anger and grief over the BP Gulf Oil Spill." VanderMeer claims that the vision of Area X was strongly inspired by this natural disaster, and that to him "it had seemed like they would never stop the leak, that the oil would keep gushing out into the Gulf for decades."[73]

Ghost Bird is a physical exact copy of the biologist and shares the biologist's memories, but she is also acutely non-human, extraterrestrial. This is especially noticeable when she mentally criticizes Control and Grace (the two only humans with

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[70] VanderMeer, *Authority* 125.

[71] Ghost Bird has taken the nickname given to the biologist by her husband, a fitting name for the doppelgänger whose uncanny existence becomes more ghostlike when it appears that the biologist is no longer human – has in fact become a monster.

[72] VanderMeer, *Acceptance* 37.

[73] VanderMeer, "From Annihilation to Acceptance: A Writer's Surreal Journey," *The Atlantic*, 28 January 2015, accessed 26 February 2017<www.theatlantic.com/entertainment/archive/2015/01/from-annihilation-to-acceptance-a-writers-surreal-journey/384884/>.

whom she has a chance to develop any form of relationship) for grasping at "such banal answers because of a lack of imagination, because human beings couldn't even put themselves in the mind of a cormorant or an owl or a whale or a bumblebee."[74] Ghost Bird thus becomes the ultimate emissary of Area X and VanderMeer's most important mediator, taking on the viewpoint of the nonhuman and offering this viewpoint to the reader. The reader has already been prepared for this transition in focalization by the sensitivity for the nonhuman perspective in the biologist. In *Annihilation*, the biologist speculates that wherever the alien organism that became Area X has come from, it is driven by "an endless, perhaps automatic, need to assimilate and to mimic."[75] Ghost Bird's existence, and her "improved" imagination regarding empathy or connectedness with other organisms, suggests that Ghost Bird is the enhanced version of a human, as designed by the alien entity that they call the Crawler.

In its weird process of assimilation and reproduction, Area X has in the biologist and Ghost Bird performed the ultimate act of symbiotic facsimile: the original organism evolving to be kin to the invasive species, while the invasive species takes the place (and face) of the original to improve the copied host organism as well. Meanwhile, the rest of Area X's doppelgängers have spread their monstrous DNA for nearly thirty years, with the speculated goal to impose such improvement upon the earth in its entirety. When the transformation is complete, when the world becomes Area X (or Area X becomes the world), what will remain is a Brave New Weird.

Strange Semantics: Articulating the Monster

The biologist realizes that she is terrified of the Crawler, yet simultaneously has favorable feelings towards what she

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[74] VanderMeer, *Acceptance* 190.
[75] VanderMeer, *Acceptance* 190.

suspects is its project: to colonize the world with its doppel-gängers and thus upgrade humanity to a version more in touch with – or in fact, entirely assimilated into – its environment. As she reflects towards the end of *Annihilation*: "the thought I cannot dislodge after all I have seen, is that I can no longer say with conviction that this is a bad thing."[76] Ghost Bird, the more-than-human doppelgänger, is at first confused as to which "side" she is on, and what her doubling means. Later, however, she reiterates the biologist's "change of sides" and decides that it is not her lot to stop the Crawler in its strange writing. Ghost Bird sees the words "ablaze with a richer and more meaningful light than she had ever seen" (though what this meaning entails is not elaborated), and she understands that every sentence on the wall of the tower represents a "merciless healing, a ruthless rebuilding that could not be denied."[77] *Language* is thus emphasized as a tool by which the human mind may be infected by words and manipulated into misunderstanding or deconceptualizing the world it perceives. The words written on the wall of the tower imply linguistic manipulation, which suggests that the monstrous transformation of Area X to some extent depends upon language – perhaps because the most developed species on the planet, which Area X happens to colonize and mimic, is also dependent on language.

All expeditions to Area X are told to keep elaborate journals recording their observations, and, in a particularly suspenseful scene, the biologist discovers all the journals in a pile, never seen by the researchers at the Southern Reach institute. Towards the end of *Acceptance* Ghost Bird speculates that the reason for the heap of journals might be that,

> on some level most [of the expeditioners] came, in time, to recognize the futility of language. Not just in Area X

[76] VanderMeer, *Annihilation* 192.
[77] VanderMeer, *Acceptance* 287.

but against the rightness of the lived-in moment, the instant of touch, of connection, for which words were such a sorrowful disappointment, so inadequate an expression of both the finite and the infinite. Even as the Crawler wrote out its terrible message.[78]

Ghost Bird here quite movingly voices the frustrating paradox of the incommunicable, the nameless. As noted above, the words on the fleshy wall of the Tower suggests that Area X depends on a cycle of words being written to fulfil its purpose. In "The Promises of Monsters" Haraway sees language and articulation as two separate things: "Articulation is not a simple matter. Language is the effect of articulation, and so are bodies [...] I rely on the articulata to breathe life into the artifactual cosmos of monsters that this essay inhabits. Nature may be speechless, without language, in the human sense; but nature is highly articulate."[79] Area X can as such be seen as the hyperbolic example of nature's surprising powers of articulation, mocking the human delusion of grandeur by "articulating" a perfect ecosystem using the human language, but in a way that is beyond human comprehension.

If Area X's "effortless manipulation of molecules"[80] can be read as a parallel to human manipulation of language, Area X literally *articulates* bodies that are improved copies of humans in order to spread its biosphere. Again, the Anthropocene allegory is striking: VanderMeer's monstrous Area X mocks human comprehension and evokes a fearful response similar to Lovecraft's monsters and Anthropocene issues. Rather than leaving at the tipping point where terror becomes paralysis, however, Area X forces the human species to become *part* of the monster by way of weird articulation, word-fuelled contamination. As Daniel Levine writes in a review in *The Brook-*

[78] VanderMeer, *Acceptance* 243.
[79] Haraway 105-106.
[80] VanderMeer, *Acceptance* 189.

lyn Rail: "VanderMeer's scenario is a fitting fantasy, and a dire warning to our current direction: imagine a more ironic, well-deserved fate than invasion by a mimic that conquers by our enlightened example."[81]

While she is dying, or transforming, at the foot of the lighthouse, the former Southern Reach director thinks that perhaps "the words aren't important, but what's *channelled through them* is."[82] (emphasis added) Ghost Bird, likewise, comes to realize that the words represent more than their semantic meaning in the moment she touches the Crawler: "Each word a world, a world bleeding through from some other place, a conduit and an entry point."[83] It is tempting to read this as representing the power of language over the implied reader of *The Southern Reach* as well, VanderMeer cleverly insinuating that *his* words, too, are mere channelling-devices for some wider meaning neither he nor any reader may ever know; each word containing a world of its own. More importantly, however, the role of language and words in *The Southern Reach* suffuses language with an organic, living quality,which suggests its inherent influence over and connection to the flesh, the body, the corporeal. "Perhaps a copy could also be superior to the original, *create a new reality by avoiding old mistakes*,"[84] (emphasis added) Ghost Bird wonders, philosophizing about her own existence, trying to make sense of it. This sentence moreover stands out as a key to reading the entire trilogy. When Ghost Bird steps out from the Tower after the climax of the trilogy, she senses that the world has alered: something "had changed beyond the climate."[85] If Area X's infiltration can be read as the revenge of Gaia, the final outlook of the changed, monstrous planet is fittingly tri-

[81] Daniel Levine, "Strangling Fruit," review of *Acceptance* by Jeff VanderMeer, The Brooklyn Rail, 3 October 2014, accessed 25 February 2017. <http://brooklynrail.org/2014/10/books/the-strangling-fruit>.
[82] VanderMeer, *Acceptance* 333.
[83] VanderMeer, *Acceptance* 287.
[84] VanderMeer, *Acceptance* 35.
[85] VanderMeer, *Acceptance* 327.

umphant. Ghost Bird approaches the suspicious Grace (as far as the reader knows the only human "survivor" of Area X), and tells her that there is no reason to be afraid: "Why be afraid of what you could not prevent? […] There was nothing to warn anyone about."[86] Ghost Bird feels "unaccountably happy, grinning even," as she walks through Area X-become-earth and sees no signs of human life, declaring that the "time for expeditions was over."[87] The copy and upgrade of planet Earth, cleansed of human contaminants, has left a monstrous ecosystem behind in which even the Southern Reach research facilities have been assimilated into the organism so that Ghost Bird can hear it "breathing."[88] And the last scene from this Brave New Weird blissfully asserts, channelling a more-than-human gaze, that it is "just an ordinary day,"[89] as Ghost Bird and Grace walk out to explore whether Area X has borders anymore. The end of *The Southern Reach* thus presents the reversal of the weird itself, for in a world-become-monster, the monsters are *us*, not *other*.

Conclusion

Through the monstrous transformations imposed upon the planet and humanity by Area X, the question resounding throughout the trilogy is whether it is really "such a bad thing" to be colonized, assimilated, altered, and forcefully evolved by Area X's monstrous system. VanderMeer's trilogy thus provides that "refreshing exit from human-scale thoughts" that Morton associates with the monstrous[90] and channels a viewpoint for an approach and reaction to the weird, and to Anthropocene monsters, that is arguably more productive than Lovecraft's stories. The "strangling fruit" of Area X seems

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[86] VanderMeer, *Acceptance* 328.
[87] VanderMeer, *Acceptance* 331.
[88] VanderMeer, *Acceptance* 331.
[89] VanderMeer, *Acceptance* 331.
[90] Morton, *Hyperobjects* 64.

claustrophobic and terrible at first, but through the eyes of the biologist, Ghost Bird, and in the end, Control, the trilogy works its way towards Acceptance. Accepting that humanity is simultaneously terrible (in its possession and destruction of nature) and insignificant (now that natural forces respond); that the upgrade executed by Area X is a merciful, required act; that becoming part of a monstrous ecology – becoming monster – is not necessarily such a bad thing at all. The strange semantics of Area X articulates a new, weird reality, suggesting that words, language, and articulation can perform a similar shift in thinking about the real world. However, The Southern Reach also exposes and ridicules the futility of language, emphasizing that words are only words until their message becomes powerful enough to change minds, broaden scopes, and transform reality.

This article has tried to show that the horror-evocative language employed by many scholars when discussing Anthropocene issues contributes to an academic climate in which the figure of the monster and the genre of the weird are naturally at home, and are therefore explicitly or implicitly, consciously or unconsciously conjured. The apocalyptic language in the works by Clark, Colebrook, Morton, and Trexler illustrates this condition of ecocritical debates – Clark calling it the "Anthropocene disorder;" Colebrook pointing out the inescapable anthropocentrism in any visions of apocalypse. Morton and Haraway consider the figure of Cthulhu useful for describing the current planetary crisis in the newly realized context of the Anthropocene. Latour turns to Frankenstein for monstrous-allegorical support in his critique of the Anthropocene condition. What the critics and philosophers discussed have in common is the contention that humanity needs to be jolted out of its destructive habits, re-evaluate and reconfigure its relation to nature, nonhuman animals, and environmental issues, and move out of the paralysis caused in the confronta-

tion with the "shock of the Anthropocene."[91] Precisely how to achieve that, however, appears to be beyond them.

Like VanderMeer's Area X, Anthropocene monsters display their complete indifference to humanity's qualms and cares, and nobody knows quite how to tame them – let alone squeeze their massive bodies into a human frame of reference. As much as ever, it seems that people in the oppressive context of the Anthropocene must turn to myths and stories to imagine a humanity able to embrace, incorporate, and understand that which is inconceivably other. Related to the futility of language displayed in The Southern Reach, the Anthropocene is only one more concept among myriad theories and notions that have been invented and imagined throughout history to try to articulate the world in a way that makes collective sense. Thinking of Anthropocene issues in terms of Anthropocene monsters is only useful as long as they can help address and provide insight into cultural, philosophical, or political conditions and tendencies. Nevertheless, the paralysis often inflicted upon the human mind when grappling with Anthropocene issues might be broken, or at least understood better, by the introduction of the monster figure. In the Lovecraftian weird tale, the monster of cosmic horror lays bare, mockingly, the insignificance of the human, thus begging for comparison to the Anthropocene discourse and satirizing that discourse by way of hyperbolic misanthropy. In the new weird fiction, with VanderMeer's trilogy as a shining example, the monstrous is rather presented as a potentially emancipatory catalyst for starting to think in weird terms. (New) weird narrative lays bare and challenges the limits of imagination, and explores how to expand, transform, and evolve beyond those limits. That is why the weird is such a promising literary stage for the Anthropo(s)cene.

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[91] Christophe Bonneuil, and Jean-Baptiste Fressoz, *The Shock of the Anthropocene: The Earth, History and Us*, trans. David Fernbach (London: Verso, 2016) 5.

The New Queer Animal: Queer Ecologies and Cinematic Representation

JANA GRIDNEVA

The term New Queer Cinema was coined by the academic B. Ruby Rich in 1992 to define a movement in queer-themed independent filmmaking in the US in the early 1990s. It aimed at reforming the existing representational structure and this reform could not happen without rebuilding the relationships between human subjects and "nature" in which nonhuman animals played an important role.

Talking about the NQC, the critic Barbara Mennel says: "Instead of coming-out stories and tragic homosexuals intended to solicit tolerance, the characters of New Queer Cinema – kings, poets, hustlers and murderers – unapologetically express deviant desires and engage in queer sexual practices in rough and gritty images."[1] Indeed, NQC infiltrates American cinemas at the very the moment when homosexuality had already become speakable in cultural discourse, but was yet constantly engaged in "soliciting tolerance" through film plots in which "gays dropped like flies, usually by their own hand [...]. In twenty-two of twenty-eight films dealing with gay subjects from 1962 to 1978, major gay characters onscreen ended in suicide or violent death."[2]

The NQC thus became a rebellion against these representation strategies employed by Hollywood to present homosexuality, and constituted an attempt to free homosexuality from its connection to victimhood. B. Ruby Rich identifies the conflict with humanism and the alignment with the poststructuralist view of society and identity as the main drives behind NQC's filmic experiment:

[1] Barbara Mennel, *Queer Cinema: Schoolgirls, Vampires and Gay Cowboys* (Columbia University Press, 2012) 75.

[2] Vito Russo, *The Celluloid Closet: Homosexuality in the Movies* (Harper & Row, 1987) 40.

Of course, the new queer films and videos aren't all the same and don't share a single aesthetic vocabulary, strategy, or concern. Nonetheless, they are united by a common style (...) In all of them, there are traces of appropriation, pastiche, and irony, as well as a reworking of history with social constructionism very much in mind. Definitively breaking with older humanist approaches and the films and tapes that accompanied identity politics, these works are irreverent, energetic, alternately minimalist, and excessive.[3]

However, in order for this experiment to be successful, the very basics of film as a representational medium had to be shifted.

Feminist film theory argues that the film as a medium is deeply informed by heteronormativity. As it relies on the dynamics of looking and being looked at, it depends on generating two different kinds of pleasure: voyeurism and exhibitionism.

The concepts of voyeurism and exhibitionism are shaped by gendered assumptions about heterosexual male voyeurs and female exhibitionists: the pairing of man and woman as husband and wife inscribes the structure of looking and being looked at, in which masculinity is associated with a desire to look and femininity with a desire to be looked at, bound together by the heterosexual contract.[4]

As these processes always take place between two polarized entities, a man and a woman, Hollywood presented homosexuality as being similarly informed and reliant on this binary. Hollywood's homosexuals thus were either feminine men (sissies) or dangerous and evil masculine women. To overcome

[3] Ruby B. Rich, *New Queer Cinema: The Director's Cut* (The Duke University Press, 2013) 18.
[4] Mennel 2

this limit inherent in the very medium in which they wanted to work, the NQ directors had to recast the cinematic representation in different terms.

The scheme that supports traditional cinematic representation is essentially mimetic. It relies on the assumption that a representational medium reflects, or can reflect, reality. However, "the mirror of reality" that Hollywood offers to its spectators is also one where a whole range of "others" cannot find themselves, and this includes all those standing outside the heteronormative status quo. NQC therefore distances itself from the traditional humanist understanding of representation and designs a new symbolic framework that frees it from the impossible and ideologically compromised task of "accurate reflection." Instead, it declares representation to be intrinsically violent.

Relying on Derrida's concept of "arche-violence", Roland Barthes' thinking on violence and representation and others in the poststructuralist tradition, Slavoj Žižek speaks about three kinds of violence:[5]

- Subjective violence – the most visible form of violence enacted by a clearly identified agent.
- Symbolic violence – embedded in language and the structures of discourse (no correspondence between the signified and the signifier)
- Systemic violence – naturalized and therefore invisible violence that is caused and sustained by the dominant socio-cultural order. (also connected to representation but acted out in the actual social realities)

[5] Slavoj Žižek, *Violence: Six Sideways Reflections* (Picador, 2008) 1-2.

The violence of gender is of the systemic kind and is largely invisible. However, this invisibility depends on the point of view adopted. Thus, from the point of view of the internalized heteronormative position, the status quo position, the violence committed on homosexual characters in Hollywood is largely invisible, as it pretends to be just the normal, "natural" order of things. However, all kinds of violence become more visible and noticeable as such from the point of view of the marginalized being.

In their determination to change the representational structure, NQC is not guided by an illusion or an utopian idea to achieve "innocent representation." Rather, their aesthetic is informed by the idea that "violence is ever present and actualized in different forms," as expressed by Derrida in *Writing and Difference*.[6] Commenting on Derrida's insights, Benjamin Noys says "It is only by thinking about a general violence that we can truly capture the forms and specificities of violence; otherwise we cast out violence as only ever secondary and accidental to some primary innocence."[7]

It is exactly this Judeo-Christian, mythological primary innocence that NQC refuses to believe in as well. Instead of embarking on a quest for the framework within which representational violence is eliminated, they overemphasize and overactualize the forms of systemic violence to the point when they become visible and therefore, analyzable. Thus, they do not so much get rid of the traditional violent structures, but rather commit even further violence on them, and this kind of subversive violence that de-normalizes the status quo we can call "queering": "Queerness, in my opinion, is not about realizing a programme, identity, or fantasy but about disruption, disturbance and laying a challenge to the very process and desire behind the act or impetus to 'realize' anything."[8]

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[6] Benjamin Noys, "The Violence of Representation and the Representation of Violence," *Violence and the Limits of Representation*, ed. Graham Matthews and Sam Goodman (Palgrave Macmillan, 2013) 13.
[7] Noys 13
[8] Nicole Seymour, *Strange Natures: Futurity, Empathy, and the Queer Ecological Imagination* (University of Illinois Press, 2013) 15.

Behind the NQC's urge to create more violence where there had already been enough is not the intention to create a new identity that would look good on screen, but to create a place for non-identity; a place where identity is always under construction and, most importantly, visibly so. Following in Judith Butler's steps, Claire Colebrook argues that "queerness (…) can only be the effect an explicit theorisation of the conditions for recognition: it is because one becomes human or a subject only through processes or iteration that there is also, necessarily, a failure or 'queering' of identity." Theorization here stands for thinking about the processes of subject-formation. NQC recognizes that gender-binary plays a significant role here. One has to be recognized as belonging to, and repeatedly confirm their identification with, one of the sides of the binary in order to be readable as a subject, and the nonhuman animal becomes deeply implicated in this processes of subject-formation, as the NQC shows. The critic Nicole Seymour writes: "The concept of nature has been used in religious, political, and other public discourses to invalidate queerness and, in turn, validate Heterosexuality,"[9] pointing out that form the very start, Queer Theory had a very tense relationship with "nature" as a set of concepts used ideologically to justify certain practices while condemning others. Animals, who are, as Lévi-Strauss has noticed long ago, "good to think with," have always played an important role in the ideological processes defining our perception of "nature" and "the natural." The editors of the *Queering the Non-Human* collection further argue that "animals should be of interest to feminist theory because they are deeply implicated in discussions of sex, gender, race and sexuality."[10]

For the NQC, an animal becomes a place where representational violence can be easily rendered visible, as animals have always been already overloaded with all kinds of symbolic/ideological meaning.

[9] Nicole Seymour, *Strange Natures: Futurity, Empathy, and the Queer Ecological Imagination* (University of Illinois Press, 2013) 19.
[10] Myra J. Hird, "Animal Trans," *Queering the Non/Human*, eds. Noreen Giffney and Myra J. Hird (Ashgate Publishing Limited, 2008) 228.

It is in the animal, ontologically the ultimate other of the human and thus the utterly marginalized and violated being, that the violence of representation becomes most visible. By interweaving animals, gender and sexualities in its images, NQC reformulates the very terms on which something or someone become "natural" or "unnatural."

One highly ironic and parodic scene from *The Living End*, takes the controlling and restrictive features inherent in the concepts of familial monogamy and exaggerates them to the point of absurdity. Not surprisingly, the animal to play an important role here is a dog. In the scene, the protagonist, a gay man, is lying in the bed with his lover. Suddenly, the lover's wife, after giving an emotional speech ("It's not the 70's anymore when being married to a bisexual was fashionable"), suddenly and no doubt to most of the viewers' surprise, takes out a huge kitchen knife out of her innocently looking clutch bag and stabs her husband. We are then shown a hand covered in blood and the family dog licking it hungrily. The dog then runs out of the house with the protagonist and happily jumps on the lawn and disappears into the darkness, seemingly with no intention to ever come back.

In Deleuze and Guattari's terms, a dog, or a pet in general, is an "oedipalized" animal or, in other words, an animal devoid of its subversive potential and consumed by the oedipal relationships governing the family as a unit.[11] The movie, however, exposes the Oedipal violence committed on the dog. She/he loses the timid aura of a creature that has accepted the Oedipal terms of being and becomes a freedom-loving wild thing who leaves the house in ecstasy. This, however, is not the dog's new realistic identity but rather just another symbolic structure within which it is inscribed. What this new symbolic dog manages to accomplish is to present both poles of the plot that

[11] Gilles Deleuze and Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. Brian Massumi (Minneapolis: University of Minnesota Press, 2005) 258.

turns it into a blood-hungry beast, the wild dog is deconstructed through the distance created by the obvious exaggeration and irony.

Having dismissed the family as a violent, rigid and controlling institution, NQC offers other forms of being together. These come in many forms in these movies but all of them share one important feature: they take the relationships of care and love beyond kinship and marital structures. In Gus Van Sant's *Even Cowgirls Get the Blues*,[12] this alternative form of being together takes a form of a feminist commune that has illegally occupied a ranch formally having served as a beauty institute for women to get in better shape. This commune also has an animal to accompany it in the movie – a whooping crane. These endangered birds have chosen the ranch as a stop on their migratory flight path. They also become the reason behind the cowgirls' conflict with the American authorities who demand access to the birds. The cowgirls say that because the capitalist patriarchal system of exploitation is responsible for driving the birds to near extinction in the first place, the authorities do not deserve to see them. The whole standoff is highly ironic and funny to watch.

Susan McHugh argues that we tend "to see wild birds as anything but individuated subjects, perhaps even as manifesting a collective social sensibility that itself appears increasingly endangered."[13] The fact that they all look the same makes it highly problematic to see them as individuals, which has been the problem with which nature films have always struggled – there are no characters, let alone protagonists, in a flock of wild birds, so the directors have to make them from scratch. The same applies to most other animals living and moving in groups who "disrupt conventional assignments of personalities to bodies."[14] Moreover, according to McHugh

[12] *Even Cowgirls Get the Blues*, directed by Gus Van Sant, Fine Line Features, 1994.
[13] Susan McHugh, "Unknowing Animals: Wild Bird Films and the Limits of Knowledge," *Animal Life and the Moving Image*, eds. Michael Lawrence and Laura McMahon (Palgrave, 2015) 273.
[14] McHugh 282

> [...] traditionally revered and feared for nesting or dwell-
> ing in hives or colonies, birds along with bees (not to men-
> tion nomadic indigenous peoples) have inspired horror
> and loathing because they represent the obverse of the do-
> mestic subjects who anchor bourgeois households.[15]

All this makes birds a good example of an animal that resists oedipalization. In *Cowgirls*, the moment when the flock of whooping cranes finally takes off, refusing to stay even in the feminist commune, serves as the movie's culmination. How-ever, it is accompanied with such cheesy music and the cli-ché Hollywoodesque scene of everybody looking at the skies, that the ironic distance remains preserved. The movie makes it painfully clear that, in terms of ecology, there are no win-ners in this conflict between the capitalist establishment and the feminist commune. The feminists are also already com-promised by the processes inherent in the way they relate to nature which drive them towards ecological catastrophe – the ending of the movie reveals that the feminists used drugs to manipulate the crane into staying on the ranch's grounds and to claim the high ground in their conflict with the authorities.

Therefore, it is not the commune but the birds that transmit the movie's revolutionary message: an alternative form of liv-ing together presupposes a new type of subjectivity that relies less on competitive individualism and more on the interaction with multiple agents. However, the movies like *Even Cow-girls Get the Blues* (showing a commune open to everybody who wants to take down capitalism and patriarchy), *Go Fish*[16] (the "family of choice" the protagonists create for themselves also continues to accept new members) and *The Living End*[17] (where friendship between a man and a woman becomes more important than than the loving relationship between two men

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[15] McHugh 274
[16] *Go Fish*, directed and written by Rose Troshe, Samuel Goldwyn Company, 1994.
[17] *The Living End*, directed and written by Gregg Araki, October Films, 1992.

do present us with an idea that these alternative forms have to be developed through queering of the traditional modes of being. Love and care here are unconstrained by any pre-conceived ideas about whom we should care about first, be it our blood relatives or partners. The relationships we witness in these movies are theoretically closer to Donna Haraway's work which contrasts stable independent agents with companion species that are always in the process of becoming through multiple and endless interactions with one another. Nicole Seymour points that "queer values – caring not (just) about the individual, the family, or one's descendants, but about the Other species and persons to whom one has no immediate relations – may be the most effective ecological values."[18] A truly queer commune, therefore, would be the one where even the divide between species is not respected.

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[18] Seymour 27
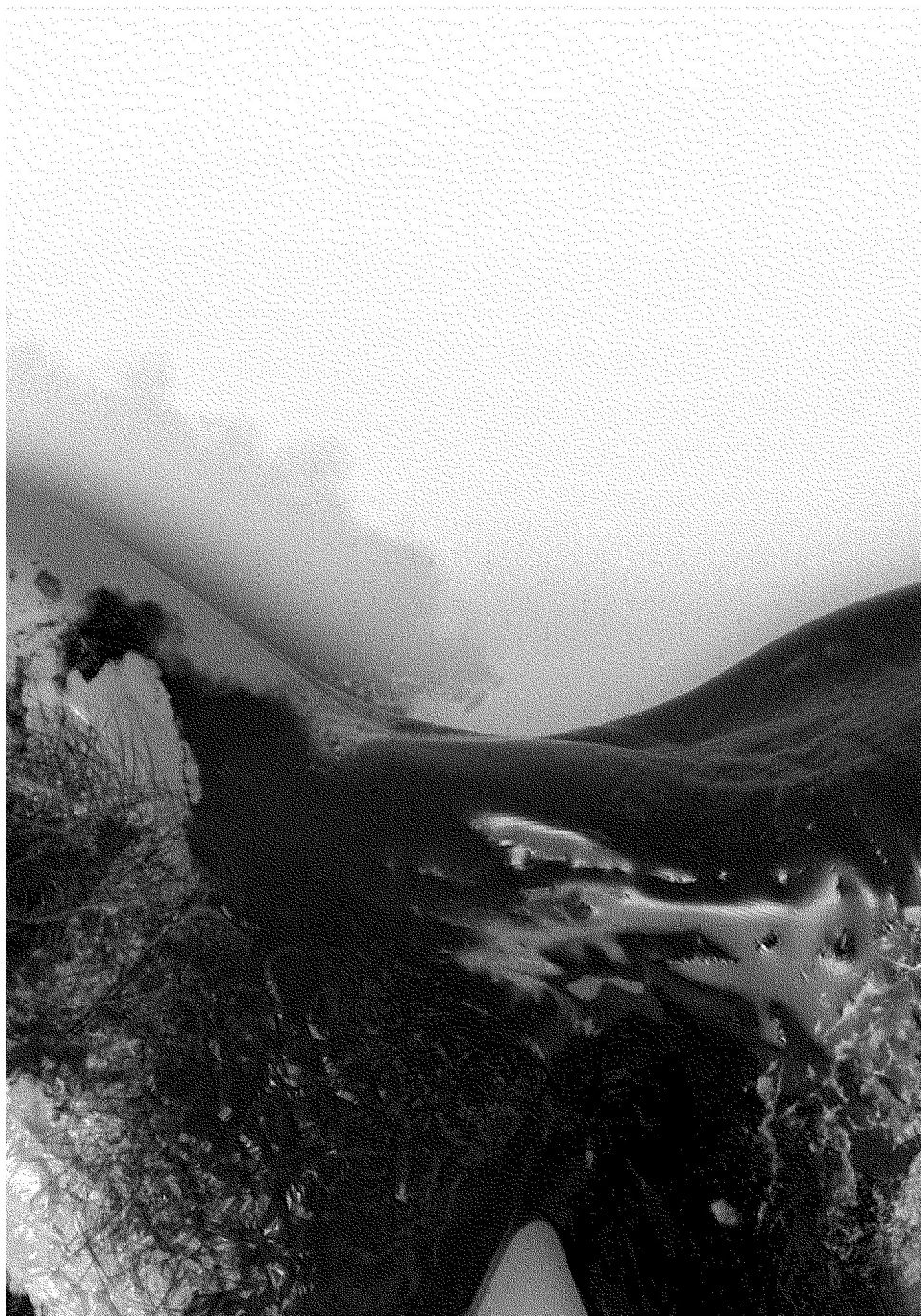
Animal Cameras: Virtual Reality and Factory Farming*

BOGNA KONIOR

> Rendering signifies both the mimetic act of making a copy, that is, reproducing or interpreting an object in linguistic, painterly, musical, filmic, or other media (new technologies of 3-D digital animation are, for instance, called "renderers") and the industrial boiling down and recycling of animal remains.[1]

Since 2012, filmmaker Mark Devries has been flying drones over large factory farms. The footage reveals toxic lagoons of waste spilling out around neat, evenly spaced-out white cubes. Hundreds of feet long, these lakes of excrement surround the tiny compounds in which farm animals spend their lives. A series of aerial photographs by Mishka Heller documents similar wastelands. Resembling the surfaces of alien planets, or wounds in the flesh of the land, the photographs amplify, through colour, the effects of pollutants, such as hydrogen sulfite and nitrates. While new media allows for these novel vectors of visuality in portraying the hidden lives of animals, living animals occupy secluded spaces. As the most literal illustration of this deadly game of sight and occlusion, Mercy for Animals reports that in South Korea alone, almost three million animals were buried alive following a flu outbreak in 2011 as euthanasia supplies ran out.[2] A simple Google search can reveal surreal photographs of health officials in protective gears dumping hundreds of alive animals into impromptu mass graves or leading an eerily unsuspecting

[1] Nicole Shukin, *Animal Capital: Rendering Life in Biopolitical Times* (University of Minnesota Press, 2009) 20.
[2] Nathan Runkle, "Nightmare in South Korea: 100,000 Animals Buried Alive Each Day," *Mercy For Animals*, 3 February 2011, accessed 29 August 2019 <https://mercyforanimals.org/nightmare-in-south-korea-100000-animals-buried-alive-each-day>.

group of ducks into a pit. Expanding in size and profit, factory farms are increasingly difficult to document. Thus, Deveries's and Heller's lenses work around their objects, circling them like a frightened animal, too cautious to come close.

In 2007, *Forbes* called agriculture "the world's biggest industry."[3] It is also ripe with innovation: from artificial intelligence systems that monitor cockroach farms in China[4] to facial recognition technology for cows[5] and the nascent industry of artificial meat.[6] The marriage of innovation and business also characterizes new media practices that artists and activists interested in factory farming utilize. Surveillance and computer graphics mould how humans look at farm animals but also how artists respond to that look. Satellite mapping, CCTV, Google Earth, aerial and drone photography... these technologies join the long line of what Michel Foucault in 1973 called "biopolitical" tools of productivity, book-keeping and disciplinary technologies of labour that extract value from life itself (and from its corollary - death). Ours is a time when capital and life became the same.[7] The frantic reproduction of animal life in factory farms is the condition for capitalism's self-renewing loop. Capital plants life and plants itself through life, a parasite that nests in one body after another, exhausting it, selling it, exploiting it, and beginning the cycle anew. This is a pattern of cunning and intelligence, a wit that has to be outsmarted. Some believe we can do so by seeing better. Can we?

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[3] Sarah Murray, "The World's Biggest Industry," *Forbes*, 15 November 2007, accessed 29 August 2019 <https://www.forbes.com/2007/11/11/growth-agriculture-business-forbeslife-food07-cx_sm_1113bigfood.html#6f270afb373e>.

[4] Stephen Chen, "A Giant Indoor Farm is Breeding Six Billion Cockroaches a Year. Here's Why," *South China Morning Post*, 19 April 2018, accessed 29 August 2019 https://www.scmp.com/news/china/society/article/2142316/giant-indoor-farm-china-breeding-six-billion-cockroaches-year>.

[5] Cargill, "Cargill Brings Facial Recognition Capability to Farmers through Strategic Equity Investment in Cainthus," 31 January 2018, accessed 29 August 2019<https://www.cargill.com/2018/cargill-brings-facial-recognition-capability-to-farmers>.

[6] Sarah PF Bonny, et al., "What is Artificial Meat and What Does it Mean for the Future of the Meat Industry?" *Journal of Integrative Agriculture* (vol. 14, no. 2, 2015) 255-263.

[7] James R. O'Connor, ed. *Natural Causes: Essays in Ecological Marxism* (Guilford Press, 1998).

The way we look at factory farms is increasingly mediated, it is not simply an aesthetic choice, but also a response to a policy that prevents an unmediated look. The United States government, among others, uses drastic measures to protect the agricultural industry, such as the federal Animal Enterprise Terrorism Act aimed at activists who, for example, free minks from fur farm cages, an offence punishable by up to ten years in prison. Recently, seeking to protect themselves from graphic video exposures, multiple corporate farm owners introduced Ag-gag laws that ban journalists and activists from documenting their grounds. This is because such actions were successful - between 2007 and 2009 several videos documenting cruelty at factory farms, such as grinding baby chicks alive or regular brutal beatings of cattle, led to industry boycotts, criminal charges, and closure of multiple facilities.[8] Lobbyists reacted immediately – over the next few years, sixteen states introduced Ag-gag laws. Therefore, artists and activists have turned to virtual reality.[9]

Colloquially, 'virtual reality' has come to mean a digitally created environment in which the user can participate, usually through a head-mounted display apparatus. Motion-tracking systems of various sophistication assure that she can move in real-time within the virtual world, which can sufficiently respond to her movements. The new medium is hailed as a prophet of change, believed to be ever more 'realistic' than the impartial experiences that other technologies deliver. Virtual reality has been recently called "a game-changer for animal advocates."[10] Exalted user reviews, ranging from 'this is unlike anything I have seen before' to 'I will never eat animal products again' are often included in how activists sell the project. On the iAnimal website, one user insists that "some-

[8] Utah Ag Gag Order, accessed 29 August 2019<https://apps.npr.org/documents/document.html?id=3891341-Utah-AGGag-Order>.
[9] Glen Greenwald, "The FBI's hunt for two missing piglets reveals the federal cover-up of barbaric factory farms," *The Intercept*, 5 October 2017, accessed 29 August 2019<https://theintercept.com/2017/10/05/factory-farms-fbi-missing-piglets-animal-rights-glenn-greenwald/>.
[10] Stephanie Strom, "Animal Welfare Groups Have a New Tool: Virtual Reality," *The New York Times*, 6 July 2017, accessed 29 August 2019<https://www.nytimes.com/2017/07/06/dining/animal-welfare-virtual-reality-video-meat-industry.html>.

thing extra-powerful comes across in VR. The heightened visual closeness brings about heightened emotional attunement."

The team behind iAnimal, at this moment the most well-known series of VR factory farm documentaries, which has so far made three VR films outlining the tortured lives of farmed chickens, pigs and cows, wants to deliver this immersive experience by filming from "the point of view of the animal [...] so that you actually feel like you're in a flock of chickens."[11] In principle, a bond between humans and machines, virtual reality is increasingly used to observe animals or – more so – to 'become' animals through technological immersion. "It actually puts you in the animal's place," says the campaign director of Last Chance for Animals.[12] Addressed in the second person to 'you,' the animal, the voiceover proclaims: "Your horns are burnt off without an anesthetic and you spend your life plagued by illness and loneliness." Through these revelations of what we often already know but, it is argued, do not *feel*, activist art wants to lift the veil on what is hiding in plain sight. Yet, if we want seriously think about how animals are mediated through these technologies, we might have to drop this old tune and ask: what is going on when virtual reality aims to put us 'in the place of' an animal?

One explanation is simple enough, Animal VR documentaries are celebrated as empathy factories. With the introduction of every new medium, this argument cyclically returns: we have already thought that war photography and documentary film-making would result in an empathy explosion, effectively preventing what it was showing.[13]

[11] Amelia Tait, "Could Virtual Reality Improve the Lives of Farm Animals?" *The New Statesman*, 30 January 2017, accessed 29 August 2019<https://www.newstatesman.com/politics/welfare/2017/01/could-virtual-reality-help-improve-lives-farm-animals>.
[12] Peter Holslin, "Virtual Reality Slaughterhouses could be the future of animal rights activism," *Vice*, 11 December 2015, accessed 29 August 2019<https://www.vice.com/en_us/article/4wb5km/virtual-reality-is-the-new-frontier-in-animal-activism-511>.
[13] Susan Sontag, *Regarding the Pain of Others* (Farrar, Straus and Giroux, 2003).

That never happened. These media did, however, change visual culture, making violence a permanent element of it. Horror theorists explain that when we watch gore or torture from a safe position, watching violence can be actually thrilling – not because we are all sadistic deep down but because it cements the sensation that, contrary to the victims on our screens, *we* are safe and *we* have made it through the screening; it is cathartic[14] and lets us reflect on the notion of evil from a protected position of distance.[15] We emerge victorious – the fleeting, intense proximity to violence makes clear to us that the world of bodily violence is, luckily, not our own, at least not *now* because we are still the ones in the lucky position to bestow empathy rather than have it gifted upon us. Furthermore, the brain can experience an influx of intense emotions as pleasurable irrespective of their content – excitement and anxiety are experienced similarly in the body and one can be tipped over into the other, a design feature that horror films often exploit.[16] And even if we were to experience sympathy rooted in terror, this does not have to turn into political action - in fact, we could argue that today the question of ethics has increasingly taken over the question of politics, to the detriment of change.

But something else is happening here: the desire to use new technologies to become animals. This is particularly peculiar because the iAnimal 'films' – or any of the recent virtual reality documentaries about factory farming – provide us with distinctly human perception of image and sound. Do we *really* see as animals do by immersing ourselves in these virtual experiences? No. In reality, chickens have three eyelids and can move each eye independently. They have a 300-degree field of vision without turning their heads. Cows can see everywhere apart from directly behind them. Compared to humans, they have a limited depth perception – they cannot tell a shadow

[14] Torben Grodal, *Moving Pictures: A New Theory of Film Genres, Feelings, and Cognition* (Oxford University Press, 1997).
[15] Cynthia Freeland, *The Naked and the Undead: Evil and the Appeal of Horror* (Routledge, 2000).
[16] Stuart Fischoff, et al. "The Psychological Appeal of Movie Monsters," *Journal of Media Psychology* (vol. 10, no. 3, 2005) 1-33; Margee Kerr, *Scream: Chilling Adventures in the Science of Fear* (PublicAffairs, 2015).

from a ditch. They can see red but they cannot see blue too well. Pigs rarely look up and primarily focus their eyesight on the ground. Unlike these animals, humans share their perceptual capacities with predators such as cats – our eyes face forward within a 180-degree field of vision, and our depth perception is really good because we need to be able to pick out prey from our surroundings. iAnimal VR films, promising to 'put us in the place' of the farmed animal are giving us the opposite, filming from the perspective of an apex predator, with the corresponding field of vision, focus and colors. Within the virtual experience, you are addressed as a prey animal – a pig or a chicken – and yet the perception you are endowed with is that of a hunter. A wolf in a sheep's clothing, we could say: the pre-supposed perception of a farm animal is colonized within a human mode of seeing.

This failure is inscribed into the very idea of 'becoming-animal,' a concept developed by Gilles Deleuze and Félix Guattari, which is often taken too literally. For Deleuze and Guattari, there are three types of animals: Oedipalised or humanized, whose history and character derives from their history with humans; archetypical or symbolic; and demonic, their favorite, an ever-evolving, flexible multiplicity that destroys stable identity.[17] In the demonic becoming, the human is scattered, becomes animalistic, multiple like a pack of wolves, the ego falls apart – this is not about imitating animals but about collapsing the self. The 'animal' here is a mediator of this collapse and even though Deleuzians might try to convince us that 'these concepts are not metaphors!', the 'animal' in 'becoming-animal' decisively is. (This is why Donna Haraway raged against the two philosophers, writing that "No earthly animal would look twice at these authors, at least not in their textual garb in this chapter."[18] This is all understandable given that Deleuze and Guattari wrote *Capitalism and Schizophrenia* to

[17] Félix Guattari and Gilles Deleuze, *A Thousand Plateaus: Capitalism and Schizophrenia*, trans. Brian Massumi (University of Minnesota Press, 1987) 240-248.
[18] Donna Haraway, *The Companion Species Manifesto: Dogs, People, and Significant Otherness*, Vol. 1 (Chicago: Prickly Paradigm Press, 2003) 28.

understand the human psyche as a multiplicity, rather than through the individual Oedipal subject stuck in parental relations as psychoanalysis posited. The demonic animal serves as a stand-in for something like a facial *dis*recognition system but has as little to do with animals as iAnimal has with animal vision. As John Ó Maoilerca rightfully asks, what's in it for the animals?[19] Are they to become a tool for a thinly veiled power-trip under the guise of ethical anti-anthropocentrism, proving our highest and most commendable ethical impulses by nobly taking on the perceptions of others? It might just be that this new aesthetic desire to dissolve humanity through becoming 'animals' is the highest form that anthropocentrism has yet taken: as if we could escape the terror of our humanity, or rather of not knowing what our humanity even *is* by nesting ourselves in another mode of being. What's in it for the animals when they become the simulated skins that we live in?

The desire to *become* remains, however, and it is an interesting one because it hides something else. What are we becoming when we try to 'become an animal' through iAnimal? The self-proclaimed ethical desire to become animal hides another longing: that to become technologies. For do we become animals through these virtual reality experiences? Not at all – this is not how the animals see. It is how the technology is configured to see. We 'become' technology. We become the eye of the camera. The camera is, however, no longer the mechanic "third eye" that early films theorists such as Dziga Vertov celebrated. The camera is a computer. It renders rather than records.

In *Animal Capital: Rendering Life in Biopolitical Times*, Nicole Shukin describes in great depth the centrality of 'rendering' to contemporary visual culture and factory farming. She notices that the word denotes both the processing of an image in computing and the processing of an animal carcass.

[19] John Ó Maoilerca, *All Thoughts are Equal: Laruelle and Non-Human Philosophy* (University of Minnesota Press, 2015) 203.

'Rendering' is then a material act on both ends: in the cultural industries on the one hand, and in industrial farming on another, two sides of the same coin. We can render a 3D image and we can render a corpse. Despite its relation to computation and potential for figurative abstraction, Shukin notices that it is a self-proclaimed 'realism' that is often taken as the goal of rendering: "Although rendering expands the sense of mimesis beyond its canonical associations with *realist* rendition, market cultures' hot pursuit of the representational goal of realism via new technological fidelities remain[s] vital to its logic."[20] Indeed, the obsession with 'realism' also fuels the iAnimal project. "The meat industry always complains that we're using selective footage, narrow vantage points and editing to make things seem worse," an animal rights activist praises the new technology, "but with VR, you're seeing exactly what we saw and hearing exactly what we heard."[21]

Perhaps it is rendering, not becoming, that best describes what happens between humans, animals and technologies in iAnimal. The promise of seeing like animals or even, as the makers claim, one day experiencing in VR the "soul-destroying stench" of factory farming tells us something about how farm animals are mediated today. For it is precisely processing that, as Shukin tells us, reveals how "literal currencies of animal life, such as meat, can be shown [...] with symbolic sense, [while] filmic or digital animations can be pressured to reveal their carnal contingencies."[22] The labour that animals perform by being processed unites factory farming and the cultural industries. Animals are both the aesthetic subject and the material. Before digital cinema, film *stock* was animal *stock* because photographic gelatin was "derived from the waste of industrial slaughter."[23] If we focus on 'rendering' animals in digital images rather than becoming animals through them, we will also be motivated to look at the economic conditions in which these technologies operate and the larger ecology of labour, pollution and industrial development.

[20] Shukin 21
[21] Strom, "Animal Welfare Groups Have a New Tool: Virtual Reality"
[22] Shukin 27
[23] Shukin 91

The three iAnimal films do not hide their links to the industry. Each is narrated by a celebrity - Evanna Lynch of the *Harry Potter* films, Tony Kanal of the band No Doubt, and tattoo artist and cosmetics entrepreneur Kat von D. The production studio behind iAnimal is located on Santa Monica Boulevard in Los Angeles. The technical team and the star power behind these films comes from its proximity to Hollywood, as it the case with the *Factory Farming 360* documentary produced by Last Chance for Animals. No wonder that some of the films ended up at the lucrative Sundance film festival, where they attracted attention because of the novelty of the aesthetic experience. They pair dramatic narratives with a gritty documentary aesthetic. *Factory Farming 360* is also filmed 'as if' from a pig's perspective, dramatically narrated by a celebrity who describes the torment of castration without an anesthetic and accompanied by a horror movie-like synth soundtrack 'as if' the dead animals were about to awaken as zombies. Inevitably, the films end with a market-focused message: buy plant-based products, not meat. A hub of vegan food, Los Angeles and its VR production studios are tied to this idea of ethical consumerism. iAnimal focuses on delivering a technologically-exciting, personal experience of terror as well as a market-driven solution to it.

Considering these solutions, we should bear in mind that industrial agriculture accounts for one-third of global greenhouse gas emission. Humans did not exist the last time there was so much CO2 in the air. Methane released from animals' belching and their manure warms up the planet. The number of living animals has been drastically shrunk over the past decades, largely due to humanity's industrial practices – we have lost 50% of wildlife since the 1970s. At the same time, life has been multiplied and accelerated for industrial farming – the number of livestock we now have on the planet exceeds the number of any other mammal group. Historian Yuval Harari writes, "Earth is home to about 7 billion humans, weighing together about 300 million tons. It is also home to several dozen bil llion farm animals – cows, pigs, chickens

and so forth – whose total biomass is about 700 million tons."[24] Their bodily labour and death, processed at the factory production line and rendered in digital images became the logic of our civilization. Fredric Jameson once wrote that all cultural narratives are informed by a "political unconscious" cultural works talk about politics whether they want it or not, they remain symptoms of the logic of capitalist production. Now, as we are re-evaluating the relationship between humans and other forms of life on the planet, we welcome the dawn of a climate unconscious, as Julia Leyda says,[25] with climate change underlying all cultural production. Factory farming constitutes an important part of it.

How does iAnimal fit into this? Focused on technological novelty and ethics, its narrative remains within uniquely human perception, economy and aesthetic pleasure. The images of suffering animals are produced to advertise the relocating of monetary capital towards 'organic' or 'green' products, some of which can carry a bigger carbon footprint than animal products.[26] All of this is underlined by a certain nostalgia, as if a pastoral relationship to the environment could be restored. This mirrors the belief that we can still return to a pre-cataclysmic world and that climate change can be reversed if only we *felt correctly* and then bought the right things. It is obvious that the relationship between animals, ecology and human technology is dominated by corporate and industrial imagination, yet it is less obvious that the narrative of empathy is a part of the same image. Rendering animals within such a dream of an uncorrupted past, a mythical land of organic farming and stable ecosystems has already become the territory of green capitalism, with its frontmen on LA boulevards.

Virtual reality films like iAnimals are a failed identity politics for the animals – they grant visibility without allowing an exit. In the times when political change seems unreachable by

[24] Yuval Noah Harari, *Sapiens: A Brief History of Humankind* (Random House, 2014); Yuval Noah Harari, "Intro," accessed 8 October 2019<https://www.ynharari.com/topic/ecology/>.
[25] Julia Leyda, et al. "The Dystopian Impulse of Contemporary Cli-Fi." Besøgt (vol. 25, 2016} 5-17.
[26] Timothy D. Searchinger, et al., "Assessing the Efficiency of Changes in Land Use for Mitigating Climate Change," *Nature* (vol. 564, 2018) 249 - 253.

standard means, ethical experiences can temporarily make us feel that we are at least trying to share the pain of others. They do not necessarily help us to understand the nature of systemic change or how to achieve it, and the comfort of engagement that they provide is fleeting so that we may need to reach it in increasingly novel ways, much more provoking to the senses than working to influence legislation or corporate funding structures. Would farm animals care about what affective states motivate us to change the laws around factory farming? In fact, would they care if we did it out of cold-hearted risk assessment and selfish self-preservation? Activists cannot be blamed for using every single resource that they have at their disposal but looking at history, and remembering that war photography did not stop wars, we should be aware of the limitations of 'empathetic cameras.'

radio.earth

UDO NOLL

Injuries

During the second half of the 15th century, the region between today's Schneeberg in Saxony and the Czech town of Jáchymov experienced the sound of the second, so called *Great, Berggeschrey*.[1] Similar to the 19th century American gold rush, the discovery of extensive silver deposits led to a rush of miners, craftsmen, merchants and settlers into the area that later received the name Erzgebirge, Krušné hory, Ore mountains. The growing prosperity of the region through mining was accompanied by massive interventions in nature. The humanist scholar Paul Schneevogel, aka Paulus Niavis,[2] born around 1460 in today's Cheb, wrote a remarkable work in view of the destruction of nature, which is considered to be the first literary work about mining in the Erzgebirge.

Iudicium Iovis or The Tribunal of the Gods on Mining[3] is an allegorical narrative which deals with man's right to plunder nature. The Gods represent the cause of the maltreated Mother Earth. In the dock sits the *homo montanus*, the miner:

> The earth, according to its lawyers Mercury and Minerva, bears fruits year after year with which it nourishes and sustains all living beings (alit atque sustentat) […] *But with this goodness does not agree, man penetrates into the intestines of his mother, rumbles through her body,*

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[1] Wikipedia contributors, "Berggeschrey," *Wikipedia*, 7 June 2019, accessed 9 October 2019<https://en.wikipedia.org/wiki/Berggeschrey>.

[2] Wikipedia contributors, "Paulus Niavis," *Wikipedia*, 11 November 2017, accessed 9 October 2019<https://de.wikipedia.org/wiki/Paulus_Niavis>.

[3] Paul Schneevogel, "Iudicium Iovis ad quod mortalis homo a terra tractus par ricidii accusatus," accessed 9 October 2019<http://daten.digitale-sammlungen.de/~db/0003/bsb00030187/images/>.

injures and damages all inner parts. So he finally tears up the whole body and completely paralyses its forces. [...] You murderer! Look at her! The one who not only nourishes you and keeps you alive (nutrit et in vita conservat), but also takes you into her womb after your death, from which you came... In you there is no trace of love for the one who bore you?[4]

Here an archaic goddess of ancient Europe, Chaos' daughter Gaia, appears in her form as Mother Earth. Since antiquity, she has been influential for religions and science, as the artist, *daedala tellus*, and mother of all becoming, embodying creativity and craftsmanship. In Niavis' narrative, however, Gaia is in critical condition, her body seriously injured, her beauty is stained, fertility and vitality have been depleted. Man's greed for metals has deeply disturbed her integrity. The miner stands accused. But in the further course of the trial, however, he calls her an evil stepmother hiding precious metals in the depth of her body. He argues rationally and economically, defends mining as part of human nature and therefore culture, and denies any guilt. Thus, he convinces the judging god, the complaint is dismissed. Mother Earth must endure man's actions.

At this historical turning-point, a three-fold leave-taking occurs: from the earth as *daedala tellus*, from the earth as the mother's body, and from the aesthetic *and* ethical insight into the predestined wholeness of nature. This is replaced by technical instrumental labour and scientific knowledge. The earth becomes dead material, deanimated and anaesthetic.[5]

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[4] Ulrich Grober, *Die Entdeckung der Nachhaltigkeit: Kulturgeschichte eines Begriffs* (München: Verlag Antje Kunstmann GMBH, 2013) 58-59.
[5] Hartmut Böhme, "Gaia. Bilder der Erde von Hesiod bis James Lovelock," *Bericht 1991 des Kulturwissenschaftlichen Instituts, ed. Lutz Niethammer* (Essen: Wissenschaftszentrum Nordrhein-Westfalen, 1992) 195-211.

However, the complaint about the rape of earth is serious and justified, and that is apparently also known to the court. It sends a gloomy warning after the verdict, that mother Earth will sooner or later resort to self-help against man:

> Yet their bodies are finally devoured by the earth and suffocated by evil weather; he is poisoned by wine, afflicted by hunger, remaining ignorant of what its best is: these and many other dangers are man's lot and destiny.[6]

The text by Niavis expresses a conflict. The self-confident miner declares the earth as a resource and claims the right for exploitation, accepting the destruction of nature. Appeals to the preservation of creation remain largely unheard and without consequences. Mining as a key early-modern industry continues to develop, unencumbered by sustainability considerations or animistic notions of the earth as a body. Formerly animate nature is disenchanted and objectified and thus moral scruples are discarded. It gives expression to the idea of the supremacy of man.

500 years after Paulus Niavis, after the third *Berggeschrey* in that region faded out, and after the discovery and exploitation of huge uranium deposits which were used during Cold War to produce Soviet nuclear weapons,[7] the region is in disarray. The consequences of these centuries-long interventions in nature and cultural landscapes are serious and require massive measures to be taken for an unforeseeable period into the future. The ecological conditions of air, soil and water in post-mining landscapes are monitored permanently by networks of sensors, in order to prevent further damage to humans and nature.

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[5] Hartmut Böhme, "Gaia. Bilder der Erde von Hesiod bis James Lovelock," *Bericht 1991 des Kulturwissenschaftlichen Instituts, ed. Lutz Niethammer* (Essen: Wissenschaftszentrum Nordrhein-Westfalen, 1992) 195-211.
[6] Hartmut Böhme, "Geheime Macht Im Schoß Der Erde," *Harmut Böhme: Geheime Macht Im Schoß Der Erde*, accessed 9 October 2019<https://www.hartmutboehme.de/static/archiv/volltexte/texte/natsub/geheim.html>.
[7] Wikipedia contributors, "Wismut (Unternehmen)," *Wikipedia*, 1 September 2019, accessed 9 October 2019<https://de.wikipedia.org/wiki/Wismut_(Unternehmen)>.

Networks

On August 5, 1858, an electrical connection was established between Ireland and Newfoundland. The alternating current was weak and slow, so a mirror galvanometer had to be used to separate the signal from noise. The transmission of the British Queen's greeting message to the American President took 16 hours, even though it only contained 103 words.[8] In his narrative of the same name, Austrian novelist Stefan Zweig describes the laying of the world's first submarine cable, and the first words across the ocean as one of the "decisive moments in history."[9]

In the course of the following decades, technology continuously improves. Submarine cables connect countries and continents, landline telephone networks expand, and from the second half of the 20th century onwards, satellite transmissions and fiber optic lines accelerate and distribute computing and communications.

> The Computer was very slow. But The Computer has done nothing since then but get faster, become more automated, and expand. [...] If the network is The Computer, then its motherboard is the crust of Planet Earth. This may be the single biggest drag on the growth of The Computer, because Mother Earth was not designed to be a motherboard.[10]

Infrastructures of the virtual emerge, attached to nodes with concrete geographical coordinates and with the potential to change the geometry of the world of commerce, politics and

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[8] Wikipedia contributors, "Seekabel," *Wikipedia*, 6 July 2019, accessed 9 October 2019<https://de.wikipedia.org/wiki/Seekabel>.
[9] Wikipedia contributors, "Sternstunden Der Menschheit," *Wikipedia*, 21 August 2019, accessed 9 October 2019<https://de.wikipedia.org/wiki/Sternstunden_der_Menschheit>.
[10] Neal Stephenson, "Mother Earth Mother Board," *Wired* (December 1996), accessed 9 October 2019<https://www.wired.com/1996/12/ffglass/>.

ideas that people live in. The networks, data centers and relay stations of these infrastructures are firmly anchored in the ground of physical and political/economic realities, at locations with secure energy supplies, in guarded buildings and with access to specialized labor to ensure operation. 150 years after the first submarine cable was laid, the global network itself has become a critical infrastructure.[11] Moreover, it has become a mental blueprint and central metaphor of all sorts of relationships, whether they are of a technical, political, ecological or social kind. A fluid geometry of a hybrid space, in which information and geography interfere and overlap at the user's location:

> Never before have cities been underlaid and arched, penetrated and networked to such an extent by a system that is only loosely connected to the material body of the city and yet takes in, digitally represents, processes, evaluates, controls and administers every relevant process. And this at thousands of places, which themselves are hardly coordinated with each other, which work semi-autonomously, grasp certain sectors overprecisely and hide everything else absolutely, but always and only do one thing: calculate and create readable symbolic representations on the interface, which in turn represent neither the inside of the computer nor the outside of the city reality.[12]

However, opacity, lack of knowledge, smart mobile devices and low latency in communications may foster the feeling of a strange weightlessness of the medium, as if it had got rid of its physical preconditions and restrictions, and would not be firmly anchored in the ground. With the metaphor of The

[10] Neal Stephenson, "Mother Earth Mother Board," *Wired* (December 1996), accessed 9 October 2019<https://www.wired.com/1996/12/ffglass/>.
[11] Neal Stephenson, "Mother Earth Mother Board," *Wired* (December 1996), accessed 9 October 2019<https://www.wired.com/1996/12/ffglass/>.
[12] Hartmut Böhme. "Von der Vernetzung zur Virtualisierung der Städte: Ende der Philosophie – Beginn des Neuen Jerusalem?" *Flimmernde Zeiten. Vom Tempoder Medien*, eds. Manuel Schneider, Karlheinz A. Geißler (Stuttgart, Leipzig, 1999) 309-323.

Cloud, this vague and diffuse thing has found its widely accepted expression, for the rather hidden data processing centers of the digital economy.

Cloud formations are aesthetic things, fleeting and with blurred boundaries, they accumulate vastly and, albeit they are gigantic, are in constant dissolution. They are both objects of physical reality as well as imagination. This cloud image, however, obscures the ownership and power relations of the infrastructures. Its image is defocusing, as technical and economic connections become blurred. The cloud appears as a global sphere of unlimited data storage capacity and computing power, which, in conjunction with artificial intelligence, data mining and machine learning, is ascribed enormous problem-solving potential. Depending on the actors and stakeholders involved, this ranges from total monitoring to solving human problems.[13]

In the early 21st century, Earth is surrounded by a sphere of increasing technical intelligence, a second nature, woven from the ground to the outer regions of the homosphere into a mesh of data links and communication relationships that contains, locates and connects almost every thing and person on the surface of the Earth.

Anamnesis

She wore a green robe. Tears streamed out of her eyes. Her head was wounded, her dress hung torn, and you could see how her body was pierced so many times... full of wounds and splattered with blood...[14]

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[13] Wikipedia contributors, "Artificial Intelligence," *Wikipedia*, 29 August 2019, accessed 9 October 2019<https://en.wikipedia.org/wiki/Artificial_intelligence>.
[14] Böhme, *Gaia* 195-211.

The shape of Mother Earth in Paul Niavis' text is pathetic. But the image behind becomes frighteningly familiar. A few centuries of industrial development, and unbridled consumption of natural resources have severely damaged almost all ecosystems, triggered mass extinctions of animal and plant species, and brought relevant global conditions of life close to dangerous tipping points beyond which self-reinforcing mechanisms could make the Earth a hostile place to live.[15] The ecological crisis calls technical progress into question:

> [...] no society is sure to this day whether its development is guided by "good knowledge". The fears that still underlie the criticism of science and technology today are fed by the idea that something could be wrong with the basic structure of knowledge production [...] it could be that man, unconscious in the enormous efforts of civilization to improve his life and secure happiness, causes his misfortune, even his downfall.[16]

Meanwhile, the idea of the earth as a living organism, as the essential sustainer of all life, has by no means disappeared. Instead, it has gained new strength and consent, by researching the complex ecological balances of the planet, and in the face of depletion and destruction of nature. In the 1970s, biophysicist James Lovelock and microbiologist Lynn Margulis formulated the influential Gaia hypothesis, which saw the Earth as a self-organizing organism.[17] It subsequently informed and influenced an interdisciplinary scientific approach that deals with the exploration of the Earth system as the sum of physical, chemical, biological and social components, processes

[15] Wikipedia contributors, "Tipping Points in the Climate System," *Wikipedia*, 30 August 2019, accessed 9 October 2019<https://en.wikipedia.org/wiki/Tipping_points_in_the_climate_system#References>.

[16] Hartmut Böhme, "Geheime Macht im Schoß der Erde. Das Symbolfeld des Bergbaus zwischen Sozialgeschichte und Psychohistorie," *Natur und Subjekt* (Frankfurt am Main, 1988).

[17] Wikipedia contributors, "Gaia Hypothesis," *Wikipedia*, 31 August 2019, accessed 9 October 2019<https://en.wikipedia.org/wiki/Gaia_hypothesis>.

and interactions.[18] The raw material of this Earth system science is gigantic amounts of data. The tools for its processing are the cloud computer centers of global infrastructure providers, such as Alphabet/Google and Amazon Web Services, among others.

It seems that the hidden complexity of ecosystems can only be adequately addressed with an equally complex network of measuring instruments. The image of a patient emerges: a body covered with sensors for monitoring breathing, heartbeat and vital functions, connected to intensive care devices, infusions, dialysis and catheters for cleaning and exchanging vital fluids.

The Gaia of the pre-industrial era was able to adequately protect and feed its human children. Now the situation is about to reverse, the mother planet appears worn out and devastated, and some inhabitants ask themselves, increasingly nervous, what measures should be taken and why. The diagnosis is by no means clear, neither are the underlying worldviews and ideas of nature. Ethical reasoning, ideas of preservation, sustainability and downscaling meet ideologies of economic growth, technological fixes and human supremacy over other lifeforms.

The uncertainty in these questions leads, among others, to ever larger data collections, fed by a variety of sensors, from academic research and industrial networks, installed in habitats worldwide, continuously monitoring the environment in real time.[19]

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[18] Wikipedia contributors, "Earth System Science," *Wikipedia*, 15 July 2019, accessed 9 October 2019<https://en.wikipedia.org/wiki/Earth_system_science>.
[19] Wikipedia contributors, "Sensoren Nach Messgröße," *Wikipedia*, 13 May 2019, accessed 9 October 2019<https://de.wikipedia.org/wiki/Sensoren_nach_Messgröße>.

GPS location data, a gyrometer to measure micromotion patterns and create motion profiles. Light intensity, humidity, temperature, noise and images are also recorded. Even radar is used to detect even the smallest creatures such as insects.[20]

Citizen Science projects enable people's participation in research projects, which greatly increases the density and distribution of sensors, as well as their acceptance. Smartphones can pick up acoustic signals and use them to identify species, or built-in cameras to measure pollutant particles in the air. Engaged environmentalists and bioacousticians install networked microphones in forests and develop statistical indicators from the analyzed sound recordings to determine biodiversity or the impact of anthropogenic noise on the local ecosystem:

> [...] sounds have an important role in detecting early signs of animal stress connected to climate change from the scale of individual species, populations, communities, and landscapes. The study of sound with an ecological perspective is a focus of ecoacoustics.[21]

And Dimitri Ponikaris writes that

> Here we have scratched the surface of what can be learned using the latest software and hardware developments to gain insights [...] all around the globe. It is important that we are able to rapidly uptake and utilize these emerging technologies, as the challenges that the natural world is facing are growing rapidly too.[22]

[20] Thomas Lenz, "Steht Ein Sensor Im Wald," *Technische Universität Darmstadt*, 2 August 2019, accessed 9 October 2019<https://www.etit.tu-darmstadt.de/fachbereich/news_etit/news_details_171520.de.jsp>.
[21] Bernie Krause, "Using ecoacoustic methods to survey the impacts of climate change on biodiversity," *Biological Conservation* (no. 195, 2016) 245–254.
[22] Dimitri Ponirakis "LISTENING TO THE WOODS. Using Bioacoustics to Explore Sapsucker Woods in Space and Time," *Cornell Lab of Ornithology* (2019), accessed 9 October 2019<http://www.birds.cornell.edu/brp/listening-to-the-woods/>.

Since the introduction of Google's *Earth Engine* in 2016, the company has created a data set of planetary scale from digitized satellite photos out of the Landsat missions, which is now available to scientists, researchers and developers. The project is unrivaled in size and analysis capabilities. In just a few months, researchers have created a virtual time machine that maps the location and temporal distribution of water surfaces on a global scale over the last four decades and provides statistics on their extent and change.[23] 10 000 cloud CPUs utilized with a total of 6 million hours of computing time would have taken about 1200 years to calculate on a contemporary home computer.

The list of recent sensing projects, from local to global scale, could be easily continued. It shows how much hope is placed in the algorithmic anamnesis of the unstable and weakening Earth system. As if only a closer look into the excavated data stock were needed. As if something had been overlooked and the answers were within reach. As if a new green technology were about to be discovered. As if the analytical power of combining sensors and data mining, artificial intelligence and machine learning were the key to healing the planet. Maybe it is, this is by no means excluded. But the willingness of so cieties to organize their actions along the dictum of an AI may yet be limited. On the other hand, current climate models, global estimates and predictions are created by this kind of technology and are thus already part of the decision-making processes. We've long since allowed technology to make decisions.

But there is a problem with these enterprises. Simply put, within a short period of time the impacts of technological progress and growth have pushed the biosphere to its limits.

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[23] "Global Surface Water Explorer," *Global Surface Water Explorer*, accessed 9 October 2019<https://global-surface-water.appspot.com/>.

Why would one trust its promises of a new technological deal, even a green one? Sociologist Eileen Crist calls it "*a neo-green agenda, a pervasive worldview that imbues the trends of more with a cachet of inevitability and legitimacy*",[24] which would include initiatives such as climate geoengineering, desalination, de-extinction, and off-planet colonization.

> The neo-green perspective would have us (enthusiastically or reluctantly) embrace a world that is massively complicated, mega-technological, engineered, risk-tending, used, biologically impoverished, overpopulated, and filled with (equitably shared) consumer stuff. The sole virtue of such a world is that it saves the historically bequeathed phenomenon of human rule.[25]

This, however, resembles the miner's attitude in Paulus Niavis' narration.

Answers

In Niavi's text, there was the prophecy that Mother Earth would devour men and bad weather would suffocate them. Although thismeans the ancient miner's underground working environment, it creates discomfort in the light of current events. The Earth responds; Gaia, it seems, dictates the agenda. Dead zones and garbage patches of enormous proportions emerge in oceans, heat and drought records are surpassed in succession, polar ice and glaciers are melting rapidly, and global extinction of species accelerates by magnitude.[26] The pressure on society increases by rising costs and social tension, public and private assets are destroyed by extreme weather phenomena, health is threatened by poison, and

[24] E. Crist, "Ptolemaic Environmentalism," *Keeping the Wild: Against the Domestication of Earth*, ed. G. Wuerthner, E. Crist, and T. Butler (Washington, D.C.: Island Press, 2014) 16–30.
[25] Crist
[26] "Global Assessment Report on Biodiversity and Ecosystem Services." *IPBES*, IPBES/7/10/Add.1, 29 May 2019, accessed 9 October 2019<https://www.ipbes.net/global-assessment-report-biodiversity-ecosystem-services>.

plastic appearing all over the food chain. On the sidelines of the 2019 G7 Summit in Biarritz, France's Emmanuel Macron declares the ecological question to be absolutely central, and tweets: #MakeOurPlanetGreatAgain[27]

Decades earlier, American astronaut James Irwin once said this about the view of planet Earth (whose photo became world-famous as the *Blue Marble*): "Seeing this has to change a man."[28]

source: *WikiMedia commons*

[27] "Ouverture Du Site Make Our Planet Great Again En Mandarin: Make Our Planet Great Again," accessed 9 October 2019<https://makeourplanetgreatagain.fr/>.
[28] Wikimedia contributors, "James Irwin," *Wikiquote*, 13 May 2019, accessed

Between these two statements lie more than 40 years of ecological decline. The Marble illustrates a problem: dimensions of *Nature* exceed any human measure. When problems scale to planetary size, no reasonable cognition is possible, and the individual fails in their problem-solving strategies. This causes feelings of powerlessness and despair, brought about by an unacceptable dissonance. Continuous alerting is not matched by adequate options for action, and ignorance is the result. Current climate debates are full of such aporia. Bruno Latour writes of the danger of going mad in the face of the loss of soil and language:

> We can't help but wonder how the daily news of the state of the planet is affecting our mental state. How could the fear of not being able to respond not make us feel that we are done?

and elsewhere he writes:

> It is no longer a past lost forever that makes us cry with misery, but the soil that disappears before our eyes [...] This is the most radical effect of the new climatic conditions: The climate crisis, the general extinction of species, the sterilization of landscapes are driving us crazy.[30]

A rational response to an emergency would be to take appropriate measures to address and downscale the causes of the crisis on a global scale. But human arrogance and an ideology of growth does not accept ideas of limitation. Latour may be right here. While waiting for global(ized) politics or insti-

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2019<https://en.wikiquote.org/wiki/James_Irwin>. Full Quote: "The Earth reminded us of a Christmas tree ornament hanging in the blackness of space. As we got farther and farther away it diminished in size. Finally it shrank to the size of a marble, the most beautiful marble you can imagine. That beautiful, warm, living object looked so fragile, so delicate, that if you touched it with a finger it would crumble and fall apart. Seeing this has to change a man, has to make a man appreciate the creation of God and the love of God."
[29] Bruno Latour, "Das terrestrische Manifest," *Edition Suhrkamp* (Berlin: Suhrkamp Verlag, 2019) 15.
[30] Bruno Latour, "Heimat, Was bedeutet," *Sinn & Verstand*, Die Zeit (no. 12, 14 March 2019).

tutions to come, or any techno-utopian fix for the planet, we literally lose ground, and most likely our minds along with it.

<center>***</center>

However, it may be worth to look at our own feet, not only to recognize our own footprint, but also to stay sane. The human sprawl has long since become a reality, and many things are lost without us noticing. We should start to believe what we already know. The earth, as soil, would be key to reconnect our needs and habits, and not only to the ground. Every single square meter of open ground is vital to a variety of lifeforms. This begins on balconies and yards, includes our gardens, any grass strip, green patch and waste land within your reach. Imagine the idea of wildlife corridors within your neighborhood, for anything that still lives there.

Biodiversity in cities increases, as rural landscapes deplete because of industrial agriculture and excessive land use. On a larger scale, connecting habitats with corridors, for species to exchange and migrate has been an aspired practice in nature conservation.[31] And it's the only chance to keep diversity. Sustainability and preservation are not new concepts, as Paulus Niavis' writings from 1490 have already shown. They have been part of human culture ever since.

We are familiar with networking and understand the dependencies. We should apply our senses as sensors and engage in it in our very own practice, from art to agriculture, whether you deep-root a narrative of better being, teach a friend, or plant a tree. In stead of getting discouraged in the face of globalized destruction, we should go radically local, literally to the soil, and take real responsibility for our actions, for a proj-

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[31] Wikipedia Contributors, "Natura 2000," *Wikipedia*, 29 August 2019, accessed 9 October 2019<https://en.wikipedia.org/wiki/Natura_2000>.

ect idea, a patch of ground, a piece of public space, or what-
ever, is in reach and is doable. Attention and resistance are
needed, because nothing that can be monetized is safe from
the miner's greed for profit.

Digital Garden Lab: An Exercise in Appropriate Accelerationism

PAUL CHANEY and DIGITAL GARDEN LAB

Part I: Appropriate Accelerationism

A lot of investment attention has recently focused on urban vertical farming[1] – hi-tech hydroponic growing systems sealed off from the environment and communities. While these systems claim ecological benefits and efficiency, many of the claims are questionable and there are many other ways to grow food in the city. In this sense, urban vertical farming is an example of an adaptation technology that can be described as "lite green."

Although sensible at first glance, the reliance of these technologies on massive transportation and industrial infrastructure at scale – if they are to have measurable impact on our overall energy consumption – makes them only a weak contender to current fossil-fuel and high-energy solutions. Even if we manage to come up with modification and adaptation measures that make these technologically and materially complex renewable energy sources and food production infrastructures more effective, more energy in itself is no longer enough. When the Jevons paradox meets the worsening EROI of finite resources (energy return on investment) and more efficiency leads to more consumption without affecting the increasing rates of depletion, the only solution is to decrease depletion and invest into finding low-energy (non-lite green) solutions. We propose this is where new forms of accelerationism and deep green thinking could cross-fertilize.

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[1] Erik Kobayashi-Solomon, "Investing In Vertical Farming: Five Take-Aways." *Forbes*, 9 April 2019, accessed 20 October 2019< https://www.forbes.com/sites/erikkobayashi-solomon/2019/04/05/investing-in-vertical-farming-five-take-aways/#381983ee355c.>; see also Emiko Terazono, "AeroFarms Raises $100m as Investors Rush to Indoor Farms," *Financial Times*, 9 July 2019, accessed 20 October 2019<https://www.ft.com/content/cac48190-9d8a-11e9-9c06-a4640c9feebb>.

In their book *Inventing the Future*,[2] the accelerationist the-oreticians Nick Srnicek and Alex Williams offer a useful cri-tique of the populist movement towards localized low-impact food production, saying they are unscalable and limited by underlying 'horizontalist folk politics'. This is one of the re-alizations that emerges through the 'naming' of acceleration-ism: We were always already accelerating, and our current situation is a lock-down that can only be solved by working with the processes of acceleration itself. Among the extremes of the accelerationist position we find everything from an un-shakable belief in high-technology and industrial process all the way down to the school of thought known as "zero accel-erationism" (or "ZeroAcc"), which claims that our current bottleneck reality as a species will result in the halting of the accelerating processes and usher in a species-wide stagnation. The power of the accelerationist idea, however, lies in its insis-tent razor-sharp focus on pushing for some deeper realization for a way to take change itself into account, allowing space for critique of the very notions of 'progress' and 'development'. We propose this impulse towards change could be applied "appropriately," i.e. be informed by historical experience, to our eco-industrial environment, our digital technologies and scientific methods.

Crunching the numbers on urban vertical farming, we can be-gin to see cracks emerge in a technology widely accepted to represent the physical form of accelerationist thinking. The claims of the vertical farming industry just don't add up. Yes, vertical farms are good at producing localized salad, but a ver-tical farm big enough to provide the current world population with its daily requirement of carbohydrate and protein would completely cover an area approximately the size of Europe. Vertical farm companies claim space saving efficiencies of anywhere between 10 and 200 times compared with conven-

[2] Nick Srnicek and Alex Williams, *Inventing the Future: Postcapitalism and a World without Work* (Verso, 2016).

tional agriculture. Currently 26% of the world's land surface area is used for livestock production, and 11% for arable crop production. If the world population converted in its entirety to veganism, we might assume 20% of the world's surface area would be needed for agriculture. At a ten-fold spatial efficiency, 2% of the World's surface area would be needed – the same area as Europe. The hermetically sealed warehousing, LEDs, and solar panels required would consume vast quantities of the world's remaining technical resources and would represent the biggest single engineering project ever undertaken by humanity (a surprisingly common feature of lite-green proposals, usually requiring another global mega-industry to be founded and run for many years). In the realm of agricultural production, the vertical should never be posited as a full alternative to the horizontal. Vertical farms will never feed the world.

This techno-optimist and populist form of localized food production is confined by its own resource and energy requirements, just as other lite green technologies. An appropriate accelerationist approach would thus be a push towards harnessing the proximity and activity of humans regardless of their politics and social connections, and taking advantage of the ability of the Sun to power all known life on Earth up to this point, without the need for cheaply produced Chinese solar panels (as the vertical farm industry proposes). If we see local, low-cost, low-maintenance and nutritious food production as one of the solutions to our overall energy problematic, we must use designs and methods that are appropriately complex and rapid enough to scale well and not get caught up in politics, economics and silicon valley startup fads.

An appropriate accelerationism would take the technologies and organizational models available to us at the moment and pick the ones that have the lowest negative impact and highest positive yield. This approach carves the techno-social landscape into categories where high-tech meets low-tech in

various ways, eliminating obviously un sustainable models first and then initiating brute force tests of everything that looks like it might scale. Using digital models and small research projects to quickly prove the feasibility of various designs, the result could be a set of tools and strategies that proactively try to adapt to their specific environment and undergo further evolution based on their ability to provide yields with minimal environmental costs and labour inputs. Every such appropriate result is an acceleration of the overall process, interlocking with other systems following the same paradigm rather than locking itself and the surrounding system down in isolation. Its end result is a balanced, highly effective application of human, digital, natural and engineering resources in ways that make them deployable and adaptable to any Earth environment – including technologically and culturally complex societies living in urban landscapes (as is the case in the global north and west). As an open-source, multi-layered database of appropriate accelerationist models and blueprints, "AppAcc" should function as a "rapid gradualist," scale-focused teaching and instruction tool. It should also try to acknowledge that we do not know what exactly needs to be done about our degrading environments and decreasing quality of life, but it suggests that we start with approaching at least one of the most basic needs every human can get involved with – food – and see what happens. Through this emphasis on immediate results and increasing long-term benefits, appropriate accelerationism could address the issue of "What is to be done?" without resorting to hope or dread.

The key feature of an appropriate accelerationist approach would be its potential ability to adapt to any environment. Given our ability to measure and predict basic environmental states and conditions, we can provide a set of solutions and ways of their modification that is ready to evolve as needed. The surprising result of such an experiment, as explained later in this document, would be its ability to combine many different existing approaches into one – from robotics to the methods

of applying human work used during the peaks of preindustrial modernity. Suddenly, many futuristic as well as primitive options become viable again, improving together and interlocking with each other. Instead of the horizontality of a forced technosocial monoculture limited by its access to resources and energy, appropriate accelerationism seeks the verticality of an immediate polyculture expanded through its frugality and interoperability.

Part II: Three parameters for interfacing nature

In 2004 I was lucky enough to be able to buy a two hectare improved grass meadow in Cornwall, in the southwest of the UK. There I set about researching, designing, and establishing a complete system for self-provision, inspired by a life-long fascination with autonomy, low-carbon living, and mutualism with the non-human. For eight years I lived at the site (which became known as FIELDCLUB) completely disconnected from public services while I attempted to provide as many of my daily physical necessities from within the boundaries of the plot. I wanted to experience survival on the smallest piece of land possible, grow the most efficient sources of complete nutrition, and install a future carbon-negative fuel system (by planting trees). I make no claim to the overall success of the endeavor – by the end of the eight years, exhaustion, both mental and physical, had taken its toll. However, the project generated some useful insights and presented a unique opportunity to become part of a geographically restricted food web, sharing the majority of material inputs for life with a visible wider community of non-humans occupying the same biotic space, and to use and share materials originating in the 'solar contemporary' (by which I mean materials solely generated by the biota's ability to capture some portion of the Sun's daily shower of excess energy toward the Earth in our present time). Here was a rare chance for a post-industrial human living in the post-fragmentary age to re-enter the problematic arena of mutualism and interdependence with the non-human.

Having already spent most of my time as an adult living various forms of off-grid existence, I knew that my human experience didn't really matter to the non-human. My attempted return to the land was not going to be a transcendental endeavour, and I had no intention of generating another Walden (although I will admit to talking to the animals on more or less a daily basis). From the beginning, I was determined to maintain a critical distance from the act of living and 'working' on this small piece of land and avoid the pitfalls of the romantic. With so many artists suddenly concerned with Nature (big 'N') it was important to me that I somehow circumvent the problem of 'nature feelz' – that dissonant cognition exclusively allowing Homo sapiens to feel deep love and affinity for seal puppies, but also drive a Hummer. Neo-materialist analysis was to be the main theoretical vector of the investigation, and the means with which to refuse the conceptual separation between human and non-human.

The seasons passed. The minutiae of daily existence in the biospheric web gradually revealed themselves with each thrust of the spade into the soil – the granular causality at play within complex non-human systems dependent on growth and decay, bifurcation and reabsorption, life and death on all scales from bacteria to Mammalia, and of course necessarily extending to the geologic and the cosmic.

My artistic practice obsessed around these physicalities as the experiment progressed. The more my actual survival depended on that small plot of land, the less the usual canons of art held sway. My creative practice became solely focused. The initial practice of attempted pre-postcollapse survival became subject to the secondary practice of artistic investigation. In doing so, over time, a categorization of experiences and methodologies emerged. This categorization defines three basic elements, each of them constituting a way of sensing and understanding relationships with a crucial part of reality or with the thing which might be called 'the real' – that which lies outside of the human mind and its sphere of technorealities. In doing

so, over time, a categorization of experiences and method-ologies emerged. This categorization defines three basic elements, each of them constituting a way of sensing and understanding relationships with a crucial part of reality or with the thing which might be called 'the real' – that which lies outside of the human mind and its sphere of technorealities. This categorization helped me cut through the personal 'greenwash' of my activity, gave me a framework that went beyond romantic middle class reasoning, and allowed me to understand the function of my activity on a theoretical level, allowing analysis and useful retrospection. This categorization could form an ethical framework for an AppAcc praxis, and answers the call of this publication – to think new ways through the confusing and ethically murky deep-end of interdependence.

First category: The Sun and geological materials

Standing in the garden, between earth and the sky, day in and day out for eight years and observing. Seeds burst, leaves unfurl, fruits swell, bacteria, fungus and virus multiply, haulms turn brown and fall back to the earth in a never-ending cycle of life and death, theft and gift, dominion and defeat. Each leaf optimized to absorb sunlight and gas to produce glucose power for cellular function. Carbon dioxide enters, and oxygen and water vapour exit through a thousand tiny puckered stomata. In the spring, when the Sun shines strongly and there is water for roots to suck, the plants grow. When a cloud momentarily passes in front of the Sun on a warm spring day, the flow of gas through stomata reverses. The plant turns upwards towards the source of all power, either in a show of flamboyant extravagance, or in desperate competition. Lay on your back, watch the canopy of the forest and see how no space is left. All life on Earth is a product of the Sun – an expression of solar excess.

This solar view shines a light of cold-blooded, naturalistic-reason on all of the systems humans have developed so far. Some of them crumble under this type of Sun-focused scrutiny,

others prove to be amazingly reliable and robust. Our current civilization's over-reliance on fossil fuels is an example of the former (stagnating through reliance on a static form of ancient 'dead' Sun energy). Polyculture and naturalism informed by systems theory and process philosophy is an example of the latter (adapting to dynamic forms of Sun energy). Capitalism, from this point of view, is a naturalistic system infected with an abundance of energy and ignorance – but it is a tool like any other, a socioeconomic instrument of assessment, production and distribution that can be appropriately accelerated if we recognize where/how it kills and where/how it heals. This is where AppAcc connects to politics and economics by addressing the building blocks of our bodies (and through brain nutrients also our minds), from the psychogeographical and deep green baseline of all life, all the way to the explosive extremes of science and progress. Whatever vision or ideology one follows, AppAcc is there to define its most optimal grounding in nature.
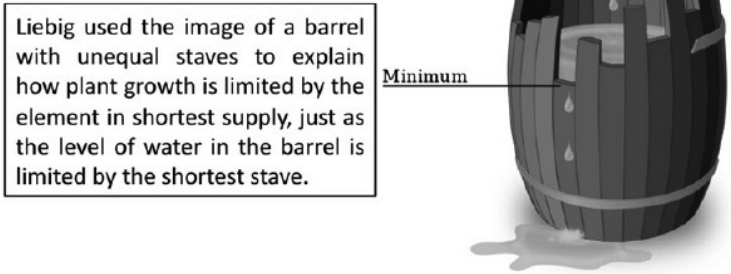
The material building blocks of human life are tragically mismanaged in our era – consider peak phosphate and the fact that most human bones, through a forceful and scale-ignorant industrial agriculture, are built from materials extracted from a single mining complex in the western Sahara. This is humanity making itself weak and fragile, vulnerable to dramatic shifts in its quality of life. If this unimaginably irresponsible one-source system is creating our bones, what about the rest of our bodies? This is not a defense of some naive anti-industrial model, but a call to re-evaluate the relationships of the synthetic and the organic, of solar economics as a scaled and balanced discipline required to keep us healthy and productive for as long as nature lives. AppAcc's first parameter is supposed to guide us towards using and developing systems whose metabolisms operate in the solar contemporary and don't predicate on the solar past. It's that simple.

When a plant lacks an element necessary for its function, it withers and becomes sick – a host for necrotizing pathogens

and colonizing insects intent on disassembling the elements the plant has gathered into itself. The structure of the dead plant is returned to the base substrate. A layered assemblage of ancient bodies and oxidized decayed rock, writhing with bacteria and parasite within parasite, hugging the contours of eroded lands, filling crevasses, spilling out across ancient sea beds and floodplains. The heaving black mass of rotten flesh sighs great puffs of gas. Roots force downwards, pulling up traces of phosphorus, potassium, calcium, sulfur, magnesium, iron, boron, chlorine, manganese, zinc, copper, molybdenum, and nickel.

Every day, hour, minute, second by second, the labyrinthine metabolics of the system are disclosed within the garden. Through analysis, careful at first and then more intuitive and automated with each season, the human becomes a direct participant and co-creator in the systems around it. Understanding is achieved through interaction, with an accelerationist questioning of things emerging from the substrate and essence of the cycles themselves – can the technosphere appropriately plug into the biosphere? The nature-informed noosphere into the techno-formed anthroposphere? How many applications of our know-how and instruments are yet to be explored and tested? The solar and the terrestrial both become allies of the human, providing nourishment and a sense of rational embeddedness. The act of balancing the need for control with the feeling of "thrownness" (the *Geworfenheit*, the birth-launch of each new human being into an unknown natural world) is possible if we see the Sun as our most immediate and powerful source, and the living leaf as the most efficient device for capturing that power. Consider Liebig's barrel: A visualization of mineral requirements for plant growth based on barrel planks where each plank is a component needed for growth – if one is too short, the barrel can't hold enough potential for the plant to grow. The human equivalent of this model starts with plant growth, where the plant is a "plank" of the human-supporting structure. The solutions to "peak X" (peak oil, peak phosphorus, peak peo-

ple...) is not necessarily to stop our current activities, but to make them appropriate to our ground of being by combining them with hyperlocal, hypereffective sources existing in the living biota, rather than the fossilized past.

Liebig used the image of a barrel with unequal staves to explain how plant growth is limited by the element in shortest supply, just as the level of water in the barrel is limited by the shortest stave.

Minimum

Liebig's Barrel, source: *Mehdi Cherif*

Marx's notion of the metabolic rift is another useful tool in conceptualizing what is at stake and how AppAcc could approach the problem of material finitude within the realm of agricultural production. Marx's idea grew out of observations of English colonial agriculture in Ireland (a period of intensification in agricultural technology that coincided with the globalized extraction and transport of guano from South America to Europe in the mid-19th Century) and the new science of plant nutrition being published by Liebig and his contemporaries. Cereal crops grown in Ireland were shipped to England and consumed in London. The consumers of the crop defecated into the extensive sewer system under the city and the human effluent was hen washed out to sea. The fertility of the Irish landscape was effectively being stripped out and shat into the English Channel. Marx protested that the English should at least be polite enough to take the shit back to Ireland where

it could be returned to the soil and re-enter the cycle from whence it came. The metabolic rift therefore describes the removal of a material from its native cycle, and its rerouting through the anthropic technosphere where it is ultimately lost. The cyclical becomes linear, pared away by the thrust of some machinic blade or colonial drive.

For the post-'Anthropocene concept,' there is further definition needed within the framework of the metabolic rift. The industrialized human world is defined by an unbinding of stratified materials accumulated over time by ancient metabolisms and biotic processes. Using the framework of solar analysis outlined earlier, we might call this 'the metabolic past'. In the case of phosphate in modern agriculture, dinosaur bones extracted in the disputed territory of Western Sahara are ground up and shipped worldwide to temporarily boost the fertility of global agricultural systems before again being washed out to sea. Mineral concentrations such as these accumulated over millions of years in great ocean bed strata, and have no possibility of reforming within the span of human civilization.

The case of nitrogen complicates matters further. Nitrogen is the most abundant gas in the contemporary atmosphere, and constitutes one of the most important plant nutrients. However, as an atmospheric gas it exists in an extremely stable form (N_2) but is only usable by plants in its more redactive form (NO_3). Within the metabolisms of the biosphere the conversion to nitrate is performed by lightning strikes and cyanobacteria, the occurrences of which once limited the quantity of protein locked within the biospheric system as a whole (nitrogen being the main constituent of all amino acids). This limiting factor was broken by Fritz Haber and Carl Bosch in 1909, who are held by some to be jointly responsible for the exponential scaling up of industrialized agriculture and the unsurpassed growth of human populations in the twentieth century. The Haber-Bosch process requires vast amounts of heat and pressure to 'crack' the powerful nitrogen bond,

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making the ammonia industry heavily reliant on fossil fuels. The nitrogen content of food grown in our conventional agricultural system is dependent on extracting and burning the bound excess of the Sun. Therefore, an unbound excess from the metabolic past is used to cause a rift in the contemporary metabolism of the Earth.

To return to the problem of the vertical farm – where do the nutrient formulations necessary for plant growth in hydroponic systems come from? Are the sources any more stable or create less rifts in the biotic metabolisms of the Earth than conventional farming practice? The main question emerging for AppAcc at this point: Is it possible to optimize and upscale the procurement of plant nutrients from the restricted geometric footprint of the site of production itself without creating further metabolic rift, or relying on the solar past?

Second category: The Non-human

While living at FIELDCLUB, the issue of "Tierischer Lebensraum" or "animal living space" became monstrously visible.[3] More so than herbicide and pesticide, the simple plough itself is the most effective tool for the complete sterilization of complex biodiverse habitats, and the removal of biological niches. In the conventional heavily mechanized agricultural system, there is no living space for the non-human animal.

My experiment in self-sufficient living quickly unfolded into a veritable killing field (for communities of individual animal and plant species as well as for whole ecosystems). The agricultural system I implemented allowed far more living space for the non-human than the surrounding farmland. A horrific double bind emerged: The more living space I left in the system for the non-human, the more non-human individuals

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[3] For a more detailed description of the FIELDCLUB project, see Paul Chaney, "Perspectives Emerging from FIELDCLUB 2004-2012," *Allegorithms*, eds. Vít Bohal and Dustin Breitling (Litteraria Pragensia, 2017).

perished during my efforts. The farmland surrounding FIELDCLUB was ploughed and harrowed up to three times a year, sprayed with large amounts of herbicide and pesticide, planted with monocultures and hard-grazed during three seasons. Conventional farmland is continually stripped of its biodiversity, and mechanical and chemical strategies continually disallow its return. In comparison to this 'green desert,' the FIELDCLUB site quickly became a haven for wildlife. Nature does indeed abhor a vacuum, and as soon as agricultural technics are withdrawn, the land is re-colonized by multiple wild organisms and their complex interdependent systems. As I made my efforts to grow my own 'sustainable' food within the recently recomplexified landscape, I inadvertently dealt death with every small act of self-provision. Worms were chopped in half by a humble garden spade, field voles made homeless by the conversion of permanent pasture into biofuel production. My implementation of deep green principles had a far from benign effect on the local fauna and flora's attempts at recolonization.

I had deliberately 'allowed' the local environment to complexify and the increased biodiversity to develop mutualisms and competitions with me for use of local minerals and solar resources. Biodiversity and mutualisms are important from the perspective of complexity theory and system stability. Monocultures are prone to collapse, and are only 'propped up' by extensive use of pathogenic chemicals, genetic engineering, and fossil fuel intensive mechanization. These observations may be formulated into an argument against most of the 'lite green' solutions explored by humanity today – they are not appropriate to our situation. Hydroponics (once again our 'go to' topic for comparison and critique) is a system based on isolating human food production from the non-human world. Isolation of this kind must be avoided when possible if we are trying to develop truly efficient systems. Systems that isolate require expenditures and maintenance of the isolation itself, burning up precious resources and work energy.

At FIELDCLUB, I initially implemented a conventional system of semi-organic (semi-bio) horticulture. The crops were planted in rows and blocks, the ground was dug every year and compost made and added to the soil. The minerals and nutrients the crops needed was provided by a mix of animal manure sourced from local farms, and recycled kitchen waste. Since leaving the UK, I have converted the system to perennial forest gardening – a form of permaculture that requires minimal labour inputs and absolutely no external sources of minerals.

Permaculture, forest gardening, and other forms of agroecology are designed to self-regulate. These systems are 'polycultural' and build inherent stability through interspecies dependency. Individual plants and insects provide 'ecological services' to each other within a carefully designed matrix, resulting in low maintenance productivity. Nitrogen fixing plants capture nitrogen from the atmosphere through bacterial symbiosis, and 'dynamic accumulators' send roots deep into the sub soil and decaying rock to unlock trace elements and bring them to the surface. The result is an abundant and intricate system of self-regulating plant growth that can support insects, birds, animals, and people.

Isolated techno/biotic systems unnecessarily reject the proven homeostatic stability of complex biotic systems that have evolved over millions of years. The way humans insist on doing things their own way and for their own purposes, ignoring the work nature is already doing (and still can do if managed well), is stupefying to anyone who was able to study the science as well as work in a non-static, direct-contact food production environment. Humans ignore this work and implement their own solutions in pursuit of economic, demographic, geopolitical or opportunistic goals because we do not yet understand, as a species, how a healthy nature translates to a healthy civilization. The work which the "natural slaves" do for us already is hard to measure, but one method used to make us feel its

immensity is to imagine the costs of keeping the International-al Space Station in orbit and capable of supporting life – according to ESA as well as NASA statements, the cost of the ISS, including development, assembly and running costs over 10 years, comes to roughly 100 billion with current technologies.[4]

The cheap work done by nature, as well as other secondary benefits of having a healthy home world, should not be ignored. An AppAcc approach to space exploration and other high-tech endeavours is based on science, the need for more knowledge and exploration, as well as for humanity to not have 'all of its eggs in one basket' in case of some cosmic catastrophe. But any ideas based on near-term space migration or that we can "burn the Earth if it means we will be able to leave it successfully" must be rejected. Our focus must be on science and our current home world first, the backbone of whatever we may become or achieve in the future.

The extreme example of imagining a humanity forced to live in space and on less hospitable worlds is a thought experiment that is supposed to make us realize what riches we are ignoring when we rely on primitive industrialism and globalized appetites in our approach to agriculture. In this way, AppAcc cuts through many other disciplines of human activity – medicine, communication, computation, transportation, research, exploration, design, economics, production and even art and politics. The AppAcc world is a pyramid with the high-tech projects of the 21st century on top, supported by a cultivated pyramid of appropriately accelerated wild nature. A vision of a lush world with access to the maximum of human technological potential emerges, the AppAcc informing our treatment of the most gross and common as well as the most refined and rare phenomena our world has to offer. In

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[4] "How Much Does It Cost?" *ESA*, accessed 20 October 2019< https://www.esa.int/Science_Exploration/Human_and_Robotic_Exploration/International_Space_Station/How_much_does_it_cost

order to explore the possibilities of the potentially emerging NBIC complex (the interconnection and cross-fertilization of nano-bio-info-cogno technologies) and other wonders of the technosphere, each of these "peaks of technology" must be supported by nature. This AppAcc vision is inaccessible and immediate at the same time, reaching an almost hyperstitional quality in the hands of some and becoming a simple everyday tool in the hands of others. Human beings are not ready for the former, while they have always been using the latter in order to survive and thrive.

This question can be summarized to "do we want to allow the non-domesticated non-human to exist, utilizing the benefits of wild as well as AppAcc-cultivated landscapes? Or do we want to live in a world without any non-domesticated non-humans, where we cannot benefit from the work done by wild nature and we continually need to move towards a more synthetic-industrialized nature?

Third category: Labour, or the acts that mediate all relationships with the previous categories

In her infamous 1958 book *The Human Condition*,[5] Hannah Arendt describes a 'vita activa' composed of three elements: labour, work, and action. The act of gardening for self-provision is the summation of all three elements. A person inexperienced in gardening can be forgiven for thinking the tasks involved only fall within the first category. But to provide for yourself requires more than a never-ending cycle of physical brute-force labour expended to merely stay alive. Tools need to be made and maintained, systems devised, crops accounted, rotations planned, varieties bred, pathogens out-thwarted. The garden itself is a tool. Improvements can be made, indeed they must be, if leisure and pleasure-time are to be gained.

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[5] Hannah Arendt, *The Human Condition: A Study of the Central Dilemmas Facing Modern Man* (University of Chicago Press, 1959).

Growing food by hand for your own consumption exposes and confronts the relationships between Arendt's three elements, at least as they are normally experienced by someone who has been alienated not only from their species' essence, but also from their means of production. The ability to grow food, through the expenditure of energy that has been gained by the consumption of the food you have grown, is as close to emancipation from the forces of capitalism as is possible for a modern human to achieve. Labour expended in the realm of the biota is very different to labour expended in the realm of technics. With access to land a person can be free from the alienating grind of capitalism. This truth is one of the major factors contributing to the popularity of the recent 'grow your own' trends. However, partial emancipation from capitalism does not resolve the problem of the physical body and its needs. In the context of the garden, relinquishing the tyranny of capital reveals other long-forgotten tyrannies: The tyranny of corporeal fragility, the tyranny of climate and weather and, most important, the tyranny of the soil itself – its cloying weight, and its propensity to crush the human spine over the course of a day's digging. Work and planning can be destroyed at any moment by unpredicted drought, frost, inundation, insect epidemic, or influx of migrating birds – meaning the investment of labour in the garden is as volatile as any globalized market economy. Making a productive garden is a complicated and creative game of contingency, attempted prediction, and black swan events.

If these forgotten tyrannies have become obscured by technics, then the task of AppAcc is to develop an approach to using technics that doesn't refuse them or, as is the case with current globalized systems, merely shift the problematics to distant populations of low class workers in the third world. The romantic notion of 'meaningful work' that existed before-industrialism is not to be operated here, but instead AppAcc could be applied to explore smart contracting principles and cashless systems of labour exchange to optimize 'back to the land' endeavours.

The concept of labour and its meaning for the human is, at the moment, in the process of re-evaluation. This re-evaluation is entering our world thanks to the realizations of the Anthropocene – that process of shifting from a view of the human as an animal chassis with a self-aware brain into an even weirder view of a larger anthropic force.[6] The humanity we are now is, as never before, on par with the other biogeological titans active on our planet (humans being the perpetrators of the Sixth extinction can be seen as our entrance onto the stage of forces). Our existence on the planet has a new meaning, a new scale of impact, and our every act must be quick enough to react to the changes and balanced enough to survive them. The AppAcc approach can introduce, at long last, a new concept of labour: One that sees labour as something that must be a part of a larger system, a larger reality, not for ethical or ideological reasons, but for reasons of seeking pragmatic efficiency and an improved quality of life on the planet. The fact that both of these goals can be pursued and fulfilled at once while also reinforcing each other is a pleasant secondary benefit of AppAcc.

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These three categories form an approach to creating and understanding an interface layer between humans and nature. Through location-specific utilization of software and skills, the three parameters define and refine the ways an AppAcc system could gather and apply data. Although the interface created by the three parameters could be applied to any context. My current proposal is to apply this thinking to a new project being launched in Prague – Digital Garden Lab. DGL will attempt to inform a specific implementation aiming to resolve the problem of growing nutrition in the urban centers of human activity.

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[6] Catherine Malabou, "The Brain of History, Or, the Mentality of the Anthropocene," *South Atlantic Quarterly* (vol. 116, no. 1, 2017) 39-53, accessed 20 October 2019 <https://read.dukeupress.edu/south-atlantic-quarterly/article/116/1/39/3811/The-Brain-of-History-Or-the-Mentality-of-the>.

Part III: Why a Digital Garden?

Over the last twenty five years I have visited observed many community gardens and 'back to the land' projects around the UK and Europe. Beyond an inhibiting and retrograde romanticism (that can easily be refused using the three parameters outlined above) the main problematic phenomena limiting productivity and upscaling seems to be transgenerational knowledge gaps and mismanagement of human labour. Over the last three or four generations, the vast majority of humans have lost all connection to horticultural knowledge and praxis. Industrialization, and its propaganda campaign to move populations into urban centers have effectively severed the link.

Urban food production efforts in the first world tend to focus on adding to the quality of life of urban citizens. Community gardens are seen as places to meet, relax from stressful occupations through limited amounts of hard labour outdoors. They are seen as places where the participants can exercise creative control over some small part of their life and express themselves through individual choice making. In terms of actual food production, they tend to fall far short of the efficiency and yields of similar scale horticultural efforts in the third world. Our current crisis demands more than this. This is not the time for wooly experimentation and self-expression within the realm of localized sustainable food production. We need to develop radical and efficient alternatives to the rapidly failing conventional agricultural model that work within the vectors of the parameters above and account for the fact that the majority of the populations in the global north and west are urban-based.

Complex polycultural systems such as permaculture and agroforestry have the potential to convert every green space in the city into productive low-maintenance horticulture. Every sidewalk, square, and park could be filled with fruit and nut

trees, vegetables, and fragrant herbs ready for communities to harvest and share. But designing and managing successful interspecies polycultures is complex. There is a lack of experts who can design such systems. Detailed management is required during propagation and establishment, and ongoing targeted micro-scale care needs to happen at critical moments. The digital has potential to increase the scalability of horizontal urban food systems by closing knowledge gaps and optimizing systems through data gathering and systems modelling, solving both the micromanagement and massive infrastructure problems at once with digital tools and human networks. By careful application of appropriate tech, the advantages of localized community food production could be brought equally within the grasp of ordinary urban citizens in rich as well as in poor nations – because a sustainable green future has to be for the whole world, not just a plaything for a hi-tech first-world elite.

Part IV: The Digital Garden Lab in Prague

The lab's main areas of research will cover a range of digital technologies and their application in small scale urban agriculture. These include: Algorithmic training and machine learning; photogrammetry and geodata capture; digital twinning, modelling and BIMs; Augmented Reality; Real Time Location Systems; social media integrated notification; real time geodata sensing; crypto-economics and smart contracting; farm-scale robotics.

The Digital Garden Lab will be a peripatetic drop-in, drop-out project happening at various locations at once and quickly reinforcing each iteration with information, and sometimes even resources, from its neighbours. In its ideal form, it allows one to use the DGL as a platform to start an AppAcc food production operation tuned and modified by one's available time, money, space and values in the context of the available resources and their quality. A rich person may use DGL to

create the best possible system for their needs, just like a poor person can. A community of hippie-types can use DGL just as well as an international conglomerate can.

The extremes of DGL should be able to allow for underground, para-terraformed, off-world or seaborne food production. AppAcc treats nature as it is apolitical. Thus, AppAcc is also apolitical. This universalism also means that DGL will attempt, in the long run, to face the issue of feeding the human population. Since our bottleneck as a species seems to be approaching faster and faster, it is crucial to bring in as many brains and bodies to the table in order for the species to be able to face what is coming. And we need to first feed these people before we can talk to them. Other uses of AppAcc are secondary to making sure there is a balance between feeding humanity and allowing nature to work with us. This may require chemicals and machines, or it may require alternative communities. Some people will hate and even oppose one or the other or both, but if applied in smart and sensitive ways, every method and tool has its place in the overall scheme. Since AppAcc only supports solutions optimized to work together within nature, it is expected to slowly phase out all inefficient and maximalist projects through its mechanism of naturalistic capitalism. Only the solutions that support the whole pyramid of life (local sourcing of nutrients, resource and labour monitoring, free flow of data between sites, balancing of wild and cultivated zones, utilization of high-tech as well as low-tech, new uses for systems already in place) can survive once AppAcc is under way.

Trees, Vines, Palms, and Other Architectural Monuments

PAULO TAVARES

The aircraft is flying over a thick jungle; the image captured by the film camera on board shows a blurry picture painted in various shades of dark. Only the highest palms, which stand out from the canopy mass, can be identified from this birds-eye perspective. The camera pans toward an open field where we see a large human settlement. Its spatial layout is geometrically arranged in the form of a vast arc. The aircraft circles the area, the camera holds on the settlement while the voiceover provides some contextual information: "On the right bank of the das Mortes River begin the domains of the Xavante Indians, the great warrior tribe that became famous for its stubborn resistance against all attempts at catechesis. A few kilometers from the river, protected by the dense cerrados [biome], we begin to see the first villages of these forest peoples, which they defend with remarkable determination."

Produced in 1947 by the Indian Protection Service (SPI), the Brazilian agency created to govern indigenous affairs, Rio das Mortes is one of the few documents of the ancient settlements of the Xavante. Fifteen years or so after these images were recorded, all of their settlements had been abandoned or destroyed.

From the 1940s to the late 1960s, the Xavante, an indigenous nation that has lived in the central Brazilian plateaus since time immemorial, were subjected to a brutal campaign of land dispossession and forced removals to create space for cattle and soy farms. Officially known as "pacification," this campaign was part of a strategy of territorial colonization that the Brazilian state described as "occupying demographic voids." In 1966, at the peak of this campaign, the Xavante commu-

nities of the Marãiwatsédé region were deported from their ancestral land. In 1974, the National Indian Foundation (FU-NAI), the state agency that replaced the SPI in 1968, issued a certificate attesting that this territory was indigenous land no more.

Following the publication of the final report, in late 2014, of the Brazilian National Truth Commission a commission set to investigate human rights abuses committed by the military dictatorship (1964–1985). My architectural practice, in collaboration with the Bö'u Xavante Association and the Brazilian Public Prosecutor's Office, initiated a project to document the sites of ancient indigenous settlements in order to provide evidence of their ancestral possession of this territory. This visual essay shows excerpts of this ongoing project. Our methodology is based on the reading of various media, ranging from historic photographs and films to satellite data to the territory itself. The landscape and its representations are interpreted as documentary mediums, archaeological surfaces that bear traces and memories of the ancestral occupation of the land by the Xavante people.

Image Archaeology

The "conquest" of the Xavante country became a mass-media phenomenon at the time, with sensational photojournalism stories circulating in popular magazines, depicting the Xavante as peoples and missionaries as redeemers. But these visual records constitute an important source of information about the history of the Xavante territory; through them we can study the spatial arrangement of its ancient settlements. The research reconstituted the architecture of some of the old villages by working the photographs through a set of digital modeling tools. The villages were traditionally built following a precise circular layout, with the houses distributed in an arc-shaped line forming a great internal plaza. The central patio of the largest village we modeled had a diameter of about 200

meters, though its footprint extended beyond the village's perimeter, defined by the row of houses. The settlements were always situated near streams, with the opening of the arc oriented toward the watercourse. The houses were built as domes structured with wood beams and covered with palm leaves, reproducing the circular logic of the overall urban scheme at the scale of architecture.

"The ancient village never dies, the vegetation is always reborn in the same place. This photo is the old village Sõrepré. Today this region is divided into four farms. The farmers do not let us enter this area; before we could still do that. So we have to work to regain access to this region."

– Jurandir Siridiwê, describing the satellite images of Sõrepré during the project presentation in Etenhiritipá, 2017.

Our research also examined a series of satellite images and aerial photographs of cartographic surveys. Despite the dramatic transformations in the landscape caused by the widespread deforestation that followed the forced removals, some of the ancient Xavante settlements seem to have been so old and robust that they left lasting marks in the territory, which are still clearly visible in these images.

Our analysis identified several traces on the ground whose shape, size, location, and disposition indicate the former presence of indigenous settlements. These footprints exhibit an arc-shaped layout that bears striking resemblance to the spatial arrangement of the villages reconstituted from the photographs. Inscribed on the Earth's surface like geoglyphics, these are vestiges of interventions in the landscape that were planned according to a cultural pattern consistent with the architecture of the ancient Xavante settlements documented in the archival records.

Landscape Archaeology

In parallel with the exercises in "imagery archaeology," the project undertook a series of field expeditions, together with elders of Marãiwatsédé, to document some of the archaeological sites on the ground. Policarpo Waire Tserenhorã, Dario Tserewhorã, and Marcelo Abaré, the elders who guided us, used to be warriors who led their communities in great geographic expeditions through their territory (a cultural practice called hömono that was totally eradicated by state policies). They therefore have a very sophisticated knowledge of this land, its environs and history.

"This arc of trees used to be a village. The end of the row of houses was there, and the other end over there, far away. The village was enormous, so the vegetation that formed inside the semi-circle is as big as the village was. The center of the village was located around here. That's why this forest is in the middle of the village. Here we used to make warã, our collective meetings."

– Policarpo Waire Tserenhorã describing the archaeological site of Bö'u during field documentation, 2017.
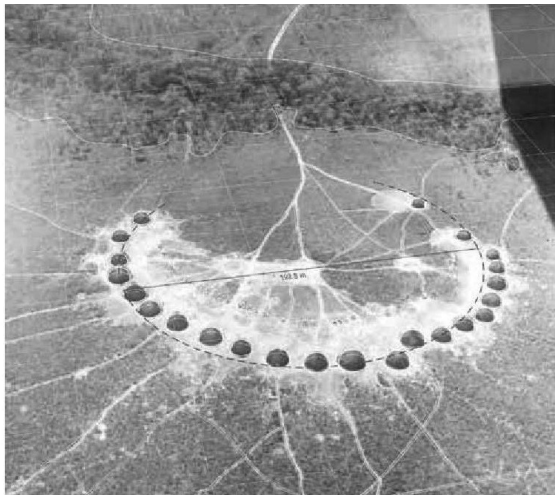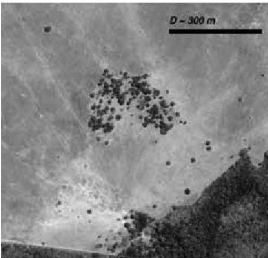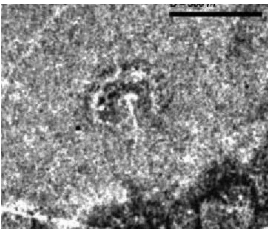
"These photos are important to testify to the existence of the ancient villages in this region. When the indigenous claim their lands, the governors always ask, 'Where are the documents to prove this?' Here are the photos that the government itself registered, and that will serve for the Xavante to prove the existence of the villages. They are very important because they can be registered with the IPHAN [National Institute of Historic and Artistic Heritage]. This institution deals with vestiges of the past. Its mandate is to demarcate ancient sites, and also to locate where the vestiges of the Xavante's ancestors are. There are cemeteries there; it is from these sites that the Xavante people spread to other nte people spread to other regions. For this reason, IPHAN needs to demarcate these areas so they are respected even if they are located inside farms, to make sure the farmers won't enclose them with fences and turn these areas into plantations. Today we only have these photos, we don't have any other official document that guarantees the protection of these sites. We can negotiate with the farmer; we won't take his land, but only assure the delimitation of the territory of the ancient village so these places can be respected."
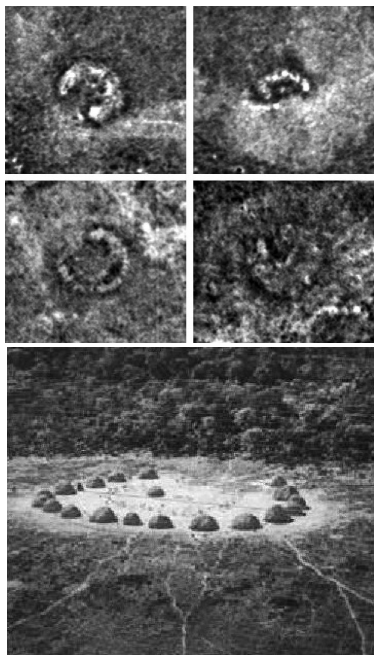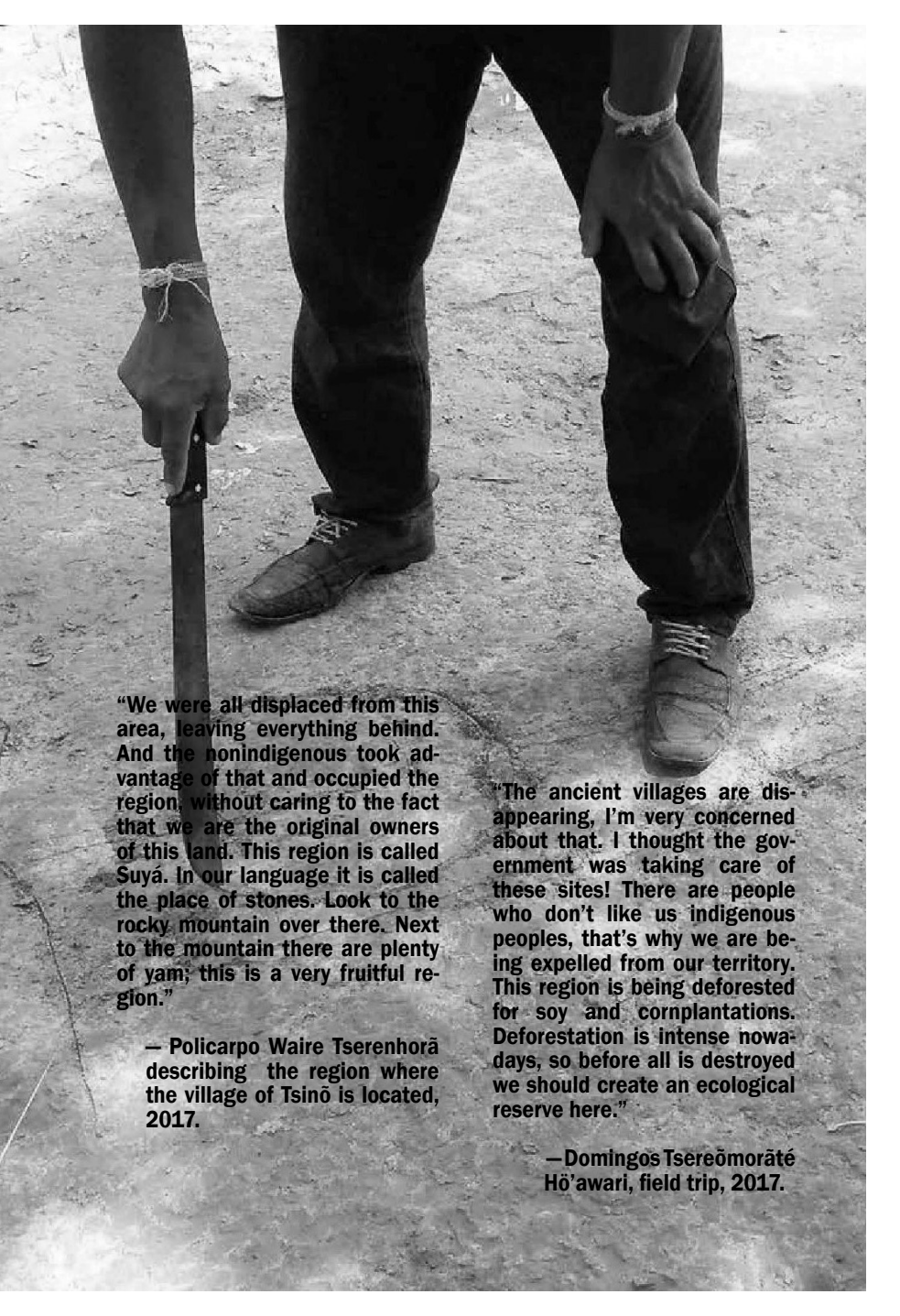
– Caimi Waiassé, describing the use of satellite images during the presentation of the mappings in Etenhiritipá, 2017.

Such extraordinary, unique knowledge of the territory, typical of Xavante culture, has been documented by various studies, as illustrated in this passage from anthropologist David Maybury-Lewis's classic 1967 ethnography, Akwe-Shavante Society: "In their monotonous scrub, where I was unable to tell one bush or thicket from another, and was frequently under the impression that I had traveled through a particular patch of trees only a little before, the [Xavante] can remember the exact place where a kill was made months or even seasons previously and narrate its circumstances in detail." What MayburyLewis perceived as an amorphous and homogeneous landscape, the Xavante people identified as specific places saturated with history and memories. In the context of our project, even with the disfigurement of the landscape due to the predatory advancement of pastures and plantations, the elders recognized several archaeological sites, even remembering places where indigenous massacres occurred. The three localities surveyed – the villages of Tsinõ, Ubdönho'u, and Bö'u – match precisely the geographical points of the footprints identified in the satellite images.

The ancient Xavante villages can be identified through very peculiar evidentiary signs that are easily recognized by the elders. These include the form and composition of botanic formations, the presence and the disposition of certain trees and palms, and variations in soil type. All the sites that were documented display a similar remarkable feature wherein a patch

"We were all displaced from this area, leaving everything behind. And the nonindigenous took advantage of that and occupied the region, without caring to the fact that we are the original owners of this land. This region is called Suyá. In our language it is called the place of stones. Look to the rocky mountain over there. Next to the mountain there are plenty of yam; this is a very fruitful region."

— Policarpo Waire Tserenhorã describing the region where the village of Tsinõ is located, 2017.

"The ancient villages are disappearing, I'm very concerned about that. I thought the government was taking care of these sites! There are people who don't like us indigenous peoples, that's why we are being expelled from our territory. This region is being deforested for soy and cornplantations. Deforestation is intense nowadays, so before all is destroyed we should create an ecological reserve here."

—Domingos Tsereõmorãté Hö'awari, field trip, 2017.

of vegetation had grown in the arc-shaped layout of the ancient village. Made of a combination of medium and large trees, palms, and other types of plants and vines, these botanic formations contain certain species that are associated with Xavante ancestral occupation and land-managing systems. Their precise geometry, as well as their species content, makes them stand out from their surroundings and reveals their anthropogenic, "constructed" nature.

Living Ruins (the Forest as Heritage)

The indigenous past of this territory is recorded not only in the collective memory of the Xavante people, but also in the memory of the Earth itself. In spite of the many different ways these communities have been subjected to what the Brazilian Truth Commission described as a "politics of erasure," their history remains registered in the forest fabric.

The trees, vines, and palms that grew from the fertilized soils of the ancient settlements are the historical landmarks that testify to the ancestral presence of the Xavante in this territory. In many different ways, these botanic formations are the product of the village design, the equivalent to architectural ruins, albeit not dead but living. Can we claim trees, vines, and palms to be historic monuments? Is the forest an "urban heritage" of indigenous landscape management systems? Most of this archaeological heritage is outside the recognized limits of the Xavante reserves, situated within private fenced lands to which the Xavante people do not have access. As such the sites are in danger of being completely destroyed by the advancement of the agribusiness frontier. In August 2017, following the presentation of our research findings at the Xavante village of Etenhiritipá, we started drawing a petition to be submitted to the Brazilian National Institute of Artistic and Historic Heritage (IPHAN) and to UNESCO calling for the inclusion of these botanic formations on the list of the protected common heritage of human kind. Our petition contends that those bo-

tanic formations should be considered archaeological heritage inasmuch as they represent "architectural artifacts" of the unique culture of the Xavante.

Beyond the urgency of protecting these sites, in interpreting trees and palms as ruins, the petition seeks to probe the liminal relations between natural and cultural landscapes as they have been defined by colonial categories of thought within and beyond the field of architecture, particularly in the way such categories and cognitive schemes have constrained definitions of heritage, memory, and history. Architectural knowledge often blinds us from understanding the deeply human and historical, properly architectural nature of these forest landscapes, and such is the tacit act by which it becomes complicit in the colonial politics of erasure.
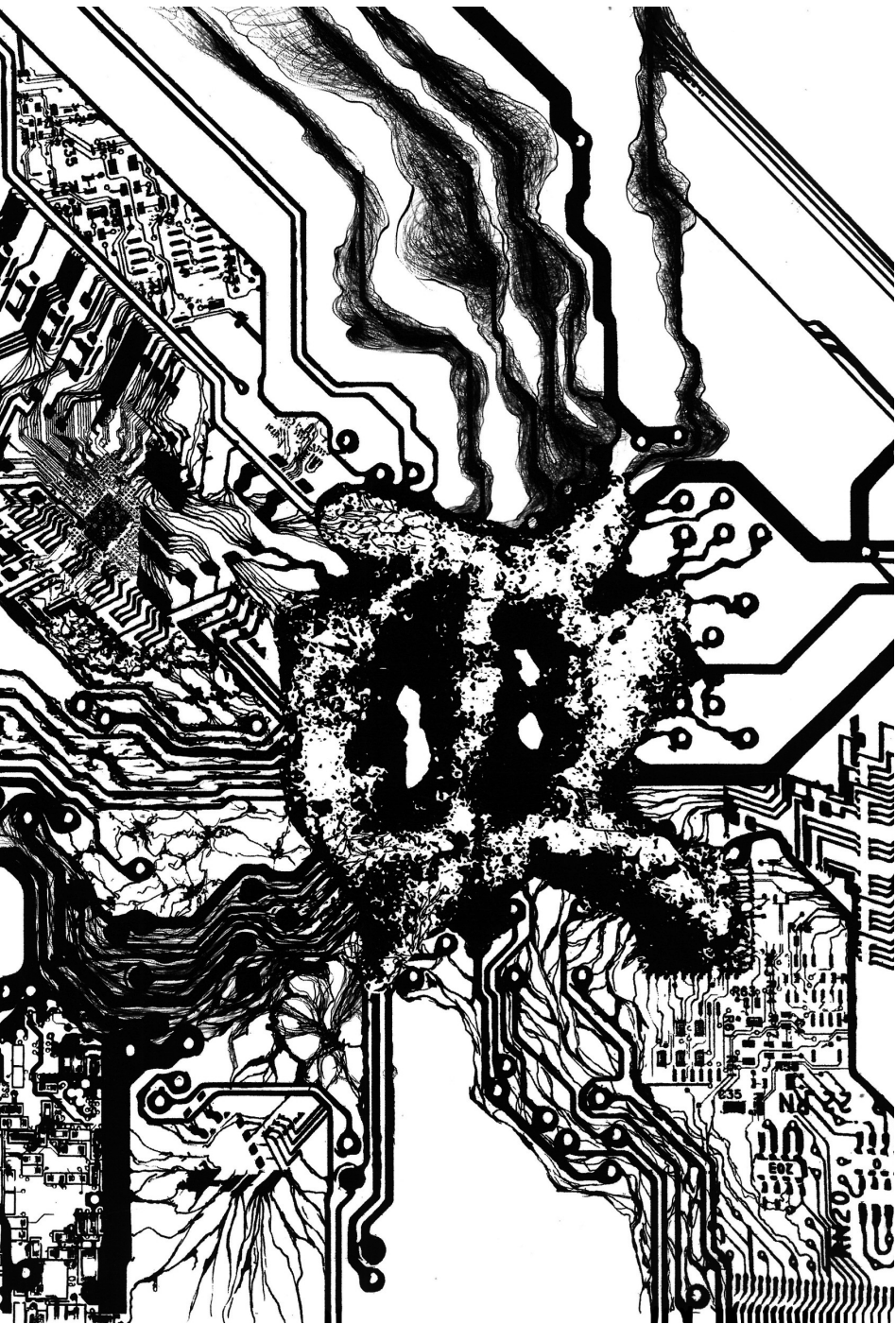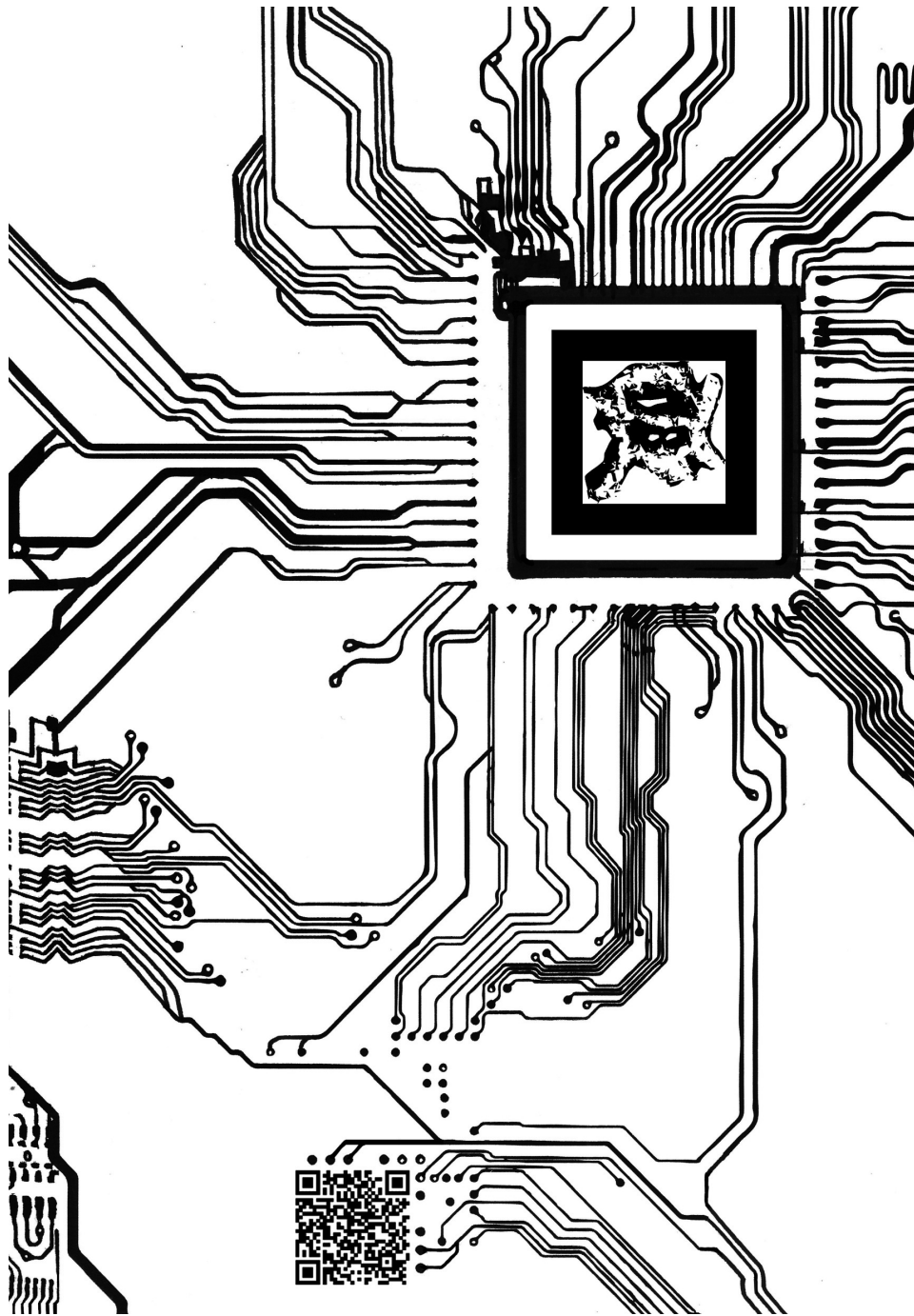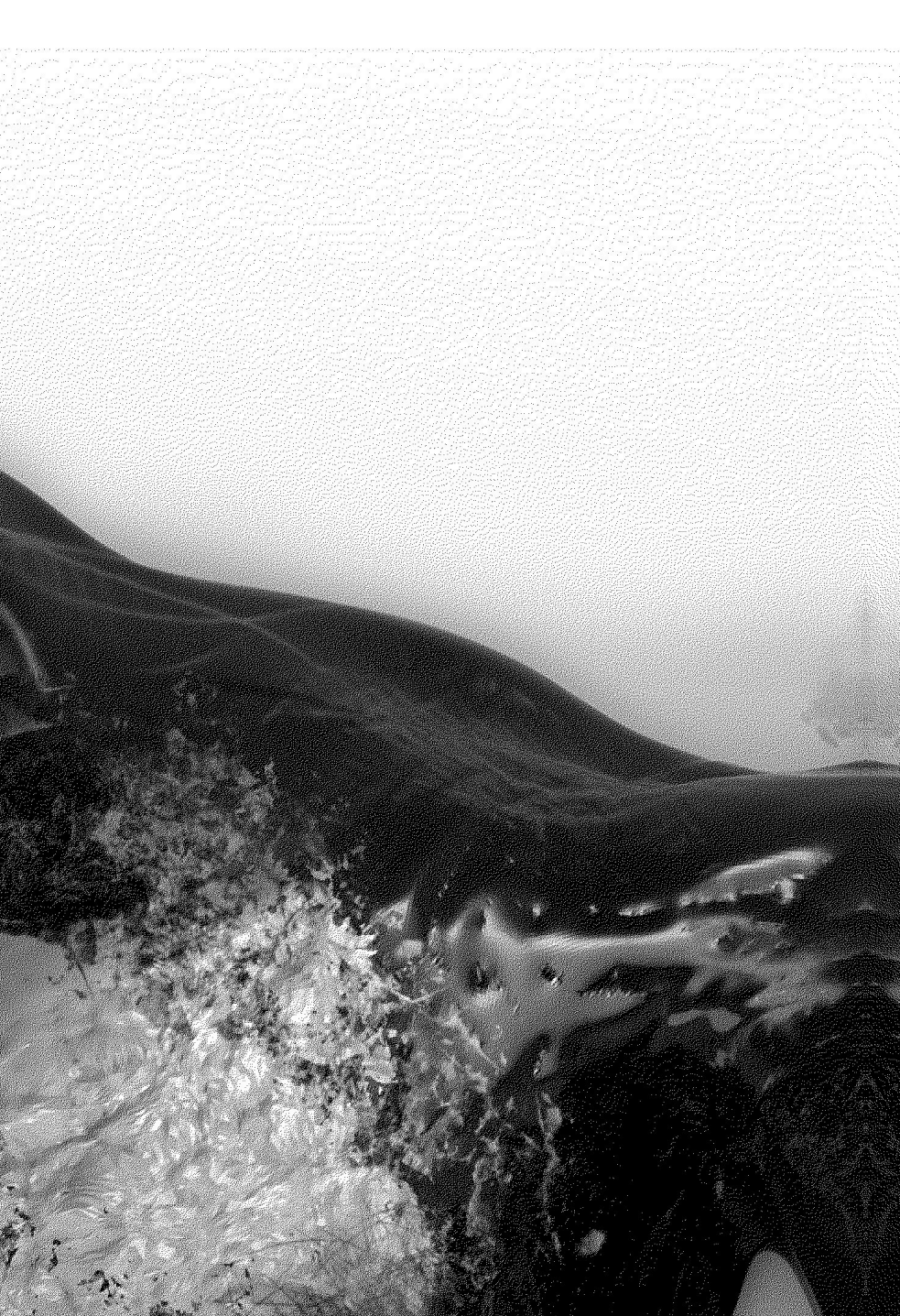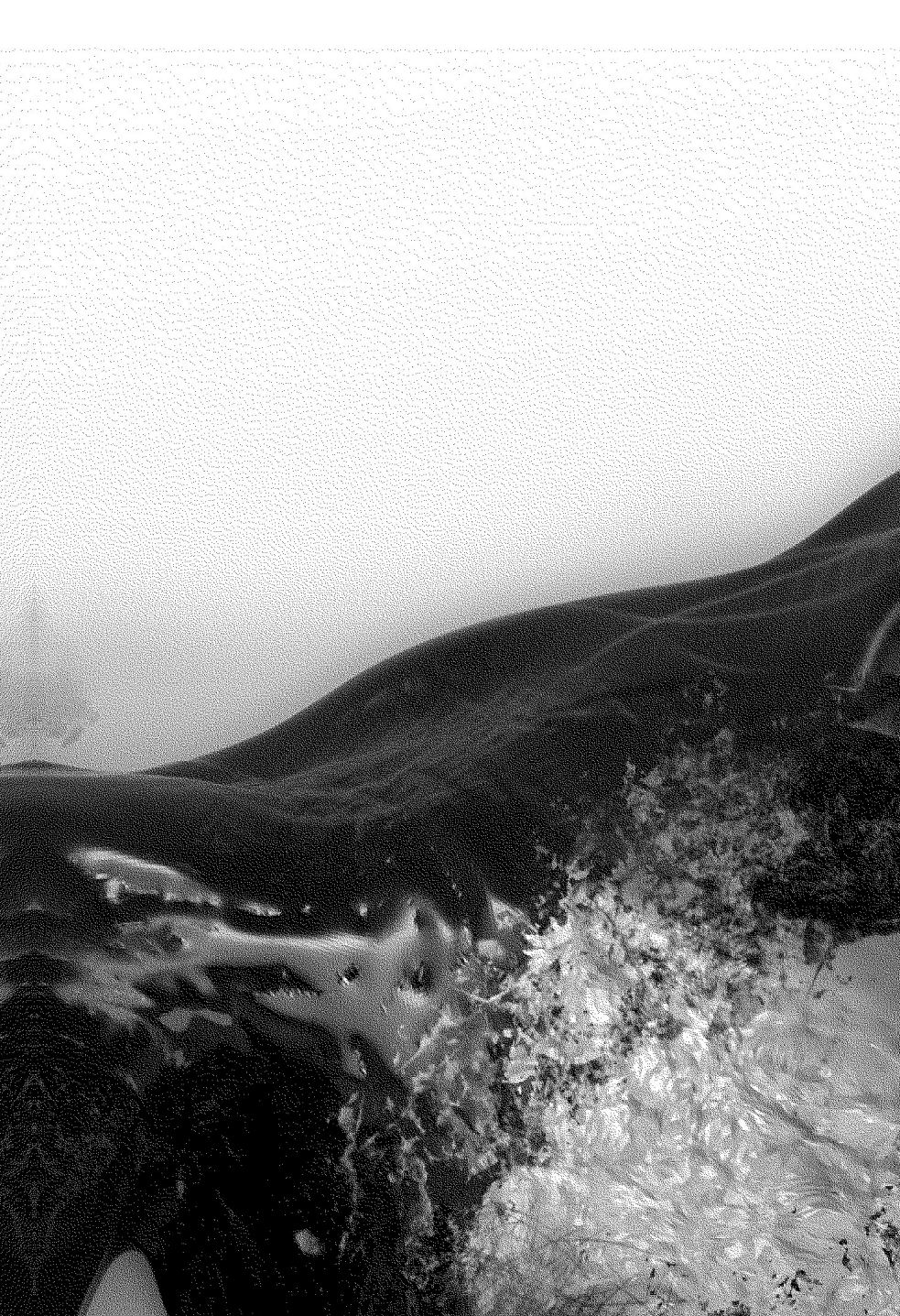
Teratologies

LOUIS ARMAND

Washington, 25 August 2019. Scenario: A lunatic is in the White House. Like a slow-motion car crash, the US administration embarks on a catastrophic trade war with China, the systematic sabotaging of the North Atlantic Treaty Organisation, a series of proxy wars with Iran, & nuclear brinkmanship with North Korea. At the point of maximum tension, the President directs the Joint Chiefs of Staff to deploy atomic weapons against a hurricane tracking westward across the Caribbean threatening landfall at the President's golf resort in Florida. Were this a film, it could only be the worst type of science fiction & few would believe it. *But what if it were real*?

Wednesday, 11 October 1961. During what has since become a now notorious speech to the National Press Club in Washington, the director of the United States Weather Bureau at the time, Francis W. Reichelderfer, told his audience that he "could imagine the possibility someday of exploding a nuclear bomb on a hurricane far at sea," even suggesting that at some point in the future the Weather Bureau could acquire its own nuclear arsenal.[1] On the same day the front page of the *Newark Advocate* (Ohio) carried a story entitled FALLOUT EFFECT FROM RED A-BOMBS TERMED SLIGHT, deeming "Any genetic damage caused by fallout from the current series of Russian nuclear explosions will be so slight, in the opinion of a Public Health Service physician, that it might not be discernible even after several generations." Other headlines included BRITAIN STANDS FIRM WITH US ON BERLIN & HOFFA INDICTED FOR FRAUD. Coverage of Reichelderfer's speech appeared in the bottom left corner: NUCLEAR

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[1] "TNT Considered as 'Storm Killer,'" *Morning News*, Wilmington, Delaware (11 October 1961) accessed 9 October 2019<[newspapers.com/clip/35291887/the_morning_news/> 17.

BOMBS PLANNED TO BREAK UP HURRICANES. The article, sourced from Associated Press, noted that "The idea of using bombs of any type against storms 'is still only in the gleam-in-the-eye stage.'" While proposing an arbitrary 1 megaton starting point for consideration of nuclear intervention against extreme weather events, & citing cost as a factor, Reichelderfer inadvertently became the first government official to reveal a concrete figure for the hydrogen bomb – a highly classified piece of information. The figure was $1 million for one megaton.[2]

Also reporting on the story, the Wilmington *Morning News* (Delaware) gave a fuller picture of US research into developing a "storm killer," quoting Reichelderfer in its page 17 story as cautioning that an H-bomb "might simply intensify a storm." It noted, however, that the Weather Bureau had held "informal discussions with the Atomic Energy Commission about the theoretical use of nuclear explosions to kill hurricane." A thousand times more powerful than the bomb dropped on Hiroshima, the acquisition of the thermonuclear "hydrogen" bomb represented, to those privy to the fact, an incommensurably greater paradigm shift. In 1952 while studying the atmospheric effects of the US's first full-scale test of an H-bomb, codenamed Ivy Mike – which produced a mushroom cloud 41 km high & 32 km in diameter – Air Force meteorologist Jack W. Reed first conceived of employing similar detonations for meteorological ends. Reed, who later participated in the US government's Plowshare Program (to develop "peaceful" applications of nuclear weapons technology) & was a member of the US Army Engineer Nuclear Cratering Group, first presented his ideas in 1956 during the International Geophysical Year & in 1959 he submitted a detailed two-part proposal to the second Plowshares Symposium, entitled "Some Speculations on the Effects of Nuclear Explosions on Hurricanes."[3] In Reed's

[2] "Nuclear Bombs Planned to Break Up Hurricanes," *Newark Advocate* (Ohio) (11 October 1961) accessed 9 October 2019<newspaperarchive.com/Newark-advocate-oct-11-1961-p-1/> 1.

[3] Jack W. Reed, "Some Speculations on the Effects of Nuclear Explosions on Hurricanes," *Proceedings of the Second Plowshare Symposium*, May 13-15, 1959, San Francisco, California, Part V: Scientific Uses of Nuclear Explosives (San Francisco: Lawrence Radiation Laboratory, 1959) 78ff.

view, a "megaton explosion" at the centre of a hurricane, wind temperatures average 10 degrees higher than the rest of the storm, would "engulf & entrain a large quantity of this hot 'eye' air & carry it out of the storm into the stratosphere." The compensating flow of colder air was expected to sap the hurricane of its overall strength, rendering it benign. It was this proposal that became the basis for Reichelderfer's speech two years later & the object of serious experimental consideration.

The month previous to Reichenlderfer's address to the National Press Club, "weather scientists" had dropped around 50kg of seeding material on Hurricane Esther," a category 4 hurricane in the North Atlantic which was the first large tropical cyclone to be detected using imagery from the new Television Infrared Observation Satellite. The storm was also the first target of a US Navy weather-modifying experiment that later came to be known as Project Stormfury (1962-1983) – a successor of Project Cirrus (a failed one-off collaboration between General Electric & the US Army Signal Corps in 1947). On 13 September, a navy aircraft flew into the eye of the hurricane approximately 400 miles north of Puerto Rico, releasing canisters of silver iodine (an inorganic compound with a crystalline structure similar to that of ice, thus capable of inducing freezing by a process of *heterogeneous nucleation*). It was hypothesized that the silver iodine would cause supercooled water already within the storm system to freeze, releasing latent heat in the eyewall & disrupting the hurricane's internal structure – an hypothesis later shown to be incorrect, due to the insufficient amount of supercooled water contained in most tropical storms of magnitude & to the fact that such storms were already subject to internal dynamics identical to those believed to have been induced by seeding. In any case, it didn't work. The *Morning News* report on Reichelderfer speech noted that, with respect to the seeding of Hurricane Esther, while "Radar photographs indicated a segment of the storm's eyewall was rained-out as a result. But the wall quickly reformed, the storm's course was not affected, and its intensity was reduced only temporarily, if at all."

At a time of nuclear optimization, as the 1960s were, the progression from cloud-seeding to H-bombs had the appearance of a natural economy of scale. Throughout the 1950s, US military & civilian applications of nuclear technology proliferated, in part driven by Eisenhower's 1953 "Atoms for Peace" programme, which directed research in particular towards electricity production. With the commissioning of the Calder Hill reactor in the UK in 1956, followed a year later by Shippingport in the US, & with the construction of large commercial reactors by General Electric & Westinghouse in 1960, atomic power finally moved from the realm of science fiction & predominantly military application into the banality of everyday life. And for at least a decade – until the anti-nuclear movement, increasing costs of constructing new reactors & a series of accidents (culminating in the partial core meltdown at Three Mile Island in 1979) took the glow off the atomic age – proposals like Reichelderfer's appeared almost self-evident to a public grown expectant of ever-greater scales of technological development & their potential for application on a "global" scale.

While human activity from the earliest times has been characterised by environmental transformation – the cumulative effects of which, vastly accelerated by industrialisation, have produced an indelible global environmental impact (the Anthropocene) – post-war nuclear technologies represented the first instance in which direct transformation or even control of the planetary environment as a whole came into view as a scientifically achievable proposition. The term "terraforming" had been coined by Jack Williamson in a short story entitled "Collision Orbit," published in *Astounding Science Fiction* in 1942 – appearing at the same time as the Blitz-bombing of London, which was soon to be followed by thousand-bomber formations of the allied air forces over Germany & the advent of atomic warfare. Williamson's term drew upon cosmic contingencies like impact events as proto-technologies of planetary engineering but, in the wake of vastly expanded war-time industry & economies of scale, direct human agency became

the defining factor in the term's subsequent use. With the birth of the US & Soviet space programmes – both having developed out of ICBM missile projects based on the captured Nazi V2 – & with Apollo architect Wernher von Braun militating for interplanetary colonisation, consideration was increasingly given to questions of technologically modifying the atmosphere, temperature, surface topology or ecology of planetary or planetoid bodies for the purposes of human habitation.

The ideological & logistical dimensions of terraforming, as applied global technology of a magnitude only previously approached by the phenomenon of world war, thus began to come into view in the period between 24 October 1946, when a re-fitted V2 rocket launched from White Sands, New Mexico, took the first photograph of Earth from space, and 12 April 1961, when Yuri Gagarin became the first human being to orbit the planet. This was the period in which an emergent global consciousness achieved a kind of apotheosis – pictorially & as direct experience – and the Earth itself became an object of human contemplation. In 1962, when Donald Brennan at the Hudson Institute in 1962 coined the expression "Mutually Assured Destruction" (M.A.D.), this object of contemplation had become one of direct, intentional & singular technological transformation.

As a blueprint, the terraforming logic of M.A.D. had much to be desired, but it was the seeming demonstrable fact that carried the argument: truly global technologies, analogous in scope to entire ecosystems, were deemed achievable. The period encompassing the Apollo lunar programme (inaugurated in 1961) & the commissioning of the satellite-based radionavigational system known as GPS in 1978, appeared to confirm this: the logistical horizon which in the past had represented an insurmountable obstacle now offered an entirely different prospectus. Reed's Plowshare proposal for nuking hurricanes was entirely pragmatic in this respect: "When the first public announcement of atomic bombs dropped on Japan came at

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the height of the Florida hurricane season," he wrote in his introduction, "the press & public began immediate speculation on their use in controlling destructive storms. However, as information on actual bomb yields became known [...] it appeared obvious that atomic bombs could not compare with large natural systems in converting energy." He then adds: "Even thermonuclear weapons, a thousand times more powerful than bombs dropped on Japan, yield an energy which is equivalent to that transformed in only five minutes by a mature hurricane." However, "Since megaton thermonuclear devices do release energies at rates only a few orders of magnitude smaller than do tropical storms, such large yield nuclear explosives might be used for triggering some indirect of 'divergent' system, which would result in storm deflection or dissipation."[4]

Although the Nuclear Test Ban Treaty (1963) & later the Peaceful Nuclear Explosions Treaty (1990: limiting yields for non-military use to 150 kilotons) – among other considerations – have limited the application of Reed's ideas, Plowshare actively pursued a wide spectrum of similar applications. Serious proposals were advanced for deploying nuclear devices to create an artificial harbour in Alaska (Project Chariot), to widen the Panama Canal & to create a new "Pan-Atomic Canal" at sea-level across Nicaragua, while 22 nuclear explosions were proposed for Project Carryall, to blast an interstate road & rail link through the Bristol Mountains in the Mojave Desert. Major objectives also included controlled blasts used to connect underground aquifers in Arizona & to aid natural gas stimulation & shale oil extraction (otherwise known as fracking) in Texas. Before Plowshare was quietly mothballed in 1977, it had produced radioactive blast debris from some 839 underground nuclear test explosions. "Sedan," a 104 kiloton experiment in earthmoving conducted at Yucca Flat (Nevada) in 1964, resulted in twin radioactive plumes that reached an altitude of 3.7 kilometres & drifted north-east as far as Illinois, releasing an estimated 880,000 curies of radioactive iodine-131 into the atmosphere – the highest acknowledged

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[4] **Reed 78-79**

amount of fallout of any nuclear test in the continental US: for this cost it succeeded in displacing 11 million tons of soil, causing a seismic disturbance of 4.75 on the Richter scale & leaving a crater 100m deep.

While these results bear out obvious flaws in the general applicability of the nuclear doctrine, Reed's remarks remain worthy of further consideration for other reasons. Although much of Plowshare's agenda was directed at the instrumentalising of nuclear weapons in piecemeals efforts at environmental transformation – with the potential for consolidation into a general "positive science" of terraforming – Reed's observations about "divergent systems" point to the fundamentally *tactical* character of such experiments & their susceptibility to the effects of complexity in dynamic systems like hurricanes. The branching of cybernetics into what came to be known as Chaos Theory, mediated by the work of Yoshisuke Ueda on "randomly transitional phenomena" & Edward Lorenz on weather prediction in 1961, was able to provide a framework (formalised by 1977, at precisely the time Plowshare was terminated) in which the crudely targeted effects of tactical nuclear weapons on what Carl Sagan called "planetary ecosynthesis"[5] could evolve beyond the *tabula rasa* logic of "storm killing nukes" & M.A.D. into a strategy of sustainable terraformation.

It is perhaps no coincidence that astronomer Sagan published around the same time a proposal for the "planetary engineering" of Venus based upon seeding the planet's cloud-cover with algae intended to convert water, nitrogen & carbon dioxide into organic compounds, thus reducing the concentration of greenhouse gases in the atmosphere & consequently bringing surface temperatures to a habitable level in a reversal of the greenhouse effect.[6] Unknown to Sagan, however, the sulphuric acid of which the Venusian cloud-cover is in fact

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[5] Carl Sagan, "Planetary Engineering on Mars," *Icarus* (vol. 20, no. 4, 1973) 513.
[6] Carl Sagan, "The Planet Venus," *Science* (vol. 133, no. 3456, 1961) 849-58.

largely composed, coupled to high atmospheric pressure, rendered such a proposal meaningless. Sagan's idea, however, gave rise to similar proposals for "ecopoiesis" – what Robert Haynes called the "fabrication of a sustainable ecosystem on a currently lifeless, sterile planet"[7] including the introduction of chlorofluorocarbons into the Martian atmosphere to promote a self-regulating biosphere.[8] In 2015, space entrepreneur Elon Musk – refashioning an idea put forward by physicist Michio Kaku[9] – announced during an appearance on the *Late Show with Stephen Colbert* on CBS that nuclear devices instead might be used to create "pulsing suns" over the Martian poles to melt the polar ice – with a view to releasing trapped carbon dioxide to thicken the atmosphere & promote "global warming," restoring liquid water to the planet's surface & thus preparing conditions for general habitability & commercial exploitation.[10]

Musk's headline-grabbing remarks recalled similar suggestions that thermonuclear detonations might be used to reactivate magnetic field & geologic activity on Mars, with a view to shielding the planet from solar radiation & induce "geothermal forcing." But while Musk's proposal was widely ridiculed, & dismissed outright by NASA as technologically unfeasible, the case for terraforming Mars with nukes, like that for terminating hurricanes, has received serious consideration. One such is a 1996 paper by Anthony C. Muscatello & Michael Houts, of the Los Alamos National Laboratory, entitled "Surplus Weapons-Grade Plutonium: A Resource for Exploring & Terraforming Mars." In it they argue, "The end of the Cold War has presented the world with a great dilemma & a great opportunity. Greater than 100 metric tons (MT) of weapons-

[7] Robert H. Haynes, "Ecce Ecopoiesis: Playing God on Mars," *Moral Expertise: Studies in Practical & Professional Ethics*, ed. Don MacNiven (London: Routledge, 1990) 161-163.
[8] James Lovelock & Michael Allaby, *The Greening of Mars* (New York: St Martins Press, 1984).
[9] See Michio Kaku, *The Future of Humanity: Terraforming Mars, Interstellar Travel, Immortality & Our Destiny Beyond Earth* (New York: Doubleday, 2018).
[10] See Loren MuGrush, "Elon Musk elaborates on his proposal to nuke Mars," *The Verge*, 2 October 2015, accessed 9 October 2019<www.theverge.com/2015/10/2/9441029/elon-musk-mars-nuclear-bomb-colbert-interview-explained>.

grade plutonium (WGPu) are now surplus to defence needs in the United States & the former Soviet Union [...] Implementation of this proposal to use WGPu for nuclear reactors for Mars exploration & colonisation would allow resolution of this serious, expensive problem on Earth by removing the problem from the planet & would simultaneously provide a very large energy source."[11]

There is a sense in which all these propositions tend towards what we might call a positivist pseudo-science, where speculative real-world problems are mapped onto an ideological framework in which they seek to be reified as self-evident in the defining contest over a certain futurity. Behind such speculative ecologies, however, remains an operation of political/economic capital based upon an "instrumentality" which is not that of a naïve conception of reason, or of a "prosthesis" of reason, but is itself a technological rationale. Seemingly exotic financial instruments like weather derivatives are paradigmatic in this respect. Based on the principle of risk management & weather insurance, weather derivatives are tradable "futures," or hedges, famously exploited by Enron Corporation with its launch, in November 1999, of EnronOnline – an electronic trading platform for energy commodities – & more recently by the Speedwell WeaterGroups weatherXchange® (launched in 2017). Even so, projects like Stormfury & Plowshare almost inevitably invite comparison to megalomaniacal world-domination schemes like Fu Manchu's diabolic ocean-freezing device[12] & the weather-control systems of pop ular sci-fi, like Samuel Johnson's Mad Scientist in *Rasselas* ("I have possessed, for five years, the regulation of the weather, and the distribution of seasons: the sun has listened to my dictates, and passed, from tropick to tropick, by my di-

[11] Anthony C. Muscatello & Michael G. Houts, of the Los Alamos National Laboratory, entitled "Surplus Weapons-Grade Plutonium: A Resource for Exploring & Terraforming Mars" (July 1996) accessed 9 October 2019<inis.iaea.org/collection/NCLCollectionStore/_Public/28/064/28064933.pdf>.
[12] *The Castle of Fu Manchu*, dir. Jess Franco (1969).

rection; the clouds, at my call, have poured their waters [...]"),[13] or pseudo-scientific quackery like Wilhelm Reich's cloudbusting experiments with "orgone energy"[14] in the 1950s. Yet it should be unsurprising that it is precisely this *hyperstitional* aspect of projects like Stormfury & Plowshare that becomes the instrumental agency in their realisation under the appearance of what is, or seemingly ought to be, most "fictional."[15]

Operation Popeye is one such: a top secret weather-modification programme pursued in Indochina between 1967-1972 by the 54th Weather Reconnaissance Squadron, as part of the US-led war with North Vietnam. Popeye was ostensibly a cloud-seeding operation, aimed at intensifying & extending the tropical monsoon season, specifically localised over the region of the Ho Chi Minh Trail in eastern Laos, north-eastern Cambodia & the far west of North Vietnam – in tandem with the aerial dispersal of the "tactical use" defoliant Agent Orange (Operation Ranch Hand). Agent Orange was a mixture of two herbicides known as 2,4,5-T & 2,4-D, each containing the dioxin TCDD (the most toxic of its kind), & was shown by the US National Academy of Medicine to be connected through direct exposure with soft tissue sarcoma, Non-Hodgkin lymphoma, Hodgkin disease, chronic lymphocytic leukaemia, as well as respiratory cancers, & was responsible for birth defects through prenatal exposure, including mental disabilities & physical deformities such as cleft palate & polydactyly (additional fingers & toes). Agent Orange also had extensive ecological impact, with dioxins persistent in the soil entering into the food chain, resulting in biomagnification that has severely affected plant & animal diversity.[16]

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[13] Samuel Johnson, *The History of Rasselas, Prince of Abissinia* (London: W. Baynes & Son., 1824) 494.

[14] See Myron Sharaf, *Fury on Earth: A Biography of Wilhelm Reich* (New York: St Martins Press, 1983) 379-380.

[15] On hyperstition (a portmanteau of hyper + superstition, referring to "fictional entities" that "function causally to bring about their own reality"), see Nick Land, *Fanged Noumena: Collected Writings 1987-2007* (Falmouth: Urbanomic, 2011) 554ff.

[16] See Daniel A. Vallero, *Biomedical Ethics and Decision-Making in Biomedical & Biosystem Engineering* (Amsterdam: Academic Press, 2007) 73.

Combined with the intended objective of Ranch Hand to de-foliate, & thus expose to aerial surveillance, the area around the Ho Chi Minh Trail, the intensified rainfall generated by Operation Popeye was additionally intended to deprive the North Vietnamese of functional use of the area by soften-ing roads, causing landslides, washing out river crossings, & maintaining saturated soil conditions beyond the normal time span (the operation's motto was "Make Mud, Not War"). Such operations became the ostensible object of the 1978 En-vironmental Modification Convention banning "weather war-fare." (In 2010 the Convention on Biological Diversity further restricted weather modification & geoengineering.) Together, Popeye & Ranch Hand ramify what already, in the wake of the bombing of Hiroshima & Nagasaki, had emerged as a domi-nant theme within the latent discourse of ecopoiesis, perhaps best communicated by the 19th-century French neologism *teratology* – the study of signs sent by the gods, portents, marvels, monsters (Reed's "divergent systems," no doubt, producing Godzillas instead of monster hurricanes). The idea of an instrumental technology began to give way, here, to the idea of uncontrolled mutation, catalysed by a technicity that is no longer "at the service" of an external (human) agency, but itself constitutes that agency; whose operations are con-sequently visible (to the human) only through ruptures in linear causation & a naïve rationalism. This came to define a logistical as well as ideological divide, exemplified by compet-ing "thought experiments" in ecology, cybernetics & artificial intelligence, on the one hand, & a brute force attempt to re-duce complexity to a *tabula rasa*, on the other, in an effort to reconstitute competing systems of "control" over such erup-tions of the Real.

In *The Planet Remade: How Geoengineering Could Change the World*, Oliver Morton notes that the computer hardware for modelling the atmosphere was the same as that used for simulating the hydrogen bomb design developed in 1945 by Edward Teller. The computer concerned was in fact the first fully pro grammable electronic computer, ENIAC, designed

by John von Neumann (formerly attached to the Manhattan Project), & the H-bomb simulation was its first assigned task. Not uncoincidentally, by 1950, von Neumann, along with meteorologist Jule Charney, also began processing weather predictions through ENIAC, aimed at producing "new insights into controlling it."[17] At around the same time ENIAC began work on the H-bomb, biologist Julian Huxley, the first secretary general of UNESCO, gave a speech at Madison Square Gardens hailing a new atomic era, echoing an earlier pronouncement about the promises of radium in 1906 by Frederick Soddy, who envisaged the power to "transform a desert continent, thaw the frozen poles, and make the whole world one smiling garden of Eden."[18] For his part, Huxley envisaged adapting atomic power to flood the Sahara & "alter the entire climate of the North Temperate Zones by exploding [...] at most a few hundred atomic bombs at an appropriate height above the polar regions?"[19]

In addition, Huxley supported a June 1946 proposal by Bernard Baruch, the US representative to the United Nations Atomic Energy Commission, based on the Acheson-Lilienthal Report from March of the same year, advocating international control of atomic energy – including nuclear weapons – as a step towards a possible future "world government." Such a government was intended to assume responsibility for "social planning on a world-wide basis," from geoengineering to eugenics. Albert Einstein similarly came out as a signatory of "One World or None," the world-government manifesto of the Federation of American Scientists, while Von Neumann, on the other hand, rejected the Baruch Plan of human governance in favour of cybernetic systems of "global control" (including industrial processes, the world economy *& climate*). It was in such an ideological climate that Jose Delgado, Director of Neuropsychology at Yale University Medical School, pursued an investigation into electrical brain implants (in part for the treatment of epilepsy) that led, in 1969, to the publication of *Physical Control of the Mind: Towards Psychocivilized Society*

[17] Oliver Morton, *The Planet Remade: How Geoengineering Could Change the World* (Princeton: Princeton University Press, 2015) 312ff.
[18] Qtd. Morton, *The Planet Remade*, 313.
[19] Qtd. Morton, *The Planet Remade*, 313.

& later, in 1974, to Delgado's testimony before US Congress to the effect that "We need a program of psychosurgery for political control of our society. The purpose is physical control of the mind. Everyone who deviates from the given norm can be surgically mutilated."[20]

Delgado's surgical mind-control research overlapped with the US government's secret pursuit of a psy-ops programme developed through the CIA's Office of Scientific Intelligence & the US Army Biological Warfare Laboratories, between 1953 & 1973 – known to the public, after the 1975 revelations by the commission convened by Gerald Ford into illegal CIA activities within the United States, as Project MKUltra. Its wide remit for developing chemical & psychological warfare techniques included drug-induced brainwashing, memory erasure & mass psychosis, in a logical continuum with Popeye's environmental modifications & Stormfury's brute force *tabula rasa*. MKUltra was driven in part by a belief within the CIA – like that publicly expressed by Delgado – that control of the human mind would represent nothing less than global political mastery, & this synergy between ecopoiesis & psychocivilization brings into view a dimension of Gregory Bateson's phrase "ecology of mind"[21] that might best be described as *teratogenesis* – not as a symptomatology (the production of monstrosities), but as the "mental characteristics" of a *technological condition* (the mode-of-production itself of the so-called Anthropocene – of which all of these grandiose schemes are truly psychotic attempts at instrumentalization). Von Neumann's cybernetic vision of world economic & ecological "governance" became a central tenet of Buckminster Fuller's general systems theory, or *synergetics*: a global geodesic megastructure of "comprehensively commanded automation" & mutually ramifying life-support systems constitu-

[20] United States Congressional Record (vol. 118, no.26, 24 February 1974) 4475.
[21] Gregory Bateson, "Conscious Purpose versus Nature," *Steps to an Ecology of Mind* (St Albins: Paladin, 1973) 405.

tive of "spaceship Earth." In Fuller's view, "The synergistic effectiveness of a world-around integrated industrial process is inherently greater than the confined synergistic effect of sovereignly operating separate systems. Ergo, only complete world desovereignisation can permit the realization of an all humanity high standard support."[22] One recent iteration of this idea is Benjamin Bratton's "Cloud Megastructures & Platform Utopias," in which planetary-scale computation is transformed from an accidental, contingent array, what Fuller calls "sovereignly operating separate systems," into a global "Stack."[23] Bratton's idea is to adapt principles of *urbanism* to a problem of general ecological governance, by way of renovated conception of terraforming. In his 2020 programme presentation for the Strelka Institute in Moscow, Bratton stated: The term 'terraforming' usually refers to transforming the ecosystems of other planets or moons to make them capable of supporting Earth-like life, but the looming ecological consequences of what is called the Anthropocene suggest that in the decades to come we will need to terraform Earth if it is to remain a viable host for Earth-like life."[24]

Bratton's terraforming as post-Anthropocenic survival strategy – a "proposition for urbanism at planetary scale" – nevertheless has echoes of an architectonic messianism (the "engineer of human souls") evident from Fuller to Reed in its geo-social vision, in which "world desovereignisation" tends towards the meta-sovereignty of The Architect – irrespective of whether this architect is a "human" agent or a "dead-hand" automated cybernetic system. What remains at issue is not the self-regulatory capability of such governance systems, or their capacity to substitute a form of risk-averse ecological management for environmental "human error" on a sufficiently large scale, but the very developmental toxicity of its logic. The

[22] Buckminster Fuller, *Operating Manual for Spaceship Earth* (Zürich: Lars Muller, 1968) 104. See also Buckminster Fuller, *Synergetics: The Geometry of Thinking* (New York: Macmillan, 1975).
[23] Benjamin H. Bratton, "Cloud Megastructures & Platform Utopias," *Entr'acte: Performing Publics, Pervasive Media, and Architecture*, ed. Jordan Geiger (London: Palgrave, 2015) 35.
[24] Benjamin H. Bratton, "Strelka 2020: New Programme Presentation" (27 August 2020) accessed 9 October 2019<http://strelka.com/en/events/event/2019/08/27/strelka-2020-new-programme-presentation>.

belief in weaponised evolutionary processes – even if these amount in practice to a type of digital cloud-seeding – remains forever bound by the paradox of an appeal to a technological "fail safe": the transcendental signified of a runaway process of "desovereignised" hyperstition by which the post-Anthropocene, like the posthumanist fallacy on which it is premised, returns dividends for "Earth-like life" in an endless rehearsal of the cosmic embryo in Stanely Kubrick's *2001: A Space Odyssey* (1968). Yet there is no escaping the fact that this reborn "star child" – the augury of a new world (& source of a life system cognisant of "ours") – is not only the product of an "alien intelligence" (that terraforms Jupiter into a second sun by means of a type of thermonuclear detonation),[25] but of a logic no less synonymous with that mode of Corporate-State terror with which Reed & Reichelderfer were inevitably complicit, & which has only ever prefigured future "life" through an apocalyptic machinery of "salvation."

Capital IX: MAKE ▮▮▮▮▮ GREEN AGAIN

P HYDROGYNOUS

1.1 Introduction

Make ▮▮▮▮ Green Again (M▮GA) calls for a return of ▮▮▮
to the rainforest. It follows the call made by the International-
ist Commune and social ecological movements to Make Roja-
va Green Again and to make many more Rojavas. M▮GA seeks
to remove any nationalist or regional exceptionalism and
generalized superlatives separating itself from post-Trumpi-
an politics where climate change mitigation is considered an
inconvenience for corporations. It carries on the algorithmic
grey zone of Haraway's *Cyborg Manifesto* in becoming with
the human, animal, plant and machine in stating: We are not
robots, we are greater than the sum of its [robot] parts. We
reject the Green Revolution for Green Accelerationism, or
any third, fourth or fifth generation agricultural revolutions.
In so doing, we maintain deeply adaptive and dark ecological
principles by restricting agriculture and logistics within the
term *agrilogistics*, an algorithm "that has been running with-
out much change--only upgrades to more intense versions
of itself--since about 10,000 BC, when it began at the start
of the (warmer) Holocene". This manifesto answers William
James' 1910 *Moral Equivalent of War* by subverting thou-
sands of years of martial and agrilogistic programming which
built the foundations for our 300-year accelerated hegemony
of consumer-capitalist-postcolonial production (military-in-
dustrial complex). It calls for a fusion of two of MIT's already
existing initiatives: Social Physics and Open Agriculture
(OpenAg), where one begins to build environmental controls
and interfaces that incentivize human, animal, plant and ma-
chine (pan-organism) interaction for open cooperation rather

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than siloed, closed-circuit competition. Make ▆▆▆ Green Again calls for a billion (▆)man green Basij working in a patchwork of ecological rather than agrilogistical frameworks to regenerate many more ▆▆▆s.

1.2 Make Seattle Great Again

1.2.1

In Spring 2019, over 4000 ▆▆▆ employees leveraged stakeholder rights to urge their respective corporation to develop and make public a sustainability plan in line with ongoing calls for companies to take action over climate change. The movement was considered one of the "largest employee-driven movement on climate change to take place in the influential tech industry" and echoed similar 2018 calls within other multinationals, such as ▆▆▆, where employees challenged the company's handling of sexual harassment cases involving higher-ups. In an open letter to the CEO, employees wrote:

> ▆▆▆ has the resources and scale to spark the world's imagination and redefine what is possible and necessary to address the climate crisis. We believe this is a historic opportunity for ▆▆▆ to stand with employees and signal to the world that we're ready to be a climate leader.[1]

Unfortunately, 2019 action was shot back during a board decision and no direction to follow through on a sustainability plan was [publicly] taken. In fact, ▆▆▆ closed further deals with major oil and gas companies to find smart, cloud solutions for the petroleum business. To be balanced, the company

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[1] ▆▆▆ Employees for Climate Justice, "Open letter to ▆▆▆ nd the ▆▆▆ Board of Directors," *Medium,* 10 April 2019, accessed 20 October 2019< https://medium.com/@▆▆▆employeesclimatejustice/public-letter-to-▆▆▆nd-the-▆▆▆-board-of-directors-82a8405f5e38>.

has developed internal sustainability goals and reacts to every call for transparency, albeit publicly declaring "No" until September 2019. In response to the above open letter, the CEO announced the program Shipment Zero and declared the intention to make the sustainability goals transparent. Also in April, ████ announced the opening of three new wind farms[2] in Texas. It may be that the company itself, fractured and decentralized due to such rapid growth and expansion, has only failed to win the hearts and minds of employees in Seattle and those in the far corners of Eastern Europe. The internal struggle initiated from within its flagship, the same city which sustained the 1999 WTO Protests, dubbed "The Battle of Seattle", continues with a declaration of solidarity with #FridaysForFuture.

1.2.2

The latest demonstration[3] on 20 September, was expected to mark the "first time in ████'s 25-year history that workers at its Seattle headquarters have walked off the job." Seattle employees hoped to encourage European workers to join them, a region more viable for strike culture due to protective labor laws and more active for sustained environmentalist protests. The evidence laid out by the organizers of the protest is mounting up, as various deals courting petroleum industry and lobbyists continue being made by company representatives. In a July 2019 speech, #FridaysForFuture activist Greta Thunberg has said "The biggest danger is not being inactive, it's when politicians and companies pretend to be doing something"[4] calling out this kind of "give with one hand and take from the other" behavior which does not add up to net

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[2] About ████, accessed 8 October 2019<https://sustainability.about ████.com/sustainable-operations/renewable-energy>.
[3] @████employees, *Medium*, 9 September 2019, accessed 8 October 2019< https://medium.com/@████employeesclimatejustice/████-employees-are-joining-the-global-climate-walkout-9-20-9bfa4cbb1ce3>.
[4] Marina Jenkins and Cristina Matamoro, "Greta Thunberg urges French MPs to 'listen to scientists' and act to reduce global warming," *Euronews*, 24 July 2019, accessed 8 October 2019<https://www.euronews.com/2019/07/23/french-mps-vow-to-boycott-greta-thunberg-s-parliamentary-address>.

emissions. Unfortunately, on the night before the announced global climate strike, ██████ announced its new Climate Pledge,[5] to meet the Paris agreement 10 years early and encourages other major corporations to follow suit. Still disgruntled employees in Seattle declared it not enough.[6] On the other hand, a prior environmental group challenged ██████'s use of plastic mailers asking the company to encourage "consumer to recycle plastic mailers by providing more education."[7]

1.2.3

As early as 2014, Greenpeace started taking up calls against ██████ with a report criticizing emissions of major companies.[8] Quite bluntly, the report claimed ██████ Web Services to be one of the "the dirtiest and least transparent companies in the sector, far behind its major competitors, with zero reporting of its energy or environmental footprint to any source or stakeholder." Also, with regards to where ██WS sources its energy to power its vast clouded infrastructure. In 2019, during one of ██████'s major sales events, ██████ Day, Greenpeace activists attended a site in Germany, camped on the roof for three days and brought in a crane to post the sign "Für den Tonne" referring to the practice of expired product destruction, while subverting the sales hashtag to #██████crime on Twitter. Greenpeace is asking the German government for a resource protection law.[9] Just prior, environmentalist groups in

[5] About ██████, accessed 8 October 2019<https://press.about██████.com/news-releases/news-release-details██████-co-founds-climate-pledge-setting-goal-meet-paris>.
[6] James F. Peltz, "██████ expanded ██████'s climate change pledge. His workers want more," *LA Times*, 19 September 2019<https://www.latimes.com/business/story/2019-09-19/██████climate-change>.
[7] Kristen Millares Young, "██████'s streamlined plastic packaging is jamming up recycling centers," *LA Times*, 13 February 2019, 8 October 2019<https://www.latimes.com/business/la-fi██████-plastic-recycling-20190213-story.html>.
[8] Greenpeace, Gary Cook, et al., *Clicking Clean: How Companies are Creating the Green Internet* (2014), accessed 8 October 2019< http://www.greenpeace.org/usa/wp-content/uploads/legacy/Global/usa/planet3/PDFs/clickingclean.pdf>.
[9] greenpeace.de, "██████ Prime Day: Greenpeace-Kletterer Demonstrieren Gegen Vernichtung von Neuwaren," 14 July 2019, accessed 8 October 2019<https://www.greenpeace.de/presse/presseerklaerungen/██████-prime-day-greenpeace-kletterer-demonstrieren-gegen-vernichtung-von>.

France blocked three locations in order to prevent the expansion of new sites in 2020.[10] The struggle went as far back as November 2018, where environmentalist groups also targeted a key sales day: Black Friday.[11]

All while the ▮▮▮▮ rainforest burned during August 2019, hashtags calling out "The Wrong ▮▮▮▮ is Burning" spread across social media. Developers even created a Chrome Browser extension by the same title, covered in a Vice news article.[12] Whenever the user goes to ▮▮▮▮.com sites, a nostalgic pixelated flame climbs up the screen and encourages users to donate to the rainforest efforts. Trolls compared the burning of the forest to the burning of Notre Dame, earlier in 2019, showing the hypocrisy of how quickly money poured in for support of the cathedral's restoration. France experienced an interesting year indeed, with the political circus at Biarritz for the G7 in August. It doesn't matter how woke or misrepresented reactions to these juxtaposed doppelgängers are, activists are calling for responsibility. Burning a rainforest has consequences. Disposing of millions of vendors' expired products in storage by simply destroying or continuing to rely on fossil fuel for energy is irresponsible.

1.3 Make [*] Great Again

Similar calls to make [*] green again have existed as far back as the reaction to Trump's most known campaign slogan for calling to Make America Great Again in 2016, which draws from Reagan's line "Let's make America great again" in his

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[10] Forest Crellin, "Protesters target ▮▮▮▮ in France calling for action on climate change," 16 February 2019, accessed 8 October 2019<https://www.reuters.com/article/france-environment-a▮▮▮▮-protests/protesters-targe▮▮▮▮in-france-calling-for-action-on-climate-change-idUSL8N243354>.

[11] "Environmentalists target ▮▮▮▮ France in 'Black Friday' protest," 23 November 2018, accessed 8 October 2019<https://www.france24.com/en/20181123-environmentalists-target▮▮▮▮-france-black-friday-protest>.

[12] Edward Ongweso Jr, "The Wrong ▮▮▮▮ is Burning," *Vice*, 29 September 2019, accessed 8 October 2019<https://www.vice.com/en_us/article/vb5dq4/the-wrong-▮▮▮▮s-burning>.

Image: User @baabaaer calling "to make ███ green again"
Source: https://twitter.com/baabaaer/status/1166567571123949568

«Make ████ie green again»
L'annonce prend aussi à revers l'ensemble des partis de gauche et les écologistes qui s'opposaient jusqu'alors au Mercosur. Et permet à Emmanuel Macron de revêtir son costume de « champion de la Terre » sur la scène nationale au moment où la défense de l'environnement s'impose parmi les préoccupations des Français. Lorsque le titre lui avait été décerné en septembre 2018 à New York, à l'occasion de la deuxième édition du One Planet Summit, il lui avait surtout valu quolibets et moqueries. L'ONU voulait alors récompenser son action en faveur du climat, notamment dans la foulée du « Make our planet great again » lancé à Donald Trump après son retrait de l'accord de Paris. À Biarritz, ce sera plutôt : « Make ████ie green again ».[13]

[13] August 23 at 9:52 PM, Text: User @A quoi ça serre ? calling to "Make ███ green again" at Biarritz, Source: Facebook

Image: User @malikthepugexplorer meme calling to "MAKE ██████ GREEN AGAIN" featuring hashtags #M█GA #MAKE█████GREENAGAIN #brazil #climatechange #deforestation #motherearth #greenpeacefoundation #earthjustice
Source: Instagram

1980 campaign. Opponents and parodies already started de-nationalizing the slogan as Make Earth Great Again, including the Slovenian metal band Laibach who composed "Let's Make Earth Great Again" to accompany the soundtrack for Vuorensola's latest *Iron Sky* sequel in 2019, with a plot involving Moon Nazis who made the earth inhospitable through nuclear fallout and featuring a resurrected Hitler riding on top of a Tyrannosaurus Rex. Ironically, the intention of ████'s and ████'s CEOs to set up a moon base has had similar reactions by opponents, referring to the battle for the dark side of moon.[14]

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[14] Mitch McDangles, "Musk v ████ Battle for Dark Side of the Moon," *The Lemon*, 20 May 2019, accessed 8 October 2019<https://thelemon.news/musk-v-████battle-for-dark-side-of-the-moon/>.

The last step is reverting the Great with Green. A U.S. online retailer, The Resistance, started offering parody hats colored green with the line "Make America Green Again."[15] Throughout the Gilets Jaunes movement during the Winter of 2018-2019, calls to Make France Green Again (MFGA) were made.[16] Now disassociating further between the Gilets Jaunes camps and environmentalist platforms in France (although not lacking any of the GJ subvertizing efforts complete with a Macron mockup as the Green Lantern), the movement MFGA has built out an ambitious commitment plan of 13 points:

1. Tax on financial transactions
2. Development of renewable energies
3. Negative emissions
4. Reduction of CO_2 emissions vehicles
5. Reassess agricultural and food model
6. Mobility and freight
7. Road and air infrastructures
8. Carbon-based taxation
9. Energy-efficient housing
10. Closure of nuclear plants
11. Ban on the exploration and exploitation of fossil fuels
12. Social impacts of the transition
13. Follow-up of French climate policies

1.3.1

What these measures insist upon is adequate reforms to how we meet climate and sustainability goals, all leading to a tax-heavy, zero emissions, ecosocialist European-style government set to increase efficiency of each carbon-contributing

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[15] *The Resistance*, Online Catalogue, accessed 8 October 2019 <https://theresistance.store/products/make-america-green-again-hat?variant=26195485831>.
[16] Make France Green Again, accessed 8 October 2019<http://makefrancegreenagain.fr/>.

individual and corporation. The demands are near in line with UK-based Extinction Rebellion's: 1) Governments must tell the truth regarding climate change, 2) Government must act now to enforce net zero emissions by 2025, and 3) Government must make a Citizen's Assembly to address climate change and justice.[17] It should be noted this last point was called also by the Gilets Jaunes movements with a poll finding 80% of the French were in favor of the référendum d'initiative citoyenne (R.I.C.). These movements are all asking for more direct democracy in order to force the governments' hand into enacting climate change and sustainability requirements for all. Why not throw money at it?[18]

The most known "Make * Green Again" campaign came out of all the least likely places: the ongoing conflict in Syria. By 2018, the Internationalist Commune of Rojava initiated the Make Rojava Green Again movement[19] in collaboration with Debbie Bookchin, after a failed Rojava Plan centered around decentralized, people- and small tech-oriented solutions for food security and community sovereignty. A little green book was published in order to spread the word about Rojava and included an introduction from the daughter of Murray Bookchin, the prophet of democratic confederalism brought to the Kurds by Abdullah Ocalan. The book calls on democratic confederalism brought to the Kurds by Abdullah Ocalan. The book calls on democratic confederalists (and anarchists) around the world to "create two, three, many Rojavas!" and thus a grassroots, non-governmental approach to outlining their template for rebuilding the Fertile Crescent following such devastating warfare was outlined by the Internationalist Commune of Rojava. In taking up Ocalan's organizational calls, the Internationalist Commune, puts women's liberation and social ecology at the forefront.

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[17] Extinction Rebellion, accessed 8 October 2019<https://rebellion.earth/the-truth/demands/>.
[18] Olivier Bost, "'Gilets jaunes': 80% des Français favorables au RIC pour proposer une loi," *RTL*, 2 January 2019, accessed 8 October 2019<https://www.rtl.fr/actu/politique/gilets-jaunes-80-des-francais-favorables-au-ric-pour-proposer-une-loi-7796101142>.
[19] Make Rojava Great Again, accessed 8 October 2019<https://makerojavagreenagain.org/>.

Image: #MakeFranceGreenAgain website banner
Source: http://makefrancegreenagain.fr/

2.1 Make Accelerationism Great Again

2.1.1

All throughout history, anarchists have always been at war with fascists. For the first time since World War II however, fascists and anarchists, the deep and hardcore ones, are starting to converge ecological camps. Ecofascism has made a return from the underground since the mention of various environmentalist points in the 2019 Christchurch shooters manifesto,[20] widely shared across 8chan prior to the rampage. Additionally, ecofascist tenets were held by the 2019 El Paso shooter as well, who also named his own manifesto "An Inconvenient Truth" in reference to Al Gore's documentary on climate change, and stated "corporations are heading the destruction of our environment by shamelessly overharvesting resources". It's not the first time for such convergence, as conservatives in the American past were also considered environmentalists (or conservationists), such as Theodore Roosevelt,

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[20] Luke Darby, "What Is Eco-Fascism, the Ideology Behind Attacks in El Paso and Christchurch?" *GQ*, 7 August 2019, accessed 8 October 2019<https://www.gq.com/story/what-is-eco-fascism>.

who helped create the first National Park in 1872. Some of the same mentalities in conservatism today, however, justify clearing forests for timber to prevent forest fires and killing off game in order to help it flourish. In addition to eco-fascist tenets, the Christchurch shooter introduced to conservatives alike a Landesque version of "accelerationism," or right accelerationism (R/Acc).

What occurred in the ███████ rainforest in August 2019 was a similarly accelerationist phenomenon. Just like killing off game with the mindset that the hunter is helping the herd by preventing weak genes to continue through, setting fire to vast tracts of rainforest accelerates the "enrichment" of the soil, unfortunately only from the agrologistic perspective. What r/Accelerationists risk in helping along a natural process is hitting a tipping point which can throw an entire ecosystem out of balance for decades or hundreds of years (for example like in the case of the extinction of wolves from Yellowstone National Park). In our current state of impending doom, no conservative acknowledges that our current methods of accelerating systems via technology, and primarily resource extraction, can have an impact for all futures. Every action has a consequence, even if the media blows it up.

2.1.2

Likewise, Srnicek and Williams' Left Accelerationism (L/Acc) also challenges labor syndicalist approaches that can even be "as oppressive and environmentally damaging as any large-scale business."[21] Furthermore, along the lines of agrologistic thinking, collective decisions on local food production and distribution with sound arguments can be counterproductive, like in the case of organic-food marked products.[22] It's as if being Green Woke, or even the corporate answer of Green Logistics, can compound the issue. Is there such a strategy as Green Logistics if a company is set on using a fleet of electric-

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[21] Nick Srnicek, Alex Williams, *Inventing the Future* (Verso, 2015) 38.
[22] Srnicek, Williams 42

powered barges transporting crude oil, charging up at ports in Dammam or Jubail in Saudi Arabia, where energy production in is most likely from fossil fuels anyway? Srnicek and Williams do address some similar environmentally-challenging conundrums, such as the net emissions of growing agriculture for English stomachs in New Zealand being lower than using artificial light to grow the same produce in the UK. Agrilogistics takes a dual hemisphere model of efficiency[23] with growing seasons augmented by mirrored worlds below the equator and with the Southern Hemisphere containing nearly 10% of humanity. Why can't we just transport the English to some small continent-sized island to live out the rest of their lives grazing? Imagine if we sent them all to Mars? Srnicek and Williams state "logistics therefore presents an important transition technology between capitalism and postcapitalism"[24] and that the future of logistics may be impacted more by strikes coming from "programmers and IT technicians" than blockades in the transport hubs and ports.[25] That's exactly why a climate strike in Seattle by 1000 people can echo louder through global trade than 10,000 people per each major city across Europe.

All this talk of accelerationism brings us to a new /Acc acronym. Green/Acc for Green Accelerationism. Reddit users and bloggers alike bounced the term around prior to 2016, including eco-accelerationism in 2019, yet a key definition is lacking. Tumbler user @baroquespiral outlined 7 principles for Green Accelerationism,[26] though no feedback came through on Reddit:

    1. Climate change is irreversible
    2. Climate change is not a crisis based on scarcity or
     depletion of resources for consumption

[23] Srnicek, William 151
[24] Srnicek, Williams 151
[25] Srnicek, Williams 173
[26] @baroquespiral "7 Points of Green Accelerationism," *Tumblr*, 5 April 2019, accessed October 8 2019<https://baroquespiral.tumblr.com/post/183966564134/7-points-of-green-accelerationism>.

3. In a non-orthogonal, unconditional sense, all of this (the Anthropocene, the formation of radically new systems of energy circulation) will inevitably happen regardless of our efforts. The goals of "Green Accelerationist" praxis, therefore, should be understood in strictly political terms

4. Technical development as a form of praxis must not be allowed to be monopolized by existing institutions such as corporations, universities and governments, which determine its current "political" character

5. Green Accelerationism should be distinguished from naive ecomodernism, not only in its radical approach to the specific conditions of technical development, but in adopting a general critique of extractivism

6. Green Accelerationism should strive not only for interdependence but independence and the right to exit, not only for humans or an economic or national elite but for as many living beings as possible

7. The category of "ecology" resolves the antinomy of "praxis" and "anti-praxis" posed by the Unconditional Accelerationists.

While Green/Acc is completely focused on praxis, what remains key to differentiate from accelerationisms, and in line with the reddit conversation on the topic is the importance of living beings to the "ecology" of a system. Life must always be upheld in every accelerationist process, and not just human life but all life, as in the tenets of bio-cosmism. However, the acceleration of a life remains death, the acceleration of all life is infinity. If the political left and right can agree on one thing across Green Accelerationism, it is that they both wish to preserve life by interventionist means. The left want to elect a god to determine life and death and the right want to be their own gods to be able to die and live on their own. In Green

accelerationism, no single body is allowed to monopolize the technical development (therefore must be open-sourced). If you don't like it you can leave. Except you can't.

2.1.3

If we are to develop a technical praxis for achieving a green planet, then the solutions on the table for now by all the preceding groups is zero net emissions. For accelerating this, we would additionally draw from Zero/Accelerationism or Z/Acc, as outlined by Meta-Nomad,[27] providing a possible equation for the subversion of current existing capitalist systems based on Waste production. Meta-Nomad draws from John Greer's "How Civilizations Fall: A Theory of Catabolic Collapse"[28] calling it an initial primer of Z/Acc on its own. Greer analyzes J.A. Tainter's theory of civilizational collapse with the notion that civilizations that reach a certain level of complexity start to decline. This leads to the supposition that some degree of simplifying or decomplexifying parts of society can be beneficial to a civilization in decline. To quantify the phases of civilization, Greer spells out a simple formula for defining steady state and dynamic societies:

Capital(production) = Waste(production) + Waste(capital) --> steady state (or SSv1) and for the next phase:

SSv2 = [Capital(production) = Maintenable(production)]

Considering how much waste is involved in agrologistic operations is key to understanding the sustainability of a system. The main callouts against ▮▮▮▮ in 2019 involved its waste

[27] Metanomad, "Z/Acc Primer," *meta-nomad*, 11 January 2019, accessed 8 October 2019<https://www.meta-nomad.net/z-acc-primer/>.
[28] John Michael Greer, "How Civilizations Fall: A Theory of Catabolic Collapse," Ecoshock, accessed 8 October 2019<https://www.ecoshock.org/transcripts/greer_on_collapse.pdf>.

disposal programs, not to mention its carbon footprint. But capital always has it way, how are we to avoid a capitalist technical solution? Meta-Nomad so adequately states:

> The tendrils of future capital are hitting against unexpected d(R) [depletion of Resources], fucking humans and their robotic Santa toys. [Systems of] Capital is generally ignorant of the finite. And so a proposal would be to retain humanity within smaller and smaller microcosms of M(p) [Maintainable Production] as a means to have greater control over d(R) and W [Waste]. Z/Acc is the reset button, except pressing it to completion takes roughly 250-1000 years

And the new demands for the company are zeros across the board:[29]

1. Zero emissions by 2030:
Pilot electric vehicles first in communities most impacted by our pollution
2. Zero custom ▇▇▇▇ Web Services (▇WS) contracts for fossil fuel companies to accelerate oil and gas extraction
3. Zero funding for climate denying lobbyists and politicians

Initiating a pseudo-attempt at achieving this via the program Shipment Zero. As stated, Shipment Zero has only committed to reducing 50% of its shipments to net zero by 2030. And even that 50% does not necessarily mean a decrease in emissions compared to current levels: given ▇▇▇▇'s rate of

[29] ▇▇▇▇ Employees for Climate Justice, "▇▇▇▇ employees are joining the Global Climate Walkout," 20 September 2019, accessed 8 October 2019<https://medium.com/@▇▇▇▇employeesclimatejustice/▇▇▇▇-employees-are-joining-the-global-climate-walkout-9-20-9bfa4cbb1ce3>.

growth, 50% net-zero shipments in 2030 could still be an increase in emissions compared to today.[30] The struggle to accelerate ███████ will continue to be baseless so long as full accountability of waste is not in place.

3.1 Make Revolution Green Again

3.1.1

Is Green Accelerationism simply a return to the 1960s interventionist program of the Green Revolution? No. At the center of Green Accelerationism is considering all living beings within a given ecology. The Green Revolution favors high yields crops and monocultures resistant to diseases at the time the crops were genetically modified. Had the bacteria in the soil been considered at the beginning of the Green Revolution, we wouldn't have superbugs resistant to pesticides today (albeit the Red Queen may argue differently). While the Green Revolution helped mass populations in the Global South to grow, they also depleted the next generations of nutrients and soil ecosystems to come. Green Accelerationism would accelerate all processes of an ecosystem. It might start by abolishing terms like agriculture and agronomy altogether. These words are based on fields, the greek root of *agros-*, and in Green Accelerationism, fields will only remain for technical vocabulary. Psytrance artists have used more accurate terms for what Green Accelerationism is to bring about with whole ecosystems contributing to a minimal waste, net-zero porous loop system, such as Digital Forests. Forest gardens must be the revolution.

3.2 Make Green Open-source Again

In the 17th century, Gerrard Winstanley similarly subverted English public land for the repurposing of gardening. His fol-

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[30] ██████ Employees for Climate Justice, "██████ employees are joining the Global Climate Walkout."

lowers formed a society known as the Diggers. Today the act of planting and gardening public lands is called Guerrilla Gardening (GG). GG takes space from public domain and re-purposes for the betterment of the local community, which can reap direct benefits. Suburban America favored trees that were easy to maintain and had straight-down root systems that didn't break up the sidewalk cement. That's nice. Medieval forests were exploited for timber before the Lords realized that some timber is better for building and takes much longer to grow. Landowners regulated the land and prohibited the cutting down of certain trees. First, the diverse forests were replaced with poplars and birches, which grow fast, but are horrible for firewood and building. Pines everywhere replaced beeches. Pines all went down in a single blight of Pine Beetle affliction and replaced by Fir. When will authorities realize that planting trees of diverse species builds a resilient system, but costs more time and money?

Two solutions may merge to help regulate these environments better. If they can recover for Jeffrey Epstein's support, MIT has sponsored programs that monitor environments. The first is of people and follow Alex Pentiland's concept of Social Physics. Simply put, this monitors your mobile data but not for the purpose of marketing, but instead for researching and influencing social networks. The second is all about plants. Open Agriculture Initiative, or OpenAg, creates a Hermetically-sealed regulation of a plant's ideal environment, void of people besides the initial builder of the Food Computer.[31] The Food Computer is comprised of a completely open-source framework of technical devices, such as Raspberry Pi and sensors. I've never seen a plant enjoy isolation and solitude so much.

Social Physics and sociology focus on human-to-human interactions and OpenAg focuses on a hands-off, automatic approach to environment shaping. Neither alone suffice to de-

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[31] MIT Media Lab, "Open Agriculture," *MIT Media Lab*, accessed 8 October 2019<https://www.media.mit.edu/groups/open-agriculture-openag/overview/>.

velop and create the integral ecological environment required for sustainability and development. M█GA combines MIT's programs of Open Agriculture Initiative (OpenAg) and Social Physics, or aptly coined Social Ecological OpenAg. One begins to build Food Computers that require human and animal, pan-organic interaction. The Food Computer is a closed loop system, however what every permaculturalist or forest gardener knows, is to start small. Loam is not built in a day. Permaculture requires this slow start initiative from the base, starting with soil health. Only after establishing a vibrant and living soil structure, only then can planting begin. The move toward the Food Computer, hydroponics and vertical farming is reductionist. Albeit it's a valid attempt toward net emission, it's short of holistic scope and damaging to the overall environment and space. Plants and animals can and do learn to adapt to new spaces.

3.3 Make Neolithic Revolutionary Again

Even the notorious Bronze Age Pervert (BAP) claims that organisms seek out an adequate ownership of *space*, in the sense of *lebensraum*, once basic needs of survival have been obtained. The initial territorialization. Fortunately, there is some overlap between Bronze Age Pervert and Murray Bookchin, in the concept of "participatory evolution."[32] While the Bronze Age Mindset provides a manifesto calling for a rejection of civilization, it should not be considered a solution in whole. What it does succeed in outlining is the only rational choice for worldwide conservatism: a return to pre-civilizational life. Otherwise, choose technology.

M█GA seeks both.

Humans have evolved to fetishize categorization and organization of space. They make lists, just as Umberto Eco has stated:

[32] Murray Bookchin, "Freedom and Necessity in Nature: A Problem in Ecological Ethics," *The Anarchist Library*, accessed 8 October 2019<https://theanarchistlibrary.org/library/murray-bookchin-freedom-and-necessity-in-nature-a-problem-in-ecological-ethics>.

"The list is the origin of culture."[33] In his Infinity of Lists, Eco also states that lists of territories and rivers are one mechanism of imperial control. For the ███████, a list can be the hundred names of single-breasted warriors:

Hippolyta, Aella, Philippis, Prothoe, Eriboea, Celaeno, Eurybia, Phoebe, Deianeira, Asteria, Marpe, Tecmessa, Alcippe...

The thousands of species living side by side in the rainforests today:

Piperales, Campanulales, Aristolochiales, Theales, Linales, Malvales, Geraniales, Lecythidales, Polygalales, Santalales, Proteales, Dipsacales, Plumbaginales, Rubiales, Violales, Euphorbiales, Laurales, Cucurbitales, Ebenales, Celastrales, Myrtales, Sapindales, Sterales, Magnoliales, Capparales, Apiales, Gentianales, Rosales. Primulales, Rhamnales, Urticales, Solanales, Scrophulariales, Lamiales, Nepenthales, Ranunculales, Polygonales, Podostemales, Fabales, Fagales...

And millions of product lists you can find on sale today:

Logitech HD Pro Webcam C920: was $99 now just $39, Logitech MK710 Wireless Keyboard and Mouse Combo: was $99 now just $45, SanDisk 1TB External SSD: was $349 now just $136, Dell U3417W 34-inch monitor: was $899 now just $648, Dell Ultrasharp U2417 monitor: was $219 now just $199, Sennheiser HD 4.50 SE wireless ANC headphones: was $199 now just $99, Acer KG281 28-inch monitor: was $349 now just $310, Samsung T5 Portable SSD (1TB): was $249 now just $149, HP 27f IPS monitor: was $249 now just $149......

Lined up like a bundle of sticks, a *fasces*.

[33] Susan Beyer and Lothar Gorris, "Spiegel Interview With Umberto Eco," *Spiegel*, 11 January 2019, accessed October 8 2019<https://www.spiegel.de/international/zeitgeist/spiegel-interview-with-umberto-eco-we-like-lists-because-we-don-t-want-to-die-a-659577.html>.

As Bookchin remarks

> every society projects its own perception of itself onto nature, whether as a tribal cosmos that is rooted in kinship communities, a feudal cosmos that originates in and underpins a strict hierarchy of rights and duties [or] a corporate cosmos diagrammed in flow charts, feedback systems, and hierarchies that mirror the operational systems of modern corporate society.[34]

Thus the final section is devoted to our perception of the future of nature.

4.1 Make ███████ Green Again

The folk etymology of ██████ is quite trivial, derived from the Ancient Greek word used for the mythical tribe of female warriors in the land north of the Black Sea. A recent Mental Floss article takes an all too common understanding of the word to mean, "without breasts" (literally *a- mazos*, see mastectomy)[35] which is said to carry over to the rainforest and river by the same name during the 16th century by Spanish explorer Francisco de Orellana.[36]

The demands by the now 8000 employees are:

- Public goals and timelines consistent with science and the IPCC report [23]. Emissions must be cut in half by 2030 from 2010 levels and reach zero by 2050. Goals must span all organizations and businesses, and cover the full supply chain.
- A complete transition away from fossil fuels rather

[34] Murray Bookchin, "Freedom and Necessity in Nature"
[35] Romy Oltuski, "The Dirty Etymology of 9 Everyday Words" *Mental Floss*, 24 August 2019, accessed 8 October 2019<http://mentalfloss.com/article/12350/dirty-etymology-9-everyday-words>.
[36] '████ (n.)' Etymonline, accessed 8 October 2019<https://www.etymonline.com/word/████>.

than relying on carbon offsets.
• Prioritization of climate impact when making business decisions, including ending all custom solutions specifically designed for oil and gas extraction and exploration.
• Reduction of harm to the most vulnerable communities first. The pollution we generate is not equally distributed, and climate impact will be felt first and hardest by Black, Indigenous, and other communities of color, particularly in the Global South. We must prioritize our pollution reduction in these communities.
• Advocacy for local, federal, and international policies that reduce overall carbon emissions in line with the IPCC report and withholding of support from policy makers who delay action on climate change.
• Fair treatment of all employees during climate disruptions and extreme weather events.[37]

But will this be sufficient to rebuild the rainforest(s)? Or will this demand slip back into the dark crevices at the heart of woke privilege? Does fair treatment of employees during climate disruption involve the allowance of adequate time for five prayers a day? Let's face it, the Global South doesn't have an inclusion policy for non-humans.

In contrast, what we propose is an acceleration on the theme of M GA, in all its facets. Not only Rojava, not only the Rainforests. Make the Sahara Great Again. Make Petroleum Great Again. Make whatever it is you want Great or Green or Revolutionary Again. Just revere it. M GA in this sense is also a form of fascism, but a fascism to end all fascisms, because it doesn't have boundaries or hierarchies of organisms. Classifications and lists of lists of lists.

[37] Alexia Fernández Campbell, ███████ says it's a leader on fighting climate change. 5000 employees disagree," 11 April 2019, accessed 8 October 2019<https://www.vox.com/business-and-finance/2019/4/11/18306389███████-employees-climate-change-plan>.

Make ▮▮▮▮ Green Again calls for a billion (*)man green Basij working in a patchwork of ecological rather than agrologistical frameworks to regenerate many more ▮▮▮▮s. This is nothing short of a kind of Green Leviathan, in the Hobbesian sense. And while life can be solitary, poor, nasty, brutish, and short, it should always be upheld in every sense – whether it's a mushroom at the end of the world or the plethora of endangered species in the rainforest today.

Similar calls to terraform entire lifeforms on plants isn't unfamiliar to the Dune universe. In attempting to terraform the planet Arrakis in the vision of Liet Kynes, who also recognized that the best tools for planetologists were human beings,[38] the life of a particular organism central to the planet's spice production was in question with more water coming into circulation on the planet. Murray Bookchin called for humans to be "active agents in the biosphere" and not retreat into "passive animism,"[39] something which the neolithic mindset maintained. Bookchin supported any ecotechnology so long as its end goal was not food production and consumption, but also an enrichment to the soil. An Ecotechnology must stand against "gigantism, waste, and mass destruction" of the environment and technology designed purely for profit.[40] ▮▮▮▮ has made great progress in turning logistics, and thereby agrilogistics, on its head and claims to be "Earth's most customer-centric company," however, it has failed to address every creature under its vast ecosystem. If its current growth continues, without addressing its subsistence on consumer capitalism there won't be any customers left. With Green Logistics[41] and Green Algorithms[42] to make cloud computing more efficient and thereby less energy-consuming, new possibilities are on the horizon. What if, however, Green Logistics sought also to reduce the

[38] Frank Herbert, *Dune* (Penguin Publishing Group, 2003) 272.
[39] Murray Bookchin, *The Philosophy of Social Ecology: Essays on Dialectical Naturalism* (Black Rose Books, 1996) 90.
[40] Bookchin, Social Ecology 91.
[41] "Green Logistics," *DHL*, accessed 8 October 2019<https://www.logistics.dhl/cz-en/home/all-products-and-solutions/green-logistics.html>.
[42] "Green algorithm to reduce the energy consumption in cloud computing data centres" *IEEE Explore*, 13-15 July 2016, accessed 8 October 2019<https://ieeexplore.ieee.org/document/7556035>.

net emissions of its end users? Oddly enough, two of the first products to be delivered by drone was a bottle of water and a banana. What Liet Kynes calls for in his son's desert vision is nothing short:

> We must do a thing on Arrakis never before attempted for an entire planet," his father said. "We must use man as a constructive ecological force--inserting adapted terraform life: a plant here, an animal there, a man in that place-- to transform the water cycle, to build a new kind of land- scape.[43]

>   - Liet Kynes' vision of his father, Pardot Kynes, in
>   the desert, Dune

[43] Herbert 441-442

"Humanity is Going to Die"
An interview with NEWTON HARRISON

We talked with Newton Harrison on 26 June 2019, during his recent stay in Prague, where he was scheduled to speak at the American Center.

Vít Bohal: Since 2007, you have been running the Center for the Study of the Force Majeure, "a freestanding education and research center"[1] based out of the University of California at Santa Cruz. Your conception of climate change as a Force Majeure is definitely very interesting – where Timothy Morton's popular definition of climate change as a "hyperobject" is more oriented towards the ideal object of climate change, the study of the Force Majeure seems to be more oriented on the dynamic of flows and frontiers, mapping the synergy of various forces which work together to threaten the human. What is the Force Majeure for you and how does the Center approach it through its praxis?

Newton Harrison: The Force Majeure is simple: it's a tsunami. Oceans are rising, the sixth extinction is happening. We began counter-extinction work about ten years ago, after reading Paul Ehrlich's proof of it. He wrote a book on extinction where he pointed out that extinctions were happening ten years ago at a rate of hundred times normal, and that this would accelerate. And it has. So the Force Majeure is a force of our own creation. It's a self-suicide operation. The waters rise, the heat touches all life, all surfaces, further increasing heat, and the resulting extinction reduces all life. So we see these three forces co-entangled as a Force Majeure, and we take the term rom legal language, which holds that a force

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[1] Center for the Study of the Force Majeure, accessed 3 October 2019<http://www.centerforcemajeure.org/>.

majeure is one that happens like a tsunami – all contracts are broken and nobody is to blame. We of course set out to redefine that: everybody is to blame. We would hold that the most important work to be done is the counter-extinction work, and it is the work of everybody. We are nearing the tipping points when our continued existence is at stake.

So the basic question is, why all the denial? Second question is, how did we go about empowering the oil industry and all associated industries, including the chemical industries and the fertilizer industries which overproduce ammonia to a degree that engenders another tipping point? We allowed all this to happen. And now that we know better, we're still not changing.

How did the Harrison Studio develop such a conceptual framing for the current environmental crisis?

In 1969 and 1970, after Rachel Carson and a whole other stuff came out into the open, Helen and I decided to split a professorship and do no work that did not benefit the ecosystem. We took the position that the kind of work we had in mind had to be done by both a man and a woman. Our feminism, which you could call eco-feminism but it's not quite that, believed that across the whole world women of all colors, even white, were repressed in one way or another and were not part of the discourse on how the world shaped itself. And the act of suppressing half of the intelligence of the world virtually guaranteed that we would go very, very wrong. All of our work begins with this. Our feminism is based upon that. The repression of females is so counter-ecological, and actually counter-human and sets up all the personal problems that come with it –the glass ceiling and all that. Basically subtracting female sensibility, intelligence, wisdom, and psyche from the overall happening of all the events in the world guarantees what we call the Force Majeure's action.

You seem to equate the dynamics of petro-capitalism and of the resulting Force Majeure, which it has unleashed, as solely the doing of the male spectrum of society. How do you understand this connection between petro-capitalism and patriarchy?

Capitalism is fundamentally counter-ecological. Nature doesn't charge a profit. Nature is rich by virtue of energy from the sun. And it works basically with photosynthesis which brings forth many things. I believe that capitalism must cease. It will self-destruct, but whether the human will survive its self-destruction or not is an open question. If it does, then the society which the Force Majeure group will propose is based upon redundancy, and based upon mama crab. I'm going to tell you a crab story.

In 1971, we failed to make catfish mate for a big exhibition in London. We got very famous for stupid reasons. But we decided to solve the problem: we found crabs and decoded their mating behavior and were the first artists to ever get an oceanographic grant. The most interesting thing about our whole operation was the mating. Suddenly, the female crab has 3 million eggs on her belly. It's called the egg mass. And typically, maybe 30 crabs live from that. That is one crab for one hundred thousand eggs. So where does the rest go? They're redundant, and many other species make use of them. That is where our wealth should be coming from, from harvesting the life web itself and by the act of harvesting to preserve the system. All other species do this in some form or other, except us. We eat up the system. It's called extraction.

All kinds of artists and critics, like T. J. Demos and others, are making a big deal about extraction. Well, so make the big deal. The question is, how do we do a complete flip, and get out of the capitalist box? It looks like we won't be able to do this in time to save most species.

I'm wondering about this redundancy. It seems that the redundancy of the crab population was predicated on a very limited amount of the crabs actually surviving. The rest of them perished, is that correct?

No, they don't perish, they are food for others. If you use the word perish, you misunderstand how the ecology works. They perish, but they are food for others. And every species over-produces, including the semen from your own balls.

But if we are critiquing capitalism here, these can be understood as surplus populations who are harvested for the benefit of the system. I think this redundancy becomes an ethical problem when we apply the analogy to people.

That's from your mind, as ethics is a human invention. We're way beyond that kind of bullshit. I refuse to have an ethical discourse; we have to have an ecological discourse. We have to talk about the wealth that comes out of the sun and how to harvest it to the benefit of the life web. I won't talk about ethics.

In your "Manifesto for the 21st Century,"[2] the Center for the Study of the Force Majeure speaks about the gap between the wealthy and the poor and the varied impacts of the Force Majeure on these demographics. You write about the fact that "The rich will continue to do well / Not true for the middle class / And devastating for the poor." Is there not an ethical statement implicit in the manifesto?

You keep bringing everything back to the human condition. Why? The whole ecosystem is dying and you bring it back to the human condition. I won't go there.

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[2] Harrison Studio, "Manifesto for the 21st Century," CSFM, accessed 3 October 2019<http://www.centerforforcemajeure.org/manifesto>.

In that case, I will bring it back to the beginning: what projects is the Center for the Study of the Force Majeure currently working on?

A Force Majeure work would be the following: The oceans rise three meters in due course, the argument is only as to when – is it going to be 110 years or 80 years? Somewhere in there is a 3-4 meter rise. When the ocean rises that much, the Bays of San Francisco become an opening into the Central Valley of California which uses irrigated farming and produces most of the vegetables in the country; at the expense of the rivers, at the expense of the topsoil. Instead, they will be flooded out, and a giant estuarial lagoon will form. If properly harvested and properly nurtured, the estuarial lagoon will produce as much protein as the Central Valley ever did. At the same time, mangroves will come, the birds will come, so a whole ecosystem will form, and a new kind of farmer has to come. The farmer will harvest the crab one time, but he will harvest bottom fish another time, and he will harvest four, five different things.

How does he determine the harvest? The harvest is determined by the overproduction of any species that would endanger the whole. So the act of harvesting preserves and enables the system. If you take too much, the system dies. If you take too little, the system is overstressed. That's a balance point that pre-literate people understood. The first people of California, the native tribes, they all understood this. We worked with some of them. So why don't we? Because we were falsely informed and falsely manipulated into believing that money had worth, and that more money had more worth. That money was power and possession of goods was power, and possession of land was power. We've been misled here, and we must start inventing anew and simultaneously learning from our ancestors who knew better. The Force Majeure group holds that power by itself is automatically corrupting. And the more power you get, the more corruptyou are, even if you do good

things. So that every act of power that we exercise has a rule: if it doesn't have an act of generosity or an act of love going with it, we don't do it.

I saw your TED talk from 2015,[3] and you broached the subject of the 'dictatorship of the ecology,' but it was quickly dropped. I would be interested if you could speak a bit more about what you meant by that.

The first time we came up with that idea was in 1975 when we were invited up to Milwaukee to be part of their center at the Great Lakes. And we thought: "There's somebody crazy here – they think they can draw a line on water." And on top of that, they *did* draw a line on water on the map. They gave half of the Great Lakes watershed to Canada, and half to the United States. You could see where the United States abused its use, and Canada was much more generous to the ecology. You can see this very easily in the land division process. But independent of that, we came up with the notion that the Great Lakes citizens of that watershed should withdraw from Canada and the United States and form a 'dictatorship of the ecology,' and that's how we came up with it.

The idea was not the dictatorship we talk about when we mention Hitler. We are talking about the *dictates* of the ecology. What does the ecology tell you to do? How come we don't listen to that instead of some damn fool politician? However, we couldn't pursue it further, because we didn't know enough. We were artists, visionaries, but we didn't know how to proceed with that insight. We thought we were right, but only some twenty years later did we understand what to do: we have to interrogate the great web of life and listen to it, and become obedient. That is what the 'dictates of the ecology' would be. All species that continue are obedient to the dictates of a larg-

[3] "A Counterforce on the Horizon," *Youtube*, 2 September 2015, accessed 3 October 2019<https://www.youtube.com/watch?v=a6UVZFQvhWc>.

er system of which they are part. If they are not, they don't continue. And we are not, so we probably won't continue.

I think that many people could read what you're saying as advocating a reversion to pre-modern methods of extraction and social organization. I am wondering whether you see a progressive potentialities of tuning into the life web, ones which could be maybe further facilitated by modern technology. Can we nowadays synchronize with the life web without the need to regress to pre-modern forms of being in the world?

If we don't, we die.

The Center is also active in the region of Sichuan in China, just on the border of the Tibetan plateau. How did you manage get the Center's projects in China up and running?

There are two China works. The story begins in 1992, when a man named Dr. Robert Livingstone, a really eminent neurosurgeon (he invented brain slicing, for example) dropped in to our studio. We were professors and we were on committees together, and he said to me, "Newton, what do you think about His Holiness' Peace Park?" Now I didn't know any Holinesses, and I couldn't imagine the Pope making a Peace Park, especially on the Tibetan plateau. And so I asked "His Holiness who?" and he replies "The Dalai Lama of course," and he said "the Dalai Lama is going to like your work," and I asked "How do you know?" And he replied that he is his science advisor. "Why don't you write him something, as he wants to do a Peace Park up there?" So I sent the Dalai Lama a poem, which between China and India, we found ecosystems in danger... And so we disassociated from the Dalai Lama, and made our proposals for the Tibetan Plateau. The proposals were ignored by both China and everybody else at the time. Al-

though we eventually re-did them in the form available now in 2005, as we were invited to be in a show honoring the Dalai Lama.

Then we started to do the Future Gardens, and we met a very brilliant Chinese ecologist, thinker, actor named Tang Ya, who was working right at the edge of the Tibetan Plateau. And we suggested to him we would do a Future Garden if he were interested and would fund it. It's moving along, but with difficulty.

What is a Future Garden?

Generally, we deal with big systems. But what is someone to do in their back yard? What can people do that would act to the benefit of the ecosystem? Every place that has survived heat in its historical past will have species in it that have the resilience to live in the now. If you search those out and grow them, then you will be growing a natural replacement with plants and life from the given place, and you're not bringing in any exotics. You will be growing a replacement ecosystem much faster than nature ever could. In this sense we assist the migration of species through time, but not through space, because the species were already there. It is a radical notion about assisting the migration of species.

So we have three or four Future Gardens going there. At the one at the edge of the Tibetan Plateau, about four or five thousand feet from the edge of the plateau, you will find species there that are happily growing in a climate much like up top, but with a + 3-5°C temperature change. These places are warmer. Tang Ya gathered a bunch of those species, moved them up to a higher place, and we are now testing their resilience. So the Future Gardens say "If you don't know what to do, plant your own future in the now." And you can do this: a good skillful botanist and some students and local folk can do it. It's not exotic, it's eco-intelligent.

There is a motto for the Center which is "think globally, act globally," and I am wondering whether there is this vision of the Future Gardens ever becoming scalable?

First of all, scalability is a dirty word. Think about it: all businesses want to scale to make their billions, and that is where that comes from. Nature doesn't scale. Nature simply occupies the space that nourishes it. So the idea of scalability is a bad idea. However, what you need for the Future Garden is just people to define a place and then begin to take responsibility for what will grow there in the future. So asking whether it could be bigger and bigger and bigger is intellectually flatulent. The idea of multiplying things is probably the reason we will die.

What was entailed in the process of developing the Future Gardens on site at the Arboretum in Santa Cruz?

The head botanist is a friend of ours in the Botanical Gardens at the University of California in Santa Cruz – his name is Brett Hall – but he works with a couple of other botanists. He himself does ancient botany. We asked ourselves whether he could find 10 or 15 species that had the resilience to group and cluster so that new ecosystems would form from it, since nature self-complicates, in a temperature of three degrees warmer, but which might be wetter or might be drier. So he went and found 21 species. We have three Bucky Fuller domes, and one dome is drier, one dome wetter and one dome the same. And then the outside is planted as well with the same 21 species, so it is in fact a nice scientific experiment. But the people who gathered it are the students and the every-day folk. It's inherently very simple.

Young people across the world are getting mobilized around the idea of climate change, or the Force Majeure, as in the

movements Extinction Rebellion or Fridays for Future. What do you think of these, oftentimes youth-driven, environmental movements?

We wrote a letter to Greta [Thunberg], but I don't think she got it. She is doing what we have been suggesting, but came at it through her own discoveries, not ours. The letter was generally as follows: "You can holler at the government all you want and tell it to do something, but the government is stupid. It doesn't know what to do, except increase people's wealth and repress those who object. And the best of the governments, like the socialist government in Denmark, are good to help the folk who live there, service the hospitals, watch out for the kids – all that human stuff. But nobody really knows what to do about the environmental mess we are in."

We will soon start twittering for the Center for the Study of the Force Majeure about this and we will be starting to propose what to do. It will be our voice, and we will start to propose. For instance, we are proposing that 'pre-emptive' planning is an imperative. Like when the waters rise: if we plan correctly, for the Bays of San Francisco the great estuarial lagoon that forms will be very profitably; but if we plan stupidly it will be an algae bloom for perhaps hundreds of years. So you need to look at the future and see into it, and then preemptively plan. It's not so difficult once you make the decision. However, making the decision to do so is difficult, because the granting agencies don't see their profit in that. Their profit is their immediate success. The second source of profit for them is scalability.

What does the Center for the Study of the Force Majeure then see as a viable way into the future?

The imperative before us is to switch resources. To restore the Mediterranean will cost about a trillion USD. To begin with,

to handle the drought across Europe, making water-retention landscapes, as we propose, will cost 1.2 trillion USD. If we don't do that, the waters rise a little bit, the drought goes up to Germany, food production drops 25%, and the population increases 10%. If we do not shift our resource-base, you have a formula for civil breakdown. The oil companies won't do this, the automobile companies won't do this, neither will the world's 100 biggest companies. That's why I think humanity is going to die.

But one last thing: Helen thought that sometimes miracles happen– that sometimes, something unexplainable or unpredictable happens to the advantage of all. This is not impossible, but I do think it is improbable.

AUTHORS

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BCAAsystem is an online audiovisual platform for music, visuals, talks and artist projects connected with new technologies and the contemporary world. Based in Prague, but reaching beyond whatever frontiers can be found, they wish to be part of the worldwide soul in terms of both content and audience. They connect musicians with visual artists in streams with their own virtual environment, uploading podcasts, and making music and art projects as a collective. The things they do are not separate entities – they combine, overlap and merge together into new ways of imaginable expression.

Vít Bohal is a PhD student at the Center for Critical & Cultural Theory at Charles University in Prague, focusing on accelerationism, western post-feminist politics, and their impact on the posthuman sensibility. He holds an MA in Critical & Cultural Theory, is a member of the Diffractions Collective (www. diffractionscollective.org) and has collaborated on numerous sonic and literary Prague-based projects (Frontiers of Solitude, 2016; Soundworms Ecology Gathering, 2018; Prague Microfest, 2018-2019). He publishes in periodicals and journals such as A2 or A2larm. He is co-editor of *Reinventing Horizons* (display, 2016) and *Allegorithms* (Litteraria Pragensia Books, 2017).

Dustin Breitling is a lecturer and PhD student of International Relations at Charles University in Prague. He is one of the founders of Diffractions Collective. He has curated Thanatropic Regressions (2014), an installation which focused on the implications of accelerationism approached through the theoretical prism of geo-philosophy, and was co-organizer of Frontiers of Solitude project (2016), the Reinventing Horizons conference (2016), or the Wyrdpatchworkshop I-IV (2018-2019). He is co-editor of *Reinventing Horizons* (display, 2016) and *Allegorithms* (Litteraria Pragensia Books, 2017).

Paul Chaney is a contemporary artist exploring alternative food systems and post collapse resilience using digital technology and public participation in gallery/museum contexts – Tate St Ives, Tate Britain, Serpentine Gallery, De Markten (Brussels), Izolyatsia (Ukraine) etc. Paul is also an agricultural consultant with twenty years of experience in horticulture and agroecology. Currently reading for a PhD at Falmouth University researching how creativity can help rural areas transition to low-carbon economics. Arts Foundation Prize runner up 2015, and Honorary mention Bloxhub Prize 2019 (Blox, Copenhagen) on behalf of DGL for smart concepts for future 'livable' cities.

Matt Colquhoun is a writer and photographer from Hull, UK. He is currently based in London and blogs at xenogothic.com. His first book, 'Egress: On Mourning, Melancholy & Mark Fisher' is forthcoming on Repeater Books in early 2020.

Digital Garden Lab is an artist-led open-source community research laboratory exploring new forms of digital augmentation to support urban community gardening and upscale the creation of 'edible urban landscapes'. DGL's focus is the development of software and hardware tools for designing and managing complex polycultural systems of horticulture—including permaculture, forest gardening, and other forms of perennial agroecology. www.digitalgardenlab.cz

Jana Gridneva has revived her MA from the Department of Anglophone Literatures and Cultures of Charles University in Prague with an MA thesis entitled Rethinking the Animal: Post-Humanist Tendencies in (Post) Modern Literature. She has been awarded a postgraduate scholarship and is currently pursuing a PhD at the Centre for Critical & Cultural Theory at Charles University. Her research is focused on the representation of animals in contemporary culture. She has participated in several international conferences including The Human-Animal Line: Interdisciplinary Approaches, organized by CEFRES and the French institute in Prague (2017), or the 6th Conference of the European Association for Critical Animal Studies (EACAS) Barcelona, Universitat Pompeu Fabra (2019).

The collaborative team of **Newton and Helen Mayer Harrison** (often referred to simply as "the Harrisons") have worked for almost forty years with biologists, ecologists, architects, urban planners and other artists to initiate collaborative dialogues to uncover ideas and solutions which support biodiversity and community development. Past projects have focused on watershed restoration, urban renewal, agriculture and forestry issues among others. The Harrisons' visionary projects have often led to changes in governmental policy and have expanded dialogue around previously unexplored issues leading to practical implementations throughout the United States and Europe.

P Hydrogynous is a member of the Diffractions Collective. As a passionate herb gardener and DIY brewer, Hydrogynous has been involved in small community gardens in the U.S. and Europe, combining green thumbs with the digital interface. Hydrogynous is an Arduino/Raspberry Pi hobbyist, writing algorithms for plants, sci-fi short stories, essays on technological, psycho- and social convergence, as well as analyzing risk for their work.

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Kateřina Kovářová is a PhD student at Charles University. Her PhD research focuses on the interdependence between American nature and culture in Cormac McCarthy's fiction. In 2018, she received EAAS postgraduate travel grant and conducted a research visit to the Wittliff Collections in San Marcos, Texas. She also received William J. Hill Visiting Researcher Travel Award, which enabled her to conduct another visit to the same archive in 2019. She presented her research at three Cormac McCarthy Society conferences, 2017 Austin, 2018 Monterrey, and 2019 Austin. She teaches at the University of South Bohemia in České Budějovice and translates English fiction.

Tomáš Mládek is an IT generalist, dabbling A/V artist and programmer by trade. As a member of /-\, he participated in their various projects and events, including Wyrdpatchwork-shops I-IV (2018 – 2019), or the Prague Microfestival 2018 as a technician, VJ, consultant and speaker. Independently, his interests revolve around aleatoric art, cybernetics, human-computer interaction, and hypnagogia. He is also currently a student of Psychology at University of New York in Prague.

Udo Noll is a media artist who graduated as a qualified engineer for photography and media technology at the Cologne University of Applied Sciences. He lives and works in Berlin and Cologne. Since the mid-1990s, he has worked as an artist and media professional in numerous international projects and exhibitions. Udo Noll is the founder and active developer of radio aporee, a project platform for the artistic research of concepts and applications related to sound, space and place, with focus on field recording. The potential of these works and materials for an experimental radio is subject of recent projects.

Paulo Tavares is an architect. He currently holds a professorship at the Faculdade de Arquitetura e Urbanismo, University of Brasília. His work has been exhibited at venues worldwide, including BAK, Utrecht; Fundación PROA, Buenos Aires; Haus der Kulturen der Welt, Berlin; and the São Paulo Biennale. He runs the spatial research agency Autonoma and is a long-term collaborator with Forensic Architecture, a research agency based at Goldsmiths, University of London.

Gry Ulstein is a PhD candidate at Ghent University in Belgium where she is a member of the ERC-funded project "Narrating the Mesh" (NARMESH), led by prof. Marco Caracciolo. NARMESH studies the representation of nonhuman realities and environmental issues such s climate change in contem-

porary literature and oral storytelling, and explores the ways in which narrative invites readers to think about and engage with ecological issues from different perspectives. Gry is particularly interested in contemporary weird literature as an expression of ecological anxieties.