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**Becoming Environmental:
Media, Logistics, and Ecological Change**
(eds. Patrick Brodie, Lisa Han, Weixian Pan)

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An Online Journal of Film and Moving Image Studies

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Contents

SPECIAL ISSUE

Becoming Environmental: Media, Logistics, and Ecological Change

Introduction Becoming Environmental: Media, Logistics, and Ecological Change.....6 Patrick Brodie, Lisa Han, Weixian Pan	6
Michelangelo Antonioni's Images of the Planet in the Anthropocene.....15 Peter Lešnik	15
Spatial Survey: Mapping Alaskan Oilfield Infrastructures Using Drones.....32 Ila Tyagi	32
Senses of Place at the Border: Visual Cultures of Mobility at Canadian Airports.....45 Sydney Hart	45
The Making of Urban Computing Environments: Borders, Security and Governance.....54 Ilia Antenucci	54
Distributed Resistance, Streamlined Silk.....65 Solveig Suess	65
Coastal Media Dossier (edited by Alix Johnson)	
Introduction to Coastal Media.....81 Alix Johnson	81
The Shoreline.....83 Liz Miller	83
Coastal Communications.....86 Shirley Roburn	86
Kelong: Politics for Life in the Johor Straits.....88 Zahirah Suhaimi	88
blóm + blóð.....91 WhiteFeather Hunter	91
Forum	
SwampScapes: A Creative Practice of Commoning in Florida's Swamps.....95 Liz Miller, with Kim Grinfeder, Evan Karge, and Grant Bemis	95
A Conversation on Media and Logistics.....104 Deborah Cowen and Kay Dickinson, interviewed by Patrick Brodie	104

Book Reviews - Becoming Environmental

Richard Grusin (ed.). *After Extinction*.....112
Léa Le Cudennec

Michael Osman. *Modernism's Visible Hand: Architecture and Regulation in America*.....115
Tyler Morgenstern

Derek P. McCormack. *Atmospheric Things: On the Allure of Elemental Envelopment*.....118
Miguel Penabella

Sara Ann Wylie. *Fractivism: Corporate Bodies and Chemical Bonds*.....120
Miles Taylor

Festival Reviews

FNC 2018: Festival Gender Politics after #metoo.....125
Ylenia Olibet

Vision Festival at Tufts: Free Jazz/Social Justice.....130
Matthias Mushinski

TAAFI Industry 2018.....135
Elena Altheman

'Yours in Sisterhood': Rethinking the Feminist Archive at RIDM 2018.....138
Lola Rémy

Poetics of Chance: Soda Kazuhiro's Retrospective at RIDM 2018.....142
Marco Meneghin

Les Sommets du cinéma d'animation 2018: A Network of Animated Bodies.....146
Cole Armitage, Victoria Berndt, and Alexandre G. Vermeil

Hump! 2018.....151
Jordan Gowanlock

Notes on Contributors.....155

Thanks to Synoptique Reviewers.....160

vol. 8
no. 1

Becoming Environmental

Media, Logistics, and Ecological Change

Patrick Brodie, Lisa Han, Weixian Pan

Just west of the University of California, Santa Barbara campus is an open trail along the bluffs, daily traversed by local surfers, students, and faculty. Sandwiched between a wide mountainous backdrop inland and stunning sepia-colored sunsets offshore, the route is one of the region's most picturesque. Equally part of this landscape, however, is the row of oil platforms roughly two to three miles offshore that give the area its name: Coal Oil Point. Formerly occupied by indigenous Chumash communities, Coal Oil Point has been a productive drilling area since the 1920s, and retains with it the menacing memory of the 2015 Refugio Oil Spill by Platform Holly—still visible on the horizon in the glittering sun—and the 1969 Santa Barbara Oil Spill before it. It has taken three years just to begin the long process of decommissioning Holly, due in part to the operating company filing for bankruptcy in 2015. In 2018, the process was finally revived, acting as a testament to the burdensome logistical, economic, and political undertakings necessary to shut down extractive infrastructures. Save for the sticky wads of black tar wedged into the sandy beaches below, today, the struggles between local residents and infrastructural operators feel remote and largely invisible to the average visitor. Residents often rely on social media to circulate information to the public and to one another, while infrastructural operators interface with the software of media. While sometimes failing to articulate just how entangled these spheres of conflict and activity are, stories

of sticky encounters between extractive industries, environmentalists, and local residents continue to proliferate globally in our media ecosystems, whether in the form of indigenous protest against gas pipelines, outcries over polluting data centers, or attempts to manage desertification brought about by anthropogenic activity.

Media—traditionally thought of as the stuff of paper, screens, code, and wires—are inextricable from their frictive landscapes of resource depletion, protest, social inequality, and environmental risks. Today, scholars and activists not only re-evaluate the infrastructural and environmental basis of global media systems but further critique modernity's division of nature and culture and its implication that becoming digital necessarily entails a becoming *less* environmental. Building on these critiques, this special issue of *Synoptique* highlights the critical tractions of Jennifer Gabrys' notion of "becoming environmental" (2016), where computational media becomes constitutive to the very environment, and subject formation within it, rather than treating the environment as merely a backdrop to operations. By taking on the language of "becoming" here, we not only acknowledge that social and political imaginaries of both built and natural environment are always in a *process* of constitution, as are the subjects relating to the world. But also, we attend to how emerging human/nonhuman relations are constantly re-configured, if not naturalized, via the state, global market, or other ideological projects. Put differ-

ently, while the infrastructures of media become increasingly embedded within the everyday practices and conditions of living, new governance of life and environments rely on instrumentalizing and extracting from existent life-worlds, materials, atmospheres, and elemental circulations, all of which represent crucial points to identify, unpack, and push against the forces of capital that co-exist within any “logistical” space.

Such conceptual thinking calls attention to the importance of media practices—from visualization, to mapping, to documentary—in constituting social relations and sociotechnical imaginaries. Ecocritical scholarship argues that film and media have always been environmental, in the sense that they articulate “the human-nature relation and its mediation through technologies” (Cubitt 2014). Yet, the intersection between a critical media studies framework and an environmental or infrastructural one transcends the ambit of representational discourse. The perspective of environmental media studies seeks to illuminate the ways in which environments participate in media functions such as storage, processing, transmission, and communication, as well as to attend to the ecological footprints of media objects and infrastructures themselves. The connotations of media thus play in diverse ways, thinking through the mediatory roles of objects that are geological, biological, and atmospheric, in addition to technological. Moving from this critical impetus, we follow Nicole Starosielski’s call to extend “the environment to encompass the social, architectural, and natural ecologies” (2016, 21) through which information circulates and infrastructure surfaces. As these environments come to be saturated with media and information in material and immaterial registers, we must re-evaluate categories that continue to appraise a so-called “natural” environment.

Numerous scholars in the humanities, especially those within the Marxist tradition, have investigated the relationship between capital and Nature (with a capital N). Neil Smith (1984) argues that the Hegelian categories of first and second nature are useful in articulating the intensification of capital as its reserves of value extraction shift elsewhere. In this process, “first nature” (traditionally conceived as the “natural environment,” or Nature with a capital N) comes to be produced (or so deeply intertwined as to be inseparable) from Society. David Harvey (2003) famously articulated

what he called “accumulation by dispossession,” the process by which “new imperialist” formations operate within a financialized global economy. Here, he conceives the Marxist originary myth of “primitive accumulation” as an ongoing process of dispossession, through spatial development, reduction and refusal of rights, the displacement of populations, the exploitation and extraction of natural resources, and the like. Political ecology approaches to capitalism’s entanglement with the environment have also moved beyond more traditional Marxist discourses of production and humanity’s control over nature (Moore 2015; Robbins 2012), with some putting forth the concept of the “capitalocene” over more popular discourses of the “Anthropocene” (Moore 2017). But key within each of these scholars’ arguments is the conceptual apparatus of “modernity” and “postmodernity” as progressive developments unevenly experienced across time and space. While these scholars would perhaps challenge more uniform theses of “uneven development” which fail to account for the capture of particularities, each primarily takes a Marxist approach for granted as a framework for understanding ongoing processes of colonization and resource extraction from the natural environment.

But although such scholars have attempted to articulate the entanglements of capital within the natural world, there is a fundamental disconnect between Marx’s ascriptions of value creation, dispossession, and the question of colonialism. Thus, many have convincingly and expressly revitalized the concept of dispossession and the centrality of colonialism within it, whether in terms of Harvey’s idea of continuous “accumulation by dispossession,” or economies of abandonment (Povinelli 2011), dispossession (Byrd et al. 2016), and disposability (Tadiar 2013). At the center of the latter concepts are struggles of indigenous peoples in settler colonial states against the extractive partnerships of states and transnational corporations. In the case of Povinelli, the primary culprit is what she calls “late liberalism’s” approach to recognition and reconciliation, which operates from an intertwined legacy of modernity, colonialism, and the treatment of indigenous land and value. Lisa Lowe’s concept of *intimacy*, brought up by Deborah Cowen in her conversation with Kay Dickinson in this issue, offers an alternative vision of histories of modernity across the colonial

world. Western modernity, Lowe argues, is always built on colonization, enclosure, and extraction from the non-European world, whose dominant concepts of intimacy were tied up in norms of the liberal private sphere, in other words, “property, marriage, and family” (2015, 29). The legacies of liberalism in the governing of colonial difference prevents alternative formations from arising, but these formations arise still, and “frame[s] this sense of intimacy as a particular fiction that depends on the ‘intimacies of four continents,’ in other words, the circuits, connections, associations, and mixings of differently laboring peoples, eclipsed by the operations that universalize the Anglo-American liberal individual” (21). Intimacies—dispersed solidarities and actions across oppressed peoples within imperial networks—are as important to unpack as the networks themselves.

Rethinking notions of intimacies also foregrounds various struggles over the commons, which is often articulated across Marxist discussions of capitalist enclosure, the state, and Garret Hardin’s “tragedy of the commons” (1968), that is, the destruction of a commons by individual self-interest. But the idea of an environmental commons offers revisions to these imaginaries. As the Anthropocene converges with neoliberal capitalism, the perception of immanent disaster brings with it a spectacular return of primitive accumulation, as cycles of extraction and depletion accelerate to extend a world for modernity. Global modernity and capitalist expansion also bring about displacement, deterritorialization, and contestations over belonging, fundamentally altering the possibilities for intimate encounters with nature on a local level. As such, the challenge becomes that of creating a notion of identification and cultural intimacy with the environment on a global scale without merely bowling over local and embedded forms of knowledge (Tsing 2004; Heise 2008). Lauren Berlant tackles this problematic by focusing on belonging as a contested relation in a broken world. In particular, Berlant holds the concept of the common under scrutiny, arguing that as a performative and often conflicted ideal, it papers over the redistribution of insecurities that underlines politics today by “positivizing the ambivalence that saturates social life about the irregular conditions of fairness” (2016, 395). Berlant’s idea of the “common” can mobilize around people, principles, or land. Berlant puts “common” in conversation with “commons,”

which also invokes the universal, but frequently stresses political struggles around resources, lands, and divisions of property.

As scholars like Michael Hardt and Antonio Negri, Isabelle Stengers, and Jodi Dean have also described, related social practices like environmentalism, communal management of natural commons, collective bargaining, and struggles against land expropriation constitute new communist practices. For Berlant, these performative and often idealistic invocations of the common are a lens through which to view the struggles of living with “messed up yet shared and ongoing infrastructures of experience” (2016, 395). In her own contribution within this collection, Elizabeth Miller mobilizes David Bollier’s notion of “commoning” to describe a related mode of resistance to extractive market logics, in which social connections and connections to nature are emphasized. Miller deploys commoning as a pedagogical tool for her case study on Florida swamps, but such struggles over the common can also be seen in resistance practices such as the privatization of water and biopiracy in the Amazon.

However, Sandro Mezzadra and Brett Neilson (2013) explain that natural and artificial commons require different kinds of organization, distribution, and management processes achieved through the infiltration of calculative and preemptive technologies into natural environments. In *The Extractive Zone*, Macarena Gómez-Barris discusses the ways in which extractive capitalism relies on advanced technologies to map and earmark biodiverse and/or indigenous territories for commodity conversion: “If colonial seeing first appeared as administrative rule over peoples and land, then in the digital phase, extractive states currently dispossess through new technologies” (2017, 26). Mezzadra and Neilson build on this to say that the high-tech regulation and management of such commons also necessarily leads to an interrogation of borders. As capital expands its frontiers, borders and commons come into contest with each other, bringing about a “primitive accumulation of modern cartography,” gesturing towards the mutual production of capital and geographic border zones. In this sense, negotiations over the commons, managerial and logistical technology, and border regulation collide at zones of extraction.

But although extractivism conceptually covers many of the logics underpinning liberal cap-

italism's expanding dynamic of value extraction, and its violence, displacements, and colonizations, such technologies of governance do not function without the cooperation of various actors across state borders and within certain territorial formations. Mezzadra and Neilson posit the importance of the intersection of "extraction, logistics, and finance" in the global economy (2015), by which these various methods of territorial control and value extraction attempt to re-organize space and time for their seamless operations. A deeper study of how these "operations of capital" function allows us a way to see where the extractive measures of finance and logistics "hits the ground." This requires constant negotiations between states, supra-national regulators, and transnational corporations to ensure that the infrastructure of global trade facilitates smooth circulation. But as "rough trade" comes across these various barriers and challenges, the practical and militarized managerial science of "logistics" comes to the fore.

A growing body of work on logistics as both global infrastructure and managerial philosophy articulates the stakes of studying the flows of goods, people, and capital through the world's roadways, railways, seas, and skies. Governments, corporations, and scholars alike has recently focused on the "frontiers" of these infrastructures, the newly paved (silk) roads and emergent paths for the movement of goods. The Arctic North as much as the "developing" world are in the crosshairs of how governments and corporations see the future of global mobility. From the water routes opening across the Arctic ice to new routes of road and rail being built across Asia, logistics fundamentally alters the geopolitical and planetary landscape.

At the heart of these discussions are the operations/dynamics of space and territory in an increasingly privatized, zoned, and cordoned off global landscape. These processes of containment and control are part of an ongoing slippage between corporate logistics and state securitization that manifests in the prioritization of productivity, economy, efficiency, and the predictability of movements—both of people and of goods. As Gilles Deleuze predicted in his "Postscript on Societies of Control" (1992), the discipline of industrial society gives way to the tracking and control mechanisms of computerized governance and commerce, by which the human subject becomes a

raw resource for data extraction, whether we look at smart cities, the internet of things, or the darker logistical media of biometric tracking, whether in borders, Amazon warehouses, or around your wrist while exercising. Such regimes of management also include sorting mechanisms, demarcating the norm from what constitutes unacceptable aberration in what becomes "an exceptionalism that operates within liberalism" (Bigo 2006, 36). That is, as Deborah Cowen points out, logistics seems to operate in the same ungovernable spaces as piracy, traditionally treated as an exceptional legal condition since the earliest iterations of Western law (2014, 138-139). The pipes, cables, and atmospheric circulations of these technologies course through air, seas, and skies. The fact that the category of the piratical has long since extended to the internet, where media piracy and other piratical activity flits transnationally across boundaries in a "lumpy landscape" (Lobato 2012) of jurisdictions, legalities, ownership regimes, and the like, attests to the fact that our global infrastructures are always circulating with unruly forces of movement as well as the powers of stoppage, breakage, blockage, and containment. Struggles over who gets to determine how and where these infrastructures are built, how they move information and material, and most importantly, who profits from them, are often centered around public knowledge campaigns and attempts to (retake) control of narratives of access and ownership. Material infrastructures like these which distribute material of value often elude visibility—a condition that obscures both their role in perpetuating inequalities and violences, as Cowen argues, as well as their precarity and their environmental contingencies. Such infrastructures also play a crucial role in the technical and conceptual production of governance, as objects like dams come to act as colonial and postcolonial cultural forms (Larkin 2008). The logics of modernity and liberalism pervade mainstream discussions. However, with these struggles, different practical and conceptual apparatuses must be constructed to better understand how alternative regimes of sovereignty, ownership, and governance can be imagined. Building on the scholarship of Lisa Parks, Nicole Starosielski, Mel Hogan, among others, our attention to logistics and infrastructure thus aims to articulate the social, political, and cultural negotiations of infrastructure to their environmental landscapes.

Thus, this special issue contributes to emergent research that advances what Charmaine Chua et al. define as a “critical logistical research agenda,” which “interrogate[s] how the politics of financial, corporeal, and material movement reorganizes social relations with and against profit and power” (2018, 621). The work of scholars such as Cowen, Jasper Bernes (2013), Joshua Clover (2016), Anna Curcio (2014), Carolina Bank Muñoz (2017), and Jake Alimahomed-Wilson & Immanuel Ness (2018) are indispensable resources in terms of mapping the anti-capitalist and decolonial terrains on which workers and communities struggle within the arcane networks of global logistics. It is essential to keep tabs on the constant tension between the locality of these struggles (from scattered ports to border regions disconnected from infrastructure) and the global connections of workers’ conditions. As Alimahomed-Wilson and Ness argue, “The exploitative material conditions inherent in global trade become lost when workers’ perspectives, conditions, and struggles are ignored” (2018, 4). The academic study of logistics must always remember that our departments, our hallways, our funding, is so often shared with those producing the forms of knowledge that ensure workers’ subjugation within the global supply chain. Deborah Cowen and Kay Dickinson discuss this in their conversational interview in this issue, and argue the stakes of logistics within local and global struggles as well as how we, as scholars and activists, deal with knowledge. While many of the pieces in this special issue address the global and planetary imaginaries of logistics and the modes of seeing, producing, and extracting value from the environment, others—especially those in our special section on “Coastal Media” and Liz Miller’s separate contribution on her *Swampscapes* project—articulate modes of resistant aesthetic and activist practices towards more ethical and sustainable social and environmental relations.

But an intervention that we wish to make here in our study of logistics is that the environment is always-already embedded within the networks of social relations that mobilize workers as much as subdue their struggles. The environment is a terrain of labor struggle, and it is essential that we expand this understanding of work to include the protection of the global commons, even if we must also restructure our own academic understandings of such commons to account for

non-western epistemologies of work and human relations to the environment. Thus, various struggles against expanded extractivism, oil pipelines, fishery exploitation, mining, dredging, and various other environmentally catastrophic enterprises, even in deprived areas, need to see through the short-sighted state and government promises of jobs, access, and investment in order to account for the co-existence of human and non-human agencies within the future of the planet. While certainly “circulation struggles” (Clover 2016) in the sense that they respond to the circulatory organization of global capitalism’s production of value, these are simultaneously struggles against Western sovereignties and control over the global commons. Perhaps it is time to supplement the focus on labor with an understanding that capitalism, liberalism, and colonialism work together to incorporate both human labor and environmental agencies into their expanding dynamics of territorial control and value extraction while expelling those materials and subjects deemed disposable to its calculative rationality.

With these larger issues in mind, the first half of the special issue features five original articles that examine the distinctive ways media—from cinematic apparatus, drone technologies, urban computational networks, and regimes of visibility at airports to transnational infrastructures and logistics—become environmental, entangled in global economies of extraction and the drastic ecological change. Peter Lešnik’s piece “Michelangelo Antonioni’s *Images of the Planet in the Anthropocene*” re-accounts the significance of Antonioni’s cinema to current debates of the Anthropocene and to “address the experience of living in a post-humous time.” As Lešnik argues, Antonioni’s cinematic imaginary of the deserts in the 1960s and 1970s both prefigures “the ethical and philosophical tasks of the Anthropocene” and reconfigures the end-of-the-world scenarios produced by mainstream entertainment industry. Shifting the focus from deserts to oilfields, Ila Tyagi’s “*Spatial Survey: Mapping Alaskan Oilfield Infrastructures Using Drones*” investigates how drones are used to map, visualize, and monitor large-scale spatiality that is entangled within global resource industry, military complex, and civil technologies. Tyagi pinpoints the neo-colonial control over the natural world through automated visions, often driven by corporate interests, but at the same time, a collab-

oration of military and civil sphere in monitoring human bodies in visual fields and actual ecological risks. Sydney Hart's "Senses of Place at the Border: Visual Cultures of Mobility at Canadian Airports" brings these risks much closer to home, where airports become the frontline to control transnational mobility. As Hart elaborates, as the most important border space in the 21st century, airports exemplify how surveillance technologies and visual cultures of display work together to manage how humans experience mobility and the sense of identity. In her article "The Making of Urban Computing Environments: Borders, Security and Governance," Ilia Antenucci offers a critique to the discourse of smart city as a seamless space and examines how urban digitization in Cape Town is in fact developed through proliferating bordering techniques and processes that reproduce existing social borders and infrastructural inequality. She further argues that smart cities should be seen as security projects because "they are informed by a logic of anticipation and preemptive risk management." The section concludes with Solveig Suess's "Distributed Resistance," a timely intervention for "a more ecologically informed understanding of logistical media" through the New Silk Road project. Echoing the call to bring together postcolonial and environmental theories, Suess returns to the unsettling deserts, this time in Xinjiang, China, to investigate the management of sand, weather patterns, and logistics at various scales and different directions of movement. Therefore, she argues, supply chain development is contingent upon state support, concentration and monopolization of capital power, and the organization of weather and the environment itself.

The second half of this special issue constitutes a variety of creative and activist-leaning approaches to media and environmental politics. The first contribution is a dossier compiled by anthropologist Alix Johnson entitled "Coastal Media," which collects short pieces from artists, researchers, and activists looking at the entanglements of humans, media, and the environment along the world's coastlines. Taking a cue from Starosielski's influential work on underwater cable infrastructure, as Johnson articulates, "These creative and experimental interventions probe the liveliness, as well as the volatility, of the coastline. Coasts, after all, are zones of productive encounter as well as spaces of risk, threat, and violence." Her collaborators

are more than up to the task, emphasizing the productivity of coastal encounters while highly sensitive to the fragility of these ecosystems often under threat by anthropogenic forces. Liz Miller's interactive *Shore Line* project brings much-needed attention to these areas, presenting users with an opportunity to explore collaborative projects dealing with these environments and their crises. Shirley Roburn revisits the concept of "communication" and the ongoing process of underwater regulation to protect species from the largely military technologies that disrupt these sonic environments. WhiteFeather Hunter's contribution outlines the video project "*blóm + blóð*," which investigates the entanglement of culture and the landscape in opposition to touristic imaginaries of Icelandic life. And finally, Zahirah Suhaimi-Broder provides us with a vivid description of the clash of traditional and industrial fishing practices in the Johor Straits.

The following two contributions offer more conversational approaches to the topics of media, logistics, and the environment, featuring collaborative discussions about the politics of research at the intersections of these various areas. Elizabeth Miller's collaborative piece with Kim Grinfeder, Evan Karge and Grant Bemis, entitled "SwampScapes: A Creative Practice of Commoning in Florida's Swamps," details a project that Miller embarked upon while a visiting researcher in Miami. Her and her collaborators, largely students, used media and artistic practice to visualize and engage with a largely forgotten ecosystem—swamps. Using the concept of "commoning," Miller and her collaborators present us with an array of possibilities for working with environments facing irreparable damage from anthropogenic forces. Similarly, the conversation between Deborah Cowen and Kay Dickinson focuses largely on the theory and practice of research on logistics. Investigating the field as a "trendy" object of study, Cowen and Dickinson detail their own research philosophies, re-grounding the debates in labor politics. Throughout the conversation, the politics of knowledge creation itself are foregrounded, stressing the importance of activism and collaboration between academia and on-the-ground struggle. In relation to this special issue's broader intervention in the field, this illuminating conversation articulates the stakes of the study of logistics as an ongoing field of struggle.

The book review section of this issue continues to highlight recent debates around extractive futures, environmental reconfigurations, and contemporary technical/infrastructural productions. Speculation comes to the fore of the Anthropocenic imaginary in Léa Le Cudenec's review of Richard Grusin's *After Extinction* (2018) in which Grusin's volume makes important linkages between extinction and large-scale ideologies like capitalism, race, ability, utilitarianism, and geologic subjectivity. Meanwhile, Miles Taylor's review of Sara Anne Wylie's *Fractivism* (2018) takes a deeper dive into the neoliberal debates around fracking, critiquing Wylie's own privileging of information collection as a bulwark against industry abuses of the environment. Miguel Penabella's review of Derek McCormack's *Atmospheric Things* and Tyler Morgenstern's discussion of Michael Osman's *Modernism's Visible Hand: Architecture and Regulation in America* both, to some extent, deal in the relationship between built and natural environments. Penabella zeroes in on McCormack's analysis of balloons as mediums of atmospheric transmission and meditations on intangible elemental mediums, while Morgenstern points out the ways in which Osman's historical interest in the architectural modulations of temperature and simulated biotic environments draws attention to the social dimensions of environmental technology, logistics, and infrastructure.

In this special issue, we hope to advance the projects put forth by both our own authors and others working through these dynamic fields. Intimacies and solidarities must be built across platforms, between the institutions within which we study, the industries we study, and the communities they affect. This project cannot remain within the pages of a journal, but we hope that the works collected here, and the processes through which they were collected, contribute to an ongoing discussion and collection of knowledge around fighting for and building a better collective future. Through understanding the local, transnational, and global ways in which capitalism entangles itself with the environment, we can better understand how to meet—and where scholars, artists, and activists are already meeting—these challenges to nature and the common where they hit the ground, on the ground.

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Michelangelo Antonioni's Images of the Planet in the Anthropocene

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Contemporary visual cultures, and the entertainment industry in particular, tend to present the end-of-the-world scenario connected to the rising awareness of the Anthropocene as a forthcoming possibility. The projection into the future of the demise of the world's sheltering function manifests the disavowal of the irreversibility constitutive of the Anthropocene's inception. This fundamental denial conceals the central paradox of the new geologic epoch, namely the fact that the subjugation of the Earth's geologic temporalities to human agency and chronologies – the apparent subjugation of “Natural History” to “Human History,” as Dipesh Chakrabarty puts it – marks at the same time the definitive demise of the anthropocentric illusion.¹ Global Warming and the current, polymorphous environmental crisis – the most overt epiphenomena of the transformation that the Anthropocene names – unveil the radical powerlessness of a humanity facing unprecedented ecological transformations. While it seemingly culminates atavistic anthropocentric delusions about ontological privilege and exceptionality, the Anthropocene simultaneously exposes their groundlessness.

The disavowal of irreversibility is symptomatic of the larger dimension of denial in which contemporary multimedia conglomerates operate. To preserve the withering delusion of the Earth as the home of the human being, an insistent equation between the extinction of humanity and the annihilation of the planet is displayed within the genre of the “cli-fi” (climate change fiction).² This equation obscures the orb's autonomy from the subsistence of the anthropomorphic life inhabiting its surface. Denial is as well operative in the erasure of the differential degrees of culpability and vulnerability connected to the advent of the Anthropocene. An erasure that disguises the salient contradictions in terms of geopolitics and social justice related to the unequal responsibilities for the anthropogenic modifications to Earth's crust and climate, along with the unfair distribution of their repercussions.³ Through the representation of a threat to the planet – and therefore to the entirety of humankind – the entertainment industry accomplishes the unification of the species into a single whole. In assembling this nonpolitical unity, disaster movies obfuscate the particularism of the specific form of life – that of the American middle class – for which they claim a universal status. Finally, the industry's ultimate act of denial is also its most perverse. The cataclysmic dread nurtured by Hollywood cinema frequently transposes the actual living conditions of the poorest regions of the planet into imaginary future scenarios involving the global North.⁴

Michelangelo Antonioni's cinema of the 1960s and 1970s articulates a reflection on the demise of anthropocentrism, which offers a perceptive counterpoint to the culture of denial fostered by the entertainment business. Embracing the desert as privileged setting and key imaginary geography, in the films he shot

between 1964 and 1975 Antonioni visualized the planet's indifference for the human being. The emphasis on the imaginary of the desert in Antonioni's cinema of the 1960s and 1970s alludes to a condition – the *worldlessness* of the Anthropocene – whose inception the filmmaker presents in terms of irreversibility. Identifying the end of the world with the collapse, in the very first place, of a conceptual and ideological construct, Antonioni prefigures what Timothy Morton considers the crucial ethical and philosophical task of the Anthropocene – or, in Morton's terms, the “Age of Asymmetry” characterized by the acknowledgement of the influence and “demonic agency” of the “hyperobjects” (global warming, Styrofoam, plutonium, etc.) (Morton 2013).⁵

Jennifer Fay opens her riveting book on cinema and the Anthropocene precisely by highlighting “the difficulty of disentangling the state of the planet from the status of the refuge” (Fay 2018, 1). In her reading, an analogous capacity to reveal the world's inhospitality equates cinema and the new geologic epoch. Making the familiar seem strange, they both unmask the illusory consistency of the planet's sheltering function, while offering an “alternative, denaturalized history of the present” (19). In light of the case studies Fay examines, Antonioni's desertic films can be understood as an attempt at visualizing, and coming to terms with, an “everyday Anthropocene” (Fay 2018).⁶ Estranging the familiar experience of the world, the imaginary of his desertic cinema maps the infiltrations of Anthropocene consciousness – the consciousness of living in a time posterior to the end of the world – on the everyday scenarios of our lives.

While catastrophic imaginaries play a primary role in the visual cultures and critical discourses of our age, today there seems to be a significant lack of alternative visions of the end of the world. The importance of reassessing Antonioni's desertic cinema at this point in time has also to do with his invitation to imagine life at the end of the world in the form of an ordinary experience, as the ineluctable, given condition on the non-anthropocentric planet that we inhabit. The catastrophism of the cli-fi genre fundamentally works towards reinstating anthropocentrism, and aims at mitigating the radical uncertainty in regards to the fate of humanity and culturally sanctioned lifestyles and modes of being. Catastrophic phantasies imply an exceptional event that would clamorously disrupt anthropocentric privilege, but which they exorcise by firmly locating such an event in a time yet to come. Antonioni's desertic films instead convey the uneventfulness of the end of the world, portraying it as the unspectacular transition to the awareness of living in non-anthropocentric, inhospitable, and potentially hostile environments.

Tackling the crisis of notions of world and worlding, Antonioni's everyday anthropocene has addressed the experience of living in a posthumous time pervaded by the “sense of being after the earth, after conceptions of humans as emerging from the earth, and after all the notions of the earth as home of ours” (Weinstein and Colebrook 2017, 6).⁷ By foregrounding the imaginary of the desert, these films question notions of nature and the world as either a home to the human being or the static background against which human actions occur. For they stress the problem of inhabitation in conjunction with the avowal of a posthumous life on the planet, Antonioni's desertic films foreshadow the problem of a viable coexistence – both among humans and between humans and nonhuman beings – in the age of the Anthropocene. In this sense, Antonioni holds a privileged position among contemporaneous art-house filmmakers. If the main concern of modernist film directors in the 1960s and 1970s is a critique of modernity focusing on the relationship between the individual and larger social structures, Antonioni's desertic films enlarge as well as displace such critique onto individual and social interactions with physical environments that are not only transformed through anthropogenic modifications, but which also, in turn, affect humanity in unforeseeable ways.

In the first part of this essay I briefly detail the inception of Antonioni's desertic cinema, highlighting its specificity in relation to his previous filmography. I thereupon engage in a close analysis of *Zabriskie Point* (1970), which I posit as the crucial juncture in the articulation of the filmmaker's imagistic forecast of the Anthropocene and in his reflection on the vital potential of the imaginary in molding our relations with the otherness of an unhomely planet. By illuminating the investment of Antonioni's desertic cinema in the transformative potential of the image and the imaginary, my aim is to provide a positive answer to the provocation launched by Pietari Kääpä and Tommy Gustafsson: “Perhaps the real and most pertinent question we should ask is not how cinema can make a contribution to global ecopolitics but whether, ultimately, it can do something beyond raise awareness” (Kääpä and Gustafsson 2013, 4).

Climatescape Change

The advent of the visionary figurations of the Anthropocene in Antonioni's cinema is announced by the transformation – occurring within *Il deserto rosso* (*Red Desert*, 1964) – of the fundamental “climatescape” shaping his filmmaking in stylistic, narrative, and affective terms. Geoffrey Nowell-Smith has coined the notion of climatescape to account for the centrality of weather and climate in Antonioni's cinema. He differentiates an “autumnal or wintry climatescape” (characterized by fog and cold) and a “summery climatescape” (defined by an enhanced luminosity), which alternate throughout Antonioni's filmography, in a cyclical return that mirrors the rotation of the seasons (Nowell-Smith 2015).⁸ Adapting the notion of climatescape to a larger periodization within Antonioni's filmography, I instead propose distinguishing the two fundamental climatescapes that inform his cinema between 1947 and 1975 according to a chronological criterion into a fluvial (1947-1964) and a desertic climatescape (1964-1975). The decisive transformation in Antonioni's filmmaking that I am describing in terms of a climatescape change reflects a fundamental transition of his cinema from the self-enclosed dimension of place to the awareness of an ominous, but inescapable planetary interconnectedness. Thus reconceived, the notion of climatescape not only alludes to the elemental properties of profilmic spaces and their physical geographies. It also indicates, more broadly, a set of narrative, stylistic, and affective components that cohere around the Italian (1947-1964) and foreign (1966-1975) locations of Antonioni's films. I hence argue that, through the transitional moment represented by *Red Desert*, a fluvial climatescape (1947-1964) recedes in front of a climatescape structured around the imagery of the desert (1964-1975) – most recognizably in *Red Desert*, *Zabriskie Point*, and *Professione: reporter* (*The Passenger*, 1975).

Giuliana Minghelli suggests reading Antonioni's early films in close connection to the atmospheric qualities of the landscape of the filmmaker's youth – the Po River Valley, and, more specifically, the Po di Volano region – and she describes them in terms of “fluvial cinema” (Minghelli 2013).⁹ Minghelli maps the intimate correspondence between the materiality of the environment in which Antonioni grew up and the formal innovations of his cinema with reference to style and narrative organizations: “[the] fluvial understanding of reality as perpetual motion [occasions] a new cinematic vision and mode of storytelling that combines the faithfulness to the profilmic space and a formal search for an alternative ‘earth-bound’ vision of modernism” (Minghelli 2013, 134). According to her reading, Antonioni's fluvial cinema culminates with *Il grido* (*Outcry*, 1957), but I would like to extend Minghelli's definition to include the three films that Antonioni shoots in the early 1960s: *L'avventura* (1960), *La notte* (1961), and *L'eclisse* (1962).¹⁰ Whereas these films initiate a progressive deconstruction of the earth-bound vision of his earlier cinema – most notably by disrupting Antonioni's almost exclusive use of long takes and complex tracking shots that secured an uninterrupted, embodied vision – at the same time, they preserve the rigorous faithfulness to the profilmic space distinctive of his previous films.¹¹ Only with *Red Desert* would he emancipate the cinematic space from the limits of his vow of faithfulness towards the contingent, material historicity of place.

In addition to the stylistic continuities linking Antonioni's triptych from the early 1960s to his antecedent work, these films also retain the dominant affective undertone of the earlier pictures, and further develop their core themes. The triptych heightens the unbearable, and yet unsolvable anxiety affecting the characters of Antonioni's previous films. This underlying affective current, connected to the dreaded dissolution of traditional ways of life and the certainties of a familiar world, is attached to the three leading thematic threads in Antonioni's fluvial cinema: life and experience in a world on the verge of dissolution; the vanishing of the elsewhere, understood as a salvific dimension of exteriority; and the threat of disappearance looming in multiple forms over the characters. Throughout this phase of his career, Antonioni paired the documentation of the progressive deterioration of physical and social landscapes in northern Italy with the scrutiny of the crumbling existential horizon of its inhabitants.¹²

A dramatic opening of this (territorially, socially, and culturally) self-enclosed space occurs in the dazzling final sequence of *L'eclisse* (1962), the film that immediately precedes *Red Desert*. *L'eclisse* narrates the relationship between Vittoria (Monica Vitti) and Piero (Alain Delon) and concludes with their missed encounter. Or, more precisely, the film ends with a seven-minute sequence composed of views of the Roman EUR district, in which Vittoria lives. Long and extreme long shots of the urban landscape alternate

with close-ups of quotidian things and extreme-close shots emphasizing the material aspects of diverse objectual surfaces. The viewers recognize places and unremarkable objects (a barrel, a tree, a wooden fence, a storm water drain etc.) that have previously appeared on screen. Yet, these are now seen in an utterly new light; estranged through daring geometrical compositional choices, unconventional framing and camera angles, and the sense of scalar incongruity kindled by the extreme-close ups. The sequence's fragmentary and disjunctive editing style similarly prevents the creation of a coherent space, and thus dismembers the spatial integrity of locations previously known to the spectator.

The prosaic existence captured in the views of the district is also imbued with a disquieting mysteriousness by the menacing quality of the soundscape. Throughout the film, Antonioni refrains from the use of nondiegetic sound. Its inclusion within the final sequence suggests that it applies to it a figural, rather than literal (realist), interpretative framework. The minimalist score for piano, based on repetition and intensification, engenders an excruciating sense of expectancy, reinforced through the characters' blocking in the central section of the sequence. Antonioni frames a series of individuals seemingly waiting for somebody to arrive. As the filmmaker immobilizes them in self-absorbed postures that adumbrate an anxious anticipation, their look intensely points towards the invisible dimension of the offscreen space. Antonioni denies the viewers the relief of counter shots, and further frustrates our expectancy by suddenly returning to the long shots of the streets and close-ups of unexceptional objects (spectacle frames, a wooden stick, street lights, etc.), which conclude the sequence. In the banality of an ordinary evening, Antonioni thus conveys a sinister, but enigmatic threat.

Scholars have frequently emphasized the documentary features of this sequence, downplaying its thematic significance. Seymour Chatman has underlined its ostensible idiosyncrasy by noting that "the story ends but the movie continues" (Chatman 1985, 80). Chatman's account is emblematic of the impression of discontinuity between the closing sequence and the rest of the film that prevails within critical readings.¹³ To the contrary, I advocate interpreting the sequence as the thematic and affective climax not only of *L'eclisse*, but of the entirety of Antonioni's fluvial cinema. Rather than through narrative development and dramatic action, the sequence culminates and unifies the core themes of Antonioni's fluvial films exclusively by audiovisual means. A progression is embedded within the music score itself, which develops through increasingly dark scales and concludes in crescendo. Likewise, the sequence exhibits a clear chronological organization, a progressive approximation to nightfall.¹⁴ This is the twilight of a familiar world, and a twilight of the familiar itself. As the film effectuates the gradual obscuration of the diegetic world and the figural vanishing of the protagonists, a suggestive series of shots inserted within the central section of the sequence intimate a more frightening disappearance. The titles of a weekly news magazine (*L'Espresso* VII.37: September 10, 1961) carefully framed in close ups read: "Nuclear Arms Race" and "A Fragile Peace." Through the evocation of the atomic peril – and in a fascinating anticipation of the international angst spread in October 1962 by the Cuban Missile Crisis – the hospitable enclosure of the world familiar to Antonioni and his characters is abruptly exposed as an impermanent, volatile condition.



Fig. 1 Witnessing the approaching twilight of the world in the closing sequence of *L'eclisse*.

Released at a two-year distance from the completion of *L'eclisse*, *Red Desert* apparently actualizes the warning evoked by the magazine's titles. Rather than a nuclear doomsday, however, the ecological agony pictured in the film represents the inescapable outcome of an uninterrupted and increasing process of environmental exploitation. A quintessentially transitional film, *Red Desert* constitutes the climax of Antonioni's chronicling of the degradation provoked by the aggressive industrial development connected to the Italian postwar economic revival.¹⁵ It also culminates the existential disquiet – determined by the collapse of traditional forms of life, sociability, and kinship – that accompanied the country's industrial expansion. As it accomplishes the dissolution of the world exposed to the threat of collapse in Antonioni's previous films, *Red Desert* preserves the adherence to the specificity of places and locations that has been characteristic of his fluvial cinema. Yet, at the same time the film also relates the actual locations of Ravenna's industrial pole, and the immense ANIC petrochemical complex built in the late 1950s, to the imagistic geography of a global toxic apocalypse. Entangling incommensurable spatial dimensions and intertwining human chronologies with geologic time, *Red Desert* inaugurates Antonioni's broadened planetary interest into the landscapes of the Anthropocene.

In *Red Desert* the solidity and shelter of a livable planet have melted, just as the ground melts under the feet of the protagonist Giuliana (Monica Vitti), in her repeated reference to the metaphor of the quicksand to describe her condition. The unbearable encounter with the unhomeliness of the planet undermines the aesthetic distance necessary to deny one's own implication in the cracking fabric of this deliquescent world. Antonioni's noticeable shift, from the almost exclusive use of wide-angle lenses and deep focus cinematography in his fluvial films, to the consistent employment of telephoto lens in order to convey Giuliana's point of view, performs the disruption of this illusory distance. Telephoto composition, which blurs the contours of objects and flattens the depth of the image by compressing its spatial coordinates onto the surface of the picture plane, has allowed Antonioni to collapse the distance – and therefore the distinction – between figure and ground, which has played up until this point a preeminent role in his filmmaking. On the one hand, this shocking erasure undermines the stability of a horizon against which human actions become intelligible. By the same token, the vanishing of the horizon also determines the elision of a possible elsewhere. On the other hand, as the firmness of the horizon evaporates, and the ground devours the figure, the corporeal and psychic boundaries sheltering the subject coalesce as well.



Fig. 2 The melting of ground and figure in *Red Desert*.

Giuliana's recurrent panic attacks signal her incapability to accept the demise of a stable horizon of meaning and the sheltering of a subjective shell. This is the case until the film's final scene, which heralds the sudden inception of a new awareness that would transform the protagonist's life and Antonioni's filmmaking. Prompted by her son, Giuliana explains that the birds survive the poisonous gasses released in the environment by the chemical plant through a process of adaptation. While the film closes with an overt invitation to overcome denial and face the end of the world as an irreversible event, the emphasis on adaptation, in relation to a toxic and potentially lethal environment, hints precisely at the need to adjust to living conditions on a planet that has lost its status as refuge. The acceptance of the catastrophe's

irreversibility crystallizes the authentically liberating side of *Red Desert's* toxic apocalypse. This awareness reorients Antonioni's cinema from the paralyzing anxiety of his fluvial films to the search for viable modes of coexistence and forms of inhabitation, which he would pursue in his desertic cinema.

With *Red Desert*, the problem of inhabitation in Antonioni's cinema is significantly reformulated through a wider planetary perspective. Global interconnectedness is asserted across a variety of levels in the film. On the one hand, the conspicuous presence of cargo ships alludes to – among other things – the transoceanic circulation of resources, goods, and epidemics, and thus evokes international trade and a market economy extending on a planetary scale. The toxic universe of *Red Desert* also reveals the entanglement of the ecosystems, that is, the integrated context of life and nonlife systems on Earth – animal (including human), vegetal, microbial, and lithic systems.¹⁶ This entanglement is openly enunciated in the remark of a man reported by Giuliana, as she recalls him complaining about the taste of petroleum of his eel. Borrowing Ursula K. Heise's phrasing, we can say that, by framing the local through a global environmental and geopolitical perspective, in *Red Desert* Antonioni's cinema transitions from a sense of place to a sense of the planet (Heise 2008). The global expansion that *Red Desert* enacts on a textual level is also coupled with a major transformation within the material conditions of Antonioni's film practice. In the second half of the 1960s he leaves behind the safe enclosure of the familiar contexts of his life and filmmaking, as the three-picture deal signed with MGM after the completion of *Red Desert* takes him to London (*Blow-up*), the US (*Zabriskie Point*), and eventually to sub-Saharan Africa and throughout Europe (*The Passenger*).

Antonioni's Desertic Cinema

The melting of the world-shelter illusion in Antonioni's cinema brings to the foreground the climatescape of the desert, the preeminent material and imaginary environment of his films between 1964 and 1975. As a figure of nature's disappearance and anthropic decentering, the desert materializes an imagistic threshold into the Anthropocene. The protagonists of Antonioni's desertic films ought to negotiate their existence and modes of being within environments that cannot be reduced to the background function of the "natural world." Dissolving the imaginary associated with the latter, the climatescape of the desert in Antonioni's films destabilizes its assumed unproblematic givenness. For Bruno Latour, the 'axiological neutrality' implied in the notion of nature as "what *is just there, nothing more*" (Latour 2017, 22; emphasis in the original) has been primarily responsible for the lack of political intervention in response to the "awareness of ecological disasters," which, Latour emphasizes, "has been "long-standing, active, supported by arguments, documentation, proofs, from the very beginning of what is called the 'industrial era'" (9). The conclusions he draws are provocatively radical: "for Westerners, and those who have imitated them, 'nature' has made the world uninhabitable" (36).

Accomplishing the iconic and conceptual disappearance of nature, Antonioni's desertic films constitute an early imaginative response to the disremembered awareness denounced by Latour. A disremembrance responsible for the "ecological amnesia" that we are presently struggling with, and which "limits us from understanding our current and past impacts on the species and ecosystems around us" (Parker 2017, M161). As Latour shows, contemporary ecological amnesia has been actively sustained by means of a laborious production of uncertainty in regard to the environmental emergency. In the past decades, economically and politically influential pressure groups have financed the generation of data and factual evidence disputing the conclusions of authoritative scientific institutions. Latour identifies the conditions for the creation and enduring success of this manufactured uncertainty with the positing of nature as a separate and autonomous domain: "When 'nature' is involved, what is a matter of fact is necessarily also a matter of law. [...] What is *just there* is fundamentally also always what is just" (Latour 2017, 34; emphasis in the original). Antonioni's deserts configure an ecological immersion that prevents his characters from disavowing their enmeshment within environments that they cannot dominate. The ecological thought encapsulated in Antonioni's desertic films thus fascinatingly prefigures Latour's call to reconsider the relation between nature and ecology: "ecology is not the irruption of nature into the public space but the end of 'nature' as a concept that would allow us to sum up our relations to the world and pacify them" (36).

While the desert functions as a figure of disappearance, at the same time the climatescape of the

desert inaugurates in Antonioni's filmography the elevation of the cinematic space to what Gilles Deleuze calls "the power of the void." A void from which space "does not emerge [...] depotentialised, but on the contrary, all the more charged with potential" (Deleuze 1986, 119-20). Deleuze further emphasizes this apparent paradox by explaining that, "it is an extinction or a disappearing, but one which is not opposed to the genetic element" (120). Antonioni's deserts cinema develops an imagistic idea of the medium, which has first emerged in *Red Desert*, but has been fully accomplished only in his subsequent *Blow-up* (1966). Contrary to *Red Desert's* reduction of imagination to an escapist, individualistic retreat from an unbearable social and historical reality – the obvious reference is to the beach sequence – beginning with *Blow-up* the imaginary in Antonioni's films is endowed with a generative potential of its own. Antonioni abandons the aspiration to chronicle an unintelligible historical reality, as he adheres to a conception of the medium reminiscent of Sigfried Kracauer's longing for an image that does not simply validate but rather questions "our notions of the physical world." Kracauer's advocacy of an imagistic cinema is aimed at contrasting the proliferation of "corroborative images," designed to persuade the viewers to accept preexisting assumptions about the world. The "corroborative images," Kracauer warns, "are intended to make you believe, not see," and he concludes: "whenever the visuals take on this function we may be reasonably sure that they serve to advertise a belief, or uphold conformity" (Kracauer 1997, 306; emphasis added).

By mobilizing the "power of the void" – the power of the imaginary – Antonioni's deserts films offer a model to counteract the conceptual "blindness" and ecological "amnesia" that, according to Ingrid Parker, summarize the two major challenges in our relationship to a transforming ecological condition (Parker 2017, M160). Antonioni's transition to an imagistic cinema significantly occurs in conjunction with the recognition, in his deserts films, of a posthumous life on the planet. Manifesting at first in the shape of a toxic apocalypse (*Red Desert*), this acknowledgement is later transcoded into the everyday existential horizons of Antonioni's characters. The question of inhabitation was a central concern for his cinema throughout the first three decades of his career, to the point that in 1978 the filmmaker stated: "[my characters] are looking for a home – and 'looking for a home,' in a wider sense, could be said to be the subject of all my films" (Antonioni 2008, 144). Yet, up to *Red Desert* Antonioni envisions inhabitation in the terms of an impossibility. In his deserts films, he instead takes an interrogative turn and links the viability of inhabitation with the transformative potential of the imaginary. Of his deserts films, *Zabriskie Point* most overtly articulates this link, and, whereas the characters' search usually concludes with a failure (most cogently in *The Passenger*), thus reaffirming the impossibility ingrained in Antonioni's fluvial cinema, *Zabriskie Point* affirms a viable solution to the problem of inhabitation, by means of a political struggle fought over the imaginary.

The Material and Imaginary Topographies of *Zabriskie Point*

Set on the backdrop of the social and political unrest of the late 1960s, *Zabriskie Point* stages the clash between the emancipatory and socially progressive pursuits of youth cultures and Afro-Americans and the ruthless institutionalized repression of oppositional movements. A clear connection is drawn between the interests of powerful private corporations and the abuses of state violence. This heated atmosphere enwraps and crucially defines the film's narrative, which revolves around the romance between two young dropouts, Daria (Daria Halprin) and Mark (Mark Frechette). Driven by unlike motivations, they are simultaneously fleeing Los Angeles; Daria at the wheels of an old-time Buick and Mark on board of Lilly 7, a stolen Cessna airplane. As their routes coincidentally intersect in the Mojave Desert, Mark's plane performs a courtship dance for Daria's Buick, and they eventually journey together in her car towards the lower depths of the North-American continent: the dried-up bed of the prehistorical Furnace Creek Lake – 282 feet below sea level – which projects in front of *Zabriskie Point*, a location on the Amargosa Range that crosses the Death Valley.

After their journey to *Zabriskie Point*, Mark and Daria part ways. He flies back to LA in order to return the stolen Cessna, and is shot dead by the police as soon as he lands. The narrative refocuses on Daria, who drives towards the outskirts of Phoenix. She joins her employer (and suitor), Lee Allen (Rod Taylor), at a luxurious mansion nestled in the landscape of Arizona's desert. Stricken by the news of Mark's

death reported on the radio, Daria revolts against the instrumental rationality and the exploitative logic of corporate capital and the governmental practices favoring its ascendancy. The entrepreneurial aims over the Arizona desert nurtured by Sunny Dunes – the development company headed by Allen – provide a concrete, immediate embodiment of this logic. The institutionalized violence responsible for murdering Mark instead functions, throughout the film, as an almost caricatural index of the state repression safeguarding economic and political hegemony. In a visceral reaction triggered by the news broadcast, Daria suddenly leaves, unnoticed. Driving away, she stops at the roadside and fiercely looks back at the mansion. The film closes by visualizing the explosion of the building, in an apotheosis of cathartic violence dismembering the iconology of consumerist culture.

The film's narrative is structured around two fundamental topographies: the "urban jungle" of Los Angeles – the set of the long opening segment – and the chthonic world of *Zabriskie Point*. *Zabriskie Point* not only represents an actual location, but also an imaginary geography. An early film treatment (August 1967) speaks of Antonioni's desire to visualize this "sort of primaevial desert which still keeps the form of its origin, the bed of an ancient sea," in such a way as to induce a "violent, cosmic emotional impact" (Quoted in Pomerance 2011, 165). Yet, it is crucial to emphasize that the vision associated with the desert is not intended to evoke a menace, but rather a promise. In a note Antonioni added to the film treatment, he specified that his handling of the location was meant to materialize a place "where everything breaths peace and serenity" (quoted in Pomerance 2011, 175). The same imaginary excess, however, also guides Antonioni's approach to urban locations, which are subjected to an analogous process of transfiguration. At the most basic level, the film opposes the material and imaginary topographies of LA and *Zabriskie Point* according to the type and quality of vision that they allow to experience, and to the distribution of the visible that they organize.

Whereas the desert allows for an egalitarian distribution of the visible and elevates the space to the generative potential of the Deleuzian void, the city is identified with an unequal and hierarchized distribution of the visible and the restricted generative capacity of the imaginary. Such a diminished capacity ironically impacts to an equivalent degree the two scopic regimes corresponding to the unequal partition of the visible within the urban settings. A partition that is reflected, on the one hand, in the ground perspective of city dwellers marked by overstimulation, spatial disorientation, and the dispersal of attention. On the other hand, the transcendental perspective of aerial views denotes the disembodied gaze of corporate capital, which dominates the city from the heights of its skyscrapers, and constitutes the other pole of the urban partition of the visible.

The planimetric control and totalizing perspective linked to corporate capital are staged in the scenes set in Allen's offices in Phoenix and LA. Antonioni frames him against the backdrop of the urban space and skyline as seen from these Olympic heights. In an early scene set in his Phoenix offices, American flags of gigantic proportions flapper outside of the building and surround Allen on all sides, alluding to the institutional support provided to the advancement of private interests. In another scene – which takes place in the lobby of the building hosting Sunny Dunes' LA headquarters – the camera sneaks behind the desk of a guard surveilling CCTV monitors. The scene is copiously lit, enhancing the intensity of the sunlight passing through the enormous glass window situated behind the guard's back. The display of panoptical control, in tandem with the increased luminosity, awake a fantasy of full visibility – and therefore of integral control.¹⁷ This heightened visibility is nevertheless predicated upon the reduction of the complexity of space and life to the all too interested abstractions of the instrumental logic of corporate capital. As such, this is a constrained and limited visibility in imaginary terms, imposed over the physical and social world through direct and "invisible" (structural) forms of violence.

Seen from the ground, Antonioni's LA is instead a city in perpetual motion, a space lacking the fixed anchoring and recognizable limits that are usually associated with place. Antonioni primarily depicts the city through a windshield that mediates the encounter with the social and material urban fabric. By means of telephoto composition, the film creates a layering of vision that superimposes street views, urban landscapes, and a plentiful array of billboards. *Zabriskie Point* thus intertwines the reality of the actual cityscape with the imaginary evocations of the advertisement industry. Through these superimpositions the film suggests a mutual interfusion of fantasy and reality, and the reciprocal action that they exert upon each other.

At the same time, Antonioni puts in motion this layered imagery through the unceasing mobility of the frame and the relentless refocusing across the back-, middle-, and fore-ground of the image. Fragmentary impressions assault the viewer and quickly alternate on screen. Narratively unmotivated, these layered and dynamic views of the city transform the lived engagement with place into mediated and incoherent forms of spatial experience. The city offers itself to its estranged occupants as a dynamic spectacular backdrop and a kaleidoscopic topography to navigate through, endlessly, pointlessly.

To describe the vision of the city organized in the film, Graham Cairns borrows the notion of “vehicular landscape” from *The View from the Road*, an essay published in 1964 by a group of scholars in architecture and urban planning. Through this notion, the authors capture the “‘live, chaotic experience’ of the car drivers” in commercial cities like Las Vegas and LA (Cairns 2013, 115). A major stress is put on the fragmentary constitution of the driver’s experience: her attention oscillates between a multiplicity of stimuli, occurring at irregular intervals and originating from varying distances. Cairns recognizes the “perceptual dynamism” described in essays such as *Learning from Las Vegas* (1972) and *The View from the Road* at the heart of the scenes depicting car rides in *Zabriskie Point*. Expanding on Cairns’ analogy, I claim that the overall experience of urban life depicted in *Zabriskie Point* is imbued by the same sense of fragmentation, restless, but purposeless mobility, and is visually characterized by a similar perceptual distortion and layering. Through the sensory assault and planimetric control associated with urban driving, Antonioni envisions the generalized condition of city dwellers in the megalopolises of the Anthropocene.

Antonioni’s LA is not a city to be contemplated, nor does it encourage strolling or enable the “walking cures” that, according to Edward Dimendberg, restore a certain spatial and psychological coherence even within the cumbrously precarious universe of postwar film noir: “Unlike the long-distance depictions of the city in a single elevated or panoramic view, these ground-level cinematic representations often secure temporal as well as spatial coherence” (Dimendberg 2004, 132). Walking is simply not an option in LA, and therefore pedestrian practices that could remold the urban space from below are ineffective. Antonioni’s city irreparably undercuts the pedestrian tactics of re-appropriation that Michel de Certeau theorizes in relation to New York. The desired effect of the tactics de Certeau appeals to is the reawakening of an “‘anthropological,’ poetic and mythic experience of space,” that is, the experience of a “lived space” (de Certeau 1988, 93 and 96). The mobility of the postmodern city visualized by Antonioni sardonically usurps the aspiration to create a pedestrian “mobile [or, metaphorical] city,” which de Certeau invokes against the abstract design of modernist city planning (110). The postmodern city of *Zabriskie Point* illuminates the transition from the disciplinary regime inherent to modernist urban planning to the instances of control devised by post-disciplinary forms of biopolitical power. In terms of social control, Antonioni’s LA bespeaks the triumph of the postmodern city over the spaces of resistance that modern urban planning preserved at its interior.

The fragmentation, mediation, and inequality defining vision in the urban topographies of the film are counterpointed by the visual harmony and sensorial respite of the sequences shot at *Zabriskie Point*. The desert opens in front of the observer an egalitarian access to the visible that contrasts with the hierarchical ordering of vision connected to the city. The harmonizing effort is tangible in the frame’s steadiness and the smoothness of camera movements, which strikingly differ from the hectic quality of the camerawork in the urban sequences. At the same time, the desert reverses the restricted imaginative capacity that limits both scopic regimes associate with LA. The use of wide-angle lenses enhances the magnitude of a landscape pictured in Panavision. It opens the spatial coordinates of the image, both in extension – magnifying Panavision’s panoramic scope – and in depth. The switch in lenses generates an intense perceptual contrast with the flatness and layering distinctive of the urban scenes photographed through telephoto composition. The noticeable reduction of the frenetic editing pace prevailing in the metropolitan settings similarly engenders a sense of placid stability and concentration that contributes to an entirely renewed experience of space. In addition to the visual markers signaling the opposition between the city and the desert, the use of sound plays a prominent role in this topographic transition. The sound mixing in the city sequences relies on the distortion of diegetic sound and the artificial character of the sound effects. The resulting soundscape emphasizes disjunction, non-synchronicity, and contrast. On the contrary, the sequences shot in the desert harmonize diegetic and nondiegetic sound, and allow, at moments, for the uncanny

experience of an inhuman silence being heard. A generative void, the vibrant sonic vacuum of the desert sets the stage for the emergence of the vision of a possible co-existence.



Fig. 3 Spaces charged with the “power of the void” in *Zabriskie Point*.

Antagonistic Visions: Love-in, or Drive-in?

Even though Antonioni envisions the desert as a place charged with a generative and transformative potential, in the film there is an unquestionable awareness of the challenging conditions posed by living in such an environment. The sequence staged in the dilapidated ghost town visited by Daria, and the not accidental, emphatic absence of water imagery throughout the narrative segments set in the desert – with the important exception of the Sunny Dunes resort – provide the clearest evidence of this consciousness. Not only the film discloses the hardships of inhabiting the desert, at the same time it also alludes to the progressive geographical expansion of such conditions, as a consequence of the interest-based developmental projects of the private sector. Marsha Kinder’s recollection of the location scouting for the film testifies to Antonioni’s alertness to the increasing process of desertification threatening the area: “[w]hen we were on location in Lone Pine looking at the dry lake bed below Mount Whitney, Antonioni observed that it had been drained because Los Angeles needed water” (Antonioni 2008, 73). As investment capital turns the world into an inhospitable desert, the filmmaker does not summon the specter of a lost natural plenitude (as was instead the case in the beach sequence of *Red Desert*). He rather accepts the challenge of transforming the desert – the figure of the unhomely Anthropocene planet – into a livable place. Yet, there is no safe place, in the “world interior of capital,” from the endless augmentation and diversification of processes of extraction, exploitation, and dispossession.¹⁸

The “peace and serenity” of *Zabriskie Point* are in fact exposed, in the site of the actual, historical negotiation between the two imaginary topographies – the deserts of Southern California and Arizona – to the predatory gaze of the ongoing imperial project of global capitalism, epitomized in the film by Sunny Dunes. This look finds an overt expression in a minor scene towards the end of the film. Allen is standing on the terrace of the mansion that the viewers would see exploding at the end of the film (the Boulder Reign house in Carefree, AZ). His gaze is directed toward the horizon; an uninhabited semidesertic plane, unspoiled by human presence, prolongs in front of his eyes. But this is probably not what Allen sees. Writing in 2017, and noting that “the desert around Phoenix today is filled with one suburb after another,” Joël Mestre-Froissard and Joaquín Aldás Ruíz have proposed to superimpose the present-day image of the area onto the landscape observed by Allen (Mestre-Froissard and Aldás Ruíz 2017, 159). They can therefore advance the inspiring interpretation of his glimpse at the landscape as a “memory of the future.” With our knowledge of the future, Allen’s vision indeed acquires the concreteness of a memory. Yet, in the late 1960s the landscape he is staring at represents a battlefield on which two irreconcilable visions of the future collide. His stare transposes upon the space of possibility of the desert the restricted imaginative capacity and the unequal access to space and vision associated with the urban topographies (and capitalist dispossession).

In order to inhabit a place, *Zabriskie Point* suggests that we first need to acquire the ability to inhabit our fantasies. The film relates the desertification of Southern California and the economic exploitation of the desert with the colonization of the imaginary, and presents the anti-imperialist endeavor of the protag-

onists primarily as the struggle for the re-appropriation of a colonized imagination. The stakes could not be higher, as the latter constitutes the site of a possible transformation of our being in a world that has lost its sheltering function. *Zabriskie Point* conceives of the imaginary in its intersubjective dimension, rather than as an individual property (as was the case for Giuliana's fantasies in *Red Desert*), and avows therefore its entanglement within the broader existing networks of social and political life. And, while Antonioni puts a major stress on the imaginative faculty, he relates the imaginary to perception, presenting the generative potential of fantasy as a capacity to see. In *Zabriskie Point*, vision is the crucial factor capable of setting into motion the generative potential of the Deleuzian void. Vision is also, however, what is the most in peril, exposed to the impersonal forces that aim at limiting and regulating its potential. The larger sets of oppositions that structure the film's narrative can be mapped out in terms of antagonistic forms of vision, competing in the endeavor of molding imaginary and material spaces.

The film unmistakably advocates the urgency of taking sides, and, in order to challenge the reifying gaze of Sunny Dunes, Antonioni invites the viewers to share the perceptual and affective experience arising from Daria and Mark's descent towards Furnace Creek's lakebed. The protagonists' journey into the depths of the prehistoric subsidence is captured in one of the most charming sequence of the whole film. The long and extreme-long shots of the desert compose the image of a ruffled sea of sand, expanding to the visible horizon. The vivid vibrancy of these images vitalizes the desert with a profusion of chromatic tonalities and degrees of luminosity. The sequence is structured around a gradual increase of intimacy: the intimacy between Mark and Daria; the intimacy of the protagonists with the environment; as well as the intimacy of the camera with the characters and the diegetic universe – most clearly reflected in the increasing amount of medium and close shots. As they begin to make love, cradled by the dunes, a growing number of couples and groups engaged in a tender intimacy suddenly appear across the landscape. There is no aggressiveness in their sexuality, but a spontaneous playfulness asserting their joyful search for an unbound interconnectedness. The participants to the love-in caress each other, while they are caressed, in turn, by the nonhuman embrace of the desert. As they progressively undress, their skin tone merges into the color palette of the landscape. The enrapturing movement of the lovers animates the dunes themselves, a single motion reverberates through and unifies all beings.¹⁹ *Zabriskie Point's* visionary treatment of the desert thus materializes a site of coexistence in which humans are guests rather than hosts, but which at the same time allows for the coming to light of a space of possibility and renewal.



Fig. 4 Performers of the *Living Theatre* enacting a viable co-existence in the imaginary vision of the love-in sequence in *Zabriskie Point*.

As soon as the vision of the love-in ends, the film cuts to a long shot of a caravan arriving to Zabriskie Point. The nuclear family onboard humorously typifies the building block of consumer society. As they abide to a standardized tour and pursue a set of conventionalized experiences, the tourists are visibly at pains in establishing a connection with the landscape. The paterfamilias points his penetrative gaze towards the horizon and remarks to the docile wife standing on his side: "They should build a drive-in up here." Lino Micciché has sarcastically noted that, in the place which has just hosted the ecstatic vision of the love-in, this couple can only see a drive-in (Micciché 1989, 65). I would like to take Micciché's pun very seriously, how-

ever, as the opposition between “drive-in” and “love-in” ultimately condenses the core conflict dramatized in the film. Although *Zabriskie Point* exalts the desert and allows protagonists and viewers to experience it as a living entity, the tourists can only see the desert coming to life at the prospect of an economic enterprise. While Antonioni, Daria, and Mark see life in matter itself, for the tourists (and Sunny Dunes), it is capital exclusively that can vivify the physical world. Fundamentally, the couple does not see matter as inert, but rather as an object not-yet-vivified by the intervention of capital. In this regard, Elizabeth Povinelli observes that “[c]apitalism sees all things as having potential to create profit; that is, nothing is inherently inert, everything is vital from the point of view of capitalization” (Povinelli 2016, 20).

The irreconcilable perspectives associated with each set of characters represent two antagonistic visions of the future. In order to explain the transforming relationship of the present with the future in the age of the hyperobjects, Morton contrasts Jacques Derrida’s notion of *avenir* with the anthropocentric misconception of the future as something that can be planned, controlled, and predicted (Morton 2013, 123). The *avenir* is not a future springing from the present, but rather a future coming towards the present – according to the etymology of the French word. The visions of the love-in and the drive-in thus activate specific images of futurity: the receptiveness towards the *avenir*, against the interest-based planning that aims at foreclosing the openness of the future. The degree of receptiveness towards the future is fundamentally a matter of vision. By looking at the desert, the tourists (and Sunny Dunes) see an empty abstract space. Their myopia is particularly staggering, if we consider that this scene immediately follows the aesthetic, sensory, and experiential richness of the love-in sequence.

The Mattering of Vision

In *Zabriskie Point* vision does literally matter, in the radical sense that the image and the imaginary engender material effects in the historical world, exemplifying the mattering function that Sean Cubitt ascribes to optical media: “mediation comes into being as matter, its mattering constitutes the knowable, experienceable world, making possible all sensing and being sensed, knowing and being known” (Cubitt 2014, 2). The attainment of a capacity to bring into existence, by means of the emergence into visibility, became Antonioni’s leading aspiration in his deserts films, and supplanted his concern with recording the contingency of the historical world.²⁰ The effectuality of the imaginary finds in *Zabriskie Point* an irresistible comedic incarnation in the tourists themselves, an obvious progeny of the *plastification* of life witnessed in a Sunny Dunes TV commercial appearing in an early scene of the film. The advertisement depicts a nuclear family enjoying the unlikely pleasures of the company’s desert retreats: playing golf on a fully-equipped course, hunting extinct wild animals, drinking fresh mountain water, living a life of adventure and independence, “like the pioneers that molded the West.” This vast horizon of possibilities, narrated through an authoritative voice-over, unsurprisingly corresponds to the visualization of a strictly gendered space. While the wife is happily relegated to the secluded realm of domesticity, cooking, and child-care, the husband teaches their son to fire a gun in monumental outdoor settings.

Through the grotesque artificiality of the oversaturated color palette, an uncanny shadow projects upon the sense of homologation forcefully expressed by way of a phantasmagoric display of standardized commodities. The most disquieting feature of the advertisement probably is, however, the fact that the happy-family scenario is entirely played out by plastic dolls. The overt constructedness of Sunny Dunes’ promises reveals the irreality of the American Dream itself, which unmistakably underlies the fantasies evoked in the commercial. Moreover, its promise of prosperity is significantly linked with the aspiration to turn the desert into a garden, in accordance with the long-lasting formula of the Western genre. Recalling the colonial history of the country, Antonioni connects the two foundational myths grounding American national identity. Embedding these fantasies within the too apparent artificiality and unlikeliness of the advertisement, the film refers to the deterioration of their imaginary grasp, and therefore of their mythical power. In this regard, Angelo Restivo credits Antonioni with an almost prophetic vision: “it is doubtless only from the vantage point of the recent years that we can understand that *Zabriskie Point* is about, among other things, the moment at which the nation begins to disintegrate as the horizon against which meaning is assigned to words and images” (Restivo 2011a, 83).

The liminal moment recalled in Restivo's reading corresponds to the transition from the second (1945-1970) to the third stage (1970-2000) in the development of "bourgeois imperialisms" described by David Harvey (Harvey 2003, 26-86). The shift from the "logic of territory" to the "logic of capital" represents the distinctive trait of this transition to forms of imperial power that aimed at substituting territorially specific domination with a global hegemony based on the control of financial capital. The rearrangement of international power relations at the conclusion of WWII brought to the process of Decolonization – that is, to the dismantling of European empires – and to the raise of a new imperial paradigm, in which supranational hegemony required a novel justification: "[m]uch as European imperialism had turned to racism to bridge the tension between nationalism and imperialism, so the US sought to conceal imperial ambition in an abstract universalism" (50). *Zabriskie Point* draws attention to the production of this abstract universalism, by exposing the homologizing endeavor of the entertainment industry responsible for what I have called the *plastification* of life. Inserting an allusion to the fantasies that propelled the colonial enterprise of the European settlers within the commercial, the film discloses the continuity between two subsequent phases of a single political project, and thus alerts to the unspoken imperialist foundations of the American Dream itself. At the hearth of both, the film identifies a fantasy of limitlessness, either projected upon space and territory, or investing the resources available for exploitation. In drawing this connection, *Zabriskie Point* emphasizes the pivotal function of the imaginary for the successfulness of imperial domination.



Fig. 5 The colonization of the imaginary in *Zabriskie Point*.

Launched as a film about the counterculture, *Zabriskie Point* has been largely criticized for failing to advance a clear alternative political project to the late liberal governance it exposes. This enduring cliché is revealing of a certain critical shortsightedness – or perhaps even of a possible complicity – that would prevent the viewers, both at the time of the film's release and now, from acknowledging the core of Antonioni's ideological and political critique. In 2011, George Porcari tried to explain why Antonioni's "prescient insights" have been largely ignored by the American audiences. The answer is to be found – according to Porcari – in "the fact that those very corporate values [embedded in the Sunny Dunes commercial] would be incorporated and internalized by the culture at large in subsequent years" (Porcari 2011, 66). Instead of producing an alternative tale to the grand narrative of the colonial epopee, Antonioni foregrounds the decisive political value of the imaginary – to which also Porcari's reference at internalization hints at.

A sequence explicitly illustrates the struggle over the re-appropriation of the imaginary incited by the film. After their trip to Zabriskie Point, Mark decides to return the plane, but only after redecorating it. The polished, candy pink Lilly 7 – a symbol of imaginative homologation – is painted over by Daria and Mark, and transformed into a colorful emblem of resistance and social engagement. The seriousness of their project is significantly permeated with a ludic gaiety, reflected in the irreverent and provocative content of their drawings (most explicitly, the woman's breasts painted over the upper side of the wings and the erected penis decorating the whole right-side fuselage). This joy is the marker of a liberation, namely, the emancipation of their imaginary from the constraints of culturally pre-constituted meanings, beliefs, and values. By painting over the prefabricated appearance of the airplane, Daria and Mark operate a political and ethical re-appropriation of a colonized imaginary.

The political stakes inherent to the redecoration of the plane are also obliquely implied in an element of the plot development that has persistently troubled commentators. This critical moment is represented

by Mark's decision to return the plane, although the characterization of police violence throughout the film allows to predict his murder. I propose to identify the meaning of this scene precisely with the affirmation of the political significance that the re-appropriation of the imaginary holds within the film. The return to Los Angeles is in fact a re-turn to the polis, the foundational element of Western political thought. The film suggests that the insights gained in the desert need to be re-inscribed within the political dimension of social life. Through this return, Antonioni undercuts the viability of communal forms of life grounded in the separation from larger social and political collectivities. He instead frames the imaginary through a broad inter-subjective perspective that exceeds the private fantasies of individuals and small groups. The commitment to imagination dramatized in this sequence refers to a shared, collective – and therefore, political – dimension, and alludes to the centrality of the imaginary in shaping new modes of being and forms of life that might enable a “collaborative survival” on a “damaged planet.”²¹

Conclusions

Antonioni metacinematically redoubles the struggle over imagination dramatized in the film. Daria and Mark's striving for the re-appropriation of a colonized imaginary mirrors the endeavor implicit in the imagistic conception of cinema subtending Antonioni's desertic films. Whereas the dominant naturalist aesthetic in Western cinemas – that adheres to and develops the aesthetic premises proper to the classical Hollywood style – aims at confirming and validating preexisting ideas about the world, Antonioni on the contrary yearns to transform these ideas through his images. In materializing an everyday Anthropocene – that is, an experience of the planet as, at once, deeply familiar and utterly unrecognizable – Antonioni's desertic films transfigure ordinary life, but they avoid the spectacularization and catastrophism of the cli-fi genre. Contemporary multimedia conglomerates foster the perception of the catastrophe's exceptionality – a possible but improbable occurrence – and the belief in the radical transformation determined by its impact. In Antonioni's desertic cinema, life instead moves on unshaken, in spite of the irrecoverable destabilization of the certainties that structure our being in the world. Against the threat of total annihilation that informs cli-fi films, Antonioni plays, in a telling inversion, the very menace of survival. His desertic films share the awareness that Fay attributes to the representations of the everyday Anthropocene: “the dread is not that the status quo will be radically disrupted, but that it will go on as it has been” (Baer 2018, 83).

The climatescape of the desert in Antonioni's cinema challenges both the figuration of the desert within the cli-fi genre, as well as the grasp on the landscapes of imagination exerted by the advertisement industry and Hollywood blockbusters. As shown by Povinelli, contemporary entertainment business has co-opted the image of the desert as the epitome of the other-than-life. Yet, by the same token, the desert becomes the stand-in for everything that can be (re)made hospitable to life. The desert in disaster movies primarily transmits the very “affect that motivates the search for other instances of life in the universe and technologies for seeding planets with life” (Povinelli 2016, 17). The threat of annihilation hence most fundamentally represents the occasion to reaffirm anthropocentrism on an even vaster scale. Today, Antonioni's desertic cinema constitutes an invaluable alternative to contemporary forms of anthropocentric proselytism. His films indicate in a broad understanding of coexistence the sole viable mode of attunement to a posthumous time. An explicit allusion to the entanglement of human and nonhuman life appears in the sequence of the airplane redecoration in *Zabriskie Point*. On the left-side fuselage Daria and Mark paint “He-She-It,” an exhortation not only to abolish gender discrimination, but also to endorse an ontological communion that rejects anthropocentric privilege. Antonioni's desertic films thus encompass the “ecologically oriented and zoomorphic” idea of cinema promoted by Anat Pick and Guinevere Narraway, as they visualize “the interconnectedness of human and other life forms, our implication in and filtering through material networks that enable and bind us” (Pick and Narraway 2013, 5).

By addressing the question of inhabitation in terms of coexistence, Antonioni's desertic films, and *Zabriskie Point* in particular, foreshadow Morton's ethical injunction to rethink life on the planet in the time of the hyperobjects: “We coexist with human lifeforms, nonhuman lifeforms, and non-lifeforms, on the inside of gigantic entities with whom we also coexist: the ecosystem, biosphere, climate, planet, Solar System” (Morton 2013, 128). Stacy Alaimo advances a complementary ethical imperative, as she urges to understand

inhabitation as in-habitation, a condition for which “what is supposed to be outside the delineation of the human is always already inside” (Alaimo 2010, 143). Alaimo invites us to welcome the “terrifying truth” – disclosed by the current ecological crisis – that “humans are made of the same genetic stuff of other creatures,” as the only possible ontological grounding of a viable ethics in the Anthropocene epoch (142). Against the populism of the entertainment industry, which advocates conservatism through the perpetual recasting of a threat to humanity, Antonioni’s desertic cinema invites to think viable forms of co-existence and co-in-habitation, while linking this viability to the precondition of gaining control over our individual and collective imaginaries. Alluding to both the power of imagination and the advent of a posthumous time, the climatescape of the desert in Antonioni’s cinema of the 1960s and 1970s bequeaths the injunction to resist ecological amnesia and blindness, and to imagine forms of connectedness open to the otherness of a non-anthropocentric planet.

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Endnotes

- 1 The reference is to Chakrabarty's "The Climate of History: Four Theses" (2009). On the complex relationship between historical chronologies and deep geologic time disclosed by the advent of the Anthropocene, see also Thomas 2014, Chakrabarty 2016, Szerzsyński 2017, and Chakrabarty 2018.
- 2 The Term refers to literary and cinematic fictions of climate change. Cli-fi films include, for instance, *Waterworld* (Reynolds, 1995), *The Day after Tomorrow* (Emmerich, 2004), *Take Shelter* (Nichols, 2011), and *Interstellar* (Nolan, 2014). On cli-fi cinema see, for ex., Svoboda 2015, Griffin 2017, and Salmose 2018.
- 3 On the unequal degrees of culpability and vulnerability connected to the inception of the Anthropocene, see, in particular, Martínez-Alier 2002 and Nixon 2011.
- 4 In this regard, Claire Colebrook has recently written: "these dystopian future scenarios are nothing worse than the conditions in which most humans live as their day-to-day reality. By 'end of the world,' we usually mean the end of our world. What we don't tend to ask is who gets included in the 'we'" (Colebrook 2017b, np.).
- 5 See also, Morton 2010, 130-5, where the concept of hyperobject is first introduced. The three examples I have listed belong to the first, and more limited, formulation that appears in *The Ecological Thought*. I have chosen them because of their explanatory immediacy. On the "demonic agency" of the hyperobjects cf. Morton 2013, 28-29.
- 6 See also Baer 2018, where Fay explicitly formulates the notion of "everyday Anthropocene."
- 7 On the notions of posthumous life and posthumous time, see the introduction to, and the essays collected in, Weinstein and Colebrook 2017.
- 8 See, in particular, pp. 244-6.
- 9 See, in particular, pp. 130-5 and n. 13.
- 10 I refer to Antonioni's films by the names that are best known to English-speaking audiences. Unlike the titles of the majority of his pictures, those of his early 1960s films are usually not translated in anglophone publications.
- 11 On Antonioni's strenuous adherence to the immediate materiality of profilmic spaces throughout the early 1960s, see, in particular, Rhodes 2011a.
- 12 On the saliency of the actual historical, social, and political contexts for Antonioni's fluvial cinema, see, especially, Arrowsmith 1995, Restivo 2002, Galt 2011, and Rhodes 2011b.
- 13 For instance, see Rohdie 1990, 115-6; Brunette 1998, 87-9; and Bernardi 2002, 178-9.
- 14 The chronological ordering of the sequence has most recently been underlined by the historian Carlo Ginzburg. Cf. Ginzburg 2017.
- 15 Angelo Restivo argues that *Red Desert's* mise-en-scène is designed for the very purpose of visualizing the impact of the Italian economic miracle and, simultaneously, its incomprehensibility. Restivo 2002, 95-143. See, in particular, pp.126-43.
- 16 Furthermore, the scene shot in *Medicina* at the Croce del Nord (Cross of the North) radio observatory expands the film's planetary perspective to a cosmic scale.
- 17 For the debates on the "politics of verticality" (the notion coined in 2002 by Eyal Weizman), and the power dynamics inherent to the optical control of space through aerial views, see, for ex., Adey 2010; Adey, Whitehead, and Williams 2014; and Graham 2016.
- 18 The reference is to Sloterdijk 2013.
- 19 The participants to the love-in are performers of the *Living Theatre*, the New York based company founded in 1947 by Judith Malina and Julian Beck. The choice of the company is suggestive of Antonioni's grandiose ambition of animating the Death Valley.
- 20 I would like to position my reading of Antonioni's desertic cinema within the turn – in cinema and ecomedia studies – towards a non-indexical understanding of the moving image. For ecocritical works that endorse a notion of the cinematic reaching beyond the registering function traditionally assigned to photographic-based media, see, for instance, MacDonald 2004, Bubitt 2005, Ivakhiv 2013, and Fay 2018. For a contribution specifically addressing Antonioni's cinema, see Pinkus 2011. These essays emphasize the generative potential of the moving image, highlighting the concrete material, social, and perceptual after-effects of cinema and media within the historical world. More radically, Colebrook argues that cinema allows for the "overcoming of the notion that images mediate the real rather than being the real itself." She demonstrates that it was precisely through cinema that Deleuze could abridge the ontological gap between image and reality: "Images are not images of some underlying truer world: the world just is its imaging." Cf. Colebrook 2017a, 31 and 32.
- 21 The Reference is to Tsing, Swanson, Gan, and Bubandt 2017.

Spatial Survey

Mapping Alaskan Oilfield Infrastructures Using Drones

Ila Tyagi

In the fall of 2013, the drone manufacturer AeroVironment teamed up with the oil company BP to conduct an experiment in northern Alaska. AeroVironment set out to demonstrate the usefulness of its Puma drone to oil operations by using the drone's Light Detection and Ranging (LiDAR) equipment to survey the condition of BP's extensive oilfield infrastructure in Prudhoe Bay. The AeroVironment Puma drone created three-dimensional (3D) maps of Prudhoe Bay's roads, offered 3D volumetric analysis of the oilfield's gravel pits, delivered visual and 3D pipeline analysis, and provided general wildlife and environmental monitoring. This information was crucial to maintaining the integrity of BP installations, and to sparing employees from working outdoors gathering comparable data in the harsh Alaskan climate (AeroVironment 2014).

Drones—or Unmanned Aerial Vehicles, as they are formally known—make up an enormous, valuable global market, which is slated to grow even bigger over the next decade. Annual worldwide drone expenditures currently stand at \$6.4 billion, a figure projected to increase to \$11.5 billion by 2024, totaling almost \$91 billion. A majority of that drone market, 89 percent, consists of military applications (Teal Group Corporation 2014). However, drones' nonmilitary applications are expanding. Within the United States, law enforcement agencies have expressed strong interest in deploying drones. The Customs and Border Protection Agency (CBP) and police forces in a handful of American states have made tentative forays into capitalizing on drones' cheapness relative to manned aircraft surveillance. For instance, the CBP uses Predator drones to remotely patrol the entire length of the U.S.-Mexico border, and the Pentagon has sent Global Hawk drones capable of flying higher than 60,000 feet and surveying 40,000 square miles of territory per day into Mexico to counter drug trafficking (Mazzetti & Thompson 2011). The Texas Department of Public Safety uses drones for certain police operations. For example, in 2011, fears that an Austin resident suspected of holding drugs and weapons might try to shoot down a manned helicopter surveilling his property led agents to survey it instead using a bird-sized "Wasp" beaming a live video feed to them on the ground (Finn 2011).

The Federal Aviation Administration (FAA), which is responsible for safeguarding the nation's airspace, has carefully restricted the domestic use of drones use so far. Entities wishing to operate drones must obtain FAA permission, which usually comes with stringent conditions attached (American Civil Liberties Union (ACLU), 2016). However, the FAA is gradually capitulating to pressure from industry and Congress to relax its regulations and allow broader proliferation of drone technology everywhere. In 2016, the FAA released new rules authorizing small commercial drones (weighing less than 55 pounds) to be

flown under 400 feet without a pilot's license, rules that could generate \$82 billion for the U.S. economy and create 100,000 jobs in 10 years (Newman 2016). As nonmilitary drones are poised to play an increasingly prominent role in industry, there is a growing need to investigate how their use may revise our understanding of aerial image-making, automation, Cartesian perspective, privacy, safety, surveillance, spatiality, and vision, among a host of other issues.

To that end, in this essay I tackle one nonmilitary application of drones in the Alaskan oil and gas industry, homing in on discourses of large-scale spatiality and extended vision in particular. The global oil industry pervades land and sea, yet only small slices of the industry's operations lend themselves to viewability. I am interested in how images harnessed by drones meet the challenge of representing massive space. Footage captured by LiDAR-equipped drones provides an unprecedented ability to visually access the oil industry's sprawl more thoroughly than any other available technology, allowing the industry to map ever-greater swaths of its spread across the Earth's surface. I argue that while drones' military uses are fraught because of the way they are used to dominate and destroy human beings, drones' civilian uses are more complicated: on one hand, the technology is used to extend the oil industry's neocolonialist control over the natural world; on the other, drones in the civilian sphere help to remove human bodies from the mortal danger to which bodies in the military sphere are exposed.

In what follows, I first offer a brief history of drone technology, as well as an overview of the tug-of-war between utopian and dystopian impulses characteristic of existing perspectives on drones. I then turn my attention to the oil industry's use of civilian drones in Alaska, the product of a long battle to exploit the natural resources of the North Slope despite significant challenges posed by its climate. Automated vision within the oil industry uniquely demonstrates the interplay between risks and benefits afforded by civilian drones' visual power, but ultimately makes a persuasive case for their benefits, particularly their potential to limit bodily harm. The civilian sphere extends concerns about the abuse of visual power, but can be framed in a manner more utopian than dystopian, allowing us to move away from these extreme ends of the spectrum and approach a more measured understanding of drone technology.

Predators, Privacy, Photography

Remote-controlled aircraft were first deployed in the United States during the Second World War, when the Army used the Radioplane OQ-2 for target practice. The Radioplane OQ-2 was launched by catapult and recoverable by parachute. Over the course of the Cold War, unmanned reconnaissance aircraft became more sophisticated in design and began to play a more prominent role in military strategy. Israel's Tadiran Industries developed the Mastiff Unmanned Aerial Vehicle following the 1973 Yom Kippur War in order to aid ground forces with eyes in the sky. The Predator, which along with the Reaper is now one of the two most common combat drone models, owes its existence to an expatriate Israeli engineer based in California. Abraham Karem developed the Gnat 750 in his garage in the 1980s: an unmanned glider with a small engine whose design was eventually bought by the American defense contractor General Atomics in 1990. General Atomics and Karem later modified the Gnat 750's design in order to meet specifications requested by the Central Intelligence Agency, including supplying it with a satellite antenna and a quieter engine. These refinements resulted in the first generation of Predators (Gettinger et al. 2014). Today, drones can be guided in real time by human navigators, or fly "autonomously," meaning that their route, speed, and height are preprogrammed ahead of flight. They can be as small as birds or as colossal as Boeing 737s. The Nano Hummingbird, for instance, designed for stealth surveillance on behalf of the Pentagon's Defense Advanced Research Projects Agency, has a wingspan of 6.5 inches and weighs less than an AA battery (ACLU 2016). Predators and Global Hawks, on the other hand, are bulky enough to require manned aircraft to escort their takeoffs and landings (Cunningham et al. 2014).

Since drones have largely been limited to battlefields until now, academic scholarship on drones focuses overwhelmingly on the military sphere, investigating the physical and psychological damage of conducting warfare at a distance. In his article "Drone Encounters," Matt Delmont uses the Pakistani photojournalist Noor Behram's photographs of drone attack scenes in Waziristan to show the supposed precision of drone strikes to be spurious: drone strikes cause a large number of civilian casualties, which

are routinely downplayed by government officials. Delmont suggests that drones have become favored weapons in the “war on terror” because of their “twin claims to visual superiority: the ability to see and to resist being seen” (2013, 193-4). Delmont’s interest in photographs and film is reflected in Jessy J. Ohl’s article on drones in visual culture, “Nothing to See or Fear.” Ohl examines drone imagery in U.S. news media between 2008-11 to argue that its “boring” nature undermines a viewer’s capacity to “sense the material consequences of war” (Ohl 2015, 612). Delmont and Ohl’s work shares an interest in the blind spots that all-seeing drones create: they limit the visibility of military action and obscure the destruction of foreign bodies (Ohl 2015, 613). Their articles reveal vision—visual acuity, visual obfuscation—to be central to drone studies, an approach further developed in Grégoire Chamayou’s book *A Theory of the Drone*.

Chamayou suggests that the history of military drones is that of “an eye turned into a weapon” (2015, 11). This eye is no ordinary eye. Like the eye of God, it does more than simply see what is plainly visible. If the eye of God is capable of searching invisible hearts and minds “beneath the skin of phenomena,” a drone’s eye can likewise see what lies well beyond the reach of ordinary human vision (Chamayou 2015, 37). Predators and Reapers come equipped with color and black-and-white television cameras, radar, infrared imaging for dim lighting conditions, and image intensifiers, enabling them to send full-motion video to pilots who can use their lasers to target people or structures below (Delmont 2013). These drones’ eyes, according to Chamayou, are human eyes amplified. Drones revolutionize seeing in a number of ways. Firstly, they can watch more continuously than a human pilot making a comparatively short flight in a plane could. In Chamayou’s words, “a mechanical eye has no lids” (2015, 38). In addition to watching all the time without blinking, spatially they can see everything, following the notion of “wide area surveillance” (Chamayou 2015, 38). Finally, the images drones yield are more advanced than the still photographs, or even filmed footage, produced by human-piloted reconnaissance missions of old. The AeroVironment Puma integrates elevation values with information from the drone’s Global Positioning System (GPS) and orientation measurements to produce a dense “point cloud,” or set of data points, showing the location of topographic features like glaciers, bare ground, or buildings. Operators can zoom in and out of the 3D maps that the Puma creates, adding and subtracting different layers of information at will.

Why does it matter that drones can see so much more powerfully than people can? In the military sphere, drones’ extended vision matters because “omniscience implies omnipotence” (Chamayou 2015, 37). Chamayou, like the other authors cited above, canvasses the ethical ramifications of sharp eyes killing from a distance at length, arguing that drones troublingly eliminate any kind of reciprocity, turning two-way combat into one-way slaughter. What about seeing powerfully in the nonmilitary sphere? The fact that drones can see so extensively and intensively has generated a popular discourse surrounding their civilian use that has centered on privacy (Kaminski 2016). To begin with, flying drones transcend the physical barriers, like walls, gates, fences, and hedges, that we have traditionally relied upon to protect our privacy. Furthermore, drone cameras’ capacity to see what the naked eye cannot—such as infrared portions of the electromagnetic spectrum beyond visible red light—shatters longstanding divisions between public and private, interior and exterior, altogether. Drones open up nightmarish visions of constantly being within a Peeping Tom’s line of sight. What the effect would be on individual psyches, and more broadly on society as a whole, if there were no places left to retreat from view is an open question, as is how susceptible drones are to individual, industrial, and institutional misuse.

The dystopian nightmares evoked by military and nonmilitary drones alike is a contemporary reincarnation of the utopian and dystopian associations that Paula Amad has argued surround aerial photography, from its inception via cameras suspended from nineteenth-century balloons (or kites, pigeons, and rockets), twentieth-century planes, and drones in the twenty-first. “Given aerial photography’s major function in the early twentieth century as a tool of military reconnaissance, not to mention the airplane’s primary role in the development of aerial bombardments such as those of Hiroshima and Nagasaki in August 1945 or the airplane’s more recent transformation into a literal weapon of mass destruction (with the 11 September 2001 destruction of the World Trade Center Towers),” says Amad, “there is obviously significant material evidence for the association of aerial vision with a negative, violent and even terroristic mode of modern vision” (2012, 69). Fears over a dominating aerial vision targeting the weak by invading their privacy, at best, or wiping them off the face of the Earth, at worst, go hand-in-hand with utopian dreams

of a vision whose expansiveness can be put to inventive use.

The “equally extreme utopianism” that Amad shows accompanied early twentieth-century aviation culture is traceable in present-day journalism and research studies breathlessly tracking drones’ applications in civilian areas as varied as agriculture, commerce, transport, emergency services and disaster response, environmentalism, moviemaking, journalism, art photography, and many others (Amad 2012, 71). Drones’ ability to cover large-scale space is an advantage for pesticide application, monitoring livestock, and surveying farmland (San Diego University 2016). Additionally, by flying at lower altitudes, drones allow farmers to spot insect infestations in their crops more readily than from fixed-wing aircraft (National Geographic 2015). Commercial companies like Amazon are testing package delivery by drone (Scott and Wingfield 2016). Dubai is testing drone taxis that promise to ease traffic gridlock in congested cities around the world (The Economist 2017). The Migrant Offshore Aid Station, a Malta-based organization, uses the thermal and night-imaging capabilities of its two Schiebel drones to locate and rescue migrants risking their lives while attempting to cross the Mediterranean Sea (San Diego University 2016). A drone called “Waste Shark,” nicknamed “the WALL-E of water,” is diving around the port of Rotterdam collecting up to 1,100 pounds of trash in its open mouth, which could eventually help clean up the great garbage patches clogging the world’s oceans (Atherton 2016).

In movie and television production, photojournalism, and art photography, drones are yielding shots that would be impossible to attain in any other way, spawning comparisons to other paradigm-shifting technologies like the lightweight cameras used in 1960s films like *Easy Rider* (1969), and the Steadicam used in 1970s films like *Rocky’s* (1976) famous stair-climbing sequence (Verrier 2015). Drone cameras can go where manned aircraft cannot, such as dropping into narrow alleyways and canyons and flying through doors and windows. A drone camera is cheaper than filming from a helicopter, with a camera drone and crew costing \$5,000 a day versus a helicopter shoot costing \$25,000 a day (Verrier 2015). Drones’ relative cheapness has led to their being celebrated as “democratizing the skies,” with photojournalists now experimenting with \$60 hobby drones to pick up the fine motor skills necessary to fly larger drones and gain an additional tool for their storytelling (Estrin 2017). Instagram accounts like Dronestagram and From Where I Drone have become hubs for drone and photography enthusiasts to share their images, and to trade techniques for finessing their use of the technology (Schwab 2017).

In short, drones’ potential civilian applications are countless. It is dizzying difficult to keep up: every day, it seems, brings another news article reporting on yet another innovative experiment with drone technology. From the fray, however, a few key trends emerge. Drones are valuable because, being automated, they can monitor larger spaces more precisely and systematically than a human-piloted plane can. Drones shorten the time required to complete tasks. Drones are economical. They are safer for human pilots, as machines can enter hostile environments without putting their pilots in danger. As a result, drones provide greater access, conveniently reaching places that would be hard for us to get to otherwise. When combined with advanced cameras, drones’ greater access also helps us see familiar things in fresh ways, or see unfamiliar things for the first time. These advantages offered by drones are particularly salient within the oil industry, which, being a planet-spanning enterprise, perpetually seeks efficient technical solutions to the problem of monitoring enormous space, while still offering maximum return on investment to shareholders. In the next section, I examine the AeroVironment-BP 3D mapping experiment in greater detail, paying particular attention to its implications for helping us see the large-scale Alaskan oil environment in new ways.

Oil’s Spatial Scale

The oil industry is big. It is what Timothy Morton calls a hyperobject: an entity so distended across space and time that it becomes “almost impossible to hold in the mind” (Morton 2013, 58). Circulating oil from areas of production to areas of consumption entails millions of miles of pipelines and shipping routes networked all over the planet. Natural gas distribution pipelines in the United States alone could stretch from Earth to the Moon at least seven times. About 40 percent of all seaborne cargo is oil, and there is more seaborne cargo at any given time, by weight, than there are fish in the sea (Carlyle 2013).

The oil industry’s globe-girding distributional network originates in oilfields whose scales them-

selves defy comprehension. The biggest oilfield in both the United States and North America is the Prudhoe Bay field, on Alaska's North Slope. Discovered in the late 1960s, the oilfield covers 213,543 acres and contains approximately 25 billion barrels of oil. The field is located 650 miles north of Anchorage, and 250 miles north of the outer edge of the Arctic Circle. Exxon and the Atlantic Richfield Company (ARCO) drilled the field's first well, the Prudhoe Bay State #1, on March 12, 1968. British Petroleum (BP) Exploration drilled a confirmation well in 1969, and over the next eight years, Exxon, ARCO, BP, and other companies holding leases in the area scrambled to chart the reservoir, resolve equity participation, and build an initial infrastructure (British Petroleum (BP) 2013).

Research published by the oil industry around this time emphasizes the challenges to development posed by Prudhoe Bay's scale, remoteness, and climate. In a 1971 *Journal of Petroleum Technology* article, F. G. Larminie of BP Alaska describes how, in order to work successfully in the Arctic, oil companies must either confine operations to the wintertime when the tundra is frozen, or build expensive, five-foot-thick gravel roads and pads in the summer to act as insulators between themselves and the permafrost's thawing upper layer. Helicopters and hovercraft could provide access to isolated field sites in the summer months, but could not operate in the North Slope's frequent fog, blizzards, and "whiteouts," a condition of "diffuse shadowless illumination resulting in loss of depth perception" (Larminie 1971). The challenge of developing the Prudhoe Bay field, in other words, sprang from an earlier challenge: the difficulty of seeing the field clearly in the first place. "Winds up to 50 mph can lift the ice crystal snow into a blinding fog that completely obscures visibility, even in daylight, for several days," a 1978 *Journal of Petroleum Technology* article on logistical problems in Prudhoe Bay co-authored by Exxon and ARCO employees says. "During these times, aircraft are grounded and surface transportation is difficult and hazardous" (Bryan et al. 1978, 852). Visibility is intimately linked to access and possession. Find a way to see the Prudhoe Bay oilfield clearly in all weather conditions, Larminie and others seem to suggest, and you are well on your way to bringing it under industrial control.

Solving the problem of seeing an oilfield's 3D topographic features clearly amid diffuse lighting conditions that are flattening them into a two-dimensional visual blur is of interest not just to the oil industry, but also to photographers whose work grapples with representing the industry's scale. Edward Burtynsky, Mishka Henner, and Garth Lenz have all used a range of methods, from helicopters to Google Earth, to obtain expansive aerial perspectives on oilfields that come close, perhaps as close as humanly possible, to helping their viewers hold the sprawling oil industry in their minds. In an interview, Lenz describes how he deliberately photographs oilfields from the air either early or late in the day, when the low angle of the sun throws into relief topographic features that would be indistinct otherwise. He uses polarizing filters to get better contrast and richer colors. Lenz believes aerial photography to serve a crucial revealing purpose. "Aerial photography can convey a sense of the scale of activities such as industrial logging, coal mining, shale gas in a way that no other photography can," he says, "It can also reveal activities and impacts that are normally out of sight (and therefore out of mind)" (Pook 2014).

Burtynsky and Henner share Lenz's fascination with documenting the impact of industrial activities on natural landscapes, as well as his fascination with aerial photography's potential to extend human vision by opening up to view what is usually out of sight. Prudhoe Bay, and the oil industry as a whole, is big and difficult to access. By being everywhere all the time, yet sealed off beyond gates, fences, and signs warning casual passersby not to get too close, the oil industry poses a formidable challenge to visibility. Henner overcomes this challenge by knitting together Google Earth's publicly available satellite images of oilfields to assemble eerily beautiful compositions looking almost like abstract paintings. In his words, he sets out "to reveal things that surround us but which we rarely see or don't want to see" (Dunne 2014).

Similarly driven by a mission to reveal aspects of our surroundings that we rarely see, Burtynsky has recently experimented with drones, banking on remotely operated technology to provide visual access to sites that would be off limits to manned aircraft. Over the years, Burtynsky has found the oil industry to be largely hostile to his desire to photograph it, saying that in most cases "they said no when I asked to come in and make photographs, because they couldn't see an upside to letting me in" (Burtynsky 2017). The oil industry jealously guarding itself from prying outside eyes goes hand-in-hand with other logistical challenges to aerial photographers, such as the fact that certain countries have no civil aviation, only indus-

trial or military access to the skies. While working in China, Burtynsky circumvented the absence of civil aviation by using a drone to shoot large-scale hydroelectric dams and agricultural landscapes. Shooting urban development and oil refineries in Nigeria, Burtynsky found that “Unlike a helicopter, a drone could fly at relatively low altitudes,” and unlike standing on a rooftop looking down, “it could take his camera wherever he wanted” (Khatchadourian 2016, 88). Remotely operated drone technology “offers new ways of entering into places that you would never have considered going—or that you couldn’t even go to—before” (Burtynsky 2017).

Writing in 1971, BP Alaska’s Laraminie was already noting the importance of remotely operated technology for providing access to, and thus control over, the Prudhoe Bay oilfield. “Arctic oil installations will be characterized by a high degree of automation,” he says, “involving remote supervision and control of production” (Laraminie 1971, 23). Another BP Alaska employee, T. A. Sharpe, likewise revealed at a 1971 Society of Petroleum Engineers conference that “because of the environment and the difficulties and cost of housing large numbers of personnel on the North Slope, the production facilities have been designed to operate unattended. All data and information will be transmitted to a central control room located in the operations camp, where a computerized supervisory control system will monitor and adjust the production from the field” using minimal human personnel (Sharpe 1971). Effective remote supervision was essential not just because the Arctic’s bitter climate makes it difficult for people to live and work there permanently, but also because the Prudhoe Bay field is too big for people to visually monitor it without technological assistance. Having eyes on giant oil fields at all times is vital for a number of reasons, including deterring criminal activity, mitigating the lost profits and ecological harm engendered by terrestrial pipeline leakages and oil spills at sea, tracking such environmental phenomena as wildlife migrations and ice floes that might collide with and damage facilities, as well as routine infrastructural maintenance.

In Nigeria, for example, vandals avail of the fact that the oil industry cannot supervise every inch of pipeline at all times to tap them, and successfully steal crude. Drones with directional antennas and long-range zoom cameras have been proposed as an efficient solution to the problem of providing real-time monitoring whenever a pressure dip or any significant third-party tampering is detected on a section of pipeline, which would then allow response teams to quickly target the relevant area (Idachaba 2014). In the summer of 2013, the Portuguese navy tested drones’ aptitude for speedily locating marine oil spills. To simulate a spill, the navy dropped 220 pounds of popcorn in the Atlantic Ocean. Flying in a scanning pattern over 62 square miles of open water, their drone pinpointed the popcorn in less than 90 minutes, and the operation from takeoff to landing lasted less than three hours (Jacobs 2013, 42).

Later that year, the FAA selected six test sites around the United States in which to experiment with integrating drones with what it called “the largest, most complex air traffic systems in the world” (Federal Aviation Administration 2013). The six sites were in Virginia, Texas, North Dakota, New York, Nevada, and Alaska, their geographic and climatic diversity intended to provide the FAA with a substantial range of data. At the Alaskan site, BP obtained a public certificate of authorization through the University of Alaska Fairbanks in order to work with AeroVironment on mapping the Prudhoe Bay oilfield. BP was still reeling from the catastrophic 2010 Deepwater Horizon oil spill in the Gulf of Mexico, and testing drones near the North Pole was a relatively risk-free way to explore their feasibility for wider use. Sparsely populated and with little air traffic, Prudhoe Bay presents few logistical or safety hazards (Ungerleider 2014).

Floods, ice breakups, and ice floes perpetually alter Prudhoe Bay’s topography, ensuring that infrastructure built within it needs constant repair to withstand the severe environment (BP 2014). The field’s infrastructure includes approximately 1,000 oil wells and 1,200 miles of pipeline across an area of 400 square miles. Wells and facilities are connected by a network of 200 miles of gravel roads. The gravel roads are crucial to seismic surveys, drilling, maintenance, and other field activities. The roads therefore need to be well-maintained themselves, but manual upkeep is expensive and laborious—simply surveying a one-mile section can cost as much as \$70,000 (Smith 2015). Their maintenance can be automated to some degree through GPS guidance, an industrial technique also employed in mining and precision agriculture. However, automated civil engineering requires high-precision 3D maps, and the Prudhoe Bay oilfield’s sheer size is an obstacle to making them.

Remotely Monitoring Oilfields

Possible oilfield mapping methods include traditional land survey, aerial photogrammetry, satellite-based photography, satellite-based synthetic aperture radar, airborne LiDAR, truck-based LiDAR, and drone-based LiDAR (Smith 2015). These methods need to satisfy two requirements: they must supply adequate accuracy, and they must cover the field's full terrain. All the methods, except for the last one, fall short. Aerial photogrammetry, for instance, can cover all of Prudhoe Bay's terrain, but does not provide sufficient accuracy. Truck-based LiDAR, on the other hand, does provide sufficient accuracy, but cannot cover the whole oilfield, as trucks cannot reach areas off the road network, or work around obstructions like well pads and waterways. Only drone-based LiDAR meets both conditions of accuracy and comprehensiveness.

The oil industry and its collaborators have long relied on remotely operated technology registering an array of electromagnetic waves to visually monitor its geographic spread. Throughout the 1970s, the National Aeronautics and Space Administration (NASA) experimented with microwave remote sensing of ice in the Beaufort Sea, north of Prudhoe Bay (Campbell et al. 1980). Microwaves offer the possibility of studying natural phenomena in all kinds of weather, and at any time of the day or night, eliminating observational barriers in an area that is dark and cloud-covered much of the year. The NASA CV-900 Galileo I performed a series of flights ranging in altitude from 500 feet to seven miles, carrying a variety of visual and infrared sensors in addition to imaging radiometers. The microwave imagery gathered allowed scientists to distinguish between old (thick) and new (thin) ice, as well as track ice motion, information useful for oil industry operations in the region.

Between 1974-84, the National Oceanic and Atmospheric Administration developed a high-frequency Coastal Ocean Dynamics Applications Radar, or CODAR, capable of using radio waves to remotely sense ocean surface currents, wave properties, over-water surface winds, and ice movement without expensive and unreliable in-water instrumentation (Barrick et al. 1986). Chevron adapted CODAR to offshore oil industry applications including environmental monitoring and conveying hazard warnings to production platform and drilling vessel operators, improving safety and reducing operational costs. CODAR data gathered from experiments around Prudhoe Bay was visualized in a two-dimensional map using color-coded arrows to chart the radial velocities of ice and ocean surface currents, as well as in a graph that, though two-dimensional, conveys a 3D effect by pinpointing information across three axes: doppler frequency in hertz, range in kilometers, and received power in decibels.

Real-time oilfield monitoring using the electromagnetic spectrum was further developed in the 1990s and 2000s. In 1999, ARCO reported on tests it had conducted over the past three years involving a forward-looking infrared camera mounted on a Twin Otter plane monitoring pipeline corrosion at the Kuparuk oilfield, 40 miles west of Prudhoe Bay (St. Pierre 1999). The infrared camera's aerial perspective enabled it to survey 700 miles of pipeline in less than three flight hours, making it a rapid and efficient inspection tool. The camera was connected to a computer, a GPS receiver, and two video recorders capturing images in standard and high resolution. Infrared imagery was also found to produce better wildlife survey results than usual. The Alaska Fish and Game Department flew over the territory each year to visually count the migrating porcupine caribou herd and estimate the number of new births, but the infrared system detected more caribou calves than did visual observations of the herd's population: the brown Arctic tundra mottled with patches of snow occasionally camouflaged the caribou to the naked eye, but infrared could still see them clearly.

In addition to microwaves, radio waves, and infrared waves, the oil industry has harnessed LiDAR technology—spanning the ultraviolet, visible light, and near infrared parts of the electromagnetic spectrum—to assist in oilfield monitoring. LiDAR equipment uses laser pulses to collect 3D images. Emitting up to 400,000 pulses of light per second, the laser scanner establishes the time delay between transmission and reception in order to calculate elevation values. Since LiDAR can be reflected from any object that the laser pulse strikes, up to five returns are collected per pulse. These multiple returns are recorded and each point is assigned a classification to identify landscape components. The intensity of the reflected energy is captured and analyzed as well, yielding high-resolution topographical mapping and 3D surface modeling (BP 2014). LiDAR technology was invented shortly after the first lasers in 1958, but was initially hamstrung by a series

of limitations: it was too costly, heavy, bulky, and required too much power to be practical (Ouellette 2012). Furthermore, the technology only worked if the lasers were fixed to the ground, not if they were placed on moving platforms. Over time, the cheaper, more compact, and less power-hungry solid-state diode pumped laser the more improved the LiDAR's practicality, as did the emergence of GPS, and evolving computer technology newly capable of performing a LiDAR system's complex data analysis. LiDAR now has a range of functions both within and beyond the oil industry. Within the oil industry, LiDAR's multifaceted uses include building geological models, obtaining erosion profiles along pipeline corridors allowing personnel to identify areas where ground cover is no longer within required safety parameters for pipeline burial, and constructing digital terrain simulations that aid in the planning of evacuation routes and helicopter landing zones for emergency situations (Beaubouef et al. 2005).

Beyond the oil industry, self-driving cars use LiDAR for navigation, creating a digital 3D map of their surroundings that allows them to "see" at least up to one football field of distance, in any direction (Vergano 2017). Within the field of archeology, LiDAR's impact is considered revolutionary, comparable to that of radiocarbon dating, or computing itself: just as computers increased the speed of number-crunching, LiDAR compresses information gathering, mapping an environment's agricultural and architectural artifacts in extraordinary detail within a fraction of the time and cost that it would take to do so by hand (Hopkins 2012). Archeologists deploy LiDAR to construct high-definition topographical maps of sites revealing features of the landscape that would be invisible to the naked eye, or even to traditional techniques like aerial photography. For instance, a LiDAR map generated by the New Forest National Park Authority in Britain was able to look past an obscuring layer of oak trees and heather to uncover traces of Bronze-Age mounds and Ancient Roman roads below (New Forest National Park Authority 2015).

Just as drones offer fresh visual perspectives while shooting photographs or films and television shows, LiDAR is likewise reshaping entertainment media like music videos and 3D gaming. The video for the band Radiohead's song "House of Cards" features LiDAR-derived 3D maps of urban spaces in Florida, including streets, buildings, and electric pylons (Radiohead 2008). EA Sports, a sports video game developer, also used a laser scanner to create 3D maps of golf courses, football stadiums, and basketball courts around the country, improving the surface-detail realism and accuracy found in its Tiger Woods PGA Tour, NCAA Football, and NBA Live games' virtual environments. "Accuracy rules in the video-game industry," an Orlando Sentinel article said, "because it helps drive the player's experience" (Pacheco 2012). Accurate measurements also matter in the oil industry's uses of LiDAR. However, as with drones, LiDAR technology allows large-scale spatial scanning in a timely, safe, and cost-effective manner — qualities that are as important as accuracy in day-to-day industrial operations. A promotional video that AeroVironment created for its project with BP in Prudhoe Bay frequently features the words "precise," "rapid," "up-to-date," "fast," "quickly," "real-time," "sooner," and "lower cost," while emphasizing just how dauntingly big the oilfield is, and the risks posed by monitoring it through any means less advanced than drone-based LiDAR (AeroVironment 2017).

The AeroVironment Puma All Environment (AE) drone carried the LiDAR equipment into the air above the Prudhoe Bay oilfield. Puma AEs have a wingspan of about nine feet and are about four feet long, weighing 14 pounds. They are hand-launched, flying 200 to 400 feet above ground level at less than 40 knots, their slow speed enabling them to gather detailed location analytics. They are also especially well-suited to ecologically fragile regions like Prudhoe Bay, as they run on smart batteries, and are quiet (AeroVironment 2014). The Puma AE's point cloud generated a picture of wear and tear on the gravel road surfaces that was compared to a picture of the roads in ideal condition. A data set marking the differences between the two pictures was then converted into a set of instructions for road grader operators. With the aid of a correctional GPS network, the operators followed a map display keeping them along the road's centerline while GPS units mounted on their grader blades moved up and down automatically to "cut and fill" the road surfaces and bring them back to specification (Smith 2015).

Gravel for the roads is mined in pits at Prudhoe Bay that can be up to half a square mile in size, and operate around the clock. The Puma AE's mapmaking ability was also used to create 3D models of the gravel pits showing how much of the raw material was remaining, and identifying areas prone to flooding. As with manual road maintenance, manual gravel extraction estimations are costly, time-consuming, and comparatively inaccurate. Flying over the gravel pits, the Puma AE's LiDAR sensor delivered rapid, precise

volumetric analysis, mapping drainage lines and charting sink points and watershed boundaries throughout (AeroVironment 2016). The Puma AE contributed more data on a half-mile-wide gravel pit in 45 minutes than BP had collected in the previous 30 years (Nicas 2014).

Eager to demonstrate the full range of ways drones can enhance operational efficiency within the oil industry, AeroVironment supplemented its road and gravel pit topographies with maps of the BP pipelines criss-crossing Prudhoe Bay. The 1,200 miles of oilfield pipeline are supported on piles driven into the Alaskan permafrost. Freeze and thaw can cause the pilings to shift and potentially result in a pipeline rupture, meaning they, like the roads, mandate continual vigilance—a demanding endeavor given that the field holds over 44,000 pipeline supports. The Puma AE can survey a two-mile-long stretch of pipeline in 30 minutes, a task that would take a human up to seven days (BP 2014). The LiDAR-equipped drone assembled visual and 3D feedback on the pipelines' stability. Successive maps were contrasted for changes over time to diagnose areas needing remediation, and to validate tested remediation methods (Smith 2015).

Extending Human Vision

Unmanned drones can easily access oilfield areas far from the typical aviation infrastructure required of manned aircraft, eliminating the need for human pilots to undertake hazardous journeys, and providing finer-quality data with a high degree of consistency and repeatability for flight profiles (Cunningham et al. 2014). As Amad has shown, human pilots are intensely fallible: “reconnaissance pilots and observers (much like the images they produced) were essentially fragile and imprecise bodies, subject to extreme danger and difficulty” (Amad 2012, 73). Their job “was especially arduous due to their observational imperative to fly over the same terrain repeatedly in a level and straight manner (often relying on nothing other than the pilot’s sense of balance) in order to visually scan it in an exhaustive, stable, and uninterrupted fashion” (Amad 2012, 73). Drones remove the fragility and imprecision of the human body from the equation.

Their advantages for systematically monitoring large spaces usually eluding human vision are supplemented by an equally useful ability to catch minutiae that a human eye might miss. To a limited extent within the United States, and to a greater extent abroad, drones are used to closely inspect oil industry facilities like gas flare stacks, which are elevated columns within larger flare systems at refineries that burn off flammable gases to prevent pressure buildup. Traditionally, the integrity of flare systems has been examined through rope access, inbuilt scaffolding, or manned helicopter flybys with a photographer. The disadvantages of trying to carry out visual inspections or take photographs while swinging from ropes or scaling ladders and platforms are obvious: the plant has to be shut down, and inspection personnel are placed in physical danger (Aja-Onu, Akhibi, and Asiodu-Otughwor 2015). Furthermore, manned helicopters cannot fly close to live flares when the system is in operation. Even photographs taken via helicopter during a shutdown cannot capture the detail necessary to assess flare conditions properly. A drone used to gather up-close imagery of a flare boom that, two weeks earlier, a helicopter flyby had declared to be in good condition found a crack in a weld on the flare tip revealing external burning (English 2015). The drone’s live video feed, shot from a few feet away, offered operators a sharper view of the weld, translating into repairs essential for the flare system’s safety and effectiveness.

Beyond remote corners of gigantic oil fields like Prudhoe Bay’s and refinery flare stacks, other parts of oil industry installations that pose access challenges include the legs, underdeck, and overside areas of offshore drilling platforms (Conolly 2014). Attempting to decommission an offshore platform in the North Sea, the oil corporation Shell tried erecting scaffolding beneath it to check the soundness of the underdeck. Frequent storms over a period of two months repeatedly sent half-finished scaffold structures to the seafloor. Cyberhawk, a British drone inspection and surveying company, performed an underdeck appraisal in five days, allowing Shell to determine that it was solid enough for the platform to be lifted off it in one go. Cyberhawk drones transmit live, high-definition video and infrared video to their operators, enabling them to identify metallic components betraying signs of thermal fatigue and to locate sources of gas leaks at refineries and production platforms. In the future, Cyberhawk anticipates that tiny microdrones will be developed capable of flying autonomously inside bulk storage tanks to generate 3D images that would uncover critical defects if present. Chemical fumes emanating from the storage tanks make this task hazardous

for humans at the moment (Jacobs 2013, 40-41).

Drones thus extend human vision in two main ways. Firstly, their LiDAR, thermal, or infrared competencies all mean that vision is no longer confined to the spectral capacity of the human eye. It expands to encompass regions of the electromagnetic spectrum before violet or past red light. Conventional photography relies on the narrow band of the spectrum to which our eyes are sensitive, but infrared and thermal imagery ventures into heat's longer wavelengths, and LiDAR to ultraviolet's shorter ones. The visible, in other words, "becomes a small part of a larger field of sensory exploration of the environment" (Manovich 1993). As a result, recording objects' positions in space is no longer constrained by whether our eyes are capable of registering them or not.

The second way in which drones extend human vision is by removing the conditions of accessibility once constraining the recording of objects' positions in space. Areas that would be difficult or dangerous for people to try to reach can easily be penetrated by mechanical drones. Dziga Vertov predicted breaking the accessibility barrier a century ago. Lamenting the "imperfections and shortsightedness of the human eye," he dreamed that the next stage of cinematic progress following a "kinok-pilot" guiding a camera's movements would be a "kinok-engineer, with remote control of cameras"—an innovation sounding remarkably similar to a drone operator (1984, 14; 19). Vertov believed that "the position of our bodies while observing or our perception of a certain number of features of a visual phenomenon in a given instant are by no means obligatory limitations for the camera" (1984, 15). Inhabiting the perspective of a perfectly mobile seeing machine, he says "I draw near, then away from objects, I crawl under, I climb onto them. I move apace with the muzzle of a galloping horse, I plunge full speed into a crowd, I outstrip running soldiers, I fall on my back, I ascend with an airplane, I plunge and soar together with plunging and soaring bodies" (Vertov 1984, 17). Drones, as we have seen, draw near to and make visible minuscule cracks on flare stacks. They are likewise adequate to drawing away from and aerially inscribing objects as huge as the Prudhoe Bay oilfield. Drones crawl under offshore drilling rigs and climb onto them, plunging and soaring together. In short, drones perceive more and better than we can, opening up new vistas to visualization unavailable to normal eyes.

Revealing technologies that extend human vision, including LiDAR-equipped drones and the digital 3D maps they generate, are attractive options for removing oilfield employees from the mercy of the elements. Oilfield employees using digital 3D maps in Prudhoe Bay transport themselves, through the computer screens in their offices, into a virtual simulacrum of the harsh Arctic environment outside. This simulation frees their bodies from real exposure to what the industry calls the four D's: dull, dirty, difficult, and dangerous work. Working in an oilfield means running the risk of injury or death in a catastrophic accident at the best of times, and in Alaska this bodily risk is compounded by severe weather conditions all year round. Winter temperatures in northern Alaska frequently drop to -30°F with extreme winds, and even in the warmest summer months the average daily temperature is only 45°F (BP 2017).

The fact that the oil industry is in the Arctic at all speaks to a wider global energy trend heralding the end of "easy oil." "Haunted by the specter of depletion, states and corporations embark on a desperate scramble for oil," in Michael Watts's words, "which is leading inexorably to a tooth and nail struggle for both conventional and unconventional hydrocarbons," including tar sands, shale gas, and deepwater oil and gas (Watts 2012, 438). Just as virtual-reality technology allows energy-hungry humans to mine unobtainium on the planet Pandora despite its toxic atmosphere in *Avatar* (2009), the challenging operating environments of unconventional hydrocarbons seem to point toward even more advanced technological enhancement of the human body's modest capabilities in the years to come (at least in the U.S., which has so far been slow to adapt to renewable energy). In a paper delivered at the 2015 Arctic Technology Conference, two employees from the firm GRI Simulations presented what they called the Virtual Arctic Simulation Environment, a software system designed to train oilfield workers in how to navigate real-life remotely operated vehicles, or ROVs, within Arctic subsea trenches. The presentation sold the technology much as EA Sports might market its athletic video games, emphasizing the "high fidelity" of its interactive 3D graphics (Dodd and Hamilton 2015). GRI Simulations' VR experience allows infrastructure to be designed and operations to be practiced in advance, freeing oilfield employees from prolonged exposure to a real-life environment hard on the human body.

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Senses of Place at the Border

Visual Cultures of Mobility at Canadian Airports

Sydney Hart

As an ever-increasing number of international passenger flights continues to crisscross the world, so too are the numbers of refugees, and irregular border crossings continuing to increase.¹ These movements evince the breadth of transnational forces radically reshaping how border spaces and human mobility are experienced today. Responding to these shifts, in recent years states across the global north have been developing new ways to control and represent mobility, notably through biometric and algorithmic imaging. Airports, as an important form of border space in the 21st century, are productive sites to analyse representations of transnational human mobilities, given their unusual concentration of wayfinding signs, technologies of surveillance, corporate marketing, and cultural displays catering to tourism (Augé 1992). In Canada, such media ecologies are marked by representations of place specific to regional cultural contexts, as well as federal surveillance protocols through which the US continues to play a determining and outsized role.² Researchers from divergent fields have recently analyzed visual media at Canadian airports largely through the tools of either sociology and surveillance studies,³ or art history.⁴ As more interdisciplinary scholarship on contemporary surveillance at US and Canadian airports has shown,⁵ analyzing modes of representation for both surveillance and art in the context of airport mobility can offer important insights into the cultural means by which state power differentially influences mobility according to race, class, and gender, in turn, demonstrating how such forms of power can be contested. What do these visual representations tell us about how mobility is controlled and perceived in Canada today? What are the aesthetics of Canada's major airports, and how do these aesthetics relate to forms of state power?

I will first address these questions by focusing on how airport spaces have changed after the security overhauls that followed 9/11. I will then consider how state power influences transnational mobility and visual culture at airports through three conceptual frameworks. Theories of the *non-place* are especially relevant for discussing how visual media determine the experience of place at airports, and how these media inform, and are informed by, scripted processes of mobility. While the term "mobility" can take on many different meanings, I am focusing on the transnational movements of people, whether regular or irregular.⁶ Through the second conceptual framework, the *world-as-exhibition*, I will outline how regimes of visibility found in Canadian airports echo a legacy of world expositions rooted in nation-building and place branding initiatives. I will focus on the visual aspects of media at airports, while remaining critical of ocularcentrism and the forms of power that ensure airports are largely designed to be navigated visually. Thirdly, I will examine the cultural context of biopolitical representations, such as biometric imaging. I will investigate how these visual representations fit within a biopolitical logic of routine identification. This inquiry focuses on Canada

as a settler nation-state, with the “state” referring not only to the territory currently claimed by Canada, but also to the political and security apparatus that has operated, directly or indirectly, through its recent federal governments. This critical investigation of divergent types of visual culture representing human mobility will form part of a cognitive map aiming to uncover the layers of state power echoing through the walls of Canada’s main airports, in addition to the vital forms of mobility that question this power.

Canada’s three major airports cater to very different parts of the world, and represent distinct migratory and cross-cultural ties.⁷ The majority of international passenger traffic is channeled through three airports, the country’s busiest: Toronto Pearson International Airport (Toronto’s airport); Vancouver International Airport (Vancouver’s airport); and Montréal-Trudeau International Airport (Montréal’s airport).⁸ Each of these airports showcase a particular visual identity, where visual culture functions largely through a showcase visuality, presenting municipal, regional, or national narratives through celebratory representations of place. On the other hand, the routine processes of security checks, including the presentation of personal biometric information, contribute to ingraining mechanical responses and standardized behaviours amongst passengers. These airports are run by private non-profit organizations, each forming distinct airport authorities for their metropolitan area. In terms of its current cultural displays, Toronto’s airport showcases a number of works by international artists, as well as collections from regional cultural institutions such as the Royal Ontario Museum, the Canada Science and Technology Museum, the Museum of Sight and Vision, as well as works by local artists. Furthermore, artworks commissioned through a juried competition are designed to provide an “uplifting” and “educational” experience, while displays are intended to “represent Toronto’s role as the gateway to the North American global air transportation system” (Greater Toronto Airports Authority 2003). Vancouver’s airport also foregrounds regional identity through its Sense of Place programme, focusing on Indigenous Northwest Coast art. Finally, Montréal’s airport showcases cultural production from its surrounding region through the *Aérogalerie / Montréal Identity* programme, which brands the city by focusing on photographic and new media projects, such as light installations, digital screens, and light boxes. Even though they represent very distinct parts of Canada, these airports each showcase sanctioned cultural displays that support both the physical mobility of people navigating through airports, and state imperatives in transnational mobility.

Canada’s major airports have introduced increasingly sophisticated ways of integrating media at airport security for the purposes of directing traffic and controlling passengers, notably through the massive security overhauls that followed 9/11. Many of these measures have been recommended, or lobbied for, through two international organizations: the International Civil Aviation Organization (ICAO), a special agency of the United Nations that issues Standards and Recommended Practices to airlines and airport authorities across the world, and the International Air Transport Association (IATA), an organization representing the commercial interests of airlines.⁹ Businesses and state interests, however, were able to turn international requirements for air travel security into opportunities for realising long-standing plans. The Canadian government, for instance, formed Canada Border Services Agency (CBSA) in 2003 to increase border security in the aftermath of 9/11. In terms of the habitual use of airport terminals, passengers started arriving earlier at security gates in anticipation of lengthier security checks. This resulted in longer waiting times past security. Montréal’s airport responded by adding more restaurants and boutiques in its restricted zone, a process that paralleled the proliferation of art both after and before security (ADM 2016). These changes led to an increase of what sociologists Justine Lloyd and Peter Adey call “dwell-time,” or enforced waiting periods, which create the retail opportunities that many airports financially depend on (2003, 94). Furthermore, the specific opportunities offered during this “dwell-time” also allow airports to position themselves competitively over other airports across the world.¹⁰ The visual culture that I will detail should be understood within a broader neoliberal context reshaping airports (and other transport hubs) into more economically productive sites, to be considered in competition with other transports hubs. Such prioritization of commerce at airports can be understood as an example of how business interests and increased security measures have stabilized to become mutually beneficial, following the confusion and economic losses of the first few days immediately after September 11th. “Dwell-time” exemplifies how airports are shaped by seemingly contradictory forms of mobility, whether they be the flows of state security or those of commercial incentives.

The proliferation of signs across airports—announcing gates or advertising products—is largely conceived for transience, and designed to be experienced in passing. The variety of media used for these signs (e.g. light boxes or digital screens) and the variety of their placements across the airport, testify to the unique integration tying media to human mobility. The combination of these elements—persistent movement and the proliferation of signs—are constitutive aspects of the non-place. The concept of non-place, first formulated by historian Michel de Certeau, was later developed and popularized by anthropologist Marc Augé in the 1990s. Considering what is negated, de Certeau defines “place” as characterized by an order of properties, a locale where each spatial element is distributed through distinct positions that create relations of stability and coexistence (de Certeau 1980, 157). This order and stability are then disrupted in the non-place through the proliferation of language in space. De Certeau especially emphasizes the influence of proper nouns, and how they lead to varied and conflicting spatial orientations. Augé develops and extends de Certeau’s formulations, describing non-places as being “invaded” by text (such as navigational aids) and characterized by the dual negation of place by textuality and the movement of people (Osborne 2013, 120). Augé mentions such seemingly divergent locales as train stations, shopping malls, and migrant camps as examples of contemporary non-places.

Extending these formulations to the field of aesthetics, philosopher Peter Osborne argues that the dual negation of place that characterizes the non-place is also constitutive of the archetypal space of modern art: the white cube. Exhibiting art through standardized architectural forms and against white walls, the white cube was famously theorized by artist Brian O’Doherty as “the single major convention through which art is passed” (2013, 123). Despite seeming antithetical to the scale and traffic associated to malls and transport hubs, Osborne argues that the white cube is also a non-place to the extent that it is a self-enclosed locale designed to facilitate the movement of people (through the transience of exhibitions) while foregrounding the insertion of textuality. For Osborne, modern art is inherently tied to textuality in the sense that modern art is necessarily constituted by the discourses surrounding it (2013, 122).

That the white cube and the airport share these ontological characteristics goes some way toward explaining the integration of extensive art exhibitions and displays within the infrastructures of Canadian airports. This meeting of two seemingly divergent spaces is made literal through the neologism *Aérogalerie*, which refers to the evolving exhibitions of art and design at Montréal’s airport. The theme of mobility is evoked through this programme in different ways. Public artworks scattered across the island of Montréal are re-presented as abstract photographs in the airport’s light boxes. These boxes are wrapped around nine of the airports’ pre-existing columns. Moving through the airport, passengers encounter columns with fragmented representations of the city through variegated geometric abstractions. Many of the columns represent the context of other transit hubs where the art or design works are located. For instance, some columns re-present the interiors of Montréal’s underground metro system through Mario Merola’s *Octavie* (1976) at Charlevoix Station, Lyse Charland Favretti’s *L’Éducation* and Pierre Osterrath’s *Untitled* (both 1982) installed at Du Collège Station, or *98* (2007) by Axel Morgenthaler at Henri-Bourrassa Station. The majority of art and design works represented through this series of columns at the airport represent the theme of mobility through other forms of transport infrastructure in the city. In fact, most of these works form part of an unbroken underground path through the interior spaces of the Montréal Metro, or through the sprawling network of tunnels, malls, and office complexes that is the RÉSO (or Underground City), the non-place that has perhaps most branded the city.



Fig. 1 *Art en Couleurs* display with Pierre Osterrath's *Untitled* in foreground

The representation of disparate parts of the city in the context of the airport, along with the aesthetics of fragmentation and fluidity, are cultural manifestations of an abstracted mode of being, what geographer David Harvey has called “time-space compression” (1989). Harvey has commented on the radical impact of neoliberalism, economic deregulation, and flexible labour in producing a newly accelerated, shortened, or “compressed” experience of space and time. He has outlined how this radical reconfiguration of social and economic life in the global north manifested through a distinct aesthetic of fluidity and fragmentation in postmodern art and architecture from the 1970s and 1980s (1989). His conceptualization and examples, however, largely overlook how these political-economic forces impact people differently according to race, gender, religion, and disability. This omission has led geographer Doreen Massey to criticize Harvey’s concept of “time-space compression” as a monolithic category that belies the ways that power impacts people in different ways, and through different systems of oppression, a process she refers to as “differential mobility” (1993, 63). Increased potentials in the mobility of some have accompanied increased controls and restrictions over the mobility of others. Massey argues for the need to consider how the mobility that many people enjoy actually weakens possibilities for others through the development of systems of increasing differential and unequal mobility.

How are group-differentiated forms of mobility impacted by the legacy of colonialism? How does state power influence what forms of mobility are intelligible at airports? Massey states that differential mobility “can weaken the leverage of the already weak. The time-space compression of some groups can undermine the power of others” (1993, 63). Universalizing the experience of “time-space compression” can therefore contribute to obscuring how some groups are freer to travel than others. Likewise, the Montréal Identity / Aérogalérie programme’s claim to represent a city as culturally diverse as Montréal, while showcasing the work of almost exclusively white artists, shores up settler notions of mobility that actively erase Indigenous and non-white patterns of migration through the city.

These forms are representative of the privilege by which some settlers can move across the continent and claim somewhere to be “their home” in a way that disassociates the land from Indigenous systems of knowledge. Settler sovereignty is, according to scholars Emma Lowman and Adam Barker, “essentially ‘portable’ anywhere inside the Settler’s domain” (2015, 23). The Montreal Identity programme extends settler processes by which senses of place and belonging are naturalized as being “portable,” abstracted from, and in conflict with, existing place-based epistemologies. However, it is important to note the ways some non-Indigenous people in North America are theorized beyond a dialectic of settler and Indigenous forms of mobility, for instance as, “arrivants.” Borrowing the term from African Caribbean poet Kamau Brathwaite, Chickasaw writer Jodi A. Byrd explains how “arrivant” relates to “those people forced into the Americas through the violence of European and Anglo-American colonialism and imperialism around the globe” (2011, xix). Arrivants represent a different relation to the settler-state, a position that should be nuanced to the extent that, according to Byrd, they have “functioned within and have resisted the historical project of the colonization of the ‘New World’ (Byrd 2011, xix).

Airports emblemize processes of globalization, but they also extend processes of representation imbricated in national (state) interests. Furthermore, because international airports in Canada operate

through, and include, international borders, the state regulates transnational movements. This is a conception of spatial limits at odds with the senses of place of Indigenous peoples, such as the Kanien'kehá:ka (Mohawk), on whose territory Montreal's airport rests. Anthropologist Audra Simpson has shed light on how Mohawk forms of sovereignty allow for an alternative understanding of forces regulating the flow of bodies through the US-Canada border. "I have crossed the border my entire life," Simpson writes, "in cars, on buses, and had my first flight alone into Dorval [Montréal's] International airport at age seven to see my grandparents and my extended family" (2014, 199). This border, Simpson claims, "cuts through [Mohawks'] historical and contemporary territory" and is "simply, in their space and in their way." Despite the enforcement of this settler-state border, mobility through it enacts the Mohawk nation's understanding of history and law (Simpson 2014, 115). This notion of mobility as a form of sovereignty is echoed by scholar Gerald Vizenor, whose concept of "transmotion" provides another way of thinking of Indigenous mobility. He defines this concept as being:

a sense of native motion and an active presence [that] is sui generis sovereignty. Native transmotion is survivance, a reciprocal use of nature, not a monotheistic, territorial sovereignty. Native stories of survivance are the creases of transmotion and sovereignty. (2011, xvi)

While this "transmotion" could be implicit, for instance, in the iconography of individual art and design works at Vancouver's airport, it is not immediately apparent in the airports' curatorial framing. Coast Salish nations have historically existed on both sides of the US-Canada border, but in the airport, artworks from these nations are used to shore up a "sense of place" that extends specifically to the territorial limits of British Columbia. Elsewhere, Simpson argues that "the very notion of *indigenous* nationhood which demarcates identity and seizes tradition in ways that may be antagonistic to the encompassing frame of the state, may be simply unintelligible to the western and/or imperial ear" (2011, 21). Simpson's stories of border crossing as the enactment of sovereignty suggest that while Indigenous cultural expressions can unsettle the reification of state borders, these stories may not be intelligible through a particular sense, or for particular circles. Their power can lie in the embodiment of movement *as* cultural expression, rather than through visual representations that continue to separate observer and observed, actor and spectator.

Airports are designed to separate spectators from actors in order to privilege passenger mobility. Through their emphasis on signs, images, and visual culture for the purpose of navigation, they can also temporally frame the experience of air travel, often providing first and last impressions of place, and contributing to senses of place. Airport authorities, along with partner institutions such as museums, have carefully curated these impressions to correspond to unique images of place. The large-scale exhibitions that result, uniquely adapted to transnational flows, draw from modes of representation originating in large-scale exhibitions known as world expositions, or world fairs. Two cities in Canada have hosted iterations of these events: Montréal in 1967 (Expo 67) and Vancouver in 1986 (Expo 86). Beyond the massive changes in transport infrastructure such fairs generated,¹¹ more discreet traces of their legacy appear throughout the visual culture of both airports. Standing by Vancouver airport's arrivals terminal, Joe David's massive work, *Welcome Figures* (1985), was originally commissioned by Expo 86 to stand in front of the British Columbia Pavilion. David's work includes one female and one male figure carved in red cedar, each towering at around three meters and carved in the Clayoquot tradition of the Nuuchahnulth. This work is based on the carved figures traditionally placed on beaches and in front of a village or big house, designed to "look out to sea, arms raised, palms facing upward" in order to "greet guests invited to special events such as potlatches" (Laurence 2015, 33). Elsewhere, the Sense of Place programme has sought to foster a sense of belonging, largely by presenting Indigenous Northwest Coast art and celebratory reflections of British Columbia's natural environment (Laurence 2015, xiii). Under this programme, the airport has aimed to unify diverse facets of BC, specifically foregrounding relations between Northwest Coast art and the region's land, sea, and sky. This curatorial focus dates back to the early 1990s with the installation of Bill Reid's massive five-ton sculpture, *The Spirit of Haida Gwaii: The Jade Canoe* in 1994, now in the airport's International Terminal. The work is bronze cast and covered with a jade-coloured patina, meant to reflect the province's naturally occurring jade. Known as the "Heart of the Airport," the *Jade Canoe* reflects the setting

of contemporary air travel through Haida representations of mobility. This work draws a parallel between the narrative arc of the canoe's journey, of mythical proportions, and the more prosaic plight of airport passengers, workers, and other people sharing the space of this terminal (Laurence 2015, 37). This work, as with David's *Welcome Figures*, symbolically transfigures everyday mobility through Indigenous iconography and aesthetics. Furthermore, Reid's work has already gained iconic status through other contexts and has represented the state in more overt ways: the first casting of this work, *The Spirit of Haida Gwaii: the Black Canoe* (1986), appears outside the Canadian Embassy in Washington, DC, and an image of the sculpture has appeared on the Canadian twenty-dollar bill.¹²



Fig. 2 Bill Reid's *Jade Canoe*, shown in context of the International Terminal

While the term “sense of place” can be defined as the various ways in which place provides a sense of belonging, creates attachments and constructs meaning, it is an elusive concept that reveals how deeply intertwined perceptions of place are with psychological, political, and sensory factors (Giesecking, et al 2014, 82). Frank O’Neill, president and CEO of YVR Airport Services for over two decades, has commented on the relationship between Northwest Coast art and the fostering of a “sense of place.” While “travellers from the four directions arrive and depart” at the airport, he claims, the “sense of place created by the art of the Northwest Coast helps to anchor and orient their feelings” (Beiks 2003, 36). Indeed, in the first years of the airport’s focus on “sense of place,” O’Neill argued that the presence of Indigenous art would “provide a competitive advantage over an airport that looks upon itself as a processing factory” (qtd. in Leddy 1996).

Despite the paradox of aiming to produce a “sense of place” within the airport (an archetypal non-place), the affective evocations of place through both Vancouver and Montréal’s airports largely draw from historically ingrained, Eurocentric modes of representation at mega-events. The format of Vancouver and Montreal’s world expositions originated with the Crystal Palace exhibition of 1851 (London, UK) and the World Exhibition of 1889 (Paris, France). For political theorist Timothy Mitchell, these expositions emblemized a characteristically Western way of seeing the world through their production of totalizing representations of place, scripted relations between viewer and representation, and an emphasis on passive forms of spectatorship. Mitchell recounts how non-Western visitors to world expositions of the late 19th century saw them as “emblematic of the strange character of the West, a place where one was continually pressed into service as a spectator by a world ordered so as to represent” (1994, 37). Geographer Denis Cosgrove remarks that Egyptian visitors to the 1889 Exposition were struck by displays that organized the world “according to visual criteria, staging reality as a dramatic performance” (2001). This paradigm, which Mitchell describes as “the world-as-exhibition” (1989), sheds light on the modes of representation that inform how Vancouver and Montréal’s airports represent senses of place. Furthermore, Montréal’s world exposition occurred during a historical phase in which such mega-events were used for nation-building, effectively contributing to shoring up the settler state of Canada by showcasing itself to the world through

(tourist) flows. The “world ordered so as to represent” finds a contemporary echo in the airports’ visual culture displays, but also in how passengers’ navigation is funneled and directed at the airport to facilitate the representation of people in transit. After the aesthetics of showcase in the publicly accessible areas of airports, passengers find themselves represented through state security processes that seek to make their mobility conditional on their authentication through personal data.

The need to facilitate the movement of people through borders, as well as to carefully filter such movements for security risks, forms a central challenge for the state at airports. The two operational priorities of airports—mobility and security—which largely conflict, have manifest themselves through visual culture in a number of ways. When passengers access security gates at airports they present identification in the form of passport photos, magnetic chips, and (increasingly) parts of their bodies—such as faces, fingertips or the iris—for biometric scans. The information provided by passengers in this way is what surveillance studies scholars call “data doubles”: virtual identities located in networked databases, (Lyon 2008) that follow passengers through security processes across the network. Learned processes of personal authentication through various security theatres—such as the airport “confessional,” when arriving passengers are questioned by CBSA agents—can become second nature, through their mechanical repetition at airports across the world. For scholar Mark B. Salter, this is part of the pedagogical function of airports, where relations with representatives of state authority are performed in repetitive fashion so as to normalize state-sanctioned processes of mobility (2008, xii).

First introduced on a passenger class basis (i.e. with passengers wishing to pay for a service expediting security procedures), iris scans represent an alternative to the changes affecting other forms of documentation over time, for instance affecting the accuracy of passport photos and face scans. Biometric imaging, as sociologist Elia Zureik has pointed out, relies on the recognition of patterns, which are then translated into binary code using algorithms (Lyon 2008, 39). This type of imaging adds another layer of state power to the forms of mobile spectatorship already dominant before airport security. Such scans offer biometric data in the literal sense of “measuring” “life signs”: since after death, muscles in the iris become relaxed, thus disrupting the machine legibility of the vital information needed for iris scans.

The use of such imaging technologies at airports reinforce the state’s biopolitical control over human mobility, contributing to reinforcing the power of the state on what philosopher Giorgio Agamben calls “bare life”: the quality of human life in its biological essence, as separated from political life (1998, 8). Agamben argues that the figure of the refugee is important in understanding the fictions produced by modern states because they reveal the processes of exclusion through which states produce the conditions of bare life (1998, 131). Following Agamben, the technologies and media infrastructures supporting the conditions for “bare life” can thereby be understood as another dynamic politicizing—and problematizing—the more overtly aesthetic forms of state-sanctioned visual culture at airports.

It is with this process of exclusion in mind that I want to turn to recent Canadian and international news media images of Syrian refugees. In December 2015, when the first planeload of Syrian refugees fleeing Syria’s civil war arrived in Canada, they found Prime Minister Justin Trudeau, the federal ministers of immigration, health and defence, and opposition immigration critics to greet them at Toronto’s airport. News reports and photos of the event rapidly proliferated across major international news outlets (Editorial Board 2015). The symbolic and humanitarian significance of this event—an unlikely meeting of different cultural and political worlds—was enhanced by its setting: a terminal at Canada’s busiest airport, opened for the occasion. In his speech, Trudeau addressed the significance of the moment and his presence at the airport, to foster a sense of place, and represent a place—Canada—for both domestic and international audiences (Austen 2015). Given this contemporary function of airports in representing place, it is perhaps no wonder that Canada’s government, through Trudeau, seized on the media event at Toronto’s airport to present an official image of Canada to the world. This official representation excludes more grim treatments of refugees at Canada’s airports. The state processes that have excluded migrants—notably by keeping migrant children held indefinitely in Canada’s infamous detention centres (Harris 2017)—have remained largely hidden from sight. To understand these images of inclusion in relation to the more hidden processes of migrant detention and refusal in Canada is to recognise the logic of representation by which states detain or deport migrants in secret, but publicly narrativize their inclusion within political life. This

is part of a visual economy of airports in which the state contributes to shaping narratives of mobility that extend settler-colonial erasures, leaving international borders unquestioned, while excluding vital forms of Indigenous mobility.

It is telling that airports have emerged as sites for the concerted curation of large-scale representations of place, given airports' crucial roles as nodal points for the circulation of goods and people in contemporary globalization. The extent to which non-places in Canada are prominent sites for the representation of place goes some way towards revealing the growing cultural importance of infrastructures for mobility, notably in shaping perceptions of place. Counter-cartographies, like those presented by Audra Simpson, suggest how an aesthetics of mobility can form part of a vital, decolonial way of undercutting the reification of settler borders, as opposed to forming an extension of biopolitical control through forms of spectatorship. In the context of these major Canadian airports, representations of place take on roles consistent with a broader biopolitical mode of representation: the ordering of mobility through an aesthetic of authentication in which institutions alternately submit place and individuals to rituals of display, constructing a visual order amidst the airport's diverging flows.

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Endnotes

- 1 "Internationally there are over 700 million legal passenger arrivals each year (compared with 25 million in 1950)" (Sheller and Urry 2008, 207).
- 2 A prominent example of which is Bill C-23, also known as the Preclearance Act of 2016, which allows armed US Customs and Border Patrol officers to search and question passengers at a number of Canadian airports, as they seek to board flights for the US.
- 3 See for instance Lyon 2006 and Salter 2006.
- 4 See for instance Flaman 2009 and Laurence 2015.
- 5 See Browne 2015.
- 6 Thus disregarding other understandings of mobility, such as the mobility of goods, or social mobility. See Urry 2007.
- 7 While the United States remains the top international destination overall, in 201, Toronto's airport recorded 42.3 million passengers with Europe accounting for 23% of international destinations; Vancouver's airport recorded 21.4 million passengers with Asia representing 29% of international destinations; while Montréal's airport saw 15.4 million passengers with both Europe and the US representing 35%. See Transport Canada. 2017.
- 8 Toronto's airport alone carried roughly half of the country's total international passenger traffic in 2015.
- 9 Both organisations are headquartered in Montreal, QC. See Salter 2010.
- 10 The United Arab Emirates, for instance, have invested huge sums to create hub airports replete with "shops, cinemas, spas, hotels, gardens, churches, and medical facilities, so that the time spent on the ground at airports is not seen as 'dead-time.'" See Salter 2010.
- 11 Notably, the inauguration of new public transit rail lines with the arrival of the SkyTrain (Vancouver), and the Metro to Longueuil (Montréal)
- 12 Officially distributed between 2004 and 2012.
- 13 "We get to show not just a planeload of new Canadians what Canada is all about, but we get to show the world how to open our hearts and welcome people who are fleeing extraordinarily difficult straits." (Austen 2015).

The Making of Urban Computing Environments

Borders, Security and Governance

Ilia Antenucci

This paper explores the production of urban computing environments in the context of Cape Town, South Africa. It draws on research conducted between 2015 and 2017 to understand how Cape Town has been transformed into a smart city by a series of public and private initiatives.

Over the past two decades, the city has seen substantial investments in digital infrastructure, the rise of a vibrant IT industry, and the increasing datafication of urban life through smart devices, apps, and platforms, while government and corporate narratives have coined terms such as “Silicon Cape” and “Digital Gateway to Africa” to describe these shifts. In this paper, I propose two key theoretical contributions: first, I push against popular narratives of smart cities as smooth and seamless spaces, and instead point to the ways in which urban digitalization actually develops through bordering processes. Second, I describe how the governance of smart cities is informed by preemptive politics and forms of speculative security.

The paper is organized as follows. The first section examines the steps undertaken by both public authorities and private actors to develop digital technologies for the management of Cape Town. It describes the border technologies—biometric identification, algorithmic profiling, risk modeling—that operate across infrastructures, mundane objects, and devices. In pointing to these processes, and in trying to grasp their logics and effects, I work across different lines of research. These include literature on smart borders and algorithmic security (Amoore 2006; Leese 2016); critical approaches to smart cities and the making of computational environments (Kitchin and Peng 2016; Dourish 2016; Gabrys 2016); and studies on the crucial and polysemic functions of borders in the global articulation of power and economy (Mezzadra and Neilson 2013).

In the second section, I argue that smart city projects are inherently security projects, insofar as their logistic organization is informed by a logic of preemption/anticipation wherein the circulation of people and things, and “natural” resources and infrastructures become inscribed into an extensive grid of risk calculation. The extensive distribution of border techniques is instrumental to this security framework. Drawing on the work of Louise Amoore (2014) and Marieke De Goede (2012), I explore the speculative nature of security calculations based on algorithmic risk modeling. I then briefly discuss how the notions of environmental governance and biopolitics 2.0 (Gabrys 2016), and targeted governance (Valverde and Mopas 2004), might be productively integrated to analyze how preemptive politics operate. In my conclusion, I outline again the analytical and practical connections that become visible between the dissemination of border techniques across infrastructures and devices, and forms of anticipatory governance in urban computing environments.

This research moves across different disciplines and scholarships—from urban studies to security

studies, to STS— to make sense of processes that are multi-faceted, quickly shifting, and slip through any categorization. Similarly, rather than following a pre-structured design, research practices were largely inspired and crafted by my relations with the context. Semi-structured interviews with informants involved in various ways in the processes of digitalization—from city managers to security guards, from academics to IT entrepreneurs—helped me grasp the many different standpoints and agendas that inform the making of smart Cape Town, while also laying out how crucial the techniques of identification, profiling, and anticipation have become in many levels of urban life. At the same time, through the analysis of planning documents, public policies, and commercial outlets, I was able to frame the tension between smart city narratives of harmonic and seamless development, and the unfolding of bordering process throughout the new smart infrastructures.

The Borders of Digitalization

Across commercial outlets and mainstream discourses, smart cities are typically represented as smooth, seamless spaces, where the integration of computing systems with human and non-human elements makes urban life easier, safer and more sustainable for all. As Söderstrom and Klauster (2016) point out, these narratives are shaped by the commercial strategies of major firms and consultants, such as IBM, Cisco, Oracle and the like, which play a crucial role in the digitalization of cities. Digitalization has been defined as “the way many domains of social life are restructured around digital communication and media infrastructures” (Brennen and Kreiss 2016, 556). I apply this notion to the urban context to indicate the socio-technical processes through which cities are increasingly instrumented with sensing and computing systems. This section investigates the strategies of digitalization in Cape Town. It illustrates how, in contrast with popular and commercial narratives, urban digitalization actually proceeds by creating borders and disseminating border techniques across and around smart infrastructures. First, it is important to situate my argument in relation to the existing debates on, respectively, the making of digital space, and the nature and functions of borders in the present world.

Paul Dourish (2016) points to the tension between holistic design and piecemeal accumulation of technological interventions that informs urban digitalization. As Kitchin and Peng (2016) claim, code becomes materially entangled with infrastructures, services, everyday habits, and practices of government, in modalities that are always contingent. Hence, the relation between code and the city is mediated by a myriad of socio-technical assemblages which include a wide range of material and discursive elements. In her book *Program Earth*, Jennifer Gabrys (2016) delves even deeper into the making of sensing/computing environments. Drawing on Albert North Whitehead’s notion of “concrecence” and Gilbert Simondon’s notion of “concretization,” Gabrys moves beyond the idea of assemblage as a simple addition of existing elements, and argues that sensing infrastructures and ubiquitous computation rewrite the relations between different entities, producing new forms of connection, expression, and actions. Computing environments, then, come into being through relational processes, where computing becomes environmental while at the same time, the environment becomes computational. Importantly, as Gabrys points out, this discussion of the environment strongly resonates with Foucault’s notion of milieu as the setting where modes of governance unfold, and of environmentality “as a spatial–material distribution and relationality of power through environments, technologies, and ways of life” (Gabrys 2016, 187). Building on this aspect, I focus on the specific distributions of power as well as on the functions that make them visible across the urban computing environment. Borders, I suggest, are a distinct form in which power materializes and operates, and it might be particularly important to investigate the ways in which they intervene and take shape in the proliferation of sensing infrastructures.

Borders are a way to articulate power relations between humans, resources, infrastructures, and computing systems through distinct techniques, such as monitoring, identification, profiling, and risk modeling. As Mezzadra and Neilson have shown (2013), besides demarcating geographical territories, borders proliferate in various facets across and beyond national boundaries to manage the circulation of people, money, and things, and provide a privileged angle to grasp the articulation of power and capital in the global world. Borders connect and divide at once, while performing multiple and differently nuanced operations

of exclusion, classification, and filter. With the development of digital technologies, bordering processes have become more and more infused with sensing systems and algorithmic calculations. Louise Amoore (2006) has shown how biometric borders introduced in the US and Europe have proven to be inherently mobile borders that disseminate risk profiling techniques across many aspects of society. Overall, however, while pointing to the ways in which border technologies globally spread across territories, jurisdictions, labour regimes, and forms of life, the discussion so far has not specifically addressed how borders intervene in the digitalization of cities. At the same time, recent contributions analyze the effects of urban digitalization in critical terms: for example, in their study on the mega smart city of Songdo, South Korea, Halpern et al. (2016) explain how the experimentation of new sensing technologies aims to manipulate synopsis, monetize human attention and emotions, and govern the city through automation. Shannon Mattern (2016; 2017) strongly argues against the rampant rhetoric (and projects) of cities as large-scale computers, which reduces the richness and diversity of urban intelligence to Key Performance Indicators (KPIs) and data behaviourism. Yet, these studies do not approach these socio-political issues as bordering processes—that is to say, as dynamics of demarcation, calculation, and filter across time, space, and relations. I argue that the “border gaze” can be very helpful to make sense of the effects generated by the proliferation of monitoring and profiling techniques across urban infrastructures and mundane devices. Hence, my interest here is to understand how borders become incorporated and active in the creation of urban computing environments that commonly go under the label of smart cities.

Having introduced the entanglement of bordering processes and the making of smart cities, I now move to examine how this unfolds in the case study of Cape Town. A brief look into the recent history of the city is enough to cast doubts on the idea that smart cities might develop as a seamless and harmonic environment. Cape Town is an ancient city with a complicated past. Under the apartheid regime, the urban geography was rearranged according to criteria of racial segregation, with the central and seaside suburbs made “white only,” and the black and coloured population displaced into overcrowded and underserved townships in the city’s periphery. The Smart City Strategy for Cape Town¹ was launched in 2000 by the municipal government, with a strong commitment to reduce digital divide and address social inequality through IT access and services. As a first stage, the Smart Cape Access project, implemented in 2002 in partnership with IT companies Xerox and CableCom Ltd, provided free computer and Internet access in public libraries in disadvantaged areas. In 2009, the city introduced broadband fibre networks throughout the metropolitan area, and building a platform for e-governance with an estimated investment of R 1.7 billion (approximately USD 1.3 billion). Notwithstanding the substantial investments and marketing operations, the digital landscape of the Mother City remains deeply skewed. A good deal of service delivery and urban management tasks is devolved to the City Improvements Districts (CIDs): private-public partnerships funded by levies paid by property owners in a specific area. As a result, levels of digital access and integration of services differ remarkably between suburbs, depending on the economic and social capabilities of the residents. In essence, the geography of digitalization disturbingly reflects the spatial organization of the apartheid city. In the wealthy suburbs and corporate hubs, broadband networks are extensive and fast; houses and buildings are managed via IoT systems and a number of services, from parking to food delivery and payments, are provided via mobile apps. These areas are also highly securitized, with digital surveillance, electric barbed wires, and private patrols always in place. The situation is dramatically different in vast townships like Khayelithsa and Mitchell’s Plain, where basic facilities such as running water or sewage are still lacking. Here, residents can only rely on a scarce number of wi-fi hotspots.² Access to smartphones, tablets, and laptops is limited and overall, less than 40% of the metropolitan population is able to use a computer on regular basis.³ The distribution of infrastructures remains messy, insufficient, and contested; IT, financial, and touristic hubs are enmeshed with a “subeconomy” of informal jobs and markets, and townships and makeshift settlements, where “old” urban poverty produced during the apartheid era and “new” poverty resulting from massive migrations from rural areas and other African countries converge.

What emerges from these examples is that in Cape Town the creation of a smart environment goes on alongside old and new bordering technologies. Far from producing a holistic and integrated environment, urban digitalization proceeds by demarcating zones, clusters, and hubs. In Cape Town, this process is mostly visible in the delimitation of informal enclaves, like the highly securitized districts for wealthy resi-

dents, or the corporate headquarters. Borders are at work around the development of digital infrastructures that are infused with spatial, economic, and racial inequalities.

As the distribution of sensing and computing technologies spread across the urban space, we can see other forms of borders taking shape. Embedded in these systems and devices are several forms of obligations, filters, and calculative practices. More specifically, I argue, smart city projects disseminate techniques that have been tested and applied in border management—real-time monitoring, biometrics identification, algorithmic profiling, and modeling—throughout mundane devices and facilities. In Cape Town, the deployment of sensing/computing networks has taken place across multiple initiatives and pilot projects that have been undertaken by the city government and maybe even more by private actors, the thriving tech start up sector in particular. As André Stelzner, Chief Information Officer (CIO) of the City of Cape Town proudly explains in a presentation (2012), in 2003, the city was one of the first in the world to implement a SAP ERP system to run every aspect of the administration into an integrated platform. Among its many features, the platform provides a single record of each citizen that identifies a person regardless of its interactions with the council. In other words, by running analytics across different data sets, the system creates a holistic profile of the citizen that covers every relevant aspect, from employment history and income levels, to potential vulnerabilities. On the basis of these algorithmic profiles, the city government is able to provide tailored services, but also to detect potential frauds or unpaid taxes.

Part of my fieldwork in Cape Town was spent observing some exclusive suburbs of the city, where the white-only doctrine is *de facto* still in place and private security guards enforce a zero-tolerance policy. Here, the houses are architectural masterpieces hovering above the ocean, and each non-white person that I saw was either a driver, a housekeeper, a garbage-picker, or a guard. CCTV systems enabled with facial recognition softwares are everywhere to identify suspicious presences, according to criteria that are explicitly biased. After some hard pressing and repeated promises of anonymity, I managed to interview one of the private security officers in charge of the area. A white, middle-aged man, with a past in the South African Special Forces, he explains⁴ that they “obviously (*sic*)” target young black individuals “who have no properties, and therefore no business in the area, except causing troubles (*sic*).”

The association of border techniques and instruments of digital surveillance does not come as a surprise, but practices of identification and profiling are at work well beyond the field of security. Since 2015, Cape Town has been facing the worst water crisis in its history, as the dams were at their lowest in a century and the menace of Day Zero—the day when taps would have to be shut off—was looming. Among other severe water restrictions, smart water meters have been installed to optimize the management of resources. Connected through IoT networks, and managed via mobile platforms, smart meters monitor real-time water usage for each user, detect and report anomalous events such as leaking, and create profiles of consumption. Now that the crisis seems to have been contained, or at least postponed,⁵ smart meters are celebrated as a game-changer.⁶ As planning documents⁷ illustrate, the City is working towards increased automation of the water system—that is, the control and reading of meters via IoT devices, and the use of analytics to develop proactive strategies.

Having lived for a few months in the central areas of the city, I also experienced how an increasing number of utilities and everyday activities are managed, sometimes exclusively, via mobile platforms. Uber car rides, carpooling, meals and grocery delivery, cashless payments, booking restaurants or gym classes, buying tickets for concerts or exhibitions, pre-ordering my coffee to skip the queue, finding a parking lot, checking the weather forecast, load shedding schedule, and shark spotting, were only some of the app-based services where I—as well as most people I knew there—signed in. In my almost five months in Cape Town, I registered at least twenty profiles, and would use them between twenty five and fifty times a day.

These examples of digital practices and habits from different domains illustrate how, despite the lack of a single, holistic masterplan, large portions of Cape Town and urban life are extensively enabled with sensing technologies and contribute to massive computations. Again, these operations take place by disseminating techniques of monitoring, identification, and profiling across mundane facilities and devices. The information remains dispersed among different actors, many of which are private companies. Via its SAP platform, the city government uses predictive analytics to re-calibrate the delivery of services and governance, while also hosting an Open Data portal. Simultaneously, though, massive amounts of urban data

are algorithmically processed and modelled privately, as part of corporate business operations. In addition to this, the distribution of sensing technologies reinforces existing borders, and often create new ones, along class and racial lines, spatial hierarchies, and access to resources.

In the above examples, the promise of a harmonic, seamless smart city breaks into a landscape of ubiquitous border techniques that are active *around* and *across* the sensing systems, and that incessantly scrutinize and filter bodies, identities, and movements. At once, access to digital infrastructure becomes compulsory in order to receive essential services and information, and conditional to the requirements embedded in the computing systems. Borders materialize and operate in different modalities. On one level, access to digital infrastructures is, to some extent, physically restricted: think of the walls and security systems that protect the highly privatized IT hubs of the city. On a second level, digital infrastructures become the border themselves, insofar as they monitor and restrict the movements of people, as it is the case for smart surveillance cameras targeting specific groups or behaviours. A third level of borders concerns the extensive deployment of profiling techniques across infrastructures and devices, whereby access to services is filtered (e.g., water consumption) and “tailored” policies are crafted. These type of borders are apparently immaterial, as they do not coincide with any physical location; yet they are pervasive, and have very material effects on the life of those who encounter them. The simultaneous presence of public and private actors in the management of data generates further filters and limitations to the ways in which data are processed and used. Last but not least, a further level of borders to take into account in the digitalization of cities are those specific to the type of algorithms and code strings employed in the softwares that process urban data sets. There is no mention in any public documents within the Cape Town administration of the analytics settings employed in their softwares. The type of inferences in use—whether analytics are based on predictive, descriptive, or decision models, which pools of data they elaborate, and across what time range—all these formulas remain undisclosed, protected by copyright and corporate policies, as well as by sophisticated cyber-security programs. This is especially so in the case of private companies. It is therefore impossible for common citizens to know the criteria according to which urban information is being analyzed, and on the basis of which decisions with public consequences are made. Importantly, the different levels of borders described above are not temporally or hierarchically ordered, but work simultaneously and often in entanglement. While challenging the usual notion of border as a physical demarcation between territories, they show how border logics and practices—monitoring, profiling, filtering, blocking—are inherently active through the new urban technologies. Furthermore, they have immediate effects on the ways in which risks are identified, and urban government and security are managed.

Smart Cities as Security Projects

Urban computing environments—smart cities—are intrinsically security projects. This is not generally the case because they are planned as massive surveillance systems, as part of smart city critics argue (Kitchen, 2014; Tufekci, 2014). Of course monitoring is an important feature of computing networks, but not one that captures their sense overall. Smart cities, I suggest, are security projects because they are informed by a logic of anticipation and preemptive risk management. The dream of smart city planners is indeed that of a city where every movement and every disruption can be calculated and acted upon in advance. The dissemination of border techniques throughout urban infrastructures and mundane objects serves precisely this rationale: to set up an extensive grid of measurement onto which models can be projected.

It has been observed that border techniques of identification, profiling and modeling take part in a turn towards preemptive or anticipatory governance that can be observed across many fields, from disaster management to anti-terrorism and policing (Amoore 2013; De Goede, Simon, and Hojtnik 2014). In his seminal article “Preemption, Precaution, Preparedness: Anticipatory Action and Future Geographies,” Benedict Anderson (2010) identifies preemption as one of the logics of anticipatory action—together with precaution of preparedness—whose specificity is that it works on undetermined, potential scenarios of the future. Largely shaped by the aftermath of 9/11, when security officers and policy-makers were shockingly compelled to focus on “low-probability, high-impact” events, preemptive governance has increasingly

sought to incorporate the imagination of future possibilities into risk calculations and security procedures. The nature of security practices has then become *speculative*, as it no longer settles for probabilistic evidence, but strives to grasp the unknown, the improbable, and the multiple possible futures, into present decisions. As De Goede, Simon and Hojtnik note, security is speculative “not because it is imaginative or unreal, but because it deploys notions of futurity that parallel the technologies of financial speculation. Like financial speculation, preemption is not so much about predicting the future, but acts on multiple potential futures that are rendered actionable (or liquid) in the present” (2014, 413, drawing on Cooper 2010; De Goede 2012; Amoores 2013). As Anderson puts it, preemption is “generative” as it unleashes transformation and unlocks opportunities in the present (2010, 790). Operations of speculative security can be understood across different practical and theoretical dimensions. On the one hand, security practices increasingly rely on algorithm-based, so-called “predictive” analytics, whose characteristics are important to understand how security knowledge—risk scores, risk models, alerts—is achieved. For example, non-obvious relationship awareness (NORA) softwares, developed in a commercial context and then largely employed for border management and law enforcement, are able to unearth meaningful connections and patterns across large volumes of different data sets—demographics, financial transactions, social networks and web surfing, mobile phone data, criminal records, etc.—and then aggregate the relevant information into individual profiles. At the same time, machine learning algorithms are increasingly being experimented with. They automatically create profiles and models while being able to re-generate their own settings, with minimal human intervention. Albeit commonly labeled as a whole as “predictive analytics,” the types of analytic models used in commercial and government sectors are in fact various and differently structured. Predictive models, which analyze past records to predict how likely an individual or object is to have a specific behaviour in the future, are used to create individual risk scores, like credit rating. Descriptive models, whose target is to identify relationships between groups of people (or objects), allow to create categories of threats, such as no-fly lists. Decision models, commonly considered the most advanced level of predictive analytics, are able to predict the outcome of a complex situation, taking into account the results of predictive and descriptive models as well as broader contextual factors; for example, the appropriate number of firefighting equipment to deploy in a high-risk day, and in what sites to prevent fires from spreading. Differently and flexibly configured, all these families of computing operations do not actually predict anything. Rather, they are somehow able to think, or at least operationally speculate on the endless contingencies of big data, to draw out meaningful results and even make decisions. In this sense, algorithmic prediction is, in fact, speculation.

On the other hand, as De Goede (2012) demonstrates in her research on the pursuit of terrorist money, security is speculative insofar as material security interventions, including analytics and risk modeling, only become possible when a visual field is created, which inevitably includes assumptions, ideals, emotions, and objectives, and is therefore politically charged. As poignantly noted in a more recent work, “algorithms do not deliver fully automated security judgements. They need instructions concerning risk appetites, patterns, and thresholds. Furthermore, software systems are integrated into wider professional environments, leading to processes of appropriation that are situated and to some extent unpredictable” (De Goede 2017, 40).

The making of urban computing environments offers distinct possibilities to observe speculative security in action. In 2017, the City of Cape Town launched an integrated solution called EPIC (Emergency Policing and Incident Command), that incorporates six public safety departments—fire and rescue, traffic, metro police, law enforcement, disaster risk management, and the special investigative unit—into a single control platform.⁸ Powered by SAP HANA system, EPIC relies on an IoT network made of GPS trackers, cameras, mobile apps, fire detectors etc., that connects every human and non-human component of the emergency services, from ambulances to policemen to fire hydrants. In the central command and control room, real-time data are displayed in dashboards and interactive risk maps, that allow staff to have a holistic gaze on the city’s security status. Real-time monitoring, improved response, and coordination of the interventions are described as key improvements achieved through the new system. However, according to developers and officers, the real game-changer in EPIC is the business intelligence layer, where analytics are at work. On one hand, analytics process data sent in from the sensing networks to produce instantaneous decision models. Algorithms elaborate whether an incident is happening or not, classify the event in order

of importance and severity, calculate what type and number of resources are needed and in what time. But even more importantly, analytics work on the future. Information about each incident, including video and photo reports, number of victims, number and type of resources employed, cost of the intervention, are recorded in the system for further analysis. By aggregating data and creating automated reports, EPIC is able to produce models of different categories of risks and emergencies, as well as automated protocols that apply to different cases. Continuously updated through the algorithmic feed, these models indicate how to optimize resources, assign risk scores to specific associations of criteria, and describe what a risk alert might look like. In spite of their commercial label, predictive analytics and models do not actually *predict* anything, as no mathematical operation is able to say when and where exactly an incident will occur; instead, they offer a range of configurations of the future upon which anticipatory action can be taken. In this sense, EPIC analytics work in a speculative manner, arranging possibilities, uncertainties, and options into specific formats. At the same time, as noted before, these analytics do not operate in a neutral vacuum, but are instructed with settings and criteria that are always materially and politically situated, and include some degree of bias that informs the very definition of risk and emergencies. In Cape Town, for example, the propensity to fire hazards, the scarcity of water, the limited budget available for emergency management, the presence of deprived areas with high crime rates are some of the factors that guide the operations of EPIC analytics. As a result, EPIC works at the interface between human and automated speculation to translate the city in the language of risk. Presented as a superior form of knowledge, these speculative syntheses become the foundation for preemptive initiatives of urban security. Decisions as to where and when to concentrate resources, which areas or groups of people should be kept under scrutiny, which departments should have their budgets slashed or increased, are taken on the basis of models, in the attempt to be prepared for potential emergencies, and to minimize the risk scores.

In examining the distinct ways in which urban preemptive politics unfold, I take up two analyses of the evolutions of government that might be productively combined. One is the notion of environmental governmentality sketched out by Michel Foucault at the end of his lectures on *The Birth of Biopolitics* (2008), and has been recently discussed by Jennifer Gabrys in her study on ubiquitous computing and urban governance (2016). The other one is the idea of targeted governance formulated by Mariana Valverde and Michael Mopas (2004). By pointing to environmentality, Foucault was drawing attention to the ways in which biopolitical techniques and modes of regulation were increasingly shifting from subjects and population to the broader conditions of life. The focus of government, Foucault suggested, was no longer so much on “players”—individual or collective behaviours—but rather on the “rules of the game”—the “milieu,” the environmental setting—that make behaviours possible or impossible. Gabrys moves from this formulation, which Foucault never developed further, to engage with the increasing implementation of computational technologies in urban environments, and their effects in terms of government. Trying to grasp more deeply how the distribution of power operates through computing environments, Gabrys introduces the notion of *biopolitics 2.0* as an analytical tool “to examine specific ways of life that unfolds within the smart city” (2016, 190-92). At the same time, I suggest, this notion illuminates some key features of preemptive governance and security in the smart city. As found in the examples above, (speculative) preemption and security work by trying to anticipate and reshape the rules of the game in advance, dragging a projection of potential future risk into the present, as a terrain of intervention. In this sense, preemption and security are inherently modes of environmental governmentality and biopolitics, as they translate life conditions into the grammar of risk, and try to act on them through specific knowledge techniques, such as mapping, tracking, monitoring, measuring, profiling, and modeling. Yet, and apparently in contrast with the idea of environmental governance, speculative security/preemption can be linked to the idea of targeted governance. This is described by Valverde and Mopas (2004) as a burgeoning shift in governmental practices across different fields—from criminal justice and policing to healthcare, insurance and social security, immigration and border security—where interventions on individuals or categories of people are based on accurate risk calculations are presented as smart and free from side-effects. Targeted governance breaks up its objects “into a set of measurable risk factors” (Valverde and Mopas 2004, 240), which are then recombined into patterns of security action.

We have observed a very similar mechanism in the work of the speculative analytics model for

urban security decisions. With the development of ubiquitous computing systems, smart cities and citizens are increasingly inscribed into processes of risk profiling and modeling that measure the activities of individuals and categories of people, as well as their relations with the urban infrastructures and resources. I described before how the ERP software for the urban management of Cape Town generates individual profiles of citizens and targeted policies of various natures, from tax inspections to police controls or social benefits. At the same time, a system like EPIC is able to extend this risk profiling and modeling mechanism to a broader range of objects, including resources, like water, events, or areas of the city. My point here is that, albeit seemingly alternative, environmental governance and targeted governance are an actually simultaneous and deeply intertwined articulation of urban preemptive politics. Techniques of security speculation embrace at once the infrastructural and environmental conditions within which the city lives, and the microscopic, intimate ways in which singular forms of life unfold. The distinction between humans and non-humans components of the smart city fades, as long as it is possible to register each element into risk calculations and processes of speculation on the future.

Conclusion

This paper has examined the transformation of Cape Town into a smart city, drawing attention to some key processes and tendencies in the urban government. In the first section I have illustrated how, in contrast with mainstream and commercial narratives of smart cities as smooth, seamless environments, urban digitalization actually proceeds by establishing zones and borders. On the one hand, borders are *visible* around the uneven spatial distribution of digital infrastructures, which reflects and reinforces economic and racial inequalities. The highly securitized digital hubs of the city are only accessible to wealthy residents or corporate workers, while most of the townships remain digitally underserved and public wifi does not even nearly cover the demand. As a result, despite the emphasis on Cape Town's smartness, large sectors of the urban population—especially the black population—are *de facto* excluded from, or only gradually included, into the digital developments. At the same time, borders operate *across* the proliferation of urban computing systems, as techniques of monitoring, identification and profiling become increasingly embedded in all sorts of mundane objects and devices, and put in place new types of filters, obligations and calculative practices. Water provision is restricted if the smart meter signals excessive consumption. Social payments are suspended if the SAP algorithm identifies a potentially fraudulent profile. Anyone walking around the city can be stopped and questioned if her face matches the (often biased) recognition settings of smart camera. Jennifer Gabrys observes that sensing and computing environments are able to rewrite the relations between human and non-human elements, and generate new forms of life. Building on this, I suggest that focusing on bordering processes is a way to grasp the distribution of power through these relations, as the examples above indicate.

The second section of this paper has argued that smart cities are inherently security projects. In saying this, I do not refer to the aspects of surveillance that part of the critique emphasizes. Instead, I suggest that while surveillance is definitely one important aspect of urban computing systems, what makes smart cities security projects is the fact that they are informed by a logic of anticipation and preemptive risk management. At least on paper, a smart city is a fully programmable environment, where any potential disruption can be known and acted upon in advance. The extensive dissemination of border techniques across the urban space enables the incessant collection of data on the basis of which risk models are generated. These are based on algorithmic operations that draw connections among large volumes of data on the basis of contextual settings or machine learning, while trying to identify meaningful patterns. Albeit presented as evidence-based predictions, risk models are actually highly speculative as they only provide distinct configurations of the future. Yet, as the example of the EPIC system for emergency management shows, these models become the grounds for security decisions with having a high impact on the public. In discussing the proliferation of border techniques and risk modeling I take up the concepts of environmental governance (Gabrys 2016) and targeted governance (Valverde and Mopas 2004). Although formulated in a different context and in a seemingly alternative way, I suggest these two interpretations of governmental evolutions are deeply interrelated and simultaneously at work in the government of urban computing

environments, where the logic of risk calculation absorbs human and non-human components, individual, and systemic processes at once.

While this article is based on empirical research conducted in Cape Town, it describes processes and tendencies that are by no means exclusive to this case study. Techniques and operations reviewed here can be observed, at different scales, in many smart city projects across the globe. It is well-known that from Chicago to Barcelona, from Amsterdam to Tokyo, IoT networks, and the monitoring and profiling techniques attached to them, are increasingly taking over infrastructures and service provision. Softwares that are very similar to EPIC in structure and scope have been adopted by a number of cities to manage logistics and emergencies, such as the Operations Center of Rio de Janeiro, run on IBM systems, or the Safe City Solution in Singapore, developed by Accenture.⁹ Each of these cases requires a situated investigation and specific empirical attention before a common framework can be formulated; yet, I suggest that bordering processes and preemptive politics might provide one theoretical avenue, among others, to develop critical understanding of urban digitalization in its global dimension.

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Distributed Resistance, Streamlined Silk

Solveig Suess



Fig. 1 The train tracking system at the rail yard on the Chinese border in Dostyk is a remnant of the Soviet era, photography by James Hill for the New York Times, 2013. (Accessed from www.nytimes.com/newsgraphics/2013/07/21/silk-road, 06/02/17)

In 2012, Hewlett Packard had negotiated the construction of an alternate rail route between their manufacturing facilities in China and their consumers in Europe which, in their words, was “defined not only according to business logic, but also with certain strategic calculation” (Zelenin, Center for Strategic Assessment and Forecasts, 2017). Faster than slow-ocean, cheaper than airfreight, this calculation led the rail route to travel from Chongqing through the Xinjiang Province into Kazakhstan, Russia, Belarus, and Poland, before reaching its destination in Germany, 11,179 kilometres later (Asia Perspective, 2017). Translated as “the flowing of goods,” “物流” (wuliu or logistics) expresses the naturalized desire of unhinged flow. Here, streamlined circulation is permitted through the displacement of sovereign borders, installing a new framework of transnational regulation, labour management, and security measures along with standardized units across various platforms. Later known to be part of the New Silk Road, distributive and docking

spaces become key nodal events, where time and territory along its routes are converted for maximum value efficiency. But as the rail-route speeds through the growing deserts in its regions, the shifting lands attests to ongoing exploitation and resistance. With an optimization of commodity movements, the counter-efforts of slowing the desert have become increasingly pressing as Asian dust storms frequently ride the air currents, sometimes as far as California, blind to jurisdictions.

The storm moves through a series of chemical transformations where during their long-range transport, its particles collide with bacteria, gases, and coagulate solid particles. “The dust aerosol [mixes] with pollution aerosol, such as industrial soot, toxic materials, and acidic gases” (Yele Sun et al, 2005) as it travels over China’s heavily industrialized zones. Particulate matter is then scattered, congealed into a whole new series of constellations, embroiled with manufactured and chemical residue: “What emerges, then, is a contest between the tenacity of corporeal memory and the corrosive power, over time and space, of corporate amnesia emboldened by a neoliberal regime of deregulation.” (Nixon 2009, 449) They collect the corporate afterlives of the unevenly distributed ravages remnant of high-carbon industrial practices, bringing a sense of an environmental uncanniness when modernity is materially readdressed with the unintentional consequences of its own grand designs.

In light of such movements, the formations of these studies on logistical innovations towards economic growth must be understood alongside managing weather behaviours and methods of containment. John Durham Peters describes what he calls “logistical media” to “establish the zero points where the x and y axes converge.” (Peters 2016, 37) Ned Rossiter includes various logistical media ranging from calendars and clocks, to addresses, maps, indexes, and logs, to extend inquiry on logistical media’s “[coordination] and control [of] the movement of labour, people, and things situated along and within global supply chains.” (Rossiter 2015, 139). Both Peters and Rossiter engage with media as ordering devices, providing a closer attentiveness to the protocols structuring the parameters in which movement occurs. With growing scholarly attention on the role of logistics in shaping the conditions of contemporary political, economic, and social life, this article seeks to bring in a more ecologically informed understanding of logistical media. Within the literature on logistics, a select number of authors take as their main focus the linkages between capitalism, modernity and imperialism (see, for example Chua, 2017; Cowen, 2010; Moten and Harney & Moten, 2013; Sekula, 2002 [1995]). However, these prior inquiries scarcely frame these histories as a longer project, where calculating material conditions such as weather acted as foundational to global forms of capitalism.

Drawing on a range of reportage and theory, I utilize the conceptual tools of new materialism to highlight how the specific mechanisms that shape the industry of logistics to the goal of profitability for capital have long colluded with spatial and environmental conditions. I use these theories to foreground the role of environmental agency where, as Karen Barad explains, agency “is about the possibilities for changing the configurations of spacetime-matter relations... [and] power is rethought in terms of its overall materialising potential.” (Barad 2007, 230) Barad’s idea of “intra-action” argues for a more performative and discursive practice of understanding, or, as she writes, “thingification—the turning of relations into ‘things,’ ‘entities,’ ‘relata’—[which] infects much of the way we understand the world and our relationship to it.” (Barad 2007, 812) To trace practices of calculating and predicting weather also entails tracing epistemological shifts which “intra-act” in ways to further the expansion of empire during the 18th and 19th century. The project of optics and of observation came to shape later practices of fluid-dynamics and logistics in formations which powered commerce, measurement, and forecasting. The global economy, as a result, was very much influenced by ambitions of what anthropologist Anna Tsing calls “scalability,” where scientific reason and pre-emptive calculations, remnants from the Enlightenment, brought forth a certain assemblage of governmentality over geographies of distribution and production. (Tsing, 2012, 505) In this article I will place Paul Virillo’s notion of speed into productive tension with Anna Tsing’s terminologies of friction and scalability when speaking of geographies across the supply chain. I also aim to evoke Amitav Ghosh, Denise Ferreira da Silva, and Rob Nixon urgent calls to bring together postcolonial and environmental theories. Here I consider the intrinsically colonial past of logistics against the currently unsettled desert of Xinjiang, China.

The method of argumentation in this article goes in order of three scales: from a general investigation into the relationships between weather-natural phenomena and logistics, the management of sand and wind

across western Chinese territories, to the closer lens of Hewlett Packard's involvement in the New Silk Road as case-study. I begin with the extended histories of intermediary infrastructures and their roles in co-constructing global-scale production networks, as a way to stress its importance towards understanding contemporary conditions along the New Silk Road project. To this end, I refer to the railroads from the early Central Asian cotton and oil industry, as extensions to topologies of technoscientific practices and observations. They bled into ideal designs for smoothness and efficiency, translated from weather to the organizations of forms and movements. In the late 1950s, the Vietnam War served as a testing ground for logistics and provided a key example of how differences were reproduced and felt along the chain. Finally, the digitalization and abstraction of pre-emptive network organization acted as a continuance of economic hierarchies between the Global North and South that we see in today's supply chains, with Hewlett Packard taking origins from the U.S. military industrial complex. The global race to the bottom naturalizes deeply engrained inequalities, alienation, and violence. It is particularly urgent to relink these histories as we see an increase of logistical practices used as tools to remake and rescale territories.

The argument of the article continues to the management of sand and increasing desertification issues in western China, largely as a result of large scale social agricultural experiments. Environmental factors, such as sandstorms, interrupt the production of a smooth inter-Asian space as imagined by corporations and the state. Taking a closer look into the corporate beginnings of the Silk Road economic belt, global tech conglomerate Hewlett Packard exemplifies a historically relevant agent in the development of supply chains with their most current involvement with Chinese state elites revealing how logistics is premised on a form of control, where the centralization of capital power in monopolistic companies rely on the state's cooperation in aspects of development. Hewlett Packard scaled up their operations to include monopolizing the entirety of their supply chain, where their moves contributed to the state's overall large-scale efforts to move industries towards the western, most arid parts of China. These networks form as a hybrid grown from China's reform-era politics, where the economy is controlled through state-led efforts. As the Chinese economy slows, technologies of zoning and logistical strategies become increasingly important. Infrastructural expansion rearranges cartographic space into nodes and events catering to strategies of controlled circulation and containment. These activities often lie paradoxical to the efforts of slowing the increasing environmental problems in the area. Distinctly intertwined with the securitizing and direct targeting of Xinjiang's Uyghur minorities, the increasing ecological unpredictability and societal ills from broken lands forms a different reality on the ground to that of so-called "liquid modernity" (Bauman 2000).

Sedimented Elsewheres

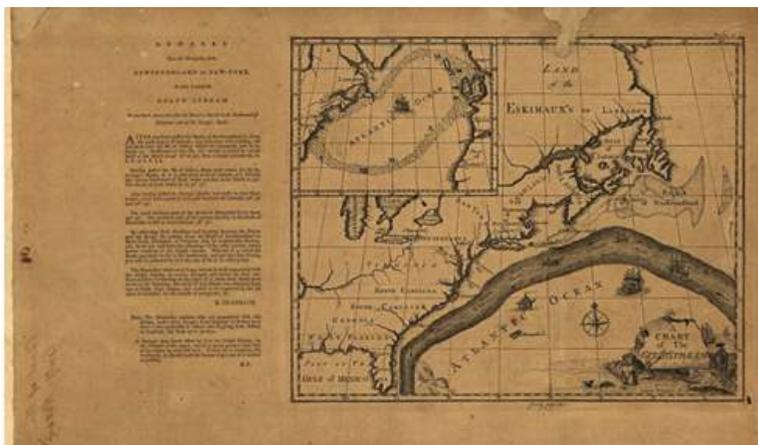


Fig. 2 A chart of the Gulf Stream, Benjamin Franklin, 1775. (Accessed from www.raremaps.com/gallery/detail/34528/A_Chart_of_the_Gulf_Stream_with_Remarks_Upon_the_Navigation_from_American, 15/04/17)

The trade-winds were originally labelled to mean “steadily in one direction,” with the term “trade” borrowed from the German language during the 14th century. While historically the word simply meant a way of life, a habitual course of action, it was during the 18th and 19th centuries that it took on the more familiar resonances—of business, a frequent practice of bartering (Online Etymology Dictionary, 2017). It was the trade winds which were truly responsible for the commencement of the global circulation of goods in the 18th century. The logic was that one had to understand weather in order to be able to extract its use value: “The oceans and the atmosphere form a nonlinear dynamic system that contains ten times more solar energy than plants capture through photosynthesis” (Delanda 2014, 53).

Benjamin Franklin’s maritime observations in 1785 drew the first maps that sought to encapsulate the relationship between turbulent waters and patterns within the currents of the Atlantic Ocean. He drew them while being Deputy Postmaster General of the Colonies, after hearing a complaint from the Board of Customs in Boston. Mail packets from England took two weeks longer to make the westward crossing than the Rhode Island merchant ships. Perplexed at this difference in time, he later found that the captains who were able to move faster were familiar with the Gulf Stream and were thus able to avoid it while traveling the westward crossing. The English captains, however, were not, and instead were being trapped in its currents while en-route (Carson 2014, 101). Like in Franklin’s maps, boundaries were drawn to involve calculations of the wind, its currents and directions in which would later be technically engineered in favour of the transatlantic slave trade. After-all, “the winds are the trade winds first and foremost.” (Leslie 2016, 12)

Here mobility, and control over mobility, reflect and feed back into reinforcing power. Imperialism, through its ability to observe atmospheric conditions, used wind and currents as force multipliers of trade, engineering it alongside managerial strategies of the supply chain. They were able to use these conditions to allow for cheaper modes of production and extraction elsewhere, while speeding up nationalist, transnationalist, and corporate interests within their imperial centres. The “intra-action” in the trade winds, between the atmosphere, its windy circulations, the ships, its captains, and their maps, colluded in what accelerated the uneven formations of a whole series of relations across vast bodies of water. These formations can be interpreted as what Barad writes of in *Agential Realism*, the reciprocated and active formation of objects and agencies of observation within phenomena; here, “individuals emerge through and as part of their entangled intra-relating” (Barad 2007, ix). These dynamic relations continuously brought into being many elements of our current modern political geography (Ahmed 2017).

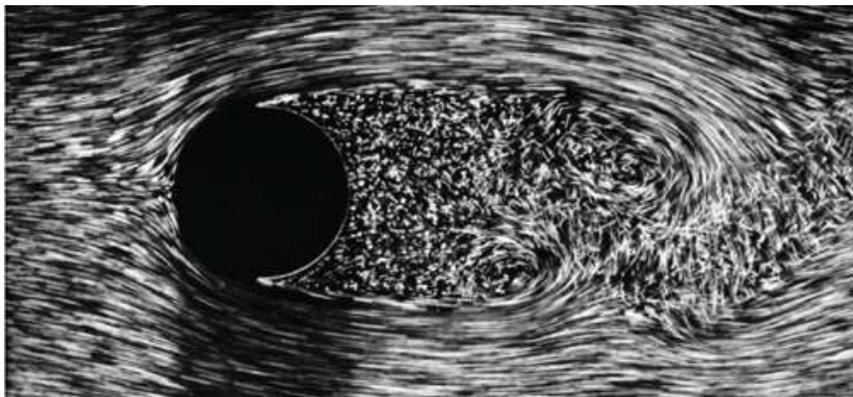


Fig. 3 Laminar flows break up into a turbulent wake, An Album of Fluid Motion by Milton Van Dyke, Department of Mechanical Engineering, Stanford University. (Accessed from courses.washington.edu/mengr543/handouts/Album-Fluid-Motion-Van-Dyke.pdf)

The beginning of the 19th century marked a rupture in epistemology. With the rise of thermodynamics, theories from physics and mathematics popularized metaphors of flow or blockages of energy through thermodynamic systems, along with hydraulic metaphors of reservoirs and damming, as these concepts became essential in thought (Frow 2005, 120). With Newton’s invention of calculus, being able to predict nature and its behaviours through clean calculations gave humanity an apparently objective viewpoint (Barad 2007, 233). Grounding the modern subject, many such instances of methodological and ontological thinking featured linear temporality and spatial separation. Theorist Denise Ferreira da Silva writes that separability is the

perspective that all things of the world are able to be rationally understood through quantity, quality, relation, and modality, when gathered through space and time. Knowledge can be extracted through the understanding of its ability to be outlined, formalized, and made useful—allowing for truth claims to be deducted (da Silva 2017, 61). Symptomatic of a Cartesian split which privileged binaries, it produced hierarchies such as the mind over the body, where Western reason was defined by its clean boundaries. Claims of ownership and sovereignty over land to be exploited were the very foundations of modern state and law, with lines drawn separating human individuals and nature. This began what da Silva calls “a trajectory that would extend beyond the confines of knowledge to become the ruler of modern economic, juridical, ethical, and aesthetic scenes” (da Silva 2017). Along with the seemingly objective practice of science, the Enlightenment project of modernity fueled notions of mastery and possession through reason and intellect (Serres 2011, 32).

As da Silva articulates, “The emergence of modern science can be described as a shift from a concern with forms of nature, which prevailed in scholastic thought, to an inquiry into the *efficient* causes of changes in the things of nature” (da Silva 2017). Efficiency revolutionises operations on matter, through high temperatures, the calculus of thresholds, and of the transformations of phases allowing for new heights of energy to be accessed. It was during this era when the telegraph, steam-powered vessels, administrative reforms, manufacturing industries, and railway construction collectively amplified one another (Ghosh 2017, 102). With the arrival of carbon-fuelled technologies, flows do not have to rely on winds, as landlocked settlements almost as accessible as those by water (DeLanda 2014, 81). For example, the Imperial cotton and oil industry in Russian Turkestan was co-constructed along with the building of a Central Asian railroad network in the 1890s. The whole region became part of a single economy geared towards cotton production on a massive scale. This followed a distinct mode of upscaling, including immense projects on land irrigation, across long-distance networks, expanding the ambit of Russian imperial power and dynamics (Uryadova 2012, 5). Campaigns for modernization under later Soviet rule continued such large-scale plantations that in turn exhausted the region’s land and water networks, leading to devastating ecological effects (Kreutzmann 2016, 113). Western powers determined the shape of the global carbon economy through military and political presence in much of Asia and Africa, when steam technology was in its beginnings.

In the 1970s, firms in the Industrialized Global North were experiencing a downturn in profits due to the rising costs of production and wages, and sought cheaper production costs elsewhere. The answer was to return to older colonial modes of production, where seeking extraction and cheap labour sources internationally allows for profit value reaped in the north while offshoring production to the global south. Logistics originates as a military term, hegemonic on a global scale when the first shipping container was designed as a way for the US army to supply materials and arms in the Vietnam War (Charmaine Chua, Skype interview with author. May 05, 2017).



Fig. 4 Saigon, Republic of Vietnam, Douglas Kiser of the Vietnamese Welfare office arranges the loading into Sealand container trucks for shipping throughout the Republic of Vietnam under project HandClasp, National Archives D.C., 1972. (Accessed from Wesley Attewell, 15/08/17)

Together, these threads of inquiry demonstrate how environments have long been instrumentalized towards extracting value in ways which are historically contextualized. The managerial sciences of colonialism continued into logics that were later adopted by the Industrialized Global North, albeit construed through various ongoing geopolitical events. One event crucially being the U.S. involvement in the Vietnam War. During the burgeoning of the “military industrial complex” in the 1960s, new surges in state funding funnelled into developments relevant for military applications. Fluid mechanics emerged as a discipline extending from mechanical engineering that was dedicated to research for the designs of faster trains, jet engines, and re-entry physics for spacecraft and ballistic missiles. Eighty percent of graduates from these departments found employment in the defence industry (Wisnioski 2016, 103). It was at this time that nonlinear dynamics became popular amongst various fields of mathematics, physics and engineering. Spilling across disciplines, its equations of the Chirikov criterion or the Butterfly Effect became relevant from industrial design to meteorology (Holmes 2007). It was also during this period that the military science of logistics was developed and digitized. Designs of containers, along with IBM’s involvement in the development of a centralized network, helped usher in a transpacific militarization (Wesley Attewell, Skype interview with author, August 9, 2017). The supply chain management in Saigon was the first to be automated, streamlining decision-making processes which made the distribution of commodities extremely efficient. IBM-applied computer technology and calculations were supplied through cooperation with RAND (Wesley Attewell, Skype interview with author, August 9, 2017).

Here, the tracking and designing of flows expanded and contracted, moving between scales. Non-linear dynamics of climates scale into strategies of movement on ground, streamlines, and fluid dynamics into the efficient management of objects. “Scalability is, indeed, a triumph of precision design, not just in computers but in business, development, the ‘conquest’ of nature, and, more generally, world-making. It is a form of design that has a long history of dividing winners and losers.” (Tsing 2012, 505) The art of logistics was in the method deployed through dividing and supplying various forms of life (Wesley Attewell, Skype interview with author, August 9, 2017). From 1965 onwards, the Vietnam War’s military backlog allowed for faster mobilization, which transported commodities into Vietnam, mitigating bottlenecks (Wesley Attewell, Skype interview with author, August 9, 2017). But as these systems ran through experience, when implemented, scalable data along with its differences are reproduced. Hierarchies amongst racialized labour became more pronounced, along with the ability to mobilise certain U.S. power relations in South-east Asia. It was also claimed that the experiments in management led to the sudden boom of Asian economies, nicknamed the Four Asian Tigers (Wesley Attewell, Skype interview by author. August 9, 2017). Along with the Cold War and all its uncertainties, the time period nurtured a desire for U.S.-led technological advancement, to aim for “crystalline definiteness” of algorithms that could “cope with a world on the brink.” (Amoore 2018, 9). The increase of transnational mobility and geographical dispersal went together with resources for managing and servicing that network of movement. Calculations for the least amount of resistance across spaces—from a missile or the shape of the train—translates forms into quantifiable nodes and allows for these designs to further perpetrate global modes of production foundational to power dynamics today.

With the current global infrastructural project of the New Silk Road, the ordering of things are led by alliances between transnational corporations and the Chinese State. These alliances simultaneously produce frictions from their designs. While acknowledging that imperialism had crucially designed itself in relation to planetary currents such as wind, the contemporary state of imperialism is no doubt different. The New Silk Road traverses terrains which are amongst the most affected by climate change, with its long-distance infrastructures needing to be designed in ways to withstand increasingly erratic weather events.

Uneasy States



Fig. 5 Sand management methods along the Chongqing Xinjiang Europe rail-route, Solveig Suess, 2017

A grain of sand is found, amongst many others, covering patches of the Chongqing Xinjiang Europe rail-route. Sand can find its entrance anywhere, potent with the ability to irritate and agitate things as solid as infrastructure. Despite algorithmic oversight, a relentless material disruption frequents the New Silk Road. Every grain carries the potential for interfering into the machinic workings of infrastructure on various temporal levels. The intense sand-carrying wind requires trains to be cleaned every three days, or it would have the power to corrode the surface of trains and fade its paint. Sand becomes an oxide after reacting with moisture on the ground, where it does not forget the industrial chemicals which meld into its chemical composition, nor the salt from its original bed (Chuanjiao and Chang 2015; Rahn 2007). Over a longer duration, it gradually wears down the tracks and train wheels (Windblown Sand Modelling and Mitigation Research Group 2016). Its material disturbances are happenings, unfolding into and (re) configuring the infrastructural framework.

Sand becomes an agent which troubles the totalising ambitions of the New Silk Road. Encountering sand and its erratic movements provoke a feeling of the “environmental uncanny”—striking a chord of familiarity with something we had once known, but cannot seem to remember how we turned away from. Eerie moments of sudden confrontation with strange weather remind us of “the presence and proximity of nonhuman interlocutors” (Ghosh 2017, 32). The landscape is a sentient entity, one without subjectivity, but nonetheless an entity, not a background. Our recently announced current geological epoch, the Anthropocene, describes shifts in the earth’s own physical processes as human activities have become the world-determining forces of change. But we should add that it is not just any human that produces change on this scale, but particular humans, perhaps of a specific mode of production and consumption, or a set of relations, maybe an assemblage of industrial and post-industrial high-carbon lifestyles (Choy and Zee 2015, 210).

In 2007, the press covered a hurricane-force sandstorm which derailed a train in the Xinjiang area. Some cars were knocked off the rails, others were left with cracked windows (The Associated Press, 2007). Each following year trailed with reports of similar severities, necessitating design modifications along its routes costing up to \$US 23 billion (Shepard 2017). All along the New Silk Road economic belt, the infrastructure rushes through vast landscapes which clearly suffer from high degrees of aridity. Its

landscapes are criss-crossed with various methods designed to keep dust and sand grounded, to prevent particulate matter from being mobilized by the winds, from transitioning its phase into suspension. Netted materials are pinned to the ground, both in grids and as vertical walls. Grids made out of stones create similar effects of catching sand. Many artificially planted trees dot the regions as their roots hug the ground. Train tracks undulate on and above ground, the heights determined by the intensities of the landscape's sand composition. 463 kilometers of windproof walls were built along the Gobi Desert stretch of the line, as well as the 3600 meter-high Qilianshan tunnel in Gansu Province (Shepard 2017). Delaying its future, governmental efforts have been organized to predict and slow the terrain's relentless movements eastwards, against the current of the Western economic tide. As each train carries around \$US6 million-worth of goods when heading towards Europe, strong winds remain a major threat to the rail-line, particularly around the Xinjiang-Lanzhou-Urumqi 710 kilometre stretch. The faster the trains, the more of a threat they become (Jia, 2013).

The sands are close reminders of the expanding deserts from the nation state's peripheries, Xinjiang and Inner Mongolia. The low pressures in the atmosphere over the Taklamakan and Gobi deserts create windy conditions in the area during late winter and early spring. Loose top soils are picked up by westerly winds, pulling these sands into an increasingly intense Asian dust storm (Phys.org, 2017). Freezing all activity in its path, such storms have become an annual occurrence, compared to half a century ago when each phenomenon struck only once every seven or eight years. The deserts are expanding roughly 1,300 square miles a year, with movements both fast and slow. Each grain of sand carries the potential to be thrown across thousands of miles with the storm (Mullany, 2017).

Over the past few decades, utopian social-agricultural experiments of high Maoist socialism have completely drained groundwater and many lakes across Xinjiang and Inner Mongolia. The Uyghur ethnic minorities of Xinjiang had previously used an extensive network of *karez*, a localized technique which had irrigated arid areas for millennia. These infrastructures were then replaced by large-scaled agricultural production used towards cotton plantations which resulted in its quickly receding water tables (Vanderklippe, 2017). Lop Nur, a lake that disappeared forty years ago, is now one of the four sources of sandstorms in China. Twenty percent of the country currently exists as desert, whereas in 1975 desert lands were 21,000 square miles smaller (Haner et. al., 2016). Anthropologist Jerry Zee writes that the mobile dunes of the deserts are "sites and material forms where we can trace emergent alignments of politics to the inorganic afterlives of the broken land" (Zee 2017, 218). The state-led ecological construction slogan in these areas speak of "blocking wind, holding sand" (*fangfeng gusha*), where it is through the control of sand's conditions, specifically in managing its transition between on-ground to in-air, which influences local environmental politics (Zee 2017, 232).

In a turbulent flow of agency, sandstorms irritate the calculated journey of the train. Rail-routes have been known to be riskier due to overland possibilities of local 'terrorist' insurgencies and extreme weather events, especially those which traverse deserts. They cannot be easily governed due to shifting lands. With China's rail-network spanning across a wide range of climatic zones, sandstorms frequently disturb routes like ones which cross the desert-ified areas of Xinjiang (UIC eNews 2017).

Trains crossing the Eurasian steppes are armed with guards stationed aboard, with a high-speed rail monitoring system actively sensing and monitoring for possible risks of a transition into turbulence—wind speeds, anti-intrusion, vibration, and geological disasters (Szyliowicz et. al., 2016, 154). Maintaining an all-encompassing algorithmic oversight while traversing westwards towards Europe, the route has become one of the most monitored areas within China. Algorithmic oversight of the rail-line operates by feeding data through numerous types of radio systems, inventory histories, and the internet of things, which in turn translate back into risk assessments and security protocols informing management procedures. As business advisory manager Wing Chu explains, "Today, most logistics operators are capable of monitoring the cargo during the whole process and provide the consignor with clearance on arrival at the railway terminus, warehousing, and trans-shipment to the desired destination" (Chu 2016). Just-in-time, precision management, and forms of regulation seek to calibrate the supply chain precisely towards predictive models for the destination of goods. Virilio writes, "modernity is a world in motion, expressed in translations of strategic space into logistical time, and back again" (Virilio 1986, 7). The political landscape is governed

by various and collaborating surveillance, mobilization, and fortification technologies, building a nervous attentiveness when movement and time are governed so tightly (Virilio 1986, 7).

Wind and its movements have not always been seen as a hindrance to production. Rather, one could say that in the inception of modernity was the ability to calculate and efficiently use all weather conditions towards capitalistic means. As outlined in the previous section, observing weather laid the groundwork for future techniques of predictive analytics. The project of optics and of observation came to shape the world in a particular formation which powered commerce, measurement, and forecasting, producing differences which matter. Taking cues from Karen Barad, carefully reading for such differences demonstrates how they are not predicated on conditions which are external to them but rather in entanglement, with effects produced as concrete in mattering and in material conditions. Without such an understanding and instrumentalization of weather, there would be no global capitalism as we know it. But increasing ecological disturbances signal an urgent need to shift our common-sense understandings and contemporary culture in ways which are both imaginary and epistemological. Climate change is amplified through dramatic environmental systems, resulting from the build-up of certain human practices, now acting as an agent of disruption feeding back onto those same practices. The replacement of the *karez* with state-led social agricultural experiments engineered the area of Xinjiang towards short-term benefits, with its lands now suffering from increasingly strange and unpredictable weather. Sand and its movements interfere, interrupt, and deviate the fluxes of logistics across contemporary Xinjiang province while simultaneously refining algorithmic calculations towards further control and efficiencies. Such technologies which fixate themselves on control and the absorption of contingencies, fold into larger societal shifts and formations of communities.

Turbulent Drag



Fig. 6 Still taken from a Russian logistics company, AvtoGSM, employee surveillance camera, 24/03/15. (Accessed through www.youtube.com/watch?v=pt2lGOQnj_s, 03/02/17)

In the wake of slowing economies, geographies of supply and demand currently spread themselves across vast spaces in mutable forms. Capable of absorbing peripheral communities at the edges of markets, logistical networks assist the drive of states and corporate conglomerates to continuously seek the extraction of capital in places otherwise untouched by its capture. As Virilio notes, layers of people and things move faster, driven by the “competitive advantage of speed” (Virilio 1986, 9). Speed fuels economic production towards distribution, and maintains a level of metabolic intensification in central nodes or global cities (Virilio 1986, 14).

Used now as a tool to stave off slowing economies by “bringing the outside in,” 由外至内 (youwai zhinei), a catchphrase amongst planners of the New Silk Road economic belt, reinforces the logistical and infrastructural as a new method of governance (Eyler, 2015). When recasting geographies

of law and violence through the arranging of the inside and outside of state space, actions like land grabs, military actions, and dispossessions are all part of its territorial reconfiguration (Cowen 2014, 102). Deregulated environmental and labour laws offer legal independence from the domestic laws of the host country through the creation of zones: “The zone typically provides premium utilities and a set of incentives—tax exemptions, foreign ownership of property, streamlined customs, cheap labour, and deregulation of labour or environmental laws—to entice business” (Easterling 2015, 10). Within the Chinese Communist state system, zoning technologies are devised as a distinctive way to re-territorialise national socialist space whilst generating a controlled development of capitalism (Ong 2004, 72).

In the case of the New Silk Road, the transnational company Hewlett Packard initiated the inter-governmental negotiations for saving two weeks-worth of transportation time (Shepard, 2017). It was seen to be an alternative to the Pacific Ocean route, which was filled with chokepoints and perils. This followed a move made by the company, as well as others including Foxconn and Volkswagen, to shift their factories towards China’s western border (Abe, 2014). As part of the “Go West” program, state-led encouragement was offered to develop these western regions. The western regions are also the location of large amounts of energy and mineral resources, including coal and iron ores from the politically troubled Xinjiang Uygur autonomous region. With more speed and less cost of transporting Chinese-made goods to western markets, large incentives allowed transnational corporations like Hewlett Packard to leverage geopolitics in their favour (Frankopan, 2015). The Hewlett Packard-initiated rail-route later became part of the Chinese state’s centralised framework of the New Silk Road Economic Belt initiative in 2015, ironing out any potential issues with bottlenecking (Yin-nor 2015, 112).

There is a particular characteristic of scalability which remains faithful to the universalist notion whereby a singular, global conquest of a certain knowledge moves objects and peoples. This unified ideal sways and naturalizes the idea of expansion. Scalability appears across various forms throughout the supply-chain, where to be “scalable” is to be expandable without needing to rethink basic elements (Tsing 2012, 505). A common tactic of neoliberal global capitalism, or large transnational corporations, scalability describes what Rob Nixon calls “geographies of concealment in a neoliberal age” (Nixon 2009, 444). By its design, difference is disguised in homogeneity, occluding troubled relations within transnational spaces with a sheer glaze of shared modern ambitions of efficiency.

From scalabilities, Hewlett Packard was also the first western company to incorporate Japan’s pioneering industrial methods of supply chain management. Hewlett Packard influenced the U.S. military industrial complex to embed their standards within America’s domestic policies (Weiss and Schoenberger 2015, 69). In post-war Japan, Toyota pioneered supply-chain management by moving production outside their sovereign borders, coordinating space and time through a more cost-beneficial manner. As a flexible production technique, just-in-time (J.I.T) management aimed to shave off expenses and optimize, where possible, through various methods of tweaking. This technique standardized a rhythm of labour throughout the production line, with working hours described by Stefano Harney as a “killing rhythm of labour” (Wesley Attewell, Skype interview with author, August 9, 2017). It globalizes an acceptance of working the body at a rate which physically and mentally destroys it over time (Wesley Attewell, Skype interview with author, August 9, 2017). As an *Economist* article reports, “One study found that American firms that introduced J.I.T gained over the following five years (on average) a 70% reduction in inventory, a 50% reduction in labour costs and an 80% reduction in space requirements” (Tim Hindle, *The Economist*, 2009). Such expansion of micromanagement practices tracks and traces, finding points of drags in time and space which then inform overall operational decisions. J.I.T management pioneered a rationalization which seeks calibration of work throughout the whole body of the supply chain (Cowen 2014, 196).

Efficiency is implemented through different scales within strata of inventory lists to political economic agreements along the New Silk Road railway. Thousands of laptop computers and accessories are piled neatly in these sealed shipping containers to travel across the New Silk Road three times a week. Borders have also shifted, with the train route’s security checks displaced. Fulfilling ambitions of free-trade, a two-day wait for a ten percent physical container inspection has been eliminated because of the Eurasian Customs Union Agreement, allowing for goods to instead travel freely through Russia, Kazakhstan, and Belarus. Time is shaved through a shortened transit duration; inventory lists are reduced, leaving less room

for complications. Objects placed in inventories are effectively tracked, allowing for quick calculations to channel profits and organize the commodity chain. In these digital spreadsheets and inventory lists, labour and environmental conditions where theft or violence are also part of the production process are siphoned off as excess. Neoliberalism is an agent of general equivalence.

Hewlett Packard negotiated with the Chinese government to implement their own border customs software for processing documents, permitting its containers to instead stay locked and un-inspected at border crossings *en route*. This allows for the inclusion of cargo inspection, quarantine, and customs clearance to occur in one stop (Chu, 2016). One does not have to look far to see that the flow of goods and capital means the arrest of movement for others. In 2016, the Uighur ethnic minorities of Xinjiang were told to hand in their passports to local authorities for “examination and management”; the area had been heavily policed for forms of separatist activity. Police checkpoints dot the area, targeting local inhabitants during the duration of the developmental works (Al Jazeera 2016). Since the development of the New Silk Road economic belt, the faster trade through these overland lines means more restrictions and containment for the Uyghur minorities in the area. The area is filled with checkpoints interrupting movement every few kilometres, providing only the surface of the extremities of the police occupation and colonization in the province as big as France and Germany combined. Deborah Cowen writes that the neoliberal management of life and death and its anti-political calculations, cost-benefit analysis, and market-driven logics embed themselves in the most minute of measures. Time and space are designed with technologies of efficiency and standardization, eliminating resistances including possibilities for political claims or ruptures. The management and security of the life of the whole supply chain is crucial, not just the population it serves (Cowen 2014, 231). Ethnic-specific targeting occurs on various levels as part of the close watch of the state. This includes anything from identity and mobile phone screenings, WiFi sniffers, cars with compulsory tracking devices, to one meter of resolution available through satellite imagery. Xinjiang is currently the test-zone for the entire country’s artificial intelligence operations.

The fantasy of logistics, and where it accumulates its power, appears as the all-encompassing smooth operator, adept at hiding the fact that it needs friction in order to stay in business. Friction, in Anna Tsing’s view, is the awkward, unequal, and unstable force which “refuses the lie that the global operates as a well-oiled machine” (Tsing 2015, 6). Understanding these global points of friction is exactly what allows Hewlett Packard to maintain its market dominance, where what is at stake for them involves finding logistical solutions towards keeping costs low. Speed, then, is engineered across frictions traversing between the body and continents. Hewlett Packard’s innovations for the New Silk Road aligned with the national interests of the Chinese state in that these joint plans assisted the westward movement of industries. This is an increasingly serious collaboration, as the mitigation of risks involves both the violent arresting of the Uyghur population along with the increased deterioration of the lands. The implications of these logistical calculations are disturbing ecologies as well as societies. It is with this urgency that these processes need to be seen together as two sides of the same coin.

(Re)configuring Flows

Fig. 7 NASA's Aqua satellite took a photo of a dust storm blowing over the Taklimakan Desert in China, 01/02/14. (Accessed from <https://earthobservatory.nasa.gov/NaturalHazards/view.php?id=51705>, 02/07/17)

This paper has mapped logistical media through its intra-actions with weather across various scales. Backgrounding with the epistemological shifts that came with different forms of forecasting and measurement, particularly of thermodynamics, the notion of efficiency has led to specific geographic modes of production, distribution, consumption, and dispossession. Long-distance networks of transportation, initially wind-dependent, later connected scalable operations of production through networks of steamships and railways, expanding the ambit of what is possible for global logistical capitalism. With the development of the military industrial complex during the Cold War underwriting a lot of how current transnational configurations are forged, notions of efficiency continue to reproduce violent Cartesian separations between human individuals and nature across its spatial and temporal orderings. Together, they demand we interrogate fundamental logics to how we make sense of increasingly strange weather—knowing that these storms do not merely trouble global scale ambitions, but that they are as much part of it.

Here, sandstorms obscure the military, scientific, corporate, and state alliance matrix with their agencies. The various temporal disturbances in which sand affects the railway and its supporting infrastructures bring forth unscalable relationships that actively reconfigure these global flows of capital and goods. As sandstorms assert themselves as an undeniable threat to the infrastructure of the New Silk Road, it folds and reorganizes corporate and material histories and futures, generating their own sets of desires, contradictions, and political and economic logics. Particulate matter finds its way of creating friction within ideal states of smoothness, influencing new programs focused on the management of risk geared towards protecting the corpus of the supply chain. The turbulent nature of sands and winds are able to interrupt the continuous fluxes of logistics but also, at the same time, increase and refine their algorithmic overview towards a more efficient control.

Referring to Hewlett Packard's history of supply chain logistics, their current collaboration with Chinese state elites is crucial in understanding newer forms of logistics today. Hewlett Packard based its innovations on points of friction for keeping its industry dominance. As the New Silk Road is currently one of the most ambitious ongoing infrastructural projects in the world, it is important to observe such points

of friction as they feed back and reinforce the supply chain as a whole. The corporation's involvement with infrastructural and material conditions includes repercussions which are both environmentally and socially devastating. The calculations for speed and the least amount of resistance exceeds into biopolitical control of the local Uygher population and increasingly strange weather in Xinjiang Province. Studying tech firms like Hewlett Packard through the lens of logistical media enables increased attentiveness to the logics of organization that bear such spatial and temporal implications. With the engineering of immediate time and space, the long-term, delayed effects of industry and capital form what Rob Nixon would call a temporal disjuncture—an out-of-sync (Zee 2017, 218). These sandstorms force-multiply cruel differences inherited through an amalgamation of global-scale industrial, modern, and capitalist practices.

The increasing nervous attentiveness to weather prediction within these regions coincide with the province as a testbed for algorithmic governance. While western colonial projects functioned differently to Chinese state-led experiments, both fundamentally imply a dismissal of other forms of logistical organization. This can be seen through the denial of older methods of irrigation, such as the Uygher *karez* technique, in parallel with systemic destruction and colonial dispossession by the Chinese state. The sheer scale of control which Chinese state-elites have over various territorial decisions places is further evidence of the current urgency to examine these trans-corporate and state infrastructural collaborations. Decisions made by these collaborations shape broader hegemonic parameters coordinating a wide range of material settings, such as ports, warehouses, transport, and even university and military operations. Efforts to recognize interconnections between more-than-human scales of logistical media are crucial to finding commonalities among struggles to unite along the supply chain.

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DOSSIER

Coastal Media
(ed. Alix Johnson)

Introduction to “Coastal Media”

Alix Johnson

Fiber-optic cable systems span oceans. Data storage facilities are increasingly built offshore. Sonar surveillance networks scan for sound underwater, intercepting it long before it reaches land. Many media infrastructures, if followed long enough, eventually wind their way to the sea. Viewed in this light, oceans are integral to communication: not only as sites where media is stationed, but as environments with, and through which, media is made. Coasts, then, as interfaces between land and water – and thus ecological, political, and social systems – are places where the practicalities, possibilities, and politics of media systems get worked out.

Nicole Starosielski clears the ground for a conversation on coastal media in her analysis of fiber-optic cables as aquatic infrastructures. While these cables may ultimately reach the urban centers that animate much communications research, Starosielski shows they make first contact at shorelines, traversing “rural, remote, and island locations” (2015, 14). Here they negotiate seismic activity, colonial legacies, environmental advocacy, errant fishing trawlers, competing modes of expertise in the industry, and, occasionally, curious sharks.

The following work is inspired by Starosielski’s attention to coastlines as sites where media systems take shape. At the same time, the pieces that follow push and play with these spaces, exploring the bounds of, and entanglements between, “environment” and “media.” These creative and

experimental interventions probe the liveliness, as well as the volatility, of the coastline. Coasts, after all, are zones of productive encounter as well as spaces of risk, threat, and violence. Today, two particularly acute formulations of coastlines reconfigured as frontlines are the disastrous and unevenly distributed manifestations of anthropogenic climate change (Adams 2009, Bankoff 2002), and the “crisis” in immigration that conditions the deployment of deadly neglect, racial hatred, and intensified surveillance and securitization at the shore (Smythe 2018).

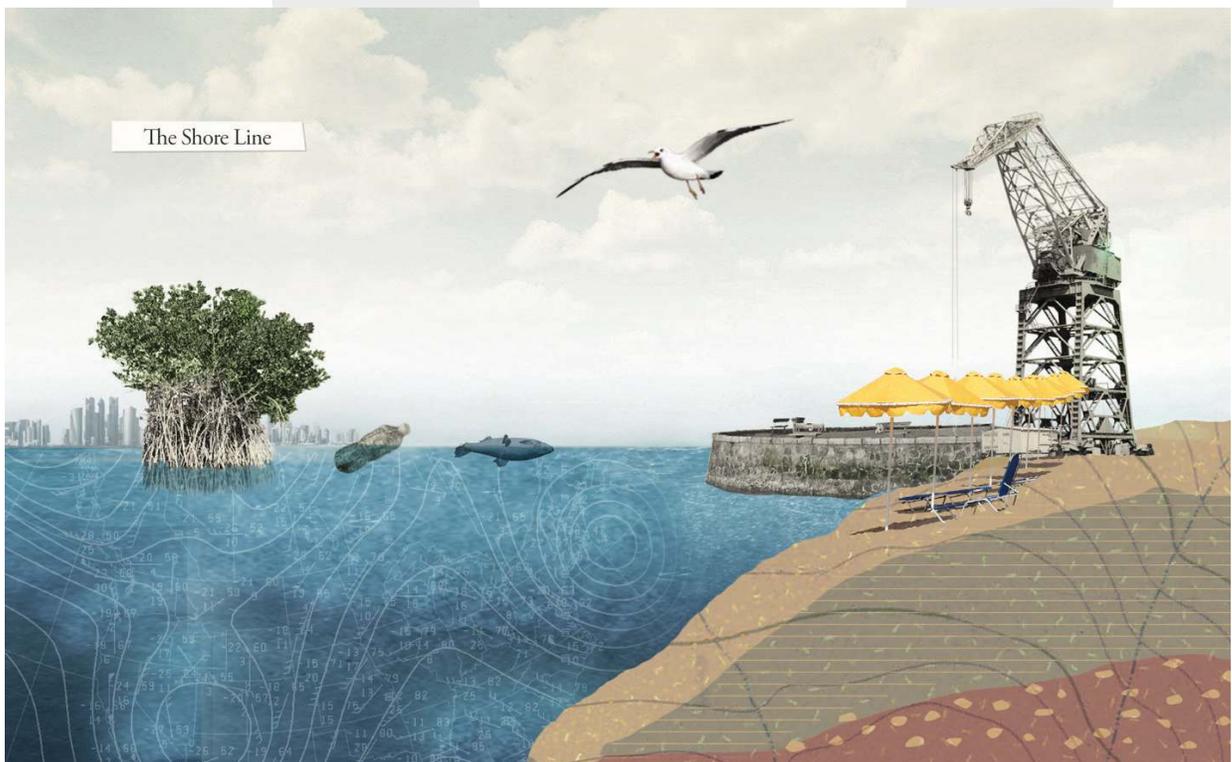
The authors in this collection illustrate both the potential for, and the urgency of, analyzing communications at these coastal meeting points. Elizabeth Miller’s interactive mapping project, *The Shore Line*, invites readers into a range of coastal communities actively confronting climate disaster. Shirley Roburn’s meditation on our relationship to whale songs raises questions of whose “voice” is heard at the shore. Hunter’s exploration of production on the Icelandic shoreline makes visible – and visceral – coastal livelihoods. Finally, Suhaimi’s analysis of shifting fishing infrastructures in the Johor Straits draws out ongoing colonial legacies, as well as interspecies collaborations on the coast. Taken together, these reflections explore “becoming environmental” on the coastline, and demonstrate how we might benefit from situating media more within these murky waters.

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The Shore Line

Elizabeth Miller



The coast, where the land meets the sea and where runaway development meets rising waters, is the site of *The Shore Line* interactive. I used this dynamic place as a prompt to visualize and connect human and nonhuman communities that survive and adapt in one of the most dynamic places on the planet. Ecological change and disaster are proliferating in a world in crisis, and the coast inspires us to imagine and enact collaborative actions that transcend borders.

For many of us, the appeal of interactive documentary is the non-hierarchical curation of peoples, places, and environments. How might an interactive help me tell a polyphonic, collaborative, cross-species story of resilience and climate justice? I was drawn to the coast as a subject, as a metaphor and even a method—as a way to challenge disaster narratives. The surge of coastal tourism, the increased dumping of industrial waste, and the unsustainable growth of fossil fuels are threatening

the very ecosystems that protect us from storms and sea level rise. Rather than dwell on disaster however, I was inspired by Anna Tsing's (2015) notion of collaborative survival and her provocative invitation to observe what survives in the midst of disaster.

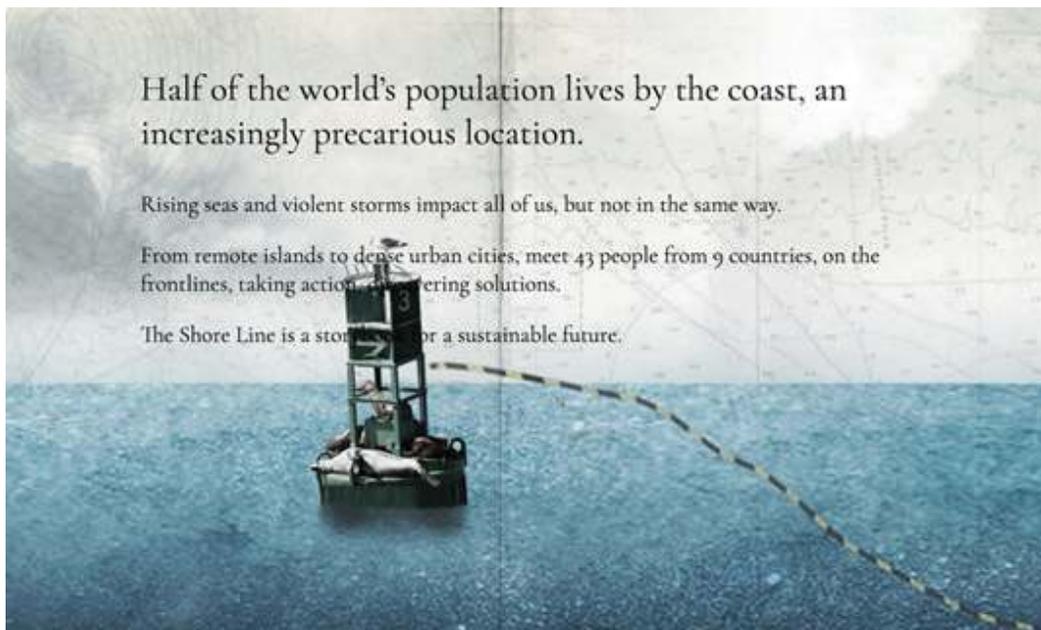
Change at the shoreline can be sudden with storms that result in massive destruction, flooding, displacement, and death. Changes also play out through what Rob Nixon (2013) calls "slow violence," involving the gradual seeping of toxins into the water or the displacement of shoreline communities and cultures. Likewise social change most often comes in the form of slow resilience, the often invisible processes of social change, enacted through a deepening knowledge of coastal ecosystems and collaborative frameworks. Over three years and in collaboration with students and filmmakers from around the world we curated a collection of 43 video profiles, of people taking actions over time, often in quiet but resourceful ways. We feature a sustainability architect in Bangladesh designing floating schools and gardens, an Indigenous organizer in Panama, moving his community from a sinking island to the mainland, a science fiction writer from Canada writing resilience into storylines, and more.¹

With my co-creator, Helios Design Labs, I was able to connect local stories into a global network through interactive maps. We turned datasets of growing coastal populations and shrinking coastal wetlands into visualizations so that users could grasp the present and future risks of development on the very ecosystems that protect us. In our strategy toolkits I worked with teachers, students, and organizers to develop educational resources.

And while taking advantage of a range of new technological affordances, I also wanted to draw attention to the largely hidden Internet infrastructures that we rely on to communicate interactive stories like *The Shore Line*. Ninety-nine percent of international data is transmitted by big heavy cables that stretch from shore to shore, under the ocean.² While we feature an Internet cable on our interface, we never fully resolved how we might instigate a deeper reflexivity about the energy required to both produce and watch an interactive. I am still grappling with how I and other makers might communicate climate justice stories with a lighter footprint.

The Shoreline Project

<http://theshorelineproject.org/#!/about?howto>



Endnotes

1. Links to these particular elements are here: <http://theshorelineproject.org/#!/archive?People=Architect>; <http://theshorelineproject.org/#!/archive?People=Writer>.
2. <http://www.nec.com/en/global/about/mitatv/02>.

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Speaking through Water

Voices at the Threshold

Shirley Roburn

As Elizabeth Miller points out, shorelines have long been sites of exchange, transition, and shifting boundaries. Fifty million years ago, in the briny estuaries of what is now northern Pakistan, Pakicetus, the ancestor of whales, slipped the shackles of earth, returning to the waters which birthed terrestrial life. For millions of years, Pakicetus' phylogenetic family (Pakicetidae) lived between water and air. Slowly forelegs became flippers; hind legs disappeared; tails grew strong and sinuous. Morphology morphed. Creatures of air became creatures of the sea. And they developed new voices.

In communication theory, as well as in popular culture, voice is a prevailing metaphor for consciousness and agency. Western thought, since at least the times of Aristotle, has distinguished humans as “the ‘speaking’ animal” (Peters 1999, 1). Our fleshing out of this concept—the vocal cords strung across the larynx, the “breath support” that acoustic communication specialist Truax invokes to describe “Voice and the Whole Person” (34-5)—is implicitly supported by the medium of air, which has shaped us physiologically. Truax notes that the very quality of our voices fluctuates with our intake of air: tremulous and thin when physiological or psychological stress makes our breathing shallow, resonant when supported by the full force of healthy lungs. In modernity, not only our voice but our texts, television transmissions, radio pro-

grams, and written communications travel over the airwaves and via satellite. Signalling waves stream towards cell phone towers and satellite dishes, GPS systems and car radios. Such architectures of transmission and reception are ubiquitous in the modern landscape. The structuring bias of our communication is set not only in space and time, but within the medium of air.

How do we find communication, communion, and community with ocean creatures whose voices lie beyond this threshold of air? How can they enter the distribution of the sensible in which Rancière claims all politics take place? While the ocean circulates oxygen, nutrients, and currents of cold and heat, and is thus intimately bound up with terrestrial water cycles, climate, and exchanges that bloom life from the inorganic, the great gap in medium between air and ocean dwelling obscures such interrelations. New technologies, from hydrophones to seismic arrays, scuba gear and underwater cameras, have begun to reveal an ocean of diverse topographies (shallow sandbanks, underwater mountain ranges, deep ocean trenches), dense and dancing water columns (moving and mixing heat, dissolved oxygen, and plankton and other marine microorganisms), and pulsing currents. Yet such aquatic perceptions are troublingly mediated: the intensive militarization and industrialization of ocean spaces is both precursor and determinant of how we have come to quite literally “sense” these

spaces through military sonar and the shock waves of seismic arrays. Rather than amplify the crackling of barnacles, the feedings of fish, or the calls of whales to their kin, sonic sensing technologies quite literally drown out these sounds.¹ Chartings that situate rock and chasm, fault and beachhead, as theatres for exercises of war, and as grounds for mineral extraction “fix” the architecture of ocean spaces such that the flow of life and waters form barely a ripple.

It is therefore remarkable how, soon after hydrophone technologies were declassified, the cries of whales erupted as a potent political force. The widespread popular circulation of Songs of Humpback Whales, released by National Geographic in 1970, began a tide of whale-themed songs, books, and other popular culture production that successfully bolstered the campaign which ended industrial whaling by the early 1980s (Roman 2006, 160; Roburn 2013, 117-18). In the decades since, cetacean “songs” and our understanding of them, have challenged humans to reimagine seas as sonic spaces, prompting a “re-mediation” of our obligations to protect critical habitat. The reconsideration of marine regulation within an acoustic register is an ongoing project: militaries have been compelled to limit their use of sonar (Horowitz 2015); offshore oil companies to cease seismic testing in biologically rich waters (Tasker 2017); and ships to slow their speeds and shift routes to respect endangered whale populations (Sevunts 2017).

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Endnotes

- 1 Improperly regulated, the use of these technologies can cause severe ear and brain damage and even death in marine mammals (Horowitz 2015).

blóm + blóð

WhiteFeather Hunter



Fig. 1 blóm + blóð (Icelandic for “flowers + blood”) presents performance as embodied research, in the landscape as laboratory/ studio. [8:00, digital video]

The artist navigates the autumnal terrain of Norðurland vestra (Northwestern Iceland), collecting natural dye and fibre stuffs, using landscape elements as tools for making and experimenting with flora + fauna in the creation of a textile work. The end (textile) result is never shown, as the emphasis is on site-specific process as the creative work in focus, resulting in the acquisition of new knowledge and the acclimatization to a new environment. Utilizing the landscape as a laboratory means more than simply the outdoor acquisition of art/craft materials—it mobilizes human empathy through experiential learning towards gaining an ecological awareness of the source of materials

one works with, fostering a working relationship between a human actor and the environment and its agents. The video plays with notions of temporality and labour, but also with ideas of material agency, as elaborated in Jane Bennett’s *Vibrant Matter* (2010), where “efficacy or agency depends on the collaboration, cooperation, or interactive interference of many bodies and forces” (20). Human-scale time-space around the performance of labour is compressed through editing software fades, much in the way that geological time is compressed in popular nature videos. This editorial trick means to slightly decenter the principality of the human (visitor) in the overall exchange.

A deliberate touristic romanticization of the coastal landscape is disrupted by the practical necessities of Icelandic life, such as the sheep slaughter and the use of horse blood harvested for the pharmaceutical industry. In particular, during the entire month of the residency, the artist witnessed an endless briny billowing of blood, from the annual sheep slaughter being funneled from the slaughterhouse floors into the tides that washed in and out, day and night, next to the residency site. The constant scream of gulls as they feasted on the bloody water and the sea life it attracted became part of the background drone of the coastline. Running counter to (or alongside of) the commodified packaging of Iceland, this visceral representation of the cultural landscape presents a more acute embodiment of entangled traditional livelihoods that include craft-based relationships to the land.

blóm + blóð has been screened as part of *Cultivars*, the Subtle Technologies Festival v.20's banner exhibition curated by Zach Pearl at InterAccess Gallery, Toronto; also, as part of *Fermenting Feminism* (Lauren Fournier, curator) shown at Büro BDP, Berlin, Front/Space Gallery, Kansas City and at the McGill University Institute for Gender, Sexuality and Feminist Studies, Montréal as part of the *Leavening the Conversation: Food, Fermentation and Feminism* conference. Additional screenings include as part of *The Body Electric* (Dr Allison Crawford, Dr Lisa Richardson and Bryn Ludlow, curators) at the Royal College of Physicians and Surgeons of Canada International Conference on Resident Education (ICRE) in Quebec City and at the Associated Medical Services (AMS) Phoenix Invitational Conference in Toronto. The video was also presented at ODD Gallery, Klondike Institute for Arts and Culture during the Dawson City International Short Film Festival, and most recently in Fremantle, Western Australia as part of the exhibition, *The Mess e In* (Tarsh Bates, curator) presented by the Unhallowed Arts Festival.

blóm + blóð was first published as embedded video in York University's e-Journal, *InTensions* in the Spring 2018 issue, entitled, *Food for Thought: Food, Embodiment, and Knowledge*. Additionally, video stills and a transcript of subtitles are published in *Fermenting Feminism* (Lauren Fournier, curator) in collaboration with the Laboratory for Aesthetics and Ecology (LAE), Berlin/Copenhagen and Broken Dimanche Press, Berlin.¹ *blóm*

+ *blóð* has also been spotlighted as a feature on Labocine, "home of films from the science new wave." Funding for the project was generously provided by Canada Council for the Arts, the Conseil des arts et des lettres du Québec and by the Textiles and Materiality Research Cluster and the Milieux Institute for Arts, Culture and Technology at Concordia University.

Transcript of subtitles (in English and Icelandic)

gather 2 c. krækiber
 season: réttir, and ber are dead ripe
 mash together in pot w/ 1 c. sykur
 fill pot w/ vatn, add ull garn + simmer on low 2 hrs
 cut 1 bucket lúpínu
 lúpínu is a Canadian invasive species
 simmer stíkar + lauf in pot full of vatn 2 hrs until
 vatn is gold
 dip in mordanted garn, leave o/n to cool
 never eat shaggy manes and then drink áfengi
 colour on ull will be ljósgrár
 knitted swatch will show subtle variegation
 an old horseshoe in the pot will work as mordant
 briney vatn evens the dye process by slowing up-
 take
 dry ull can be wound on Lopi bones as bobbins
 ask for Ægir's blessing
 Lopi will go to the sea to eat þara
 haust ull is the best ull
 dirty ull takes dye better b/c of ammonia in the
 old reiðan
 "scabs of the gods" must be fermented to release
 colour
 pick the slow-growing scabs from a wide area in
 order to not overpick
 there will be others after you
 also collect reiðan in jars while collecting gods'
 scabs
 reiðan aging process will take a number of weeks
 crush gods' scabs and add to reiðan
 réttir is slátrun time – collect blóð from státruhús
 ull dipped in blóð must be left o/n to dry and set
 the colour
 do not heat the blóð
 blóð will clean up best when worked with úti
 rinsing garn in the sink afterwards is bad as it will
 smell like dauða
 there are no villtur animals in Íslands to steal your
 blóðug garn left úti
 the best place to rinse the blóðug garn is in the sjó
 that's where the slátruhús rinses itself too
 Ægir will take the blóð fórn
 give + take, gefðu + taka
 always keep one eye open for the Fjörulalli

bury your hjarta in the gufu + mud
 for one month to make an impression.

blóm + blóð (2016)<https://vimeo.com/196461170/370f36e266>**References**

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Endnotes

1 A downloadable PDF of the complete publication is available online through e-ARTEXTE, here: <https://e-artexte.ca/id/eprint/28709/>, last access February 1, 2019.

Kelong

Politics for Life in the Johor Straits

Zahirah Suhaimi-Broder

Kelong refers to an offshore structure, made of large nets supported by trunks of nibong palm, and is used to trap fish moving out with the receding tide. They were once a common sight in the Johor Straits, a narrow channel of water between northern Singapore and southern Johor, Malaysia, but are now receding into the peripheries of urbanization and high-tech aquaculture development in Johor, and near obsolescence in Singapore. Today, *kelong* is better known colloquially as referring to situations when a group or individual appears to be given an unfair advantage over others.¹ This visual essay examines how (dis)advantages are negotiated within the historical and emergent conditions of coastal infrastructures for foodfish production.

The proliferation of *kelongs* off the coast of the Johor Straits began shortly after British colonization of Singapore and Malaya started in 1819, and the intensification of foodfish production was needed to feed the rapidly growing migrant population. Newly arrived Chinese entrepreneurs met this growing demand by developing *kelongs*, which outstripped artisanal fishing methods. The prohibitive cost of nets and rapid depletion of nibong palms effectively created relations of debt and dependency, particularly for indigenous Orang Seletar communities, for whom the nibong palm was a key economic resource, providing food, medicine, and materials for reinforcing the houseboats they lived on (Fig. 1).

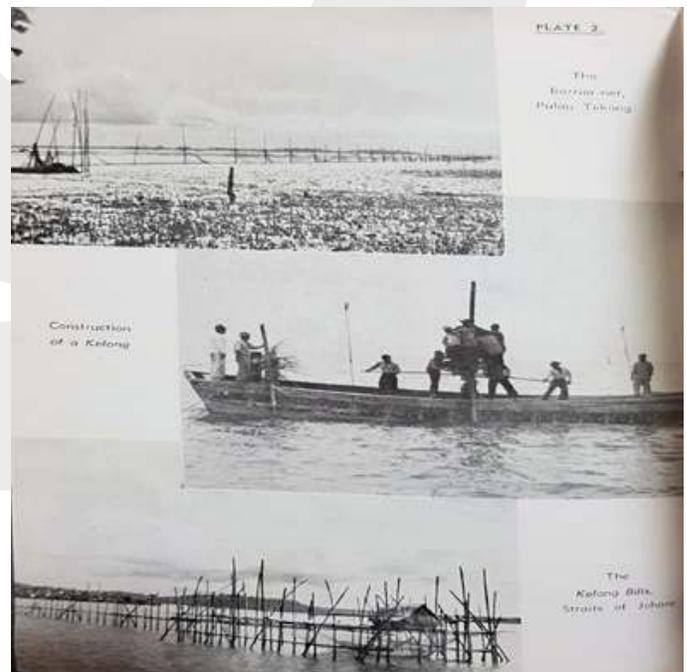


Fig. 1 Kelongs in the Johor Straits (from Burdon 1955)

Between the intricacies of these acute *kelong* conditions and other developmental pressures,² Orang Seletar communities developed various strategies for subsistence while sustaining sociobiological and metaphysical relations fundamental to their collective existence with nonhuman inhabitants of the landscape. One strategy practiced today is *pukat bakau* (mangrove nets), 2000-3000 feet nets supported by scrap wooden beams set up adjacent to mangrove forests (Fig. 2).



Fig. 2 Dismantling pukat bakau and releasing a juvenile flower crab to the sea; photograph by Jefree Salim, a Seletar collaborator in an ongoing media project.



Fig. 3 Floating fish farm with net-cages filled with fish species preferred by Singaporean and Malaysian consumers, namely grouper, seabass, and red snapper, and other seafood such as lobsters and mussels.



Fig. 4 An Orang Seletar village today, framed by sparse fringes of mangroves, a large sandpile, and an under-utilised luxury waterfront commercial district. Floating barrel structures in the foreground are used for mussel cultivation, the primary means of income subject to water quality that is reportedly deteriorating.

Mangrove forests are not simply resource-rich ecosystems but reproductive sites of sociobiological and metaphysical relations for all life. These relations are instantiated when human fathers carefully leave their newborn's fresh placenta between branches of mangrove trees. If properly placed and left undisturbed for seven days by the elements, plants, and animals, his child's safety and health is assured. As Temah, a young Seletar woman explained, "...the mangroves are where all our benih (Malay word that refers to origin and embryo) must be readied for life. We exist today because our parents, grandparents, and animals and trees, protected our benih. So, we must let the [adult] plants and animals ready their benih in the mangroves too before our nets catch them."

Unlike kelongs, or the capital-intensive fish farms that have almost replaced them (Fig. 3),³ pukat bakau is not a permanent structure and only stands for one diurnal tidal cycle. The casting and staking of the pukat (net), and the mesh size of the pukat itself, is aligned with the spawning cycles of specific nonhuman life. In instances when small mesh sizes are used for catching shrimp after they spawn, the practice of staying at sea with the pukat allows for immediate harvest as soon as the tide recedes, enabling the return of juvenile or spawning non-shrimp animals from the nets to the sea.

Amid ongoing kelong conditions of colonial and post-colonial coastal infrastructures, pukat bakau is living knowledge of life,⁴ and for life; a reproductive ethic of collaborative human and nonhuman survival, for relations that have come before, and must continue to come everyday and after.

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Endnotes

- 1 A widely known exemplar of this use would be Wilson Raj Perumal, the internationally wanted Singaporean football match-fixer, who dubs himself the "Kelong King."
- 2 So acute were the conditions of dependency, that Chinese financiers eventually owned the houseboats on which Orang Seletar families lived (Sather 1999).
- 3 See the video here: <https://player.vimeo.com/video/264933617>, last access February 1, 2019.
- 4 The emphasis on knowledge offers an alternative standpoint to Ariffin's (2014) account of this practice as "old beliefs and traditions" (p. 38). Such accounts of indigenous practice occlude the ongoing existence of Orang Seletar communities as inextricably bound to material, immaterial, and not-yet material (benih) relations with the waterscape (see also Shorter 2015, 2016; Tallbear 2011).

FORUM

SwampScapes

A Creative Practice of Commoning in Florida's Swamps

**Elizabeth Miller
with Kim Grinfeder, Evan Karge and Grant Bemis**

Photographs by Grant Bemis



Fig. 1 Swamp Guides Eric (far left) and Rita Bauer (far right) orienting our team.

Many of us are disconnected from the beauty of swamps and the vital role they play in filtering water, fostering life, and buffering storms. Today, coastal development, pollution, and sea-level rise are threatening these invaluable ecosystems.

One of the biggest threats to swamps is a lack of understanding of the role they play in human survival. In a time of global warming and unpredictable weather, it has never been more important to look, listen, and learn from the swamps around us.

This is especially true for South Florida, home to the Everglades, one of the largest swamps in the world. Up until 1900, all of South Florida was one big swamp. To make way for development, the city drained the area and diverted the natural water flow, changing this essential water filter and supply system forever. A rapid expansion of urbanization and agricultural growth has led to a host of environmental problems and today the Everglades is a skeleton of what it once was. While we cannot turn back the clock, we do need to figure out how to coexist with the very ecosystems that can help protect us from increasingly extreme weather. What

is the role of media in fostering a connection to this vital ecosystem and what new tools can we utilize to connect urban audiences to nature?

In this essay, I discuss the making of *SwampScapes*, a collaborative multi-platform documentary that I co-directed with Kim Grinfeder and Juan Carlos Zaldivar, while in residence for a semester at the University of Miami as a visiting Knight Chair. The project involved fifteen students, community partners and the seven individuals featured in the project including Betty, a Miccosukee water activist who runs her own airboat business; Donna, a raptor biologist who monitors hawk nests



Fig. 2 Liz Miller and Juan Carlos Zaldivar interviewing water activist Betty Osceola.



Fig. 3 Kim Grinfeder stabilizing the VR camera in a remote area of the Everglades.

in urban swamps; and Win, a disturbance ecologist speaking to human-caused disturbances. We call the project “multi-platform” because we employed diverse media forms resulting in a Virtual Reality (VR) film, a photo exhibit, a website with 2D films, an interactive Swamp Symphony, and a study guide. By presenting the material across platforms we hoped to engage diverse audiences.

Throughout the process we tried to be self-reflexive about the intended and unintended impacts that our project might have on the people and ecosystems we were representing. Making media can be rewarding, but it can also be an intrusive experience. Acknowledging entanglements is a necessary part of any critical media practice. While multi-platform projects hold the promise of increased circulation, outreach, and education, they can just as easily be associated with new forms of consumerism and electronic waste. For example, as we were developing the VR film, a new standalone VR headset, Oculus Go was released. The headset offers an affordable way to present the project but is also just one more electronic device advancing standalone technological innovation and consumerism rather than collaborative frameworks. By engaging with new VR technologies might we inadvertently be promoting screen practices that

put stress on the very environments we hope to protect? At the same time, we cannot dismiss the advantages of using immersive VR technologies to reach audiences who might never be able to visit a swamp. How can we come to terms with our aspirations as well as the contradictions inherent in any contemporary environmental media endeavor?

Praxis in the classroom

My first step in this collaborative endeavor was to identify partners, a process that requires taking risks, building trust and discovering shared values. The first group of collaborators were the seven class members in the course I was assigned to teach. The course was a praxis lab in documentary production involving graduates and undergraduates from diverse disciplines. I proposed that we create an i-doc, a documentary for the web that makes use of interactive digital technology and permits opportunities for multiple voices and authorship. I had just completed a three-year i-doc on global shorelines (www.shorelineproject.org) and I felt that swamp stories were largely absent from discussions around climate challenges and solutions. I was also in close proximity to the Everglades and was eager to immerse myself in Florida’s swamps.



Fig. 4 Documenting our team experiencing a swamp walk in the Fakahatchee Swamp.

To set the tone for our shared endeavor I assigned David Bollier's article, "Commoning as a Transformative Social Paradigm" that defines commoning as a social practice that works against the logic of the extractive market economy and instead works to foster people's social connections with each other and with "nature" (2016, 4). Bollier explains that commoning is a practice where groups engage in acts of mutual support, communication and experimentation to explore ways of managing shared resources (2). I suggested that we use commoning as a prompt for our own media production and consider how our collective actions might influence both the process and the representation of a shared ecosystem that we need and depend on. I also assigned reading from Helen De Michiel and Patricia R. Zimmermann's *Open Space New Media Documentary* (2017) to offer a context for how collaborative media initiatives are not just about representation but can be used to help expand the public commons.

I asked each student to identify a personal goal, skills they might contribute, and their hopes for potential impacts. These exercises helped to establish a common agenda and an understanding that the project was not pre-determined but would be shaped by our shared input. For example, the active participation of one graduate student, Grant Bemis, a skilled photographer, resulted in a photography exhibit that helped us to

document our commoning practice and articulate an unexpected dimension of SwampScapes. Another graduate student, Evan Karge, had experience filming underwater and so we incorporated his expertise into the project. Graduate student Savannah Geary contributed her skills in design and cinematography.

Identifying how each student might contribute to the project was a gradual process that involved individual and collective discussions. Our process was impacted by the people we were meeting in the field, the research we were conducting as a group, and the skillset and availability of those engaged in the class. Our method was a far more complex process than simply assigning each student a role in a pre-configured initiative because the project was constantly evolving. Evan Karge explains in the class's final reflection exercise (May 2018):

The emphasis on the process as opposed to the result is something that has resonated for me throughout this class. Between learning and being immersed in the creative process, increasing my ecological literacy in regards to Florida's unique terrestrial and aquatic ecosystems, learning about shot composition, and learning about a whole different outlook on documentaries as an art form/educational tool, SwampScapes has been a shining example of social engaged



Fig. 5 Liz Miller and Evan Karge in the Fakahatchee Swamp.

art where the process has undeniably been more important to me than the end result. On a personal level and related to this, I feel as though I have not only increased my understanding of the production process but I also I feel as though I have been exposed and sort of indoctrinated into a privileged labyrinth of collaborations between like-minded individuals that has given me a unique vantage point of the ecological crisis occurring right beneath our feet, that I was largely unfamiliar with.

One of biggest challenges in our coming experiment was finding the right amount of structure to guide the experience. Student collaborators needed support and guidelines but also the freedom to find their own way. Karge explains:

I really appreciated the balance between guided direction and creative freedom that was allowed on our shoots. Because I am relatively new to videography, I was hoping to get some specific structure and feedback to have some sort of framework to be able to put together compelling shots, but I also feel as though I have this skill, especially in the underwater realm and I felt as though I was able to exercise my own creativity.

An additional challenge that we faced throughout the production was aligning student

schedules with the demands of documentary production, a process that requires flexibility and time. The class met once a week for several hours. The Everglades is a two-hour drive from our urban classroom, so productions were planned outside of class time. Furthermore, we had to work around the busy schedules of the individuals we were filming. This meant that students with tight schedules and competing work or family demands were not able to participate in what were often spontaneous production opportunities. For example, we wanted to capture the fires that were burning through the Everglades and were on stand-by for over a week waiting for a safe moment to film. This was not a shoot that we could coordinate in advance. The students who participated on production field trips benefited from “being there” and it appeared to strengthen their commitment to the project and their connection to the swamp. Students with fixed or tight schedules worked more on post-production tasks such as editing or sound design.

Another challenge was that our project evolved quickly, and it was hard to keep track of all the moving parts and contributors. As graduate student Grant Bemis in his final reflection explained, “There was an excessive amount of moving parts, and a never-ending flow of creativity. So, with the time allotted for completion, I am impressed how well it all came together.” Our challenges touch on a key tension in any participatory project, which is the work it takes above and beyond structured



Fig. 6 Documenting our Fakahatchee guide, Mike Owens.

class time. Throughout the class, I was engaged in a balancing act of offering students a chance to participate in a meaningful project and needing to respect the competing demands upon their time.

Our class produced the media and we involved students from a web production class taught by Kim Grinfeder, co-director of SwampScapes and director of the Interactive Media Program at the University of Miami. Kim supervised a team of six graduate students and they designed and built the SwampScapes website as part of a web production course Kim was teaching. By engaging students across classes, our commons was expanding; Kim's students were approaching storytelling

from an interactive design perspective while my students were thinking through documentary concerns. This new interdisciplinary dynamic infused new ideas into the project, and generated important discussions about how to present media and how it circulates.

Exploring the Possibilities of Multiple Forms

Before arriving in Miami, I had not anticipated that SwampScapes would involve a Virtual Reality (VR) film project. Once I met Kim, who is committed to environmental issues and has the technical know-how to make a VR project, it



Fig. 7 Deb Vanslet filming in the Fakahatchee Swamp.



Fig. 8 Juan Carlos recording sound in “Spy Mode” on an airboat in the Everglades.

seemed like perfect opportunity to explore how we might bring an environmental justice perspective into an evolving storytelling platform. In a VR film, place becomes the lead character and we had an ideal location to explore this form of filmmaking. To resolve my concerns about access, we decided to also develop an interactive website to reach a broader audience. The fact that Kim's office was just minutes from mine was a critical ingredient in the process. Daily encounters and briefings helped to foster the patience and trust that was essential to this elaborate and sometimes overwhelming process. Kim explains his commitment to collaborative endeavors:

A lot of people see collaboration and partnerships as a burden. Things can go wrong or fall apart, but I see collaboration as a necessity. We don't live in a time where we can do meaningful projects alone; there are just too many angles, too many technologies. If you want to make a strong project you have to collaborate. While we can learn technical skills on our own online, we can't learn how to collaborate, how to assess other people's skills and engage their strengths, unless we practice it.

At the same time that I was getting to know Kim, I was in conversation with an accomplished documentary artist, Juan Carlos Zaldivar. We were exploring story ideas together and if we might engage biologists working in the swamps of Cuba, his country of origin. Juan Carlos had worked on a VR project about Cuban dance and had years of experience in sound design, a key element to any VR project. He has also collaborated with Good Pitch, an organization dedicated to connecting filmmakers to movements for social change. We were excited for an opportunity to collaborate and he suggested an activity to align our goals and visions. We both produced an artist statement articulating the guiding principles behind our practice. We then read each other's statements to prompt a discussion on what we connected to in the other's statement, how we usually contributed to production processes, and how we would want this collaboration to play out. It was a creative and interesting way to initiate a collaboration.

For each location we had our "local guide,"

our documentary protagonists. We represented their experience through still photographs, 2D video, and VR video. Getting coverage for each platform made for rather chaotic shoots, but we hoped that each platform would appeal to diverse audiences and contribute something unique. Furthermore, we were learning about the strengths and weaknesses of each form. For example, a VR or 360 perspective offers users a sense of actually "being there" but does require the negotiation of a bulky plastic headset and is not yet accessible to larger audiences. One challenge we faced with VR was how much story or information we could include without taking away from this largely sensory experience. We had to experiment with the right balance between story and presence. We shot the 2D videos for our i-doc with teachers in mind who may not yet have access to VR technology but would want to bring the Everglades alive through first person narratives. On our website (<http://www.swampscapes.org>) we embedded the videos with additional information and a companion study guide. The photograph exhibit permits users to pause, engage, and make their own connections without the intervention of a script or soundscape. Kim suggests that "photography is about the moment, 2D filming can deliver a lot of information and 360/VR can really deliver an experience." Our objective was to better understand how we might use each form most effectively together to foster connection and to encourage swamp literacy.

Commoning as a method to connect

In a time when market culture is ubiquitous and invasive, commoning cultivates new cultural spaces and nourishes inner subjective experiences that have far more to do with the human condition and social change rather than the manipulative branding and disempowering spectacles of market culture. Finally, the real significance of commoning may be that it is not ultimately about a fixed philosophical vision or political agenda, but about engaged action in building successful commons. (Bollier 2016, 4)

A critical part of commoning is strengthening networks and as a Knight Chair I was invited to collaborate with The Conservancy of Southwest Florida, a key player in environmental issues in the

region. The organization is based in Naples, a two-hour drive from Miami and was the first site I visited when arriving to South Miami. Communications officer Catherine Bergerson offered leads and possible directions for the project and introduced me to the Director of Environmental Education, Heather Scaza Acosta, who has a joint appointment at Florida Gulf Coast University (FGCU). FGCU is a leader in environmental education and has designed a required course on sustainability for students across disciplines. Over the course of the semester my students and I imagined this sustainabil-

ity course as our “target audience” and collaborated with several professors at FGCU in both the conception and the production of SwampScapes. For example, Brenda Thomas, the course coordinator, shared the goals of the course and we used these to develop our SwampScapes study guide. Win Everham, the founder of the sustainability program at FGCU and a disturbance ecologist is featured in our documentary project as well.

Through our collaborators at FGCU we met Kathleen Smith, the biologist at The CREW Land and Water Trust in the Corkscrew Regional



Fig. 9 Win Everham explains the impacts of a recent fire in Picayune Strand State Forest to Liz Miller.



Fig. 10 The VR Camera is in the front of the boat and Kim, Juan Carlos and I are on the floor of an airboat in “Spy Mode” to avoid being in the 360 shot.

Watershed, who donated sounds for the development of Swamp Symphony, an interactive feature on our website where users can identify and even play sounds together. Swamp Symphony is our humble homage to biodiversity. And rather than record the sounds ourselves, we were excited by the notion that by repurposing sounds originally recorded by biologists for research, that we were creating a bridge between science and art. What SwampScapes revealed to us is that active listening and observing are critical skills for artists, biologists, and advocates. Forging new connections with groups and educators was key to our commoning process, and there are many other collaborators who I have not mentioned here but who played key roles in this project. An obvious challenge for most community groups is that they are often juggling multiple projects and responsibilities and finding the right dose of collaboration is key, so that everyone benefits in some small way.

Our SwampScapes project and our exploration of commoning will take a new direction as we begin the outreach stage of this project. The class is over and I am no longer in residence near the Everglades, so we will find new ways to stay connected and connect others. I began this essay explaining that a major threat to the Everglades is our disconnection from swamps but we are also disconnected from each other. The ongoing entanglements of people, media and the environment are always already present. The practice of commoning is one way of activating these pre-existing connections. Media has the power to bring people together, to

foster a process of commoning but it takes work, intention and self-reflexivity to common and in doing so get closer to becoming environmental.

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A Conversation on Media and Logistics with Deborah Cowen and Kay Dickinson

Interviewed by Patrick Brodie

At the Porting Media II conference at Concordia University in the Fall of 2017, I had a chance to organize a virtual conversation between Deborah Cowen, Associate Professor of Geography and Planning at the University of Toronto and most recently the author of *The Deadly Life of Logistics* (2014b), and Kay Dickinson, Professor of Film Studies at Concordia University and most recently the author of *Arab Cinema Travels: Transnational Syria, Palestine, Dubai and Beyond* (2016). Over the last year or so, we have been corresponding back and forth, raising questions and ideas about the importance of studying logistics in media studies. With the two conversants' combined backgrounds in geography and media studies, they came up with some enlightening thoughts on everything from interdisciplinary collaboration, activism, education, infrastructures of resistance and exploitation, and struggle. What follows is a distillation of our conversation, presented in an interview format.

This first question is for Deb. Working in the University of Toronto Department of Geography and Planning, what are some of your encounters with film and media studies at this (or other) universities?

Deb Cowen: Geography—at least in its critical incarnations—is a wonderfully undisciplined discipline that has not only allowed but encouraged my

own interdisciplinary tendencies. I am deeply committed to questions of space, territory, landscape and materiality which have long been central to the discipline, yet this openness is also core to geography's appeal. I feel quite limited in my facility with film and media studies, though I have certainly had some wonderful encounters with these fields. The relationship between media studies and geography is absolutely crucial for engaging questions of time-space and circulation. I am also drawn to the particular ways that film and media studies speak to debates about materiality and materialism and can bridge questions and approaches from science and technology studies and cultural studies.

Kay, while your research has taken you through sound studies, transnational theories of Arab cinema, with a key focus on labor throughout, one of your most recent chapter (forthcoming) articulates with extreme clarity the politics of film and media production in free trade zones (with special focus on Dubai). How did you come to start looking at the logistics of film production from your previous projects and areas of study?

Kay Dickinson: It has been a fairly logical development, which hopefully gives a useful picture of how logistics absolutely figures within what we do in film and media studies. In broad brush-

strokes, my first monograph was dedicated to the politics of labour and my second engrossed itself with practices of travel. One sharp edge where the two meet is the logistical management and coordination of labour markets.

From the get-go, I knew I wanted to investigate what was going on in Dubai, which has gone to enormous lengths to establish itself a media industry over the last fifteen or so years. That sector, along with many others, is dedicated, in large part, to offshored manufacturing, split production and regional headquartering for major conglomerates, all serviced by a predominantly migrant workforce. It's estimated that at least 90% of Dubai's workers are non-citizens on temporary work permits. What renders Dubai competitive within transnationalized media production and circulation includes its global positioning as both one of the world's largest transshipment ports and a heavily trafficked airline transit hub. Logistics comes in here as a consciously wielded approach to quicken the flows of people and goods required for something as typically expensive and slow to make as, for example, a blockbuster movie (about a hundred of which have passed through Dubai this century, not that you would know it—hiding the tracks of the modes of production being another core characteristic of logistics). The logistical synchronization of legislation and the built environment to the demands of transnational production has been staggering and quite alarming here.

Without wanting to backtrack through *Arab Cinema Travels* too much here, two quick examples readily come to mind. Firstly, labour is entirely orchestrated to match the casualized short-term contract types we are familiar with from filmmaking (and work at large across the globe). A suitable media worker can be brought into Dubai within a matter of days, which loops the unwieldy process of making a film into the financially expedient proclivities of just-in-time manufacturing. These workers can just as easily be dispatched once their contract is up, given that they have no right to stay on in the country or access to its broader legal or welfare protections. This is all very tidy but carries massive implications for how people survive in the world and how their treatment is regulated. Construction, cleaning and domestic workers most definitely suffer this the most and it should be noted that the media industries can't run without them.

And then, secondly, Dubai situates media produc-

tion within an archipelago of sectorially-defined free zones, here Media City, Studio City and Internet City. Everything media runs through these, from the Dubai International Film Festival to *Mission Impossible: Ghost Protocol* and *Masterchef Arabia*. The free zones are designed to the nth degree to attune to logistical demands, whatever that takes.

Sorry, this has proven a really long answer, but I am hoping it opens out some of the dimensions that I feel are under-studied within our discipline—particularly the treatment of workers—and not just in Dubai as a singular case, given that these practices impact a global workforce and are being increasingly rolled out elsewhere. We need to know where our media is made, what and who are moved in the process, and under what conditions, especially as the tidy, fantastical end results strive to obfuscate all this.

One other important thing that struck me while conducting fieldwork is the long durée of logistics. In this site, we are talking centuries of port activity and commerce-based human movement that shape the contemporary situation (however much Dubai projects a shiny and new image). I worry about the presentism that colours the consideration of logistics within media studies. Logistics has deep roots in slavery and colonization, as Deb's work and Stefano Harney and Fred Moten's (2013) "Fantasy in the Hold" chapter clearly stress. We urgently need to attend to how contemporary logistics perpetuates these legacies.

Deb, while your most recent book focuses on, obviously, logistics, we could perhaps say that a through-line of your work has been on the three keywords of your first edited collection: war, citizenship, territory.¹ What was your methodological and theoretical avenue into these discourses? How have these ideas shifted or transformed (or not) throughout your research?

DC: I appreciate that thought. I think you are right about that through-line, though I would add "intimacy" and "labour" to the list. Work and labour have long been at the centre of my research, and Kay's thoughtful comments remind me to foreground them here. My first book—*Military Workfare* (2008)—was all about the labour of warfare, but in this exceptional field that is often bracketed from the concerns of labour studies. I embarked on that

work in order to understand what appeared to be an expansion of the *military* welfare state at a time when radical scholarship was tracing the neoliberal dismantling of social services and protection. Digging deeper, I learned of the long entanglement of war and welfare; the ways nation states experimented with social welfare and insurance to recruit soldiers and their loyalties and assembled state territoriality, long before civilian welfare provision. This concern with war work also provoked my interest in logistics—which emerged as a field historically to sustain troops on the battlefield. The long history of logistics as provisioning and sustaining the forces of war places labour and social reproduction at the centre of the frame.

By intimacy I do not mean a particular scale of relation – it is not simply the local or interpersonal – but a way of centering feminist and queer questions about the production of desire and subjectivity, for instance, within relations that can be as “big” as empires. I am interested in intimacy in the sense that Lisa Lowe and Lauren Berlant,² in distinct ways, open up the term. These concepts—war, citizenship, territory, intimacy—are so deeply entangled in the project of modern states, and all of my work is in some way or another oriented towards telling a different story of that entanglement. I have a persistent interest in the “how” of violence—especially in its organized state and corporate forms. Here I am referring to the practical necessities of re/producing and sustaining populations, militaries, or economies through the field of logistics—so, how do supplies or soldiers or commodities get from point A to point B? But I also mean something else. These “how” questions also ask that we look to the discursive re/production of “civilian” and “military” and related concepts like “domestic” and “foreign.” How can we have a polity that is entrenched in and premised upon war making it can only account for as exceptional?

Logistics is a “hot” term at the moment in the humanities, particularly in media studies. But as with many such terms, it requires some nuance and specificity to avoid becoming a kind of blanket term for a variety of processes concerning the production, dissemination, and use of media. So, on a basic note to get the conversation started: What do each of you consider to be *the most crucial stakes* in the study of logistics or “logistification” of media?

DC: I imagine Kay will offer something much more precise and thoughtful here, and I am sure she can speak to the challenge you identify in the context of film and media studies. I agree that logistics (and concepts more broadly) need to have some specificity in order to remain vital, yet I am better at questioning boundaries than drawing them. I would want to ask, what are the various things that media scholars are getting from the concept? What does it give them in practice that other terms don’t seem to offer? And perhaps I would also add for you Pat—what do you feel is getting lost in the current explosion of interest in the field and expanding use of the concept?

Logistics offers a cartography of geo-political economy. More specifically, in its focus on the most banal but practical necessities of circulation and sustainment, logistics offers us a map of contemporary imperialism. Neither capitalism nor imperialism are first and foremost ideas or abstractions, but relations, and the field of logistics is the management science that organizes empire. If logistics is understood in this way—as the calculative science of war and trade—then at stake in any critical engagement and with the practice of counterlogistics is nothing less than the future of life and death, at both the singular and planetary scale.

In the scholarly worlds that I travel there is a growing critical body of work on logistics. In fact, a special issue dedicated to “critical logistics” that I co-edited with Charmaine Chua, Martin Danyluk, and Laleh Khalili is about to launch in *Environment and Planning D: Society & Space*.³ I also see a lot of promising work in social and labour movements that are increasingly focussing on the politics of circulation. I tried to address some of these questions in a short piece on disruption (Cowen 2014a) in *Viewpoint* a few years ago, and if anything, I see these tendencies growing.

KD: I totally agree with Deb here and hope, if these pathways into media studies proliferate (and pathways are infrastructure, so require our critical scrutiny), that what has to come maintains her activist focus. For that, the more hands on deck the better.

I say this with a concern for certain inclinations within the discipline and academia more generally. We do have a tendency simply to pick up a paradigm and then simply stretch it to a different site of inquiry. Ta-da, finished, “a new contribution to

knowledge.” We should be wary of how that ambition overlaps with the conquest models that drive logistics. What we can learn from logistics is its drive to connect, to see whether this focus can inspire modes of (to quote Jasper Bernes) “counter-logistics” (Bernes 2013)—as Deb, Danyluk and Khalili are extrapolating in their special issue too. What binds us, globally? How are we all inhabitants of the worlds logistics creates? How can we form networks of solidarity? I will admit that, through my own research, I have yet to encounter too many people who’ve devised clear-cut tactics to fight the injustices of supply chain capitalism’s hold on media production. But a more collective struggle against its wrongs, where scholars contribute what they can through deep connection with other workers seems a highly pressing objective.

I feel there’s scholarship the humanities can offer to help intervene into the biopolitics that logistics exacts. To take media studies’ objects and interrelationships as a case study: how are workers trained, by our own institutions, to slot into the logistics of production and circulation? Even at the most privileged levels, how is creative work figured as a labour of passion, just as, all the while, the industry’s just-in-time, precarious and flight-ready employment formations demand long hours for low or often no pay without security or benefits? What is higher education’s role in easing into place globally competitive, extremely replaceable workers? How are these jobs still presented as fulfilling one’s dreams without too much attention to the risk and debt incurred? Across the planet, media is produced under sweatshop conditions. Logistics’ dedication to speed above all else destructively impacts upon the people who make and sustain media hardware, the sets and costumes we see on screen, the networks for circulating each piece of a dispersed puzzle that goes towards the end product, and the hasty dispatch and reception of media commodities.

These are two really amazing answers. Because as both of you are saying, the stakes are way higher than academic study, and “the more hands on deck the better.” To answer your question Deb, I feel like exactly what is getting lost is the specificity. What *The Deadly Life of Logistics* does so well, among other works like Jesse Lecavalier’s *The Rule of Logistics* (2016), I think, is to historically place the development of logistics as a military-cum-cor-

porate strategy. And something that I myself have been guilty of is to focus on the top-down, who’s pulling the levers kind of studies, whereas focusing on and giving voice to struggles and movements against logistics—or at the very least, how workers and communities are dealing with logistics in their everyday lives—may ultimately be a more effective way of approaching the subject.

There seems to be some obvious points of entry into a media theory of logistics, but some not so obvious. In Ned Rossiter’s *Software, Infrastructure, Labor* (2016),⁴ he uses the perhaps brilliant or maybe unfortunate term “logistical media”: the incorporation of media, software, radar, gadgets, etc. in forms of biometric policing and tracking; and the proliferation of advertising, books, and films on the subject, which force an analysis of logistics as both a phenomenon and a buzzword. What imaginations drive these approaches, and how can we ensure a continued focus on the *materiality of logistics* as one of its crucial contributions to studies of global capitalism?

DC: I am very keen to insist on the materiality of logistics, but materiality is, of course, not a simple word. Rail and cable and containers are crucial and material, but so are the calculative knowledges and affective orientations that keep them running.

KD: Well put. Hopefully this conversation is giving some sense of how all these factors interlink.

Good point. Approaching “materiality” as a concept would certainly go beyond the purview of this conversation.

In *Deadly Life of Logistics*, Deb talks about the bio- (or necro-) political dynamics of disruption involved in the sheer scale of global trade, and the implications for labor and organization. How can these networks of global trade produce the conditions for their own demise if we seem to be witnessing, along with the financialization of everything, a logistification of everything traveling along these routes of capital?

DC: I am not sure that “these networks produce the conditions for their own demise.” Doesn’t this give too much power to logistics manage-

ment and infrastructures, rather than those who contest them? I would rather say that *struggles over* networks of global trade may produce the conditions for the demise of those formations. These networks—formed through myriad negotiations, contestations, and dispossessions—might give shape to the occasion and the cartography for their own disruption. I have found Marcus Rediker and Peter Linebaugh’s work in *The Many Headed Hydra* (2012) to be incredibly helpful on this question. They trace the ways in which transatlantic imperialism forged new configurations and relations across places and peoples that may not have otherwise come into relation. The book emphasizes the unexpected, everyday, and extraordinary ways that disparate groups, across unlikely geographies could sometimes produce creative solidarities. This work reminds us to look at the particular formations and cartographies that shape the violence of our present as opportunities and resources for opening up radically different futures. I would be happy to talk more about finance and logistics, but I am also not sure that logistics follows finance (or financialization) in this way.

KD: I would be similarly wary about adopting, let’s say, an accelerationist take on all of this. But what you’re asking, Pat, does position us *in medias res*, amidst the stakes and struggles against the injustices logistics imposes.

I would like to home in, for a minute, on one variant of that “us” to assess what it might usefully contribute. I personally feel that it’s vital to grapple with our own placement within these systems as they pertain to the university. It’s not hard to understand the globalized university as a nodal point in how it increasingly aggregates the people it draws in (and under what terms) and how it organizes its manufacture and dissemination of “products.” I find it enormously revealing to seek out how the university is being made to function, in a variety of ways, like a distribution centre. This isn’t to say they’re the same thing, of course, but comparisons like this can be illuminating.

To start on a more hopeful foot, education has something of a delivery system modality to it and one that can run counter to the greater objectives of supply chain capitalism. So, in simple and classic terms, it’s an effective means of everyone involved sharing awareness of, to pick two ready “counter-logistical” examples: the history and continuance

of pipeline activism, or the struggles against the construction of the apartheid road system build for settlers only in the West Bank, Palestine. This transport network is at once a colonial land grab, a means for frontier colonists to effortlessly commute to Jerusalem for work, and the infrastructure that enables the flow of products out of factories illegally built under international law in the West Bank, and which rely on exploiting almost literally captive Palestinian labour. It doesn’t take much to bring discussions of these situations into any number of different classes. A PhD colleague’s “Contemporary Chinese Cinemas” class, to take another case study, included a film that lays out the global supply chain and, during the session, she made sure to tell the students that “all your trash goes to China.” These are ways in which we can become more cognizant of the inequality that logistics produces and can continue to question where everything comes from and goes to, how and what relations are forged by these movements.

But, of course, mere familiarity with these issues isn’t enough, and can even exacerbate differentials of privilege. If education does mean to aid in challenging the motivations for and repercussions of logistics, it would do well to explore what we can contribute, for instance, to the Amazon worker strikes in Europe, or Walmart employee organizing in Chile (Carolina Bank Muñoz’s research is fantastic in this respect).⁵ Given how implicated, as ordinary people, we already are in these networks, this isn’t a stretch. But these commitments should join forces with knowledge about how these sorts of transnational corporations are simultaneously making inroads into education too. Marc Bousquet’s chapter “Students are Already Workers” in *How the University Works* (2008) proves this point. He investigates how UPS has struck deals with higher education institutions in Louisville, Kentucky, the home of one of its largest processing hubs. The arrangements leverage the promise of education to lure in a cheap, indebted workforce under conditions that make it almost entirely impossible to preserve the time and energy necessary for successful study (including through satellite classes held within the complex itself and at particularly antisocial hours). Examples like this bring “home” (as logistics itself does) what Pat’s identified as “the logistification of everything” and I can only see these sorts of hand-in-glove arrangements between the logistics industries and educa-

tion ramping up. Teasing out these operations is imperative, so too the provision of information on tactics of opposition and the fostering of solidarity links.

At the same time, an acknowledgement of the ubiquity of logistics takes us to the fact that we are all probably best matched to struggling within the conditions we know best and then hooking them into solidarity networks. For example, we can't just study logistics as a distant thing exacted on others that implicates us only in what we consume. How are our own educational environments managed according to logistics, from VLE expediency to just-in-time teaching hires and casualization? This also connects to what you were asking about financialization, Pat: how, at the same time, are students slipstreamed into the high stakes gamble of futures through what they pay out (often through debt) to be educated for an uncertain post-graduation life? Within all these processes of imbrication, there's the issue of how university education (especially in countries like the UK) categorically aims to produce graduates who match the requirements of contemporary job markets, a process that can cajole students into complying with, rather than challenging these logistics-friendly formations of work. I wouldn't advocate here for a special status for media studies, more for it to join a broader struggle that questions and refuses the multiplying exploitation and extraction that logistics eases into place. What are we helping to enable, allowing to flourish, encouraging in the work-ready preparation of students that can be diverted away from these sorts of control?

I would like to clarify, I suppose, that I was referencing the classical Marxian dictum that the contradictions of capitalist modes of production and accumulation eventually leads to systemic crisis, at which point revolution is seen as imminent. While these ideas definitely risk overdetermining capital as an unstoppable force of change, I think with financialization, maybe what I am getting at is that endemic crisis seems continuous and productive for these kinds of accumulation.

Briefly, I think it's useful to tie what Kay's saying here to what Deb mentioned earlier about the "calculative knowledges" of logistics, key to their functional (material) operation. Because I think that on the one hand, we can talk

about supply chain management programs in business schools, and how, as Kay says, these—and really, so many other programs in universities—encourage such an uncritical, growth-oriented approach to the circulation of goods and information. But on the other hand, we can talk about how so-called "immaterial labor" factors into the affective circulations that push capital movements and logics forward, as well as the literal cognitive labor that goes into the algorithms of tracking and biometric technology. To tie this to the broader issue theme, I think it's the specificity of these particular strategic entanglements—and their embeddedness within global business cultures—of the calculative technologies and management logics of logistics that make it so important to focus on infrastructure, the built and so-called "natural" environment, and the particular sites at which work (and friction) relate to these environments.

Jumping off of Kay's final points here, then, and to give Deb the last word, how can we perhaps see these struggles organized around sites of financial or logistical circulation (such as Occupy and the NDAPL struggle), particularly with regard to natural resources and land rights, within a historical framework? I am thinking of something like Joshua Clover's (2016) idea of these as "circulation struggles," which he draws out by tracing a kind of world systems analysis of cycles of accumulation, where during periods of more industrialized production, strikes arise as more effective, whereas riots are the operable form of struggle in eras of heightened financialization. Because I think these are responses to particular kinds of violence, in particular historical formations of capitalism and imperialism. But what other models and methods can we propose?

DC: I have tried to make some parallel arguments about the intensity of labour actions and anti-colonial struggles around ports and other key nodes of logistics infrastructure in my book. Clover's ideas here are helpful, and I find Tim Mitchell's *Carbon Democracy* (2011) to be inspiring in terms of thinking about the rise of these sectors and their contestation in a way that centres materiality, ecology and geography. At the same time, I have found myself in bank archives lately, looking back to the

circulation of capital from the Trans-Atlantic slave trade into infrastructures of the 19th century. The force of finance in that era—especially in the context of the forced circulation of millions of human beings—has me thinking carefully about the long entanglements of these fields. If we think with Moten and Harney about the slave trade as the first large scale modern experiment with logistics, then there remains a different story of counterlogistics to be told that would require starting from the tradition of anti-colonial thought and action.

We will end there for now. I would like to sincerely thank you both for your thoughtful and generous contributions.

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Endnotes

- 1 This refers to Cowen and Gilbert (2008).
- 2 See, for example, Lowe (2015) and Berlant (2008, 2011).
- 3 See Chua et al. (2018).
- 4 This book became an interesting crux of the conversation, but never fully fleshed out in this finished version. Rossiter borrows the term “logistical media” from John Durham Peters (2015), who argues for an expansive umbrella for what (environmental) media is. Such an understanding could probably use a heavy dose of specificity, but there is something in the “becoming environmental” (Gabrys 2016) of logistical technology that is worth keeping tabs on. See our editorial introduction.
- 5 See Muñoz et al. (2018).

BOOK REVIEWS

book review

Grusin, Richard (ed.). **After Extinction**. University of Minnesota Press, 2018

Léa Le Cudennec

Coined by atmospheric chemist Paul Crutzen in 2000, the term Anthropocene suggests the advent of a new era in which humans are the main geological force. Acknowledging this shift in constitutive forces on Earth turns our attention to the fast-approaching ecological catastrophe brought on by human activity and thus, to the likely extinction of all life on the planet. Following *The Nonhuman Turn* (2015) and *Anthropocene Feminism* (2017), also published through Minnesota University Press, which dealt with issues of ontology and feminist and queer approaches of the Anthropocene, *After Extinction* is the third volume edited by Professor of English Richard Grusin, grappling with this increasingly fashionable concept in academia. Subsequent to the 2015 Center for 21st Century Studies conference of the same name, the book provides an interdisciplinary approach to the question: What comes after extinction?

The collection starts with political theorist William E. Connolly's call for an "entangled humanism," underlining the limits of 20th century philosophical theories of cultural internalism and human exceptionalism in the face of the coming sixth extinction. To counter the nihilisms that these philosophical premises would inevitably convey, Connolly suggests rethinking humanism, transfigured into "new modes of care" (Connolly 2018, 16), in the form of entanglement. Acknowledging the limited human ability to feel, entangled huma-

nists should attempt to enlarge human affect and understandings of life to include an Other who might be found in everything. Following Connolly, Jussi Parikka underlines the necessity of multiple temporalities to think this turn to the nonhuman. In his contribution "Planetary Memories: After Extinction, the Imagined Future," Parikka proposes rethinking concepts of time and approaching extinction and the future as a mediated now. The Finnish theorist looks at narratives and representations of the post-planetary in different literary and artistic examples, to question the issue of temporality in relation to extinction. Through "politics of chronoscapes," we might understand the present as entangled geological timelines and the future as "an archaeological existence of projected spaces or potentiality" (Parikka 2018, 43).

Connolly's and Parikka's chapters lay the theoretical ground for the more specific focuses that follow. Joanna Zylinska interrogates the regimes of visuality around extinction, developing an issue central to the common reflection presented in this collection: how can we theorize and represent extinction against the human cognitive inability to fathom annihilation? Zylinska presents photography as a form of fossil, as both are obtained through a similar process wherein the "real" is imprinted on the material using light. Zylinska goes on to posit that photography can thus be attributed life-giving, rather than life-conserving, properties.

This is because photography provides material to simultaneously reflect on the issues of temporality and the possibilities offered by solar energy. Joseph Masco's chapter furthers these interrogations of visibility and representation by underlining the paradox between the Freudian human denial of one's death and the fascination - if not eroticism - brought on by images of annihilation. Commenting on Hamza Walker's 2013 exhibition *Suicide Narcissus*, Masco finds entryways to resisting the spectacle of extinction and fostering investment in a collective future, aware of the complex impact of human activities on the environment. In a last example of the ways arts and sciences may work together in thinking subjectivity beyond extinction, Cary Wolfe explores a scientific and artistic project on the extinction of the Californian Condor. Replacing extinction as both the most natural phenomenon and one that can never be natural, for it goes against the "stabilizing apparatus" of theorized biodiversity, Wolfe discusses Heidegger's "thesis of essence" and Derrida's response on the human-animal distinction.

Nicholas Mirzoeff's chapter marks a much-needed rupture in the collection by clearly addressing the blind spots of the non-human turn, only slightly hinted at in previous articles. Mirzoeff asks who is the "anthropos" of the Anthropocene. Going against the universalist tendencies of the materialist turn, he recalls the historical definition of the nonhuman as the non-white man. As he reviews theories of race, from Cuvier to Audubon, Mirzoeff reminds us of the central role of race played and still plays in defining whose life matters. Mirzoeff gives a color and a chronology to extinction, arguing for a geological color line and drawing links between the Anthropocene and Christianity, slavery, and capitalism. Uncovering the "white supremacy scene" also allows him to unearth practical modes of resistance and more precisely "new" actors of these resistances: those designated not human within the regime of white supremacy. Further analyzing the concept of "man" in the Anthropocene, Claire Colebrook looks at the rational discourses surrounding the definition of humanity, in particular regarding disabilities. She highlights that as our planet's resources continue decreasing, a utilitarian discourse will have to take place to define which lives are worth living. Building on Bernard Stiegler's thesis that every human is dependent on unequally distributed networks of

technology (Stiegler 1988), Colebrook challenges the idea of the sixth extinction by demonstrating that not only is extinction a natural phenomenon, it is in fact a logic at the very heart of humanity.

These chapters make a vital intervention to contest the universalizing tendency of the nonhuman turn, as approached in theory and arts so far in this book. These concerns, raised by postcolonial studies most notably, are all the more significant when thinking about the Anthropocene, for it presents the risk of a return of Enlightenment conceptions of the human as bearer of rights, overlooking distinctions of gender, class, race, and ability (Chakrabarty 2012).

Ashley Dawson revives the debate over the very naming of the Anthropocene, in opposition to the Capitalocene. If Dawson's chapter restates an established discussion in environmental humanities, it remains an unavoidable debate to have in this volume, one that reorients the discussion towards institutions, issues of responsibility and the inexorability of extinction. In the introductory chapter, Connolly had dismissed this term by Jason W. Moore, for it fails to include the nonhuman processes also at stake in the race to extinction and to account for variables outside of capitalism. Instead Dawson engages in a compelling study of de-extinction rhetorics to explore the ways in which the Anthropocene not only is a consequence of capitalism but also fuels it. He explains, "the extinction crisis offers an opportunity to capital for a new round of accumulation" (Dawson 2018, 176) through the rush for new biotechnologies and the increasing commodification of nature. Taking the example of the Amazon, Dawson shows how this "catastrophe biocapitalism," supported by the fallacious belief in unending capacity for growth, is a threat to not only the environment but the local population it displaces.

The volume's closing chapter offers a reflection on the epistemology of extinction, looking at native peoples' histories and the very meaning of 'extinction'—word which often does not translate in native languages. Daryl Baldwin and his collaborators explain that extinction "is not only a foreign concept but an invasive one" (Baldwin 2018, 210). Like Dawson criticized the social impacts of so called "technofixes" to extinction, the authors look at strategies of linguistic survivals and the misguided efforts to conserve and archive them rather than revive them.

In his opening words, editor Richard Grusin introduces the collection as an effort to think of extinction as generative. The multiplicity of interventions made in *After Extinction* come together to complicate the now widespread focus on the nonhuman and to bring forth issues of race, ability, and capitalism in matters of extinction. In so doing, the writers propose practical answers and make calls for action. Therefore, extinction appears here not only as generative but also re-generative of the ecological debate and, as Grusin points out, of processes of creating knowledge in the humanities today. As such the book embodies the struggles of the humanities to theorize the human not only as a subject in Enlightenment perspectives – which postcolonial studies challenged but nonetheless built on – but collectively as a geological force.

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Endnotes

- 1 As Jane Bennett’s work *Vibrant Matter: A Political Ecology of Things* (2010) developed in its reflection over object-oriented ontology.
- 2 Zylinska refers here to the argument articulated by Ilkka Hanski (2008).
- 3 Connolly remarks that Capitalist Germany has managed to drastically reduce its greenhouse gas emissions and that Soviet Russia was a massive polluter.
- 4 Technologies claiming to fix the negative externalities of human activity while preserving the potential for economic growth. Tools of green-washing practices are mostly fixes to feelings of guilt.

book review

Osman, Michael. **Modernism's Visible Hand: Architecture and Regulation in America.** University of Minnesota Press, 2018

Tyler Morgenstern

With the 19th Century drawing to a close and the US body politic still reeling from the cataclysm of Civil War, a peculiar new set of techniques for making order in an otherwise volatile world began to coalesce in American homes, offices, and laboratories. Skewing from conventional understandings of the built environment as exclusive of “the elements,” an emergent generation of architects began to imagine a more porous, though still orderly, relation between interior and exterior. In *Modernism's Visible Hand: Architecture and Regulation in America*, Michael Osman offers a lively glimpse into this world-in-the-making, tracking the emergence of *regulation* as a distinct mode of architectural thought and practice. Joining other recent efforts to nuance the historiography of US architectural modernism such as Jeffrey Lieber's *Flintstone Modernism* (2018), *Modernism's Visible Hand* approaches regulation as a malleable set of infrastructural, technical, and interpretive operations by which postbellum US architects transformed the brick-and-mortar structure into a dynamic apparatus that did not so much exclude as modulate and mediate the elements, charting new meanings for “home, market, nature, and labor” (Osman 2018, xix) in the process. Richly archival and amply illustrated, the project amounts to an effort to rethink the ‘modern’ in modern architecture; to cast it not as “the embodiment of an idea about a new society,” but as an *enterprise*, “constructed

through intersections of management with technology and physical infrastructure that operated on the environment and the economy to constrain the errors and deviations endemic to a society invested in growth” (Osman 2018, viii)

Osman's sojourn through regulation is, by necessity, eclectic. This has as much to do with the heterogeneous conditions under which the practitioners of regulatory design worked as it does with the idiosyncratic pathways charted by regulatory technologies themselves. As in the case of the thermostat, which was initially designed to control temperatures on the factory floor but ultimately saw much wider adoption in the domestic sphere, Osman's chosen technologies often prove unexpectedly charismatic, exceeding the intentions of their creators and taking on new aspects as they shuttled across disciplines, institutions, and applications. Chasing these unwieldy itineraries, Osman traverses a wide range of seemingly unrelated spaces that, taken together, evince a “broadening interest in tools for managing dynamic change” (Osman 2018, 127). In Chapter One, for instance, readers pass through Catherine Beecher's proto-feminist efforts to reimagine the domestic interior as a regulatory system in which ventilation and temperature control mechanisms would help to transform the “middle-class house into a testing ground for the reform of homemaking” (Osman 2018, 21). In Chapter Three, Osman turns his at-

tention to the embryologist Charles Zeleny's *Vivarium*, a facility on the grounds of the University of Illinois at Urbana-Champaign where a complex climate control apparatus afforded Zeleny "an unprecedented level of control" over the simulated biotic environments at the heart of his experimental practice (Osman 2018, 110). Osman, however, construes regulation not as mere pretence for laying brick, but as a potent *representational* technology in itself, a means of visually formalizing worldly processes that might otherwise escape managerial capture. Thus does he assimilate the mathematical work of Carl G. Barth—a key figure in the deployment of Taylorist production principles in the US steel industry—to the regulatory. "Collecting the variables of the production process in plots, diagrams, and slide rules," Barth "translated the core elements into the neutral abstraction of numbers," rendering them available to "increasingly rigorous" forms of managerial order (Osman 2018, 142).

Moving across these disparate domains, Osman constructs regulation as a transportable, scalable design principle that offered architects a means of thinking the relations between environment, technology, and management anew in response to often idiosyncratic demands and aspirations. Particularly for those readers adjacent to architecture proper, this concept work is perhaps the book's key contribution. One might even read *Modernism's Visible Hand* as an account of the transitional space between Foucault's disciplinary society and the Deleuzian society of control. If the disciplinary society was organized around a series of clearly delimited enclosures (the school, the factory, the prison) within which specific discourses of truth and value consolidated, in the society of control, such enclosures had all but eroded. By the end of the 20th Century, Deleuze argues, the vaporous entity known as the corporation had already largely replaced the factory, and endless 'skilling' programs were well on their way to doing the same with the school. This transition did not, of course, entail the end of power. Rather, it signalled the emergence of a world in which power asserted itself not through so many physical walls and barricades but through the everywhere-and-nowhere matrix of digital code. In such a world, the Open no longer signifies disorder. As Wendy Chun has shown, it rather maps almost point for point to control: if disciplinary power was "visible, yet

unverifiable," in the control society, code renders power "invisible," such that prohibition increasingly appears in the guise of freedom (Chun 2008, 7-9). With *Modernism's Visible Hand*, Osman puts some empirical flesh on this conceptual joint, showing how regulatory architecture wound interior and exterior, the controlled and the contingent, into complex new arrangements.

The result was a variety of built environments that retained something of the logic of enclosure—here and there Osman's case studies betray an abiding allegiance to a mode of civic and corporate monumentality that dramatizes the disciplinary dream of a rationally ordered social body—yet nonetheless embraced a repertoire of proto-cybernetic organizational precepts that shifted the accent from the production of normality to the *inducement of order*. Indeed, it is difficult not to read Barth's efforts to transform the factory into "a time-based and mutable *form*" (Osman 2018, 130) as unwitting prologue to Deleuze's gaseous corporation, where labor, compensation, and organization are held "in states of perpetual metastability," subject to modulation without end (Deleuze 1992, 4). Or consider, further, Osman's fascinating account of the development of modern cold storage facilities in Chapter Two. In place of the massive ice blocks that dominated earlier forms of cold storage, the facilities that Osman considers—one in Chicago, the other Boston—boasted elaborate cooled-water piping arrays that allowed managers to regulate interior temperatures with remarkable precision. In these facilities, perishable commodities like meats, fruits, and vegetables were synchronized with the rhythms of the market. As Osman writes, modern cold storage emerged primarily out of an effort to make such perishables available to the futures trading market at a time when futures were themselves understood as regulatory mechanisms capable of stabilizing the boom-bust cycles endemic to capitalist exchange. By holding temporarily at bay the perishable commodity's natural tendency to spoil, wither, and rot, cold storage opened a hiatus between initial sale and fulfillment of order, creating a window within which the purchase contract could be speculated on and resold. Not an enclosure in any strict sense, then, the modern cold storage facility was rather a built technology for inducing order at the otherwise turbulent overlap between unregulated exchange and unchecked biotic decay.

With such analyses, Osman offers scholars in a variety of disciplines fecund resources with which to reframe a range of contemporary research agendas. Those who interrogate the foundations of ecological thought in the shadow of the Anthropocene, for instance, will find value in Osman's account of how regulatory precepts torqued accepted methods for representing, modelling, and ultimately building into and around natural phenomena. Similarly, and as hinted above, historians of cybernetics and its afterlives will uncover in Osman's work a parallax view on such familiar concepts as feedback, homeostasis, and control. Locating these and similar constructs in proximity to an historiographic corpus that extends well beyond the annals of computer science and electrical engineering, Osman raises for the historian of media and technology some compelling methodological questions. What, for instance, might it look like to narrate the emergence of the Society of Control not through code, the network, or related figures, but through the aesthetics of built space, or through environment? Finally, Osman's understanding of the deeply social character of technical systems will appeal to the many in media and science and technology studies presently developing critical approaches to the study of logistics and infrastructure.

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book review

McCormack, Derek P. **Atmospheric Things: On the Allure of Elemental Envelopment.** Duke University Press, 2018

Miguel Penabella

A strong first installment in the new “Elements” series edited by Stacy Alaimo and Nicole Starosielski, Derek P. McCormack’s *Atmospheric Things* offers a bold new intervention in the study of media infrastructures with incredible lucidity. Beyond traditional infrastructure studies, he considers the affective dimensions of material infrastructures and the particular affordances of the atmospheric and elemental in articulating the two. Perhaps the first thing that will strike readers of *Atmospheric Things: On the Allure of Elemental Envelopment* are the chapter headings. Structuring the book with sections such as “Sensing” and “Allure,” McCormack succinctly signposts an important conceit of his main argument—that atmospheric media should be considered not just in terms of the meteorological, but also as affective and sensuous. The volume carefully analyzes the limits of atmospheric perception and experience, suggesting that part of the allure of the atmospheric is that which “remains beyond cognition or tangibility,” or a spectral quality of the vaporous (McCormack 2018, 10). By skillfully intertwining Kathleen Stewart’s theories of atmospheric attunement and allure with Luce Irigaray’s critique of envelopment along the lines of bodily difference, McCormack pushes readers to think beyond Irigaray’s accounts of being-in-the-air and instead offers atmosphere and the elemental as more theoretically expansive terms. In doing so, he moreover highlights the different ways and magni-

tudes that forces and variations of atmosphere are felt in different bodies, for different ends.

At the heart of *Atmospheric Things* is an engagement with the politics and ethics of atmospheres, examining how the infrastructures and technologies that condition it are differentially mobilized and can displace, agitate, or destroy bodies, as in the case of pollutants. To address such issues, McCormack engages with archives of visual and textual material pertaining to balloons, deploying the balloon as a philosophical device that can disclose conditions of envelopment and renew greater atmospheric awareness. He begins with three evocative case studies in particular that neatly demonstrate these thematic interests—the failed balloon drop at the 2004 Democratic National Convention, Christopher and Marc Brauder’s art installment *Lichtgrenze (Border of Light)*, and Google’s Project Loon. These examples, along with many other cases, enable a deeper understanding of how atmospheres are conceptualized in different contexts.

McCormack’s clever application of the balloon to discuss the overlapping ethico-political, aesthetic, and technological approaches to thinking about atmosphere is a valuable methodological intervention. Situated in a broader scheme of stratospheric infrastructure, McCormack singles out the balloon as a speculative device for better understanding how certain modes of envelopment allow us to palpably sense atmosphere, and the balloon

functions as an incisive case study to more deeply consider elemental infrastructures and atmospheric media along the lines of the affective. He also thoughtfully builds on the work of Michel Serres and Peter Sloterdijk by reconsidering the political concerns when atmospheres are disclosed and felt differently across different bodies. He draws, for instance, from Sloterdijk's formalist theory of bubbles and the volumetric in order to consider how inhabitable worlds depend upon the mediation of infrastructures and governmental decisions that shape the development of forms of life.

Atmospheric Things develops its arguments across nine chapters: "Envelopment," "Sensing," "Allure," "Release," "Volume," "Sounding," "Tensions," "Hail," and "Elements." McCormack deftly populates each chapter with germane case studies that effectively organize and frame his thoughts with clarity and even humor. Real-world examples like militarized balloons that distribute propagandistic leaflets or function as surveilling sensors in tandem with other geopolitical assemblages serve, like literary or artistic representations, as an "imaginative lure" that enables readers to clearly think through the more abstruse theorizations (McCormack 2018, 18).

Chapter 1 establishes envelopment as a theoretical foundation that fosters two lines of thought, atmospheric materialism and entity-centered ontology, in which atmospheres can be disclosed. *Atmospheric Things* also represents an important rethinking of envelopment along two lines: as a condition of atmospheric immersion, and as a relational process of sensing variation. This bifurcation frames, in generative tension, the elemental conditions and material relations that determine atmosphere. Ultimately, McCormack's reorientation of envelopment functions as an ontological project in developing an expanded vocabulary of atmospheres and affective spacetimes. Chapter 2 investigates how the balloon affords different kinds of aerostatic sensing and immersion in an atmospheric milieu, while Chapter 3 examines how allure is fabricated materially and infrastructurally. McCormack then moves into thinking about how balloons can assuage grief and loss through acts of release in Chapter 4, while Chapters 5 and 6 unpack the term "volume" to avoid reducing atmospheres as mere three-dimensional, calculable entities that would undercut the allure of its intangibility. Later chapters address the political and ethical dimensions of

atmosphere, including questions of how atmospheres can serve as mediums for ideological dispersal and address. McCormack ends by locating parallels between the atmospheric and elemental, examining stratospheric experiments including solar and telecom balloons before turning to the figure of the angel to make sense of how balloons mediate and transmit through atmosphere.

Throughout, McCormack avoids simply framing atmosphere as some affirmative category of authentic experience, instead opting for more complex and detailed arguments that refuse reducing the atmospheric to purely representational terms. Rather—and this is where *Atmospheric Things* really shines—McCormack continually raises questions about how envelopes of sensing function and for what reasons, channeling the work of John Durham Peters in seeking widened parameters for media studies and media geography to better grasp the elemental intangibles of atmospheres. In other words, McCormack is disinterested in producing fixed categories of experience for atmosphere, but instead locates how human and nonhuman entities are enveloped differently, and at times, intangibly. This imaginative and interdisciplinary approach to studying atmospheres resists the trappings of defining it as stable or purely in the realm of human experience, as he notes how even paper wrinkles in high humidity. These methodical theorizations will be invaluable to those interested in coupling the affective with the meteorological, as McCormack does here.

Ultimately, McCormack offers a lucid and comprehensive analysis of balloons as a device for doing atmospheric things, meticulously weaving together disparate strands of ethico-political, aesthetic, and technological concerns that shape atmospheres. This book will be instrumental to media scholars interested in new ways of thinking about the intersecting lines of infrastructure, affect, meteorology, envelopment, and even trauma and objecthood, where both human and nonhuman agencies from bodies to balloons are theorized in terms of the atmospheric. By inviting scholars to consider that the allure of atmospheres rests in its resistance to full perception and sense, and that the free-floating dirigibility of balloons offers productive ways to imagine and experience atmospheres, McCormack lays the groundwork for future work in atmospheric infrastructures and opens room for the enchanting, generative possibilities of simply letting go.

book review

Wylie, Sarah Ann. *Fractivism: Corporate Bodies and Chemical Bonds*. Duke University Press, 2018.

Miles Taylor

On November 6, 2018, Colorado voters rejected a ballot initiative that would have banned Hydraulic Fracturing, or fracking, within 2,500 feet of homes, schools, and water sources. In a stunning victory for the oil and gas industry, voters decided that the 500-foot limit currently in place was more than enough (Irfan 2018). This development comes in spite of the work by educators, protestors, artists, and scientists who have spent the past couple of years studying and publicizing fracking's dangers. Sarah Anne Wylie, author of *Fractivism*, sits at the intersection of these fields. A STS (Science and Technology Studies) scholar by trade, Wylie studied under the revolutionary Theo Colborn. Afterwards, she worked with local activists in Colorado and Pennsylvania, and collaborated with the artist Chris Csikszentmihaly on the websites Well Watch and Landman Tracker, all in a bid to "empower isolated local communities" through digital tools (Wylie 2018, x). The result of these experiences is *Fractivism*, a book that is part documentation and reflection on her efforts, and part suggestions for a path forward.

The early chapters of the book offer a convincing argument on the importance of endocrine disruption research and Theo Colborn's novel scientific methods. In 1987, Colborn was hired to evaluate the health of the Great Lakes. At first, she followed the scientific template common at the time: "toxic chemicals=cancer" (Wylie 2018,

48). Nothing appeared wrong. So, Colborn took a path uncommon in science at the time: she began to look at the outliers in her data, trying to find if something linked them. Eventually, she found that the same chemicals appeared across many troubled species: "DDT, dieldrin, chlordane, lindane, and PCBs" (Wylie 2018, 48). In doing so, Colborn took the first steps toward a new form of science, one that operates in a way less conducive to corporate interests. Wylie calls this practice HEIRship (Health Environmental Impact Science).

It is a credit to the book that every chapter has its share of galling information about corporate malfeasance. In the first chapter, Wylie lays out how fracking became exempted from the EPA's Safe Drinking Water Act so that Halliburton and Schlumberger would not have to disclose what they use on the gas patch.¹ Wylie charts the movement of industry executives into regulatory bodies and vice versa, as well as academia's ties to the industry. She singles out MIT, for a time her home institution, and its energy initiative (MITEI) for how closely the institution works with its industry funders. The chapter inspires the type of angry fear that makes you aware of your body, the fear that you feel in your forearms precisely because they are useless. One is angry, terribly angry, but what good is physical anger in the face of late capital? And so one becomes fearful instead.

This first chapter also reveals an issue that

Wylie confronts in the later chapters, even as it at times undermines her projects. Wylie believes that the response to fracking is to gather as much information as possible, which eventually will be impossible for the gas industry to withstand. Or, in her own words, she is interested in exploring “how social sciences and the academy at large can invest... to help redress the informational and technical imbalances faced by communities dealing with large-scale multinational industries” (Wylie 2018, x). It is interesting to note that several times in the book, she likens the fossil fuel industry’s scientific deceptions to what the cigarette lobby did (and does), paying scientists to downplay the dangers of cigarettes. However, though almost everyone knows cigarettes are bad, Americans bought 249 billion cigarettes in 2017.² To quote Wendy Chun, “publicity, understood as open publication, is not democracy” (Chun 2005, 71). Indeed, the first chapter belies Wylie’s belief that information will solve the problem; those in power decide which information is considered valid, even in the public sphere. And when they lose control of that, they choose to just ignore said information. Facts alone do not bring about change. Wylie says the EPA’s decision on exempting fracking from the Clean Drinking Water Act One was “later criticized as cronyism” (Wylie 2018, 27). One could also call it neoliberalism in action, perhaps even a pure expression of neoliberal ideology—the subjugation of fact to the government’s duty to open ever more spaces to the market. In such a scenario, what might scientists, sociologists, and other academics do? Anger is insufficient, as is knowledge production itself. Calls to sabotage fracking machines would be dismissed as extremist and elitist. What is left?

Rather than fall into nihilism, Wylie offers several solutions. To start, she suggests scientists might follow Colborn’s model and practice HEIRship. Wylie sees HEIRship as a technique “suited to studying both the emerging health effects of endocrine disrupting chemicals (EDCs) as well as the public relations (PR), scientific, and regulatory strategies of the corporations that produce such EDCs” (Wylie 2018, 64). Her prime example of what HEIRship might look like is TEDX, a non-profit organization founded by Colborn that houses “Monster,” the organizations database of EDC research. Yet, despite the organization and Wylie’s goal of correcting knowledge imbalances, the Monster database is tightly controlled. The

Monster database does not exist online, and as Wylie says, “Lynn always logged me in if I needed to perform Monster searches and I was never allowed to bring in my own computer or to work in the office alone or after hours” (Wylie 2018, 70). The solution she proposes for how a database run by a few people and unavailable to the many is supposed to fix knowledge imbalances and challenge corporate PR is through websites such as the Critical Windows Development project, which shows research on various endocrine disruptors and their effects. Wylie reproduces images from the site in the book. Speaking as a layperson, they were borderline undecipherable. A quick visit to “hydraulicfracturing.com” reveals easy to read graphs and maps which demonstrate the lobby’s overwhelming financial might. This is not to belittle TEDX and HEIRship, but rather to reveal that websites alone are not enough to correct the knowledge imbalances Wylie is nobly dedicated to eradicating, if only due to the vast gap in resources. The result of TEDX’s most effective campaign at the time of the book’s release was a national bill that died in committee—it never even reached the congressional floor.

HEIRship is not the only mode of bringing about change that Wylie suggests. She also calls for what she calls “STS in practice.” STS in practice is exactly what it sounds like—a form of activism that stems from Science and Technology Studies, working to get information and critiques to a larger swath of the population beyond just academics. It includes projects such as the development of websites that track landmen and their practices or map wells and the health effects around them.³ These projects are the focus of Wylie’s book and activism. Chapters 7 and 8 are dedicated to The Landman Report Card, a site designed by Wylie and her associates so individuals could review landmen they dealt with and prospective leasers could investigate who they were negotiating with. Though at times she suggests the site could be a way for communities to band together to stop fracking, its real purpose is to prevent the exploitation of individuals by landmen, with building solidarity as a secondary bonus. But if the leasers were given what they deserve, it would not be economical for the corporation to lease. As Wylie herself notes, landmen would go to poor neighborhoods, such as Jimmy Johnston’s, and pressure individuals to sign bad contracts. Johnston told of “neighbors, drug

addicts and old ladies, what been pressured into signing leases way below market price. Renters were pressured into signing documents just so there was an authorizing name” (Wylie 2018, 167). While the site opened the possibility that those with time and energy might negotiate a better deal, this is not a case of a rising tide lifting all boats. For any number of reasons, individuals might not be able to put in the time and effort to do the research the site allowed, yet Wylie makes little mention of this.

Furthermore, Wylie and her collaborators had a goal of making the site as neutral-seeming as possible. Wylie does not want to slander landmen or create a place where people just vent about them. She even believes landmen can be good, and opens up the possibility for praise of them on the site. But though a landman might be a good person in their personal life, to be good at their job is to sacrifice the world to humanity’s addiction. At first, her goal of an impartial site seems odd, considering her dedication to opposing the industry. However, the reason is simple: Wylie and her co-workers did not want to get sued for libel. In an early mock up, they included a quote that lawyers feared might be taken as editorializing. The result was they “replaced it with a legal disclaimer in our next version of the site” which was also eventually removed (Wylie 2018, 184). They redesigned the sight to “protect [themselves] as the ISP,” encouraging users to add “positive and negative feedback” and removing warnings to users about defamation risks (Wylie 2018, 185). Warning users about their actions would make Wylie and her group liable, and so instead they moved any such warnings into the terms of service (which Wylie admits are rarely read or understood) and a hyperlink in the website’s FAQ. In doing so, they pushed the legal threat onto those willing to speak out against landmen. A place built for individuals to speak openly and honestly is impossible when the legal system can be a tool for corporations and their embodiments to stifle speech. Gawker is dead, Peter Thiel is rich and happy, and surely Halliburton and Schlumberger have taken note.

Another website Wylie helped build, WelWatch, was meant to be an open-source website that tracked well locations and was open to editing by almost all—after a basic verification process. Her goal for the site was that those who live near gas patches would tell their stories, providing researchers a database to which they could also add.

As she describes, the development of the site had its fair share of difficulties. They ended up using a wiki system, though the mock-ups presented in the book look less like Wikipedia and more like an esoteric Netscape site. Though it eventually crashed and all data was lost, the site did collect information and produce knowledge during its existence. Through it, researchers found new areas of study, and individuals began to recognize that their cases were not unique—that fracking truly was the cause of their ailments. Wylie celebrates these moments as successes, as indeed they are. Yet, as she notes, it was the capitalist structures of research, the industry, the academy, and the Internet that caused its downfall, and as we know now, the information the site shared to non-academics for the short time it was up was not enough to overcome industry lobbying. Wylie rightly calls for institutional change in the academy and non-profit worlds, but takes it as a given that both industries want to revolutionize themselves to better oppose the oil and gas industry. This is, unfortunately, not a given.

In the conclusion, Wylie offers a list of “techniques for industrial embodiment,” which includes her suggestions for a more radical academia (Wylie 2018, 295). These techniques include “building on relationships of becoming,” “collective communication of situated knowledge,” and “witnessing and developing experimental science” (Wylie 2018, 296-300). Yet she neglects to explain why academia, particularly the more conservative STEM disciplines, would enact this change. She notes in the early chapters that her home institution for a time, MIT, is the beneficiary of corporate donations, including by the oil and gas industry. Yet she does not suggest what might motivate MIT to disband MITEI, which produces pro-industry white papers and solicits large donations from companies like Schlumberger, which even has its own executive training program within MIT’s business school (Wylie 2018, 32).

As forests burn and famine grows, the need for Wylie’s radical science and activism is ever more necessary. However, better science and open-source websites alone are not a way out of the mess we have made. They are improvements within the system that is leaving us to rot, policies posited as end goals. At most, they are a step in the right direction at a time when we need leaps. That we are so far behind is not Wylie’s fault, of course. But digital media won’t save us, just like television

and film and radio and the printing press and every other technology that promised the world as long as we accepted everything off the screen was unimportant and invisible. Wylie's activism assumes a benevolence within the academy, governmental, and non-profit sectors that her own work and activism falsifies. It also relies on a mass engagement we unfortunately have yet to see. The back of the book promises an outline for "the way forward... for the planet as a whole." The failure of even minor change in Colorado, the central location of her work, suggests this optimism be approached with skepticism.

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Endnotes

1 In an act of great magnanimity, the industry did promise that they would not use diesel fuel as a fracking fluid because diesel contains a dangerous combination of chemicals (BTEX), even as they promised that the chemicals wouldn't dilute water and so what they used did not matter. Even this self-imposed burden was too much, however. As Wylie points out, TEDX and the Environmental Working Group (EWG) found that the companies used petroleum distillates with these same chemicals even after the agreement.

2 This also opens up another issue. By "everyone" I really mean "everyone in the western developed world." Information is not equally accessible to everyone. Furthermore, health dangers do not only exist in the United States—to stop fracking in the US is to start it elsewhere, and so a myopic focus on the danger to us will simply lead to companies transporting the dangers to the global south and onto ever more vulnerable workers.

3 Landmen are employees of the fracking industry who negotiate the leases necessary for companies to drill on an individual's property.

FESTIVAL REVIEWS

festival review

FNC 2018 - Festival Gender Politics after #metoo

Ylenia Olibet

The 47th Festival of Nouveau Cinema, as every year, marks a grand occasion for the cinephiles of Montreal showcasing films that have accumulated significant cultural capital by their prior circulation in the international festival circuit (such as *Shoplifters*, Kore-eda Hirokazu, 2018, 121 min), varying premieres, and avant-premières (*A Land Imagined*, Yeo Siew Hua, 2018, 95 min). FNC is also known to feature independent, experimental, and local productions that are often excluded from wider distribution avenues (*M/M*, Drew Lint, 2018, 82 min). In this sense, FNC conceives of its programming as an exceptional space, which has the ability to project Montreal as a city embodying the trends of global cinema. This year, the festival highlighted its engagement with and contribution to global film politics by including films and events that directly responded to the pervasiveness of the #TimesUp and #metoo movements. Slowly, but endimically, these movements have been reshaping power relations in the film industry at large, while also reorganizing mechanisms of visibility for women's work within film festivals.

Reviewing FNC relative to the visibility of today's feminist digital activism brings to the fore two major perspectives through which global film politics, in the context of film festival institutions at large, can be approached by means of a gender-specific lens. On the one hand, the festival's concern with spotlighting films directed and/or

scripted by women¹ as well as films with a “feminist representation of the world,”² opens up a space in which one can reflect on the extent to which the dominant project of global feminism has become intertwined with the idea of global cinema, as engendered by the festival's apparatus. Through featuring and promoting the contributions of women filmmakers from various parts of the world (*Fugue*, Agnieszka Smoczynska, 2018, 103 min) and narratives that foreground contemporary feminine subjectivities (*The Heiressess*, Marcelo Martinesi, 2018, 95 min), the festival claims to endorse a feminist vision on film politics. On the other hand, this kind of feminist vision seems based on a narrow understanding of feminism, one that settles amid neoliberal and Western-centric parameters of self-entrepreneurship, according to which women, with supposedly equal opportunities as their men colleagues, can now succeed, even within this already established (capitalist) system (Rottenberg 2013). However, such a monolithic understanding of feminism,—proliferated by festival discourse—curbs the opportunity to engage further with the nuances of feminist resistance to established channels of production and distribution. This is necessary for the possibility to break into and revise the existing dynamics in the global film industry. The festival's construction of cinematic feminism reinforces a discourse of global cinema where the “global” is defined according to “progressive”

Western standards in gender politics. By emphasizing the inclusion of films by and on women from “all over the world,” the festival promotes itself as seemingly liberal and modern, while actually engaging with only a narrow idea of feminism. In turn, the festival’s gender politics are then instituted as the model to follow in order to be considered “global.” Despite the festival’s reductive construction of feminism, many films in its latest edition demonstrate an alignment to multiple feminist projects. In this review, I will focus on select films screened at the Festival that underscore women and non-conforming modes of femininity. In the second part of the review, I will deal more specifically with the way that the #metoo, intended as a socio-political movement, has contributed to the reworking of labour conditions within the film industry, as well as to the reshaping of certain rape and sexual assault narratives in women’s cinema.

Rafiki, programmed in the Panorama International section of FNC 47th, clearly depicts a dynamic linking feminism with the idea of global cinema, as constructed by the FNC. Directed by Wanuri Kahiu, *Rafiki* is both a lesbian love story and a coming-of-age narrative between two young women, set within Kenyan society, one intolerant and forbidding of homosexuality. By delving into the representation of queerness in a specific geopolitical context and by intersecting issues of locality, class, and ethnicity—the film challenges canonical sexual identities promoted by globalization and condemns the violence inflicted on LGBTQIA+ communities in Kenya. However, FNC’s discourse around the film, as described in the program as well as mentioned at the film’s Q&A, has focused primarily on the fact that the film was censored in Kenya, where homosexuality is constitutionally forbidden. The festival, thus, positions itself as an emancipatory platform for the circulation and the exhibition of *Rafiki*. The screening and fruition of the film at FNC, an internationally-acclaimed festival based in North America, stages FNC as a progressive space where Western gender politics and attitudes on ‘liberated’ sexualities can be openly presented and conceived of as the standard and most championed model to follow suit.

However, the renewed attention to feminist politics, brought about by the global visibility of the #metoo movement, among others—restores, the concept of ‘women’s cinema’ as a political filmmaking practice that represents women as

righteous social subjects and engages with issues at stake within feminist communities amid international flows of film circulation. FNC 2018 delineated a space to showcase how the politics of ‘fourth-wave feminism’³ can enter into themes, narratives, and characters of films directed by women, contributing to a redefinition of “women’s cinema” as more so of an operational concept that directly reinscribes feminist theories over the political into the film form itself. Thus, while FNC itself is a concrete example of how contemporary women’s cinema is involved within the dynamics of global cinema, the very formal and thematic tactics in the included films disrupt hegemonic modes of femininity, helping rethink gendered relations within globalization. These films now stand within a genealogy of women’s cinema that specifically engages with and employs the woman’s experience itself as a site of political insurgence, addressing issues that feminist politics, activism, and theory are currently concerned with. The wide range of genres, formats, and themes explored by the women filmmakers in this year’s edition of FNC display unconventional explorations of feminine subjectivities as influenced by recent feminist understandings of girlhood/womanhood, gender performativity, sexuality, and queerness. For example, from the section “Focus Quebec/Cinema,” *Mouthpiece*, by well-known filmmaker Patricia Rhozhema, follows a woman wandering through the urban landscape of Toronto as she tries to find the power in her to write a eulogy for her mother’s funeral. The protagonist’s inner conflict is rendered by two actresses playing the same role, with each representing a different aspect of the complex character. Both, in turn, are torn between the past and present, childhood and adulthood, while simultaneously negotiating mourning, aphasia, and creativity. Using flashbacks, fantasy sequences, and musical performances, which mediate the process of mourning, the film explores a mother-daughter relationship that is anchored in generational conflict. While the film depicts different expectations of womanhood, it confers centrality to the role of the mother as crucial to a woman’s formation. From the section “Temps 0,” *Touch me Not* by Adina Pintilie, winner of the Golden Bear at Berlin, explores sexuality and intimacy through a body-positive approach—foregrounding disabled, older, and transsexual bodies. What Pintilie thus renders is an attempt to redefine the boundaries

of what is considered to be normative, reshaping assumed ideas over human desires and relations. Understanding these films in line with contemporary reconfigurations of feminist activism and theory reactivates a political project capable of ultimately readjusting a postfeminist⁴ climate that has long dominated festival politics and, in that way, reducing women's cinema to an industry-fabricated 'films for women' (White 2015). Refusing to relegate feminist endorsement to the past, the formal and thematic strategies of these films re-establish a feminist engagement with embodiment, women's experiences, and the understanding of the 'personal' as the political. In this sense, the resurgence of feminist activism through digital technologies, of which the #metoo movement seems to belong to, helps re-define feminine-centered narratives and subjectivities in the larger scope of contemporary women's cinema.

The extensive reach and potential of the #metoo movement cannot be underestimated in its ability to reignite a feminist political project within film politics. This intervention is evident both on the organizational level of the film industry as well as on the level of filmic form, theme, narrative, and constructions of femininity. The force and the political effectiveness of the #metoo movement is reworking gender politics in the grand scheme of the global film industry by initiating a conversation about women's working conditions. The #metoo movement has not only denounced sexual abuses, but has also exposed the inherent sexism in all spheres of the film industry more broadly. From the marginalization of women filmmakers at the stage of production and distribution, to the gendered power relations on set and within the broader network of the film industry, to the instituted biases regarding the types of films women can make—international festivals are gradually and more explicitly addressing these issues. The panel "Breaking the Glass ceiling: Women in Cinema," within the FNC Forum—a series inviting members of the industry to reflect on specific topics—was a formal occasion at FNC 47 that focused on recognizing and discussing how the #metoo movement has broadened the discussion over a woman's presence, role, and place within the film industry. The filmmakers and producers on the panel, moderated by Fanni Pelletier, entered the discussion by means of their embodied experiences, in order to pinpoint the way gender discrimination in the

industry cannot be tackled solely through policies that attempt to establish gender equality (like the NFB's commitment to ensuring that by 2019, at least half of its productions will be directed by women and half of all production spending will be allocated to films directed by women)⁵, but also through addressing the more structural problems (like the resulting gender gap amid technical positions, in part due to the ways certain professions are socialized), that contribute to a toxic working environment on set for the female filmmakers and technicians. In order to eradicate such deeply embedded sexism, a panelist proposed for women filmmakers to rely exclusively on networks meant to support their professional and creative development. For example, the organizations Femmes du Cinéma, de la Télévision, and des Médias, based in Montreal, offer social events that provide women with training, assistance, and the possibility to network among other women film professionals. Although the panel was undergirded by a neoliberal discourse and framing of confidence, creativity, individualism, and self-empowerment—the recognition of the importance in creating a network of support amongst women produces a renewed potential for the politics of feminist solidarity in cinema.

It is precisely through this idea of reconstructing solidarity that digital feminist activism is reorganizing the struggle over sexism, misogyny, and rape culture. The renewal of a feminist consciousness is reconfiguring the understanding of sexual harassment and consent, consequently reshaping the representation of rape and opening up a new political understanding of a woman's agency in the context of sexual violence. In this sense, women's cinema is tackling these issues by dealing with new representations of sexual violence. At the 47th FNC, two films in particular, that address the structural problem of rape culture through a character's individual trajectory, caught my attention. Although using different narrative and formal strategies, *All Good* (Eva Trobisch, 2018, 93 min) and *Holiday* (Isabella Eklöf, 2018, 93 min) both grapple with a representation of sexual violence that challenges the standard understanding of rape, shifting discourse to new understandings of what constitutes consent and how it is determined. In *All Good*, the protagonist Janne must deal with the trauma of being raped at her country house by a man she meets at her high-school reunion. With

a cinematography composed mostly of close-ups, imparting the audience with intimate feel of the protagonist's state, the film focuses on the feelings of insecurity and loneliness that arise after such an experience. In the sequence depicting the woman's rape—the bare *mise-en-scène*, the assailant's arrogance in forcing himself onto the protagonist despite her verbal lack of consent, along with her ultimate surrender—together compose an alternative representation of sexual violence in its non-sensationalized treatment. Although not overtly aggressive nor brutal, the insidious violence of rape in this sequence emerges. While this traumatic experience will leave Janne with anger, despair, and solitude—her trajectory is also marked by the realization that her relationship with her life partner is characterized by manipulation, abuse, and egoism. In this sense, the experience of this rape is not only the object of analysis, but the prism through which hegemonic discourse, which tends to analyze sexual and gender violence as exceptional or fixed occurrences, are deconstructed. In other words, the representation of a more inconspicuous rape enacted by an acquaintance, as opposed to the more common, violent representation as one committed by a stranger, challenges pervasive perceptions of sexual assault that are usually limited to more recognizable scenarios.

Through a different set of formal and narrative strategies, *Holiday* speaks directly to the contemporary feminist deconstruction of sexual violence in its reductive style. The austere camera work, in contrast to the film's embellished set design, illustrates a context that forces the power relations within the protagonist's personal sphere to become visible. A luxurious *mise-en-scène* made of brilliant colors, kitsch objects, and maritime landscapes is anchored in a cinematography of frontal shots with medium to long frames. The flashy film form situates the protagonist, Sascha, on vacation in Turkey with her gangster boyfriend and his family—living in a world of surfaces, where physical and sexual violence are enmeshed with consumerism, economical wellness, and recklessness. Her body becomes akin to a human-sized doll, fondled by her partner in a disturbing initial sequence. While drunk and helpless on the bed, Sascha's bodily autonomy is disrespected as her boyfriend treats her body as a conceit for objectification: playing with it as he wants, touching and manipulating. This reprehensible scene is positioned,

unbeknownst to the viewer, before graphic rape scene later into the film. A long frontal shot makes a distancing, observational perspective that obliges the spectator to witness the scene, without being enticed, putting them in a position that replicates the structural complacency of society on the issue of sexual assault. Although the sequence, mostly provocative and highly disturbing, is certainly disempowering for Sacha, the film dares to show sexual violence as embedded within a capitalist and consumerist structure of imbalanced gender relations, thus connecting to and participating in the revolution of #metoo.

Both films focus on a woman's subjective trajectory in conjunction with a structural, social, economic, and political treatment of sexual violence. Within the context of Festival du Nouveau Cinema, these films open up a dialogue with broader feminist attempts at reconfiguring the public sphere, especially through cultural film politics. Such a moment is intertextually linked to the existing digital media-based instances of feminist activism that, in line with a long-standing tradition of feminist solidarity, can mobilize audiences against sexism and rape culture. Finally, although the festival operates under a global cinema logic that conflates with certain homogenizing discourses of feminism, the specific films themselves, of and about women, have the power to excavate a space within FNC, for the discussion and visibility of the most relevant and radical aspects of contemporary feminisms today.

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Endnotes

- 1 "Women's Voices at FNC 47" <https://nouveaucinema.ca/en/news/news/womens-voice-at-fnc47>, last access February 1, 2019. Please note that this Festival's article, as well as all the other festival discourse, only refers to women and does not specify other "self-identified women."
- 2 "Something like Feminism – FNC 47" <https://nouveaucinema.ca/en/news/news/something-like-feminism-fnc47>, last access February 1, 2019.
- 3 Fourth-wave feminism usually refers to a renewed visibility of feminist politics as an intervention into structural, gendered power relations through the use of online grassroots strategies (Munro 2013; Chamberlain 2016).
- 4 By postfeminism, I mainly refer to the disavowal of feminism based on the idea that feminist activist politics are no longer required. For some literature on postfeminism, see McRobbie 2004; Tasker and Negra 2007; Gill and Scharff 2011.
- 5 National Film Board of Canada – Departmental Plan 2018-2019 <http://onf-nfb.gc.ca/en/about-the-nfb/publications/institutional-publications/departmental-plan-2018-2019/departmental-plan-2018-2019-html/>, last access February 1, 2019.

festival review

Vision Festival at Tufts: Free Jazz/Social Justice, October 27, 2018

Matthias Mushinski

All of us come together because there is a certain kind of life-giving ingredient that goes into the kind of music that we make. Even the source of it, it's what the American situation is concerned, it has been African and the suffering that we've had... But what has happened as a result of what we have learned how to do is that we have provided people around the world another methodology to express themselves, to forgive (Cyrille and Parker 2015, 393).



Fig. 1 2019 Vision Festival Lifetime Achievement Honoree Andrew Cyrille performing in New York.

The terms are often set with familiar edicts, proclamations such as “the history of cinema, and the concepts of film theory, become the most productive contexts for defining the audiovisuality of our past and current centuries” (Rodowick 2008, 393), or that “cinema and television, as the dominant media of the twentieth century, shaped and reflected the cultural sensibilities of the era” (Denson and Leyda 2016, 1). The effectiveness of such discipline-forging claims testifies to their dual purpose: they simultaneously acknowledge a debt to film history while cataloguing all audiovisual forms—of past, present, and future—as genealogically present within cinema’s twentieth century embryo. The twentieth century was “the century of cinema” (Badiou 2003, 92) and cinema is, therefore, the centre of reference for determining what is and what ought to be. Cinema envelops everything, cinema is everything—a sprawling pre- and post-cinematic enclosure that delineates possibility and designates cinema and moving image scholarship as the axiomatic command of the twenty-first century.

But what if that ain’t it? What does it mean to study *dominance*, and to be *productive* in doing so? To project it, compute it, and animate it? What if our ideas were to take a Glissantian *détour* elsewhere, as opposed to resting comfortably within the absolute facticity of the moving image’s eternal dominance and epistemological productivity? Or, more specifically, what would it mean to nourish cinema scholarship with what Andrew Cyrille refers to as free jazz’s *life-giving ingredient*, under the auspices of Jean-Louis Comolli and Phillippe Carles’ insistence, in *Free Jazz/Black Power*, that “Everything that the Western idea of Art censors in the arts *lives* in free jazz” (Comolli and Carles 1971, 174; my emphasis)? As noted by Brent Hayes Edwards in *Epistrophies: Jazz and the Literary Imagination*, “one medium can be inspired, provoked, or extended by an attention to the specificities of another” (Edwards 2017, 9), yet the prospect of such transmedial consonance insists upon the rejection of all pre-existing sensory hierarchies—those forewarned by flautist Nicole Mitchell via Octavia Butler: “You are hierarchical... I think your people did not realize what a dangerous thing they were doing” (Butler 1987, 39).

Let this review amplification of Fred Moten’s first on-stage, ensemblic, free jazz performance contribute to the celebration of free

jazz’s generative fugitivity—an impassioned commitment to “another way of thinking of things that is offered in the social aesthetics of black radicalism and its improvisatory protocols” (*Universal* 2018, 10). I am focussing here on an ensemble featuring Andrew Cyrille (drums), William Parker (bass), Rob Brown (saxophone), Steve Swell (trombone), and Moten (poetry). The lifting conclusion to an evening of music at Tufts University that included performances by Matthew Shipp (piano) and Michael Bisio (bass), “Revolution/Resurrection” featuring Patricia Nicholson (dance and text), Jason Kao Hwang (violin), Michael T.A. Thompson (drums) and Bill Mazza (live video painting), and a solo reading from Moten. Although the scope of these words is limited, my gratitude extends to all the event’s organizers and performers—for those and the many other sets I have attended in New York and Montréal—and for the records that accompany me now as I type.

During the 2015 edition of the Arts for Art Vision Festival in Brooklyn, Moten referred to Amiri Baraka as a “kind of spiritual and intellectual father,” and as he took the stage at Tufts’ Distler Performance Hall I couldn’t help but approach the event as yet another embodiment of this dedication. Not only did the performance include musicians who have performed with Baraka in various settings, but for Moten—whose writing continually posits free jazz as both an object and method of study—one has to imagine the event carried a symbolic resonance beyond the many lectures and readings he has shared over the years. George Lewis refers to “improvisation as a knowledge-producing, indeed, a knowledge-finding activity—a journey of discovery” (Lewis 1998, 79) and if you’ve ever attended a live, improvised performance, you know the feeling: the feeling that anything can happen, the rhythmic beckoning of the “tone world” (Parker 2007, 78).

So, what happened? If to describe a performance is, as Moten suggests, to “violate[] that performance’s ontological integrity” (*Points* 2017, 107)—to move away from its “absolutely fugitive punctum” (*The Universal*, 34)—the task of “reviewing” live, improvised music presents a unique set of challenges; or, as William Parker puts it in *Who Owns Music?*, “the task of the critic is to become a poet” (Parker 2007, 83). At the risk of running against these notions I will say that Moten was seated behind a glass podium, stage-right. In

front of him laid an assortment of notebooks, along with a copy of his *The Feel Trio*, a finalist for the 2014 National Book Award for Poetry. Moten plays, Cyrille plays, Parker plays, Brown plays, and Swell plays. Moten flips through his notes with the same, aberrative rhythm imparted by his writing as he intermittently transfers his gaze from the podium to his collaborators. He speaks it out, he feels it out: “They killed every single one of us... the music is why they couldn’t kill us all.” A riff, perhaps, on Baraka’s conclusion to “New Black Music”: “New Black Music is this: Find the self, then kill it” (Baraka 1967, 176).

If practicing improvisation is the practice of improvisation, Vision Festival at Tufts inaugurates a new futurity. Forgive me for disavowing a grade-like evaluation, though I will say that Moten’s performance felt like a rehearsal, and I mean this in the best possible way—in prophetic passage. Improvisation operates within “a seemingly unbridgeable chasm between feeling and reflection, disarmament and preparation, speech and writing” (*In the Break* 2003, 65). For sure there is an element of extemporaneity, but not in pursuit of some naïve denomination of non-thinking ineffability. It asks: what if there’s thought outside, the thought



Fig 2 Fred Moten performing at Tufts University with William Parker (bass), Rob Brown (saxophone), Steve Swell (trombone) and Andrew Cyrille (drums).



Fig 3 Women with an Axe to Grind” performing at the 2018 Arts for Art Vision Festival: Nicole Mitchell (flute), Joëlle Léandre (bass), Patricia Nicholson (dance) and Melanie Dyer (viola).

of going outside, an outer side of thought? It exceeds the discursive limits of our conceptual universe in order to step to it again, to do it again. During the performance, we find Moten listening, bobbing his head, gauging the volume of his voice within the acoustics of the concert hall. Brown and Swell grip their horns with what I perceive as compassionate hesitancy, perhaps uncertain whether to jump in or to let Moten do his thing.

Robert G. O’Meally, the director of Columbia University’s Center for Jazz Studies, has introduced Moten under the premise of an *aesthetics and politics of generosity*, and there is perhaps no better heading under which to describe the mission of Arts for Art, a New York-based organization “dedicated to the promotion and advancement of Free Jazz” with year-round concerts, conferences, symposiums and community events, as well as the Vision Festival which is held at Roulette Intermedium in Brooklyn every summer. Their social, educational, political, and aesthetic initiatives emblemize Moten’s outlining of *study* as something that we “do with other people. It’s talking and walking around with other people, working, dancing, suffering, some irreducible convergence of all three, held under the name of speculative practice” (Moten and Harney 2012). And although Vision Festival at Tufts was free to the public, it was difficult not to approach the “official” concert hall setting housed within the university as warm up for a later date. After all, as Moten remarked during a symposium held prior to the music, “the ideal situation for the playing of this music—which is to say, black music—is communism.”

I have been wondering lately, how is it possible, or what is potentiated, by the fact that Moten’s books are piled on the tables at Book Culture at the same moment he is seated behind a table at the Vision festival, as a volunteer/board member, collecting raffle tickets and providing general information? How is it possible, or what is potentiated, by the fact that Moten continues to rack up accolades from academia and “the art world,” yet even the greatest free jazz musicians endure their struggle to make ends meet? Don’t they hear the music in his writing? There is a *life-giving* secret to impart and Vision Festival is it! The movement of black radical praxis as the tapping in/to an ontological tonality.

There is a familiar refrain in cinema scholarship brought forward by Solanas and Getino’s

landmark essay “Towards a Third Cinema,” “that every image that documents, bears witness to, refutes or deepens the truth of a situation is something more than a film image or purely artistic fact, it becomes something which the System finds indigestible” (Solanas and Getino 1965, 241). With this in mind, we may then proceed by asking what, if any, filmmaking practices and complementary discursive frameworks have maintained their revolutionary indigestibility? Does the supposed dominance and productivity of cinema obstruct it? Is all of cinema eventually assimilated within the intensification of “second cinema” and its elusive corporate outposts? If it is necessary, as Solanas and Getino suggest, “to transform time, energy, and work into freedom-giving energy” (Solanas and Getino 1965, 248; emphasis in original) perhaps the social, aesthetic, and spiritual resources of free jazz and the black radical tradition—by virtue of their perpetual indigestibility and coinciding marginalization—point to galvanizing modes of improvised sociality, methods of assembly, and intellectual practice.

Moten writes that “really listening, when it goes bone-deep into the sunken art of bones, is something other than itself. It doesn’t alternate with but *is* seeing; it’s the sense that it excludes” (*In the Break* 2003, 67; emphasis in original). In resonance, Julie Reid writes in *Cinema Journal* that “It is in the interest of dominant and colonial power to leave ‘listening’ out of the communication theoretical model that we have been teaching for so long” (Reid 2018, 138). Free jazz embodies a tension between the abstraction of art music and the desired functionality of folk music. It encompasses collective improvisations, networks of unpredictability, and scatterings of sound that merge together familiar rhythms, found objects and disassembled instruments. If listening, as Reid suggests, can “reasonably be envisaged as the first step” towards denaturalizing cinema scholarship’s privileging of “voices from the ruling quarters of the vox populi” (Reid 2018, 138), forging solidarity with free jazz and the ideas surrounding it enacts a much-needed transgression of disciplinary borders. An uplifting path towards a true ensemble of the senses—an Arthur Jafa-esque “cinema like the music” (Jafa 2017)—and a new thought environment for mobilizing the conversion between aesthetic and political insurgency.



Fig 4 Fred Moten performing at the 2017 Arts for Art Vision Festival

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festival review

TAAFI Industry 2018

Elena Altheman

The Toronto Animated Arts Festival International (TAAFI) is a fairly recent addition to Canada's diverse body of animation festivals. This was the first year of the festival's Industry Conference, held during November, 2018. The organization, founded in 2012, comprises a film festival, a job fair, speaker conferences and a variety of industry and public events throughout the year. Their ambitious mission is to make Toronto the premiere international destination for animated arts and entertainment. Therefore, the TAAFI Industry 2018 was described on its website as the "animation event of the year," and promoted a diverse selection of speakers that "are changing the industry and are bound to inspire" (TAAFI, 2018). While that seemed an impressive boast, judging by the guest speakers and panels offered at the 2018 event, (such as the panels "Authentic Voices: Reflecting Diversity in Kids' TV" and "Female Creators Showcase"), TAAFI was serious about its intention to position itself as a catalyst of action in the animation world while promoting relevant discussions concerning the current state of the animated arts.

As a Brazilian animation studies scholar and professional scriptwriter foreign to the Canadian animation scene, I was interested to see the intersections between the current Canadian animation industry and contemporary academic discussions. TAAFI promised very interesting and

diverse panels, which aimed to discuss the present and future of the animated arts and entertainment not only in the Canadian context, but also from an international angle. The "unspoken theme of this year's industry event [was] 'change'" (TAAFI Pamphlet, 2018) and the stated purpose of the conference was to help the industry grow, to engage with the community, to explore what is going on in the world of animation, and to understand where animation is heading. This was reflected in several questions the panels aimed to debate: "How has our industry changed over the decades?" and "In what ways has technology changed how we tell and share our stories?" While TAAFI raised very good questions, some of the panels seemed to miss the main focus of the event. They were concerned not with issues that relate to the animation field as a whole, but on individuals and their personal stories of professional and creative development.

Animation is increasingly seen as more than a mere kids' audiovisual genre, but as a respected medium on its own, both within scholarly debates and the broader cultural landscape. More scholars are being drawn to animation studies every year, developing a robust body of academic work. The reasoning behind animation's change of status in the present-day artistic universe is crucial in order to understand its importance in society's cultural landscape, and how it is shaping it,

and the possibilities that the future reserves. The analysis of technology's effect on creation, labour relations and cultural impact is not only vital to better comprehend the animated medium, but also extremely relevant in today's age of representation and diversity.

In panels originally dedicated to broader debates about the animated world, I would have preferred more engaging discussions about animation's situation as a whole. However, many of the speakers in those panels focused instead on their personal histories – showcasing the particularities of their works and accomplishments, accompanied with some good advice for future creators. In spite of that, some of the speakers seemed out of touch with different (as in non-privileged) realities. They expressed such sentiments as, “If a creator wants, he just goes and make it,” or gave advice like “When I couldn't get the job I wanted, I created it for myself.” This may sound inspiring for an animator, but for me it had the opposite effect. Those affirmations sounded like the product of living inside a privileged bubble, and did not acknowledge diverse experiences, realities, backgrounds and opportunities.

There were, however, panels explicitly dedicated to personal trajectories. These panels provided spaces to learn about the industry's operation through personal experience, emphasizing how the creative process is imagined and put in practice. Take, for instance, legendary animator Dan Haskett's talk, “Designing the Animation Renaissance,” that was dedicated to discussing his career, or the four very interesting “Behind The Scenes” talks. These panels were clearly intended to show the particularities of creating and producing specific animations, featuring diverse contemporary works with different scopes of production, animation style, genre and target audiences. The animations featured in the “Behind the Scenes” panels included a NFB produced stop-motion short film *Bone Mother* (Dale Hayward, Sylvie Trouvé, 2018), an indigenous-led student short movie *Wawatay* (Ben Kicknosway, Morgan Kagesheongai, Neil Affleck, 2018), an independent Canadian-American-Chinese feature film acquired by Netflix, *Next Gen* (Kevin R. Adams, Joe Ksander, 2018), and an original Netflix series, *Final Space* (Olan Rogers, 2018). As these examples show, TAAFI emphasized works that reflect today's cultural landscape, celebrating diversity and inclusion.

Those issues notwithstanding, some of the panels did discuss the larger context, echoing the stated purposes of the event – and, by doing so, acted as counterparts to the inquiries made by academic animation researchers. The opening speaker, Fred Seibert, founder and CEO of Frederator Studios, is a very successful and well-known figure in the animation world. In his talk, he discussed how he produced a new series without meeting its creator in person. He also described how his company now operates by not owning the original ideas and shows' pilots – they are all owned by their creators. This is a far cry from a time when Ted Turner told him, “If I pay you, I own you.” Albeit this was said in passing, the change signals the vital importance of the internet and modern technologies in current productions, which can diversify the structural and labour relationship between executives and artists and promote a new type of exchange between creative people from different countries. These new modes of production for their ideas gives hope for peripheral artists and animators, who were formerly bound by restricted access to production companies and money.

Unsurprisingly, many of the female speakers at TAAFI addressed more directly the economic difficulties of making animated productions and having their voice heard and respected. The panel “Authentic Voices: Reflecting Diversity in Kids' TV” most directly addressed intersectionality within animation. With four speakers and a mediator coming from different backgrounds and cultures, the panel moved the discussion beyond the personal and amplified it – reflecting a preoccupation with engaging with bigger and socially relevant issues. Shabnam Rezaei, founder and president of Big Bad Boo Studios, an Iranian woman, was very emphatic about giving a voice to otherwise outcast populations in animations. She poignantly addressed how inaccurate media representation of different cultures and people lead to the wrongful perception of them, enabling the rise of xenophobia, populism, and right-wing politicians who anchor their actions in hate and ignorance, like Donald Trump (whom Rezaei called out by name, for the delight of the audience) and Jair Bolsonaro. The speakers called out for diverse representations that avoided easy answers and stereotypical portrayals. In order to bring authenticity and to depict diversity without appropriating it and falling into clichés, they recommended hiring diverse

creators, writers, animators and voice actors. Their entreaty reflects current academic debates around representation, labour relations in the animated industry, and how the diversification of animated themes and contents enriches our cultural environment.

During a panel in the Female Creators Showcase, “A Conversation With...” Linda Simensky, she discussed the intersections between academia and the industry. As someone who moves between the two, I strongly agreed with her views. Simensky is both a professor of animation history at the University of Pennsylvania and a very successful executive in the area and now the senior director of children’s programming at PBS. She argued that more people from the industry should talk at schools and universities, engaging directly with young and new artists and animators. While she meant that in the context of inspiring and bringing more women and diverse people into the animation industry, who were historically neglected and left aside, I also think that the opposite stands true. More people from academia such as professors, students, and researchers of animation studies, should be present at industry’s discussions such as TAAFI Industry.

The thoughts, concerns, debates and questionings that arise in this kind of event certainly resonate with academic inquiries. Regarding the animation world, both people from the industry and the academy are asking themselves the same things, albeit from different angles, points of view and analytic approaches. Since bringing diverse focal concerns to a debate only enriches it, why not promote better communication among people that inhabit and are interested in the same universe? In doing so, people working in the industry can better understand the dynamics behind labour, representation and even aesthetic issues, and academics can better apply their theoretical knowledge in a practical way, closer to the general public. In my own experience, being able to work with animation while studying it academically has been critical not only for my career, but also for my personal growth, as someone who strives to better comprehend our society and culture. TAAFI wants to be an animation hub, connecting (future) professionals with the industry and posing such important and great questions about the present and future of the animated arts. Why not bring the two communities together, in order to make our cultural landscape,

our medium richer and more diverse? It certainly seems to me that bringing scholarly content and interrogations to an industrial setting and vice-versa enhances the outcome of the discussions, enabling the growth of the animated medium as a truly diverse place.

festival review

'Yours in Sisterhood': Rethinking the Feminist Archive at the 2018 Rencontres Internationales du Documentaire de Montréal

Lola Rémy



Like the statue of Apollo, emerging from the Mediterranean off the shores of Gaza after centuries (maybe) underwater (*L'Apollon de Gaza*, Nicolas Wadimoff, 2018, 78 mins), many films from the 2018 Rencontres Internationales du Documentaire de Montréal (RIDM) festival focused on the labour of unearthing old materials archived away. In different ways, the films document this labour, as well as the materials' political potential to move us despite their temporal distance. Indeed, by inviting experimental filmmaker and archivist Rick Prelinger to a series of screening sessions and master classes on the theme of "Archives, Popular Documentary, NYC," RIDM encouraged a reflection and discussion on the intersection of documentaries, archives, and urban landscapes. Some films follow the vein of Prelinger's *Panorama Ephemera* (2004, 90 mins) by reflecting on the public history of specific countries through the lens of found footage. For example, Kristina Konrad's *Unas Preguntas* (237 mins) and Ruth Beckermann's *The Waldheim Wal-*

tz (93 mins) both use public archives and personal footage from the 1980s to reflect on the history of Uruguay and Austria, respectively. These films bring forward a reflection on democracy and social movements with hindsight. In *The Image You Missed* (93 mins), Donal Foreman takes a more personal approach to the matter by entangling footage shot by his late father, documentarist Arthur MacCaig, with his own, in order to revisit a part of Irish history in parallel with his complicated relationship with his father. On the other hand, in two powerful experimental documentaries—Salomé Lamas' *Extinction* (85 mins) and Talena Sanders' *Between My Flesh And The World's Fingers* (31 mins; unfortunately paired with the unabashedly masculine *4 Years In 10 Minutes* by Mladen Kovacevic)—it is the landscape that comes to bear the trace of history, becoming a public and private archive. Whether it is in the form of decaying soviet architecture, or in the paths and mountains of Montana, both films create an intimate, essayistic vision of history. San-

ders' film turns to the life and work of American poet Mary MacLane by interlacing archival footage and re-enactments, superimposed with text from her diary. What is striking from this juxtaposition of text, archives, and footage of nature is the contemporaneity of MacLane's writings on sexuality and nature. In a Q&A, the director expressed her intention to recall the sensuality and physical embodiment of her texts in the filmic form, engaging in a dialogue with them through time. However, for this review, I chose to reflect on a documentary that expands the concept of archival film, and which deeply moved me, as it resonates with my concerns as a scholar and a young woman: *Yours in Sisterhood*, directed and produced by Irene Lusztig (2018, 102 mins).

Lusztig's earlier films, *Reconstruction* (2001, 90 mins) and *The Motherhood Archives* (2013, 91 mins), prominently feature archival materials in the form of found footage. In *Reconstruction*, she turns to the history of her maternal grandmother in 1960s Romania, using archival footage of a government-sponsored propaganda film to weave her personal history with the wider history of authoritarian regimes and their modes of representation. *The Motherhood Archives*, on the other hand, is entirely composed of found footage throughout the 20th century on the topic of maternal education. Through these archival materials, Lusztig reflects on the ways in which media, educational, and industrial films have shaped the discourse surrounding pregnant women's bodies as sites of control, surveillance, and knowledge. With those two films, Lusztig has established herself as a major figure of feminist archival documentaries. But unlike *The Motherhood Archives* and *Reconstruction*, *Yours in Sisterhood* does not feature found footage, and the archival materials in question are performed, rather than displayed on the film.

Indeed, each sequence of the film features a frontal shot of a woman reading a letter that was sent to the feminist magazine *Ms.* in the 1970s.¹ One by one, across the United States, each woman reads and reacts to a letter that was written in the same place 40 years earlier. The letters vary in content, from how to explain feminism to fellow 13-year-olds, to complaints about the lack of intersectionality of some articles, advice on domestic abuse and divorce proceedings, descriptions of harassment at work and in the streets, and praises of a self-sustaining life in the woods. They present a

panorama of women's concerns—private and public—in the 1970s, that still ring surprisingly true today. In a manner typical of feminist archival films, Lusztig interlaces public and private history through the archive.² The reactions of the readers to the contents of the letters stage an impromptu intergenerational dialogue, revealing the actuality of the archives' materials. The readers, like us, are visibly moved by the letters, whether they tell very personal stories or rant about public concerns. Like us, they all react on the spot, and construct a reflection on the history of women inside the United States and the timeliness of this documentary. In an interview with Julie Wyman, Lusztig addresses the double temporal effect of the film:

There is also kind of a double listening in *Yours in Sisterhood*—the people who read letters are spending immersive time listening to the voice of someone from 40 years ago (by putting it into their body several times in a row over several takes), and then I listen/make space for their contemporary response (Lusztig 2018 b).

The performance of the archival materials releases the affective potential of the archive. The film offers a negotiation with history that is embodied and in constant evolution. In this, it comes close to Mariam Ghani's foundational statement that archives are “more than the sum of their materials.” They need to be understood in performative terms, including the labour and performance of their “archivists and administrators, janitors and historians, redactors and readers and others who at various times perform the archive for its public.” She adds: “[e]ach performance refracts the archive through the performer's interpretation, and each is then reflected in the archive, as the interpretation becomes another record, or another path through the record that can be retraced” (Ghani 2015, 52). *Yours in Sisterhood* is another record of the *Ms.* magazine archive, inscribing the labour and performance of its readers: the women filmed, the director, and us. This vision of the archive as a constantly evolving object, subjected to the ordering of all the people encountering it, opens it in turn to the future, as noted by Jacques Derrida in *Archive Fever* (1996).³ With her film, Lusztig opens up the archive to a multiplicity of interpretations and voices, and refuses to order it in an authorial way.

Several letters to Ms. echo the debate between black and white feminism that began at the time, with a letter complaining about the silencing of black women's voices in feminist meetings, and another one calling for an ambiguous unity of all feminists under a non-racialized banner. With hindsight, the reader of the former letter points out that a white woman probably wrote it and reflects on the various waves of feminist theory in the past forty years. *Yours in Sisterhood* mirrors the debates that took place in the magazine by presenting a diversity of women both in age and in social, economic, and racial background. Far from calling for unity and uniformity in feminist struggle, Lusztig stages the debates, controversies, and contradictions inherent to the movement, and remains critical of the blind spots of Seventies feminism. In a constant state of dialogue, the film never offers a resolution to the multiplicity of voices on screen. In her director's statement, Lusztig writes that she "wanted to know if this rich collective archive of everyday feminist history and experience could be a catalyst for a new kind of national conversation about feminism today" (2018a). This conception of documentary films as places for conversations on and off screen harks back to American feminist documentaries of the 1970s like the famous *Woman's Film* by the San Francisco Newsreel (1971, 40 mins), which documents consciousness-raising groups where women of different classes and races talk about the daily realities of their lives as wives and workers. As Julia Lesage has demonstrated, conversations between women, and the consciousness-raising group form the "deep structure" (1978, 522) of these feminist films where experience is shared in a politicized way and creates the potential for collective action: "It was and is a political act carried out in the private sphere" (1978, 515).⁴ She adds:

Yet the very act of writing a diary, of writing poems, or of consulting a neighbor woman about how to get along when times are hard [and I would add to write letters to a magazine]—all these are testimonies to the struggle women wage to create a language, to formulate a stable sense of self, and to survive economic dependency on men (Lesage 1978, 516).

Yours in Sisterhood is indeed about creating language, and through it a space open for support and discussion. Openly inspired by this tradition of feminist films, Irene Lusztig stages women talking about and to other women through time, and revitalizes the feminist conviction that conversation is a political space. As she writes: "Feminists have always understood that speaking up, listening carefully, and making space for others to speak is the most powerful way to start to build real change" (2018a). Her film takes women's conversations out of the domestic space of consciousness-raising groups into the public space. Indeed, all the scenes are shot outdoors, with the readers standing near roads or train tracks. In a Q&A following the screening, Lusztig declared that she wanted to stress the importance of transportation for the widespread distribution of Ms. in the United States. The setting of the scenes also emphasizes the opening of women's discourses outside of the characteristic space of the home. The film renders the letters public—both metaphorically and concretely—as we find out in the credits that most of them were never published in Ms.

Read on a teleprompter, the letters lack the materiality typically found in archival films. However, this intangibility is countered by the performative reading of each woman, giving a new face and body, albeit anonymous, to the letter's contents. In *Yours in Sisterhood*, history does not appear with the nostalgia of found footage, but as a trace that is constantly re-embodied and re-interpreted, in a constant state of dialogue and negotiation. This is where the political potential of the film is inscribed. Lusztig claims to have found inspiration for the structure of *Yours in Sisterhood* in the films of Peter Watkins and Heddy Honigmann—*La Commune (Paris, 1871)* (2000, 345 mins) and *O Amor Natural* (1996, 76 mins), respectively—both representing ordinary people re-enacting history and poetic texts (2018 c). However, the very use of the teleprompter and of the frontal medium shot, as she points to, clearly echoes a form of political public address to the nation. Using this technology enables her to give political power to ordinary people and locations, subverting its original use. She had previously worked with this type of format in an art installation for the Museum of Contemporary Art of Santiago (Chile) entitled *Maternity Test* (2014, 14 mins), where she invited women to read a text composited from anonymous *mothering.com* fo-

rum posts, and to react to it with their own stories and experiences of C-section births. Those untold stories of daily lives and experiences, through the apparatus deployed by the film, enter a new register of publicness. Out of the enclosed archives of the magazine, the letters become catalysts for a public conversation on womanhood, patriarchy, intersectionality, and solidarity.

As much as this sentence has been repeated over the past years, I believe that in the Me Too era, we need to make space for conversation across generations and spaces. *Yours in Sisterhood*, with its intersection of private and public address, archival and contemporary knowledge, while being deeply embedded in local spaces, presents a model for a feminist reflection on history and memory. It rightfully calls for a historicizing of feminist activism through an examination of its archives.

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Endnotes

- 1 Irene Lusztig visited the Schlesinger Library on the History of Women in America in 2014, which houses all the materials of the magazine *Ms*. For further reading, see Farrell 1998.
- 2 See for example Eichhorn 2013, and Torlasco 2013.
- 3 See also Torlasco 2013, vi: "[...] the archives of the so-called digital age—the heretical archive, as I have termed it—can help us imagine an unruly, porous, incoherent legacy, one that undutifully appropriates a certain history rather than attempting to negate it. In this interconnected domain, marginal or overlooked figures [...] return to speak of lost life as much as of life that demands to be lived, subverting the order that holds sway over the relation between intelligibility and existence."
- 4 See also Erens 1988, and Kaplan 1988.

festival review

Poetics of Chance: Soda Kazuhiro's Retrospective at RIDM 2018

Marco Meneghin

In his article “The Postwar Documentary Trace: Groping in the Dark,” Abé Mark Nornes provocatively asks “What happened to the exhilaration and passionate engagement of the Japanese documentary world of the 1960s?” (Nornes 2002, 41). Far from being a groundless provocation, it was based on the debates between different generations of Japanese documentarists at the 1998 Yamagata International Documentary Festival. The generations’ different approaches to documentary were addressed in the festival’s symposium “The Groping in the Dark: Japanese Documentary in the 1980s and Beyond” (39). At the symposium Kanai Katsu and Iizuka Toshio, representing the older generation formed in the militant documentary scene of the 1960s, complained about the lack of social awareness and commitment in the filmmaking practices of the younger generation, criticised for their focus on private introspection and the predilection to investigate intimate histories, often in an autobiographical registers. Ise Shin’ichi and Kawase Naomi, speaking for the new generation, affirmed that, while their films were not directly involved in any public debate and they rejected the militant aesthetic of 1960s, they nonetheless engaged critically with central issues in Japanese society, but from an oblique, intimate and personal point of view.

Exactly twenty years from the Yamagata symposium, the 2018 edition of the Rencontres

internationales du documentaire de Montréal (RIDM) hosted the retrospective of the films of independent filmmaker Soda Kazuhiro, whose body of works merges the two seemingly opposite conceptions of documentary which clashed at the Japanese festival two decades before. Indeed, Soda’s working method, theorised in his “Ten Commandments of Observational Filmmaking” (Soda 2018), is based on a particularly strict conception of observational documentary. While having as a starting point the private circle of his acquaintances (his ex-university friends, his parents-in-law, his neighbours), his films reveal issues which show the current crisis of fundamental aspects of Japanese contemporary life (the electoral process and the state of democracy, the welfare state and the lack of care for the weakest members of society, the crisis of the labour market due to the ageing of the population). I would call the aesthetics produced a “poetic of chance” based on observations stemming from chance encounters that open up unexpected vistas into the current state of Japan.

The 10 Commandments of Observation

The observational mode of documentary was not simply a choice for Soda, but also a necessity. As he explains on his personal website and repeated many times in the Q&As after the screenings of his films at RIDM, his formation

as a filmmaker happened within the strictures of television formats that required extensive research and a clear editorial stance way before the start of shooting. This, according to Soda, prevented him to begin filming without preconceptions and expectations, which ultimately did not allow the subjects to express themselves fully and did not allow the filmmaker to come across surprise events. As he put it, “I found that these practices prevented me from making documentaries with eye-opening discoveries for both the audience and myself. So I decided to do the opposite” (Soda 2018).

Starting from his first film, *Campaign* (*Senkyo*, 2007, 120 mins), Soda developed his own personal method to produce films that he calls ‘observational’ (indeed, in the credit sequence of all his documentaries, the inscription “Observational Film #...” appears). His conceptualization of observation is double: it involves both the observational capability of the director and the active gaze of the spectator watching the film. As Soda explains: “Firstly, I as a filmmaker closely observe the reality in front of me and make films according to my observations and discoveries, not based on my assumptions or preconceptions I had before I shot the film. Secondly, I encourage viewers to observe the film actively with their own eyes and minds” (Soda 2018). This mode of filmmaking, though, requires a degree of discipline equal to that required for shooting content for television, yet the rules are opposite. Soda’s rules are “The Ten Commandments of Observational Filmmaking”:

1. No research.
2. No meetings with subjects.
3. No scripts.
4. Roll the camera yourself.
5. Shoot for as long as possible.
6. Cover small areas deeply.
7. Do not set up a theme or goal before editing.
8. No narration, super-imposed titles, or music.
9. Use long takes.
10. Pay for the production yourself. (Soda 2018).

Commandments one through nine consist of what I called Soda’s “poetic of chance.” The subjects and the topics for his documentaries are discovered by chance encounters with people that

spark his interest. Not having a film crew always at the ready and being constantly alone with his subjects, (with the exception of his wife Kashiwagi Kyoko, who also produces the majority of his films), creates the intimacy seen in the films. This allows for a wide variety of long-takes to be taken, in which various themes, both personal to Soda’s subjects and relating to the wider social background, are allowed to unfold. Indeed, his films are based on a constant dialogue between the intimate stories of individuals and their context within the broader landscape of Japanese society. Issues which seem to be specific of a certain locality are actually a reflection of national, and sometimes global, problematics.

The distribution process is fundamental because it is the director’s only source of income, in accordance to the last of his “Ten Commandments.” Once Soda assesses that he shot enough material, he proceeds to a long and solitary process of editing, which usually takes several months. When the film is ready, he then shows it in various film festivals and in a chain of independent film theatres throughout Japan. Afterwards, his films become available on his Vimeo page both for rent or ownership, and there are special prices if universities or other institutions decide to acquire them. Indeed, the main reasons why he is able to make films according to his previous commandments is economic independence, which is afforded through a mixture of very low production costs coupled with a stable network of distribution to rely on. The last commandment, therefore, is crucial to sustain his personal mode of observational filmmaking, and economic independence is also one of the main themes of his films.

Of Politics, Money, and Art

Money and its influence on local election campaigns is one of the main themes of Soda’s *Observational Film #1, Campaign* (*Senkyo*, 2007, 120 mins). In it, Yamauchi Kazuhiko, an old university friend of Soda, is picked by the powerful Liberal Democratic Party (LDP) of then (2005) Prime Minister, Koizumi Junichiro, to run in a special election in the city of Kawasaki. Yamauchi, who was not a member of the party before, was mainly picked so that the LDP would not lose its majority in the Kawasaki city council. Soda’s camera shows us how Yamauchi is made to stand for hours at

street corners greeting people with party slogans and awkward handshakes, how he is humiliated by other, more experienced party members who have no interest for his ideas, and how he receives almost no economic support to run his campaign. The result is a bleak vision of the democratic process, reduced to empty slogans, party manoeuvrings to maintain economic privileges, and the personal humiliation of the candidate.

But this is not the end of Yamauchi's story. Indeed Soda's old friend decides to run again for the city council of Kawasaki, this time as an independent. Greatly upset by the nuclear disaster at Fukushima, Yamauchi decides to run on a platform focused on raising awareness about the dangers of nuclear energy and with a clear abolitionist message. Soda decided to film this second campaign, and the result is Observational Film #5, *Campaign 2* (*Senkyo 2*, 2013, 149 mins). Many scenes mirror those in *Campaign 1*: more slogans shouted from the corner of the street, more handshakes, more obnoxious LDP party members (now his rivals). Yet, Yamauchi's actions are no longer mechanical repetitions of party's instructions, but the passionate and urgent message of a man worried by the possibility of a new nuclear disaster. A scene in particular testifies of this change. At the end of the film, Soda fixes the camera on a close-up of Yamauchi making a speech near a metro station, and then slowly zooms out to reveal the indifference of his audience, who simply passes him by, and the aloneness of Yamauchi's endeavour. This scene replicates one in the beginning of *Campaign 1*, but rather than appearing as a pathetic figure caught in an awkward position, Yamauchi appears in the second film as a tragic hero. He is a sort of Japanese Cassandra warning his people of future dangers, but destined to remain unheard.

His two films concerning internationally renowned playwright Hirata Oriza and his company Seinenda, Observational Film #3, *Theatre 1* (*Engeki 1*, 2012, 172 mins) and Observational Film #4, *Theatre 2* (*Engeki 2*, 2012, 170 mins), address questions of economic sustainability and artistic independence. Soda explores how theatre works as an artistic practice and how it can be sustained as an economically independent endeavour. Hirata's productions are characterized by the actors' painstaking and extremely precise performance, while multiple simultaneous events happen on stage. While the resulting sense of realism was

unprecedented in Japanese theatre, Hirata's plays required long periods of preparation and the reliance on a stable company of players. While the first film investigates this meticulous artistic process, the second film focuses on the economic viability of Hirata's method. Soda documents Hirata as he gives theatre courses, writes books and public grants, and gives public lectures, all to economically sustain his work, which is less and less funded publicly and relies more and more on the so-called free market and private patronage. Hirata, just like Yamauchi in *Campaign 1* and *Campaign 2*, becomes a heroic figure facing increasingly difficult mundane task to preserve his artistic independence and the livelihood of the members of his company.

Of Care, Labour, and Cats

Both Yamauchi and Hirata endure many trials not only to foster their beliefs, but to care for the people they love and work with. And care is the main theme of other two of Soda's films, Observational Film #2, *Mental* (*Seishin*, 2008, 135 mins), and Observational Film Extra, *Peace* (2010, 75 mins).

Mental observes the goings on at a small clinic for people with mental disabilities called Chorale, in Okayama City, run by the old but resilient Dr. Yamamoto Masatomo. Despite being close to his eightieth birthday, Yamamoto-san works tirelessly for his patients, stigmatized by Japanese society's harsh views on mental illness. Soda follows and portrays both the patients and the medical staff, their daily routines, their constant dealings with inefficient bureaucracy, their therapy sessions, and their intimate stories. The picture that results is of a place of care and solidarity, where the weakest members of Japanese society can safely deal with their issues and receive the medical attention they need. The film also reveals the precarious foundation on which this clinic stands. As a not-for-profit, the clinic relies on public grants and projects, which are less and less available. Nevertheless, the clinic continues through Dr. Yamamoto's stubborn determination to work despite his age, because it has become difficult to find someone who will take his place. In spite of the difficulties, Chorale in Okayama City keeps working.

Peace concerns another charitable organisation, which provides services such as transportation and house care for the disabled and the elderly.

It is run by Soda's parents-in-law, Kashiwagi Toshio and Hiroko. The Kashiwagis' organisation faces the same difficulties as Chorale: the lack of funding, the ageing of the personnel, the daily difficulties of dealing with people who cannot take care of themselves any longer. And yet, moments of peace and connection can still be found. In this film, Soda focuses on two particular subplots. The first involves his mother-in-law, Hiroko, and her relationship with 91-year-old Hashimoto Shiro, who is in the final stages of lung cancer. The conversations between the two alleviate the solitude of Hashimoto-san, who reflects on his life and the traumatic, horrific events he witnessed during World War II. The second subplot deals with the community of cats cared for by Soda's father-in-law, Toshio. The stray cats stay for a few years at the Kashiwagis' house and then disappear. Every time a new cat shows up, it must adapt to the rhythms of the community, otherwise it will be driven away. Soda films the process of a new cat adapting to the already formed community, following the early tensions when the cat society seems threatened, then the older cats' slow acceptance and acclimation of the new cat, and finally the return to their communal living.

A similar storyline, new elements entering an older community, is present in *Oyster Factory* (*Kaki Kouba*, 2015, 145 mins). Here, due to the rapid decline of the local population, a shortage of labour threatens the fishing community of Ushimado. Long scenes of the labouring seamen, of the surrounding community, and the fish and oysters, are intertwined with the daily life of a fishing family who is also looking for seasonal labourers needed for the complex work of oyster farming. Since few workers are available now in Ushimado, the family decides to hire migrant Chinese labourers to work on the ship and at the factory for several months. Chinese labourers already work in other local industries, and the two communities, Japanese and Chinese, although very different and mostly unable to speak each other's languages, find a way to live together through constant negotiations and daily acts of kindness and solidarity. These acts are necessary to face, on the one hand, the precarity of temporary migrant labour, and on the other, the slow but steady decline of the local population. And yet, the oyster factory is still working.

Aruitemo... Aruitemo...

Chance should be paired with another concept to faithfully describe Soda's poetics: resilience. This theme underlies the most beautiful and elegiac of Soda's documentaries, *Observational Film #7, Inland Sea (Minatomachi)*, 2018, 122 mins). In stunning black-and-white cinematography, Soda follows the life of three elderly dwellers in the town of Ushimado: Wei-chan, an eighty-six-year-old fisherman who every day still earns his daily bread on the sea; Kumi-san, an eighty-four-year-old woman who wanders the village and engages whomever she finds in lively conversations; and Koso-san who, after the death of her husband, still runs the family fishery despite being a self-defined "late stage elderly." They all live in a town which, as previously seen in *Oyster Factory*, has been particularly hit economically by the decline of the population and by the migration of younger generations to larger cities, such as Tokyo and Kyoto. And yet, they survive the best they can, despite enormous difficulties and the approach of death. They, like Yamauchi and his campaigns, like Hirata and his theatre company, like Dr. Yamamoto and his clinic for mental patients, like the Kashiwagis and their care-giving organisation, like the family of fishermen in Ushimado, all of them keep on going while the world they inhabit is slowly but steadily declining.

Just as Kumi-san, they all keep walking, *aruitemo... aruitemo...*

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festival review

Les Sommets du cinéma d'animation 2018: A Network of Animated Bodies

Cole Armitage, Victoria Berndt, Alexandre G. Vermeil

The 17th edition of Les Sommets du cinéma d'animation, hosted in late November 2018 by the Cinémathèque québécoise, was an effort to showcase the diverse range of techniques and styles that constitute the animation industry. The festival consisted of various screenings, panels, masterclasses, exhibits and interactive activities. As Cinémathèque programmer-curator and artistic director of the festival Marco de Blois notes, the festival has shifted in recent years from focusing on independent short films to becoming more reflective of the industry as a whole, including feature films and more animation that takes place outside of the setting of the commercial film theatre (Phi, 2017). In an industry as diverse as animation, it is nearly impossible to put the myriad techniques that abound on equal display, but the festival nonetheless ought to be lauded for its admirable attempt to provide a snapshot of such a diverse field. Echoing Norman McLaren's view that there is no one way to do film (or animation), the festival not only included a wide array of styles from across the world (2D/3D, pixilation, puppetry, GIFs, stop-motion, hand-drawn, etc.), but also connected past and present (Phi). One of the central features of the festival was a reconstruction of Winsor McKay's *Gertie the Dinosaur* (1914) undertaken by the National Film Board of Canada in collaboration with the Cinémathèque, with support from the University of Notre Dame. This impressive undertaking

involved the detailed recreation of approximately 250 drawings following McKay's style by animator/director Luc Chamberland. Alongside an exhibit of the work of Frédéric Back, the *Reconstruction of Gertie* exhibit celebrated both McKay's original work and the recent efforts to recreate Gertie. This reconstructed animation then came to life as *Winsor and Gertie*, a recreation of McKay's signature 1914 vaudeville act produced by Donald Crafton, in which an actor portraying McKay would interact with the titular dinosaur with a prop whip. In this routine, the body is thus doubly on display: both the performer interacting with the animated character and the labouring body that plays a hand in its reconstruction.

While it may have merely been the selection of works we had the opportunity to see, the return to McKay's performing bodies – both live and animated – seemed to focus on the body in a way that was emblematic of the entire festival. The relationship between animation and the body is a pervasive theme throughout animation studies, and Les Sommets showcased many works that offered their own interpretations of the various bodies they featured. From recorded humans to anthropomorphic animals, and transformative potentials to fragmented forms, the types of bodies featured were as diverse as the cultures on display. Equally diverse were the theoretical attitudes towards the body. It was in these discourses that we

found the festival generated the most thought-provoking discussions. This interest in the animated body was a pervasive theme at the festival, tying together feature-length and short films, talks, installations and other events. From the student installation *Animated GIFs: The Body*, to the masterclass on experimental pixilation led by artist and dancer Paul Wenninger, the body was on full display. Short films in the International Competitions offered themes of bodily transcendence, unstable bodies, and bodies fused together. Montreal Gaymers, a LGBTQ+ social group that organizes gaming events, even brought their *Just Dance* party to animate and engage the bodies of the festival attendees in the evenings, concurrently running alongside further screenings.

Les Sommets explored animation through a variety of styles, tones, and forms. Exploration of the self, the body one inhabits, remained at the center of many of the films screened at the festival. The freedom of form resulted in Les Sommets' inclusion of many more popular short films in their exhibit Young Independent Animation from the U.S. *Late for Meeting* (David Lewandowski, 2013), a hilariously absurd short animated film. It places a contorted computer-generated body into a mundane streetscape, demonstrated the relationship of the human body to its surroundings using obscure humour without explanation. The uncanny animation was widely circulated online following its release, where hundreds of memes surfaced using GIFs or clips from *Late for Meeting* as over-the-top reactions to otherwise ordinary circumstances. Similar shorts show in Les Sommets such as *Hi Stranger* (Kirsten Lepore, 2017) and *Time for Sushi* (David Lewandowski, 2017) were also widely circulated online as memes. The inclusion of popular, short films-turned-memes provides insight into the response generated by the public, as well as what is programmed in an animation festival circuit. The festival celebrated animation from all modes of reception, and *Late for Meeting* demonstrated the form's capacity for a less serious exploration of the body's role in experiencing the world. The absurdist humour in these animations displayed how a body animated to be unrecognizable as a human could then stand in for the bodily experience of the viewer. Awkwardly rendered or sculpted, uncanny animated bodies interacting with live-action footage negotiated the body in new terms that can be understood through the circulation of those

very videos displayed at the festival. The bodily experience in *Late for Meeting* and those similar to it suggest that the body is out of place in the world, however the body's ability to grant a person experiences should not be discounted. A short film by Canadian filmmaker Alex Boya titled *Turbine* (2018) explores a pilot whose face becomes a plane turbine, morphing the biological and mechanical into one being. His body changed, the man cannot interact with the world in the same way he used to. By forfeiting what makes him human, the man's relationship to his surroundings is fundamentally altered. Here, the body is mediated through technology to form a complicated chain reaction of the human experience in modern life, where the technology is as much a part of the body as its biological components. In these examples, animation intentionally creates ambiguity as these bodies are animated to be shaped by their experiences, molded and rendered through the animated technology, rather than by their physical descriptors. *Turbine's* animation interprets the body as a site of transformation, where the world becomes visible. Combining a realist style similar to a pencil sketch, the short further commented on the use of absurd expression to understand the role of the body and our relationship to it.

Absurd bodies also came to the fore in the short *A Demonstration of Brilliance in 4 Acts* (2018) by Morten Tšinakov and Lucija Mrzljak, depicting a bizarre chain of events preceded by the birth of a fully-grown man in a hospital. Inherently nonsensical, the short follows a series of domino-like effects partially influenced by the arrival of the man – eagerly anticipated by an audience who sits waiting on a bench outside the hospital. Eventually, the man from whose palm extends a group of string-like appendages, is literally joined with a woman with a matching group of holes in her hand – their bodies becoming one. This grouping is one of two conjoined bodies in the film, with the other being a pair of men who periodically go to the window to view the unfolding activities. The film portrays both conjoined bodies in a positive light. When one of the conjoined men dies, his constant warning of a perpetually incoming bird is lost, and the bird flies straight into the head of the lone man. *Brilliance* praises bodily complexity, and suggests that the body is not only an individual mode of experiencing the world, but a connected one as well. The result is a literal network of bod-

ies. Les Sommets' circuit of films painted a layered picture of what the body's significance is in experiencing life. Not only is the body something to identify with, it can be changed, altered, and shared with others. In this way, Brilliance is able to summarize this notion through its narrative network of bodies. The animated method of all of these shorts investigating bodies and their consequences encouraged a reflection on the bodily experience of the viewer, and the alternative interpretations of daily life that they offered. As such, the body comes to represent a site that mixes together the experiences of others with its own through mechanical and biological means.

Screened during Austrian filmmaker Paul Wenninger's masterclass, the short pixilation-technique film *Tresspass* (2012), winner of the Sommets 2013 Grand Prix, offered further insight into the way that experimental animation might prioritize the body over both space and time. In filming *Tresspass*, Wenninger did not use a storyboard but instead allowed motions to flow into one another, using the position of the on-screen body as inspiration for each successive action. The film tracks the body of Wenninger himself through a series of movements, from walking to eating to reading a newspaper. The world around his body appears in a constant state of flux, with objects in a continual rapid-fire transitory state until grasped in Wenninger's hands. The human body here appears to offer the only access point to stability and reality. Yet as Wenninger himself noted during the masterclass, despite appearing as one continuous shot, we are reminded of the instability of the body through the instability of the world surrounding it. In fact, there are cuts after every single shot, a reminder of the artificial and constructed nature of the body as it is animated on screen, regardless of how natural it may seem.

Some films offered a more liberatory stance on the animated body. French filmmaker Sarah Van Den Boom's short *Raymonde ou l'évasion verticale* (2018), winner of the festival's Special Jury Award and Audience Award, explored the socially transgressive potentials of the animated body through its heartfelt message of embracing one's inner nature. In the incredibly detailed and beautifully animated primarily stop-motion puppet short, titular character Raymonde is an anthropomorphic elderly owl who yearns for sexual freedom denied to her by the tidy workings of her societal and religious

surroundings. Her increasing desperation, as she tends to her garden, makes trips to her church, and sells dirtied panties online, is underscored by the disjointed and repetitive upbeat score. Raymonde is surrounded by (or haunted by) two-dimensional animated female figures that represent ephemerality and transcendence from the weightiness of the stop-motion world she inhabits. Raymonde achieves transcendence, but rather than exit into the world of two-dimensions, she embraces an inner nature writ on the surface of her character design: that she is, in fact, an owl. After she flies off into the night, Raymonde inspires another citizen of her town, who is subsequently visited by the two-dimensional figures as the short closes. *Raymonde* is far from the only film, even among those shown at the festival, which oscillates between the animal and human in the anthropomorphized. One prominent example is Alison Snowden and David Fine's Oscar-nominated 2018 film *Animal Behaviour*, which relies on this oscillation for its story's wildly humorous antics. But *Raymonde* goes against the grain by locating the transformative potential of animated bodies in their ability to cast off societal norms and attain greater freedom, which represents a different ideology towards the anthropomorphized subject. Whereas *Animal Behaviour* finds humour in a regression to animality as moments of mental instability, *Raymonde's* animal half represents liberation and self-expression.

The animation process allows the filmmaker to fashion a customized world from an infinite bank of elements limited only by the creator's imagination. As such, animation results in a sense of absolute freedom in which bodies can take a multiplicity of forms. It is then no wonder that animation festivals often describe themselves as being eclectic. Les Sommets does indeed offer up an eclectic survey of films, both in terms of narrative and of stylistic techniques. But this tendency is also evident in the way it represents diversity, showcasing films from around the world, while also acting as a place to give sexual minorities a voice. Mel Hoppenheim School of Cinema alumna Brenda López Zepeda's short film *ABEO* (2018) uses a panoply of the animation techniques discussed throughout this article. The film tells the story of two Latin-American women, a lesbian teenager named Nadia, and an older woman named Lupe, as they walk the Arizona desert to cross over the U.S. border. It mainly uses stop-motion animation

but also uses sand animation to portray Nadia's past love story, and a 2D digital animation style for Lupe's souvenirs of her children. *ABEO*, which means 'change' in Latin, is a call to humanize often ill-portrayed, undocumented Latin-American immigrants. The work spends most of its time focusing on the two women discussing their past, and their hopes for the future as Lupe is meant to reunite with her family in the U.S. This way, the viewer is invited to identify with the characters, as they discover parts of the protagonists' interiority. While the characters' inner selves bring life to the animated figures in some ways, López Zeped, emphasizes the importance of the character's body, and how she decided to present them (Itchysilk). Both are people of colour, contrasted with a whiter America, and while they have a similar goal, their age and body types differ. *ABEO* shows difference across the border, but also within the same community in order to challenge the singular, and most often negative, idea that is promoted about asylum-seekers in Conservative-leaning news outlets. The relationship between the animator and the bodies she animates before the camera is only heightened as she voices Nadia, while her own mother infuses Lupe's voice with hers. While not autobiographical, *ABEO* nevertheless feels personal due to the filmmaker's choice to shoot entirely in her own bedroom, and because of the stories she gathered from undocumented immigrants. As she lends her voice and craft to these characters, she also speaks as many, acting as a conduit for both queer and foreign bodies.

With such a heartfelt film about acceptance and breaking down borders, and taking into account the above films that celebrate diverse bodies and identities, as we have outlined thus far in this review, it is with a sense of contradiction that Les Sommets chooses as its opening film Nina Paley's *Sader-Masochism* (2018). The film's content is not per se problematic, on the contrary. The unapologetic way it illustrates the history of violence towards women shocks, and consequently invites the viewer (although in a too obvious way) to acknowledge, and challenge the wrongs committed by patriarchal societies. What is of issue takes place outside of the cinema screen, and begs the following question: can we separate the work from the creator? The animated film presented as one of the main events, gains a celebratory quality, as it is singled out as a rare artefact alongside only seven

other feature length films. Putting *Sader-Masochism* on a pedestal therefore heightens the filmmaker's profile, which becomes problematic if we turn to look at her activity on social media. A quick browse of Paley's Twitter account reeks of transphobia as she not only shares articles against trans identities, but also damaging artwork presenting trans women as dangerous rapists, and murderers. One of the infamous tweets, dated January 22, 2018, infers the melody of the famous children jingle "If You're Happy and You Know It, Clap Your Hands," while renaming it "The Transjenner Song" in direct reference to transgender celebrity Caitlyn Jenner. It includes transphobic lyrics such as "if a person has a penis, he's a man," and "if he isn't born a woman, he's a man." In reaction to the online community calling her a trans-exclusionary radical feminist (TERF), she labels herself as a "gender-critical radical feminist" in her own online blog, acting here as a victim. While her feature film does not engage with queer issues, do festivals not have a responsibility to be wary of giving a platform to this type of individual? In this situation, eclectic takes a dark turn overshadowing diversity, by allowing the body of the festival to be an open site of hate and discrimination through its association with Paley. Here, we do not wish to condemn Les Sommets, but to interrogate what is included in the animation festival circuit, and how the celebration of a discriminatory individual trying to close borders of acceptance, can be featured in the same program as others who are tirelessly trying to open them.

Our intention here is not to paint the festival as an anchored place, but more as a site of connections that allows for the viewer's mind to travel. Les Sommets features animated films from thirty-four different countries around the world, showcasing various languages and cultures in the process. The programming grants an access point to both imaginative excess, or personal stories specific to the filmmaker's origin country, such as closing film *Chris the Swiss* (Anja Kofmel, 2018), which recounts the artist's cousin's story, a journalist who died in the Yugoslav Wars in 1992. That being said, the festival acts as a node in a network of festivals, and nations, where most of its content strongly depends of its special presentations, which is dictated by each screening's specific sponsor. An entire screening presented by Glas Animation Festival and the U.S. Consulate General of Montréal featured independent films strictly from

the U.S., while the presentation sponsored by the Swiss Consulate General, and Swiss Films, exclusively featured films from Swiss filmmaker Isabelle Favez. Another special event took the form of a 68 minutes *carte blanche* program curated, and coming from, French distributor Miyu, counting nine films from France, and one from Belgium. With such affiliations, the festival transforms into a transnational body that strongly relies on foreign partnership, bringing notoriety and selections from other festivals into their own programming, as is the case with their Best of Annecy 2018 screening. In this review we have focused on the movement, transformation, and borders of the body from within and outside of the animated screen. We chose the body as our theme, not only because it featured so prominently in the films, but also because it speaks to the nature of the festival itself. Les Sommets acts as a node within a network of bodies, which may take the form of animated works, but also of its partners, its festival team, and various collaborators. Portraying the festival as such can help trace a path of investigation into the streams of content that travel through it, therefore allowing us to map out the interconnectivity between various bodies. It is the relation between these entities that dictates, to some extent, the programming of Les Sommets, acting as a sort of neurological system, or a rhizome. As we have mentioned before, when reviewing such a platform, it is important to both look at the films, and what surrounds them, such as the behaviour of its participants. Paley might not address hate towards transgender people in her work, but the simple fact that she is included (and celebrated) in festivals, negates the repercussion of the hate speech she has been promoting online. The inclusion of the work of Paley, in such a way that it gives her a spotlight, arguably threatens the resilience of this system. Her disavowal of gender multiplicity beyond the strict heteronormative binary, pushes against the diversity upon which such a system is built. After all, these bodies are linked together growing towards other geographical regions, influencing one another, reflecting social issues, and engendering an inclusive expansion of representation, in form, content and source, on a global scale. While Les Sommets deserves praise for the diversity it brings in the form of diverse bodies that resist and subvert dominant structures, the negation of any association with hate speech ought to be seen as the next step. This makes it

an imperative not to take lightly comments targeting the safety of others, and to champion diversity both on, and outside of the screen.

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festival review

Hump! 2018

Jordan Gowanlock

The HUMP! film festival seeks to create a theatrical venue for amateur pornography that empowers participants, fosters a sense of community, and creates an inclusive and safe space. In an era where handheld devices can access and create sexual images with ease, and where those images can be shared with the world on extensive web platforms, consensually and not, HUMP! strives “to change the way America sees—and makes and shares—porn” (HUMP! Film Festival, n.d.).

This year marks the fourteenth annual HUMP! festival. The festival began as a local event in Seattle and Portland, promoted by the local alternative newspaper *The Stranger* and its editorial director and sex advice columnist Dan Savage. Films featured in HUMP! are exclusively amateur productions and generally cater to a diversity of different kinks and sexual orientations. The curation of the festival also clearly seeks to include a diversity of bodies and identities. Perhaps the most definitive aspect of HUMP! is the way it controls the exhibition and circulation of its moving images. The festival’s strict set of rules and norms are laid out by a master of ceremonies at the beginning of every screening. The first rule: although audiences are encouraged to react genuinely with shock and laughter, they are expected to be respectful and to bear in mind that the filmmakers and performers may be in the theater. The second rule: absolutely no photography or cellphones are

allowed. These films are designed only to be shown at the festival, and the workers and performers use pseudonyms in order to maintain control over their identities. This protects people involved from being discriminated against if an image were to fall into the hands of an employer or family member, for example. This rule also means that HUMP! does not function as a promotional platform or “industrial node” the way many other film festivals do (Iordanova 2015). The films featured in the festival are unlikely to launch any careers given that they are un-credited and cannot be seen outside of the festival. Unlike the Toronto, Berlin, or Busan International Film Festivals, HUMP! provides no opportunities for producers to network and arrange funding or distribution deals.

HUMP! can be positioned within a long genealogy of amateur porn film practices stretching back as least as far as the “stag films” of the early 20th century, which were produced and distributed through illicit networks due to the presence local laws and censorship (Williams 1999, 60-1). HUMP! can also be positioned within DIY histories that include John Water’s cinema of transgression work and the Queercore and Outpunk movements, which grew out of the grass-roots venues, publications, and record labels of the 1980s and 90s west coast DIY hardcore punk scene (Spencer 2005, 239-243). DIY movements such as these sought to make media themselves in order to build alterna-

tives to commercial media and thus avoid the many perceived problems entailed with the entanglement of capital and culture. Following this logic, HUMP! sought from its inception to provide an alternative to the porn industry.

DIY media has changed dramatically since the first HUMP! though, transforming from an often anti-capitalist and anarchist grass-roots movement into the tech-centric discourses of “web 2.0” (O’Reilly 2006), “produsage” (Burns 2008) and “prosumption” (Ritzer et al. 2010). Making your own media has turned from being a radical political act to being the lifeblood of some of the world’s largest media companies, with users supplying free content for media “platforms” (Gillespie 2010). Porn has changed similarly, with video platforms toping web traffic rankings. For example, according to Alexa.com Montreal-based video platform PornHub saw twenty-eight billion visits last year, making it the twenty-ninth most visited website in the world. HUMP! is noteworthy for the way it resists these trends. While the festival does rely on amateur labour for its content, its rules have continued to empower participants, giving them control over the circulation of their images. These rules have also controlled the exhibition context, keeping it positive and community-oriented. HUMP! stands as an example that DIY media practices have not been fully subsumed into Silicon Valley neoliberalism.

This is not to say the festival has not changed over time. Although the rules of HUMP! have generally stayed the same since its inception, participants in this year’s festival certainly submit their work with a different set of expectations than those who participated fourteen years ago. While the original festival was limited to screenings in two cities, creating a sense of community between filmmakers and viewers, contributors today submit their films knowing that after the festival concludes in Seattle, Portland, and San Francisco, they will be seen internationally with dozens more screenings in a review tour across the U.S. and Canada (the review will come to Montreal in May 2019). The festival does, to a certain extent, risk becoming a victim of its own success with this tour. Wider circulation may make it more difficult to control the conditions of exhibition that are meant to empower participants and create a positive and inclusive space. Performers have to accept that their work will be seen far beyond their local sex-posi-

tive community, and audiences in these cities have no sense that filmmakers or performers are from their community or that they might even be in the theatre.

Films screened at this year’s festivals varied greatly. Some, like *The Wheel of Fortune* or *Extreme Wild Fuck...*, feature large casts with high production values that clearly required substantial time investment from skilled workers. Others, like *Taskmaster*, were the product of a single individual’s efforts. While films like *Paint Party* render bodies through rhythm and colour, to the point that the viewer cannot identify what they are seeing, others examples like *Home for Lunch* track closer to the explicit aesthetics of conventional porn. A few selections feature no explicit nudity or sex acts whatsoever. *My Cathartic Release*, for example, is an animated short where a woman describes getting over a traumatic experience through sadomasochism. This film renders the narrator’s interior experience abstractly through animation. Jury prize-winner *Porn Yesterday* similarly features no nudity or sex. Rather, the film consists of a series of interviews with different people talking about their first encounters with sex through magazines and television. The film thus implicitly reflects on how sexuality takes shape in a saturated media landscape, while also noting the dissonance between people’s innate desire and the types of sexual images they had access to. These examples are in the minority however. The vast majority of films at HUMP! feature graphic and detailed depictions of sex.

There are two modalities of graphic content at the festival. Some films follow in John Waters’ tradition of shocking, excessive, grotesque attacks on pop culture mores, while others promote acceptance and identification with non-normative sexualities. This latter form confronts the viewer with the performer’s sexuality unapologetically with pride and confidence. The effect of this is deeply humanising. The idea is to make the viewer squirm a little, but ultimately to foster better understanding and shared experience. The theatrical setting enhances this frank confrontational effect. Everyone watches everything, even if it makes them uncomfortable. These two modalities have similar ends. They both combat ideologies that function to marginalize and oppress non-normative sexualities. Yet they go about this in very different ways.

The presence of these two modalities has the potential to create some confusion. In certain

films frankness is pushed to comically exaggerated levels. Are these films supposed to be humanizing or comically abject? This is particularly the case where performers do not seem to be enacting their own kink. *Whatever Floats Your Goat* (a lesbian barnyard burlesque that defies description) and *Troughman* (a semi-biographic musical about an infamous character in the Australian bar scene) are both examples of this. These are both clearly comedies, but to a certain extent the joke is the extremeness of the non-normative sex acts being depicted.

This is not to say that any of the films featured in HUMP! are prejudiced or regressive. Within their very sex-positive context they should be interpreted as facetious and irreverent. They evoke enjoyment rather than true disgust. They are cheeky, in other words. This cheekiness is fundamental to HUMP! in many ways. For example, one of the challenges put to filmmakers for this year's festival was to integrate jumper cables, Jenga, and Justin Trudeau into their films, to inevitably comedic effect. But this brings us back to why HUMP!'s rules, which control the circulation of images and the behaviour of audiences, are so important. Outside of the context of the festival, some of the films could be easily misconstrued or misused. If these films were on an online video platform, it would be easy for them to elicit a reaction far from sex-positivity and acceptance. This is a good example of why HUMP!'s ever-growing review exhibition circuit pose certain challenges for its future. The organizers will need to monitor these subtle trends as the festival continues to grow to keep it faithful to its very worthy goals.

The HUMP! Touring Festival will screen in Montreal on May 23rd, 2019. <https://humpfilmfest.com/>

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NOTES ON CONTRIBUTORS

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Ilia Antenucci is completing her PhD at the Institute for Culture and Society, Western Sydney University, where she works with Prof. Brett Neilson. Her research explores how processes of digitalisation are transforming urban government and security politics. Ilia conducted fieldwork for her PhD project in New Town Rajarhat - Kolkata and Cape Town. Her publications include: "Security and the city: post-colonial accumulation, securitization, and urban development in Kolkata," in *Accumulation in Post-Colonial Capitalism*, and "Smart cities, smart borders. Sensing networks and security in the urban space," in *Sensing Security. Sensors and the Making of Transnational Security Infrastructures*.

Cole Armitage is an MA student in Film Studies at Concordia University in Montreal. He holds a BA in Media Studies from Trent University in Peterborough, Ontario. Cole's research interests and intended thesis project center around relationships of agency and autonomy, particularly between humans and non-humans, as expressed through the visual culture of anime and animation, video games, webtoons, and other animated media.

Grant Bemis is an accomplished photographer, sailor, conservation advocate, media specialist, and fisherman. His passion for aquatic ecology has brought him all over the world, from mountain streams in New Zealand to Amazonian tributaries in Brazil. Grant has an MA in Exploration Science and his work as a conservationist, field logistics manager, and photographer continues to bring him to remote destinations. His photography is narrative-driven, and his subjects include landscape wildlife, architecture, and adventure sports. Grant is a team player, has strong people skills, and is most at peace when on and in the water.

Victoria Berndt is a first year Master's student in Film Studies at Concordia University. Prior to this, she attended Wilfrid Laurier University for an undergraduate degree in English and Film Studies. Her research focuses on anime, fan culture, and the increasingly complex relationship between fan-produced and industry-produced works, specifically looking at the impact that such a change in dynamic has on definitions of the fan experience.

Patrick Brodie is a PhD candidate in Film and Moving Image Studies, in affiliation with the School of Irish Studies, at Concordia University in Montreal. He is currently a Mitacs Visiting PhD Researcher at the Department of Geography, Trinity College, Dublin. His dissertation project, entitled "Wild Tides: Media Infrastructure, Built Space, and Financialization in Post-Crisis Ireland," investigates the transnational politics of spatial development in relation to Irish media industries. His work has appeared in *Nordic Irish Studies Journal*, *HARTS and Minds*, *Pause Button*, and *Synoptique*, and he has a piece forthcoming in USC's *Spectator*. He is a member of the Global Emergent Media Lab at Concordia University and a member of the editorial collective of *Synoptique*.

Deborah Cowen is Associate Professor in the Department of Geography and Planning at the University of Toronto and a 2016 Pierre Elliott Trudeau Foundation Fellow. Her research explores the role of organized violence in shaping intimacy, space, and citizenship. She is the author of *The Deadly Life of Logistics: Mapping Violence in Global Trade* with the University of Minnesota Press, *Military Workfare: The Soldier and Social Citizenship in Canada*, and co-editor with Emily Gilbert, of *War, Citizenship, Territory*. Deborah has also been active in community-based research and organizing in Toronto addressing the racialization of sub/urban space, and was a collaborator on the National Film Board of Canada's Emmy award winning HIGHRISE project. Deborah serves on the board of the Groundswell Community Justice Trust Fund.

Kay Dickinson is Professor of Film Studies at Concordia University. She is the author of *Arab Cinema Travels: Transnational Syria, Palestine, Dubai and Beyond* (BFI/Bloomsbury, 2016) and recently compiled *Arab Film and Video Manifestos: Forty-Five Years of the Moving Image Amid Revolution* (Palgrave, 2018). Her current project *Supply Chain Cinema, Supply Chain Education* (forthcoming) examines the logistical engineering of offshored film production with particular attention to labour and training.

Jordan Gowanlock is a FRQSC post-doctoral visiting scholar at University of California, Berkeley. He is a graduate of Concordia University's Film and Moving Image Studies PhD program. He studies the history of digital visual effects and animation technology. He is also working on a project on DIY media discourse.

Kim Grinfeder is an award-winning creative technologist, professor, and the founder and director of the Interactive Media Program at the University of Miami. His work explores new media tech across the spectrum including immersive storytelling and interactive narratives. His current research and creative work interests are in producing 360° films, spatial storytelling, and algorithmic driven narratives. He founded VR lab at the University of Miami and his students have won multiple awards.

Lisa Han is a PhD candidate in Film and Media Studies at UC Santa Barbara with an emphasis on technology and society. Her research interests include new media studies, environmental humanities, STS, and critical infrastructure studies. Her dissertation examines the history and culture of deep-sea media technologies and infrastructures, and their role in the material and semiotic remaking of the seafloor. This includes examining sonar-based imaging, sensing, and sampling used for extractive industries, oceanographic research, and archaeological excavation. Lisa has also published work on fetal ultrasound, the Planned Parenthood video controversies, and internet freedom.

Sydney Hart is an artist and PhD candidate in the Cultural Studies programme at Queen's University, Canada. He obtained an MA in Aesthetics and Art Theory from the Centre for Research in Modern European Philosophy, London UK. His current research investigates infrastructures for transnational mobility, focusing on digital representations of mobility at Canadian airports. His critical writing on art and infrastructure has featured in magazines and journals such as *Espace art actuel*, *C Magazine*, *Esse arts + opinions*, *COMMposite*, and *Scapagoat Journal*.

WhiteFeather Hunter is a multiple award-winning Canadian artist and scholar, as well as an educator, arts administrator, curator and writer. She holds an MFA in Fibres and Material Practices from Concordia University (Montreal, Canada) and is currently a PhD researcher, Australian Government Commonwealth Scholar and University of Western Australia Postgraduate Scholar. She presents her work internationally, most recently at Ars Electronica (AT), transmediale (DE), University of the Arts Helsinki (FI), KIKK Festival (BE), Iceland Academy of the Arts (IS) and various North American cities.

Alix Johnson is a Postdoctoral Fellow in the Department of Sociology and Surveillance Studies Centre at Queen's University. Her current research examines expanding digital networks in Iceland as a lens on questions of sovereignty, identity, and imperial power. Her work has appeared in *American Ethnologist*, *City & Society*, *Culture Machine*, *Imaginations*, and *Allegra Lab*.

Evan Karge is a current graduate student at the Rosenstiel School of Marine and Atmospheric Sciences studying Exploration Science. Coming from an anthropological background, his main focus is on understanding and communicating the cultural and humanistic dimensions of contemporary environmental issues. With a passion for underwater cinematography, he has been focused on utilizing film and media as a tool for environmental conservation.

Léa Le Cudennec is a Master's student in Film Studies at Concordia (Montréal). She previously completed a Master's in political sciences in France (Sciences Po Toulouse, Institut d'Etudes Européennes). Her research focuses on issues of gender and sexuality in contemporary mainstream media, ranging from cinema to YouTube, and is currently exploring their intersections with end-of-the-world narratives.

Peter Lešnik is a Ph.D. Candidate in Italian Studies and Cinema and Media Studies at the University of Pennsylvania. He is currently completing his doctoral dissertation, entitled *An Adaptive Auteur: Michelangelo Antonioni and His Literary Encounters*, which represents the first systematic study of Antonioni's work as an adapter of preexisting literary texts. He has published articles and book chapters on a variety of topics in the fields of Italian Studies and Cinema and Media Studies, both in Italian and English language.

Marco Meneghin is a PhD student at the Mel Hoppenheim School of Cinema in Concordia University. He has a background in Latin American Studies (literature) and holds a MA in Film and moving Image studies from University College London (UCL). His research deals with the theorization of re-enactment in documentary filmmaking.

Liz Miller is a documentary maker and professor interested in new approaches to community collaborations and documentary as a way to connect personal stories to larger social concerns. Liz is a Professor in Communications Studies at Concordia University in Montreal and has partnered with international organizations including Witness (USA), UNESCO and the International Association of Women in Radio and Television. Her films on timely issues such as water privatization, refugee rights, gender & environmental justice have won international awards, been integrated into educational curricula and influenced decision makers. She is the co-author of *Going Public: The Art of Participatory Practice* (2017).

Tyler Morgenstern is currently a PhD student in Film and Media Studies. His research is concerned with the visual and discursive organization (and governance) of racial and Indigenous difference in settler-colonial states, and explores how particular representational forms – especially documentary and archival media texts – operate in tandem with colonial legal orders to uphold racialized distributions of power. As well, his work considers how racialized and Indigenous populations answer (or resist, or refuse to answer) these formations through experimental media and performance practices, artistic interventions, and grassroots political organizing. Tyler holds a BA in Communication from Simon Fraser University (Vancouver) and a MA in Media Studies from Concordia University (Montreal), where he was a fellow of both the Feminist Media Studio and the Media History Research Centre. Currently, he is a doctoral fellow of the Social Sciences and Humanities Research Council of Canada and a fellow of the Graduate Center for Literary Research at UCSB.

Matthias Mushinski is a PhD student in Film and Moving Image Studies at Concordia University. He completed his MA in Film Studies at Columbia University and his master's thesis was published in *Framework: The Journal of Cinema and Media* in 2017. His research explores the critical reception of free jazz musicians such as Don Cherry, Archie Shepp and the Art Ensemble of Chicago in Paris during the late 1960s and the unrecognized influence of Amiri Baraka on the foundations of political film theory. He hosts a monthly free jazz radio show titled “Out from Outside” on n10.as in Montréal.

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Weixian Pan is a PhD candidate in Film and Moving Image Studies at Concordia University, Montreal. Her work investigates the critical intersection of global media and environments, particularly from the perspective of China and the Global South. Her dissertation *China Southern: Digital Environments as Geopolitical Contact Zones* examines how digital media shapes the materiality and political imaginary of land, sea, and air. Her next project will focus on racial and gender formations in streaming practices and live data in Asia. Her writing appears in journals such as *Asiascapes: Digital Asia*, *Culture Machine*, and *Synoptique*. She is also the lead coordinator in the Global Emergent Media Lab, and collaborates in several research initiatives including Life-Streaming Research Group and Digital Ethnography Workshops.

Miguel Penabella is a MA/PhD student in Film and Media Studies at the University of California, Santa Barbara. His research deploys the specter as a theoretical framework for examining historical revisionism and cinema in the Philippines. He is also interested in theorizations of cinematic temporality with regards to national identity, memory, spectatorship, and slowness, focusing specifically on Southeast Asian filmmakers. He is a member of the *Media Fields* editorial collective.

Lola Rémy is a doctoral student in Film and Moving Image Studies at Concordia University, Montreal. Her thesis, *The “Universal Language of Images”: Decolonizing Post-War Experimental Cinema*, under the direction of Professor Ca-

therine Russell, investigates and contextualizes the formation of a post-war universalist discourse as expressed in experimental film practices of assemblage. She offers a decolonizing perspective on the appropriation of Indigenous artefacts and imagery, at the core of this discourse. Her work has been published in *NECSUS European Journal of Media Studies*.

Shirley Roburn researches the public storytelling strategies used by indigenous communities and their civil society allies in order to reframe controversies over energy infrastructure development in terms of issues of land and water, food, and cultural sovereignty. Her work to date has focused on campaigns related to the Arctic Refuge and to proposed pipelines, ports, and hydro projects in northern and western Canada, and has appeared in peer reviewed journals including the *International Journal of Communication* and the *Canadian Journal of Communication*. Her active research areas include indigenous communications and legal orders; environmental justice and environmental humanities; and sound studies. She is an Assistant Professor of Communication Studies at York University in Toronto.

Solveig Suess is a filmmaker and designer who works primarily between Berlin and Beijing. However, her practice addresses weather-stricken geographies where ecological shifts collide with infrastructures of migration, trade and optics. A graduate of the Centre for Research Architecture, Goldsmiths and Strelka Institute, Moscow, she is currently working on the documentary series called 'Geocinema' under the Digital Earth Fellowship. She is also designing with User Group, a cooperative developing open source software for climate change adaptation and environmental engagement. Recent work has been shown at the International Film Festival Rotterdam, Images Festival Toronto, Tabakalera Centre for Contemporary Culture, the Istanbul Design Biennial, along with talks given at the ICA, Sonic Acts, Transmediale.

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**THANKS TO
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