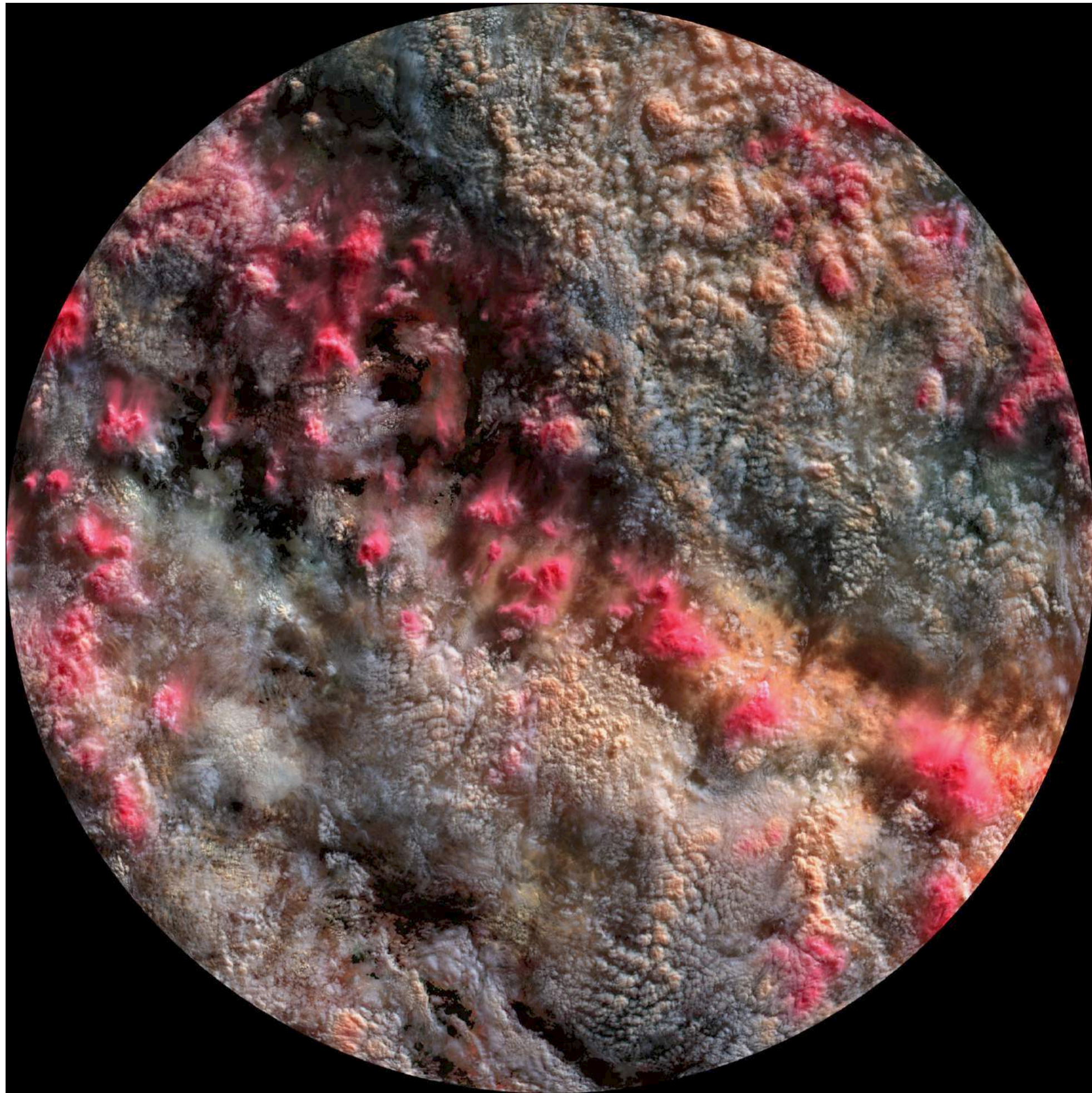




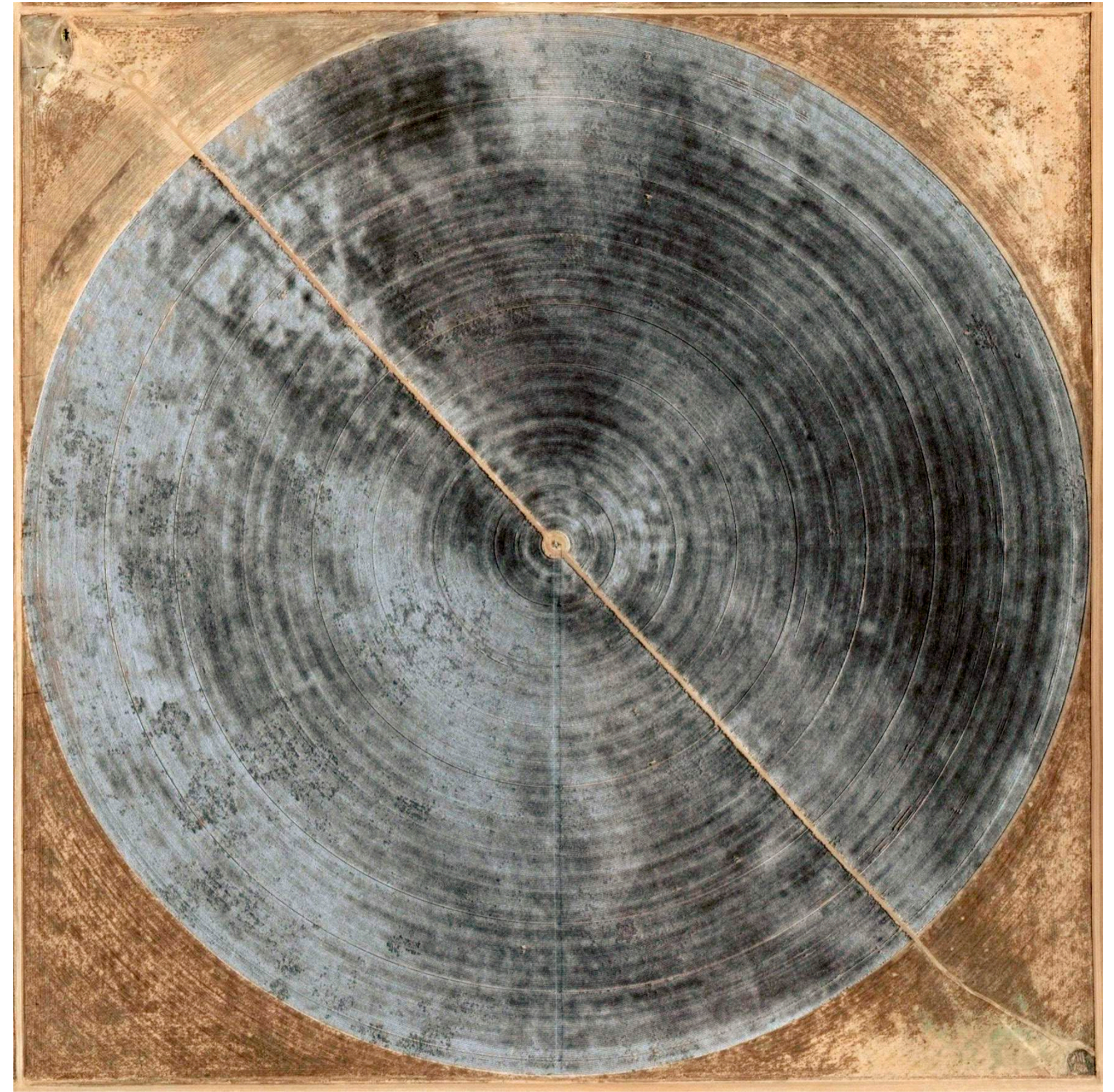
WRITING WITH LIGHT

PHOTOGRAPHY - ETHNOGRAPHY - DESIGN

November 2023 - Issue no.2



Still image from "Path 99", 2021. Grayson Cooke & Dugal McKinnon



Gerco de Ruijter, Cropped#04 (2015)



Writing with Light Editorial Collective

Craig Campbell, Vivian Choi,
Lee Douglas, Alejandro M. Flores Aguilar,
Arjun Shankar, Mark R. Westmoreland

Lead Editors for Issue no. 2: Craig Campbell and Mark R. Westmoreland
Layout & Design: Craig Campbell with the WLL collective



Published in collaboration with ICER Press. © 2023.

The Institute for Community Engaged Research (ICER) Press strives to support and promote the publication of open access scholarship focussed on community-engaged research that illustrates a commitment to social justice through the following guiding principles. The ICER Press mission centres around promoting cultural expression, fostering collaboration, and creating space for social change through innovative, emerging modalities. We recognize that ICER Press is physically located on the University of British Columbia on the Okanagan Campus and that our work exists in respect to and in relation with the unceded and ancestral Syilx territory upon which we carry out our work. While the work of ICER Press begins here in the Okanagan Valley, it expands internationally to offer publishing opportunities for those interested in community-engaged research.

Director of ICER Press: Fiona P. McDonald, PhD.



Maquette at the National Border Patrol Museum, El Paso, Texas, 2023. Craig Campbell

This second issue of the *Writing with Light Magazine* continues our exploration of a single theme through the shared fascinations and frustrations of photography, ethnography, and design. **The View From Above** began in 2018 at a workshop funded by the Wenner Gren Foundation, held in Austin, Texas. At that time collective member, Mark R. Westmoreland presented work that he and a Ghanaian collaborator, Nii Obodai, had undertaken with kite aerial photography. Mark spoke eloquently about the project and demonstrated a savvy approach to the ways in which the kite/camera assemblage broke conventions of photographic framing. Returning to those themes in this issue, we reached out to the anthropologist Alexandrine Boudreault-Fournier, who had just published her 2021 book, *Aerial Imagination in Cuba: Stories from Above the Rooftops*. Alexandrine offered us our second photo essay – a collaboration with Cuban poet Demián Rabileiro.

We began with the idea of focusing on landscape photography for our second issue. Over time we shifted toward aerial photography and the captivating set of relations and concepts animated by the so-called 'vertical gaze.' Our theme is still interested in landscapes and how the horizon line may or may not come into that equation, but by shifting to 'the view from above' we've tried to open up a space—materially and figuratively—to think more about the limits and politics of verticality and the associated ways in which perspectives and relations can be assembled and reassembled through the still image.

The two longer photo essays in this issue are complemented by an extended section of the magazine that we've dubbed Dynamic Range. It brings together a set of creative and critical works that offer variations on the View from Above; experimenting with the forms a photo essay might take, these interventions activate the zones where sequence, design, and analysis intersect. The spreads provide an introduction to the work of various photographers, anthropologists, and artists. Rather than aiming for exhaustive coverage, these distinct viewpoints share fascination with the undisciplined representational potential of aerial images.

The map insert at the center of the issue constitutes its own section. The affordance of an unstapled magazine inspired us to create what we have playfully referred to as our 'centerfold.' The folding in this case does not fold out but rather features a landscape that folds inwards and onto itself. One side of the centerfold is a hand drawn map by members of the Institute of Cartopology. The other side features instructions to turn the centerfold into a single-sheet zine by Mark R. Westmoreland. This intervention—at once graphic and material—embodies the very spirit of *Writing with Light Magazine*, where we celebrate experimentations in form and design that make it possible to re-imagine and re-invent the photo essay at a time when we need more spaces for critical, innovative image-driven scholarship that allows us to think about what it is that images do in a changing world.



THE VIEW FROM ABOVE

1. **Introduction: The View From Above**
3. **The Poet and the Sky: Cuban Aerial Imagination in Time of High Pressure**
Photos by Demián Rabileiro. Essay by Alexandrine Boudreault-Fournier
11. **Herdade da Silveirona**
Rui Gomes Coelho
13. **Street View dwelling from above, 16mm film, and the labor of public urban space**
Toma Peiu
15. **Terra Ex Machina**
Hagit Keysar & Ariel Caine
17. **Drawing the Drone Archive**
Katherine Chandler & Hillary Mushkin
19. **Wide and Close, Above and Below: Visualizing the African City**
Filip De Boeck
21. **Broken Ground: Expanding Landscapes**
Mark R. Westmoreland with Nii Obodai

INSERT>>

Look Up: Correctionville
Mark R. Westmoreland

To read this map is to make this map
Marlies Vermeulen, Suzanne Dekker and Remy Kroese of the Institute of Cartopology

31. **Zooming in, while Zooming out**
Gerco de Ruijter
33. **Witnessing Change: A Repeat Photography Project in the Canadian Rockies**
Sarah Jacobs & Eric Higgs
35. **Diorama Map Beppu**
Sohei Nishino
37. **The Vertical View**
Nathaniel White-Steele
39. **Entanglements of smoke and pixels**
Suzanne Schaaf
41. **Blind Spots in the Orbital Sensorium**
Grayson Cooke
43. **Sensing from above via transitional concepts (Aquifer, Porosities, Image)**
Andrea Ballesterio

Ni siquiera el cielo





“Te dije que era a la derecha” (I told you it was on the right), 2022.

The Poet and the Sky

Cuban Aerial Imagination in Time of High Pressure

Photos by Demián Rabileiro
 Essay by Alexandrine Boudreault-Fournier

Aerial spaces are commonly perceived as being void of materiality, an empty territory in which humans, objects and other beings seem to move and float without friction. Yet the atmosphere, the air that enters our lungs, is full of particles, dust, microbes, and (in)visible bodies. The sky “is made by history and thus it is changeable,” suggests elemental media theorist John Durham Peters.¹ The sky is political; it can be heavy and oppressive. It can also be infused with nostalgia and poetry. It is with this ambiguity in mind –the sky as a seemingly neutral and abstract medium, but one that offers a space for interpretation and criticism –that Demián Rabileiro points his camera towards the Cuban sky.

Demián is first and foremost a Cuban poet, filmmaker, thinker, a free spirit, and he is also a lawyer, and the director of the Image and Sound Museum located in what used to be one of Santiago de Cuba’s most luxurious neighborhoods. I am a white French-Canadian woman, an anthropologist who has been working in Eastern Cuba for the last 23 years. Demián and I have known each other for more than 10 years; we connected thanks to our common interest in Cuba’s youth, popular culture, filmmaking and the arts. Demián’s recent series of photos inspired by his skyward gaze and posted on social media moved me, not only because they created an aerial imagination² of Cuba’s current economic and humanitarian crisis, but because they offered a sarcastic commentary about Cubans’ everyday life while facing the pressure of a decaying system.

Cuba is currently undergoing the worst economic crisis of its contemporary history, worse than the Special Period, a severe economic crisis caused by the collapse of the Soviet Union at the beginning of the 1990s and remembered as a period of extreme scarcity. The COVID-19 pandemic, the drop in hard currency, and U.S.-Cuba politics since the Trump era have contributed to the degradation of Cuba’s economy. Many generations of Cubans have had to struggle (*luchar*) with and learn how to resolve (*resolver*), and invent (*inventar*) ways to cope with the shortage of products and information, among other things. Demián’s series of photos inspired by the aerial space above the city of Santiago de Cuba echo this current moment of struggle.

Through various conversations at the Image and Sound Museum and on WhatsApp during the years 2022-2023, we discussed a selection of his aerial snapshots. This photo essay is based on those conversations as well as on my own research about the current Cuban crisis and the notion of pressure. Elsewhere, I build on the analogy of air, sound and blood pressure to reflect on how Cubans strive to develop coping mechanisms to face systemic tensions.³

Demián spontaneously engages with the movement and features of the sky, as well as the atmosphere it creates while he walks, spends time with his daughter at the park or decompresses in front of his house during one of Cuba’s many blackouts. He appreciates being able to move around and take his phone out of his pocket when something catches his eye. His photos are about capturing the atmosphere of the moment. Photography became a coping mechanism that helped him deal with the exhausting (*agotadora*) pressure of life during the period spanning 2021 and 2022 as he pointed his iPhone 6 camera towards the sky to create visual-poetic commentaries about the current Cuban situation. They have become a creative outlet that allow him to release his poetic nature. “Photos are secondary to the title I give them,” Demián told me. This makes sense, as he is a poet first. In giving a photo a title, Demián transforms a geometric abstraction into a call for alternative futures. Where can we escape to, if the sky is also a trap?

The sky is provocative: it pushes Demián to reflect on the ideal of freedom symbolized by the unlimited and borderless sky in a context where the sentiment of being trapped, limited and crushed by the pressures of the Cuban system has a real effect on people’s bodies and lives. “Not even the sky” illustrates how nothing is free of political presence, of the control over Cubans’ lives and bodies. From the smallest quotidian detail, like young boys having to cut their hair to be admitted to school, to the mandatory military service imposed upon young adult men, these forms of oppression, Demián told me, are the result of a system that is patriarchal, *machista*, and violent. “Oppression is experienced in the flesh” he added (“*Es algo que uno sufre en carne propia*”).

“I told you it was on the right”: The image is so uncluttered, with no obstacles, no obtrusive clouds in the background. The composition of the photo is clean. Demián had no choice but to capture this section of rooftop from this particular standpoint. Had he taken it from the other side, the piece of wood would have faced the sun, overexposing the shot. Demián had to take the photo with the wooden structure pointing right. “The left is freaking useless,” (“*no sirve pa’l carro*”) Demián joked. The left and the right are imbued with values, of what is good and fair. The right means both the United States and the enemy, according to Cuban revolutionary ideology. But it also signifies a way out, a future, hope and new opportunities ahead, he explained. Yet, it becomes confusing when one finds oneself in the middle of this symbolic highway. Demián’s approach is playful: “I told you it was on the right! And you turned left! Dammit! Look where it got us now! [Laughing].”

"Al futuro" (To the future), 2022.



The ETECSA antenna, belonging to Cuba's only telecommunications company reminds Demián of a rocket launcher. It is a typical Soviet icon of superiority, socialism, the "We will win!" type of discourse, a utopia which causes him to think about his own childhood. "Ever since we were kids," Demián explained, "we were told that the future is a form of futuristic socialism." This photo is "To the future," the future that never was. "I spent my life expecting this utopian future, an ideal that was sold to us. For how long will I have to wait for this future?" The antenna, situated in the left side of the photo, leaves a lot of space for the future. Yet the feeling of having been betrayed runs deep.

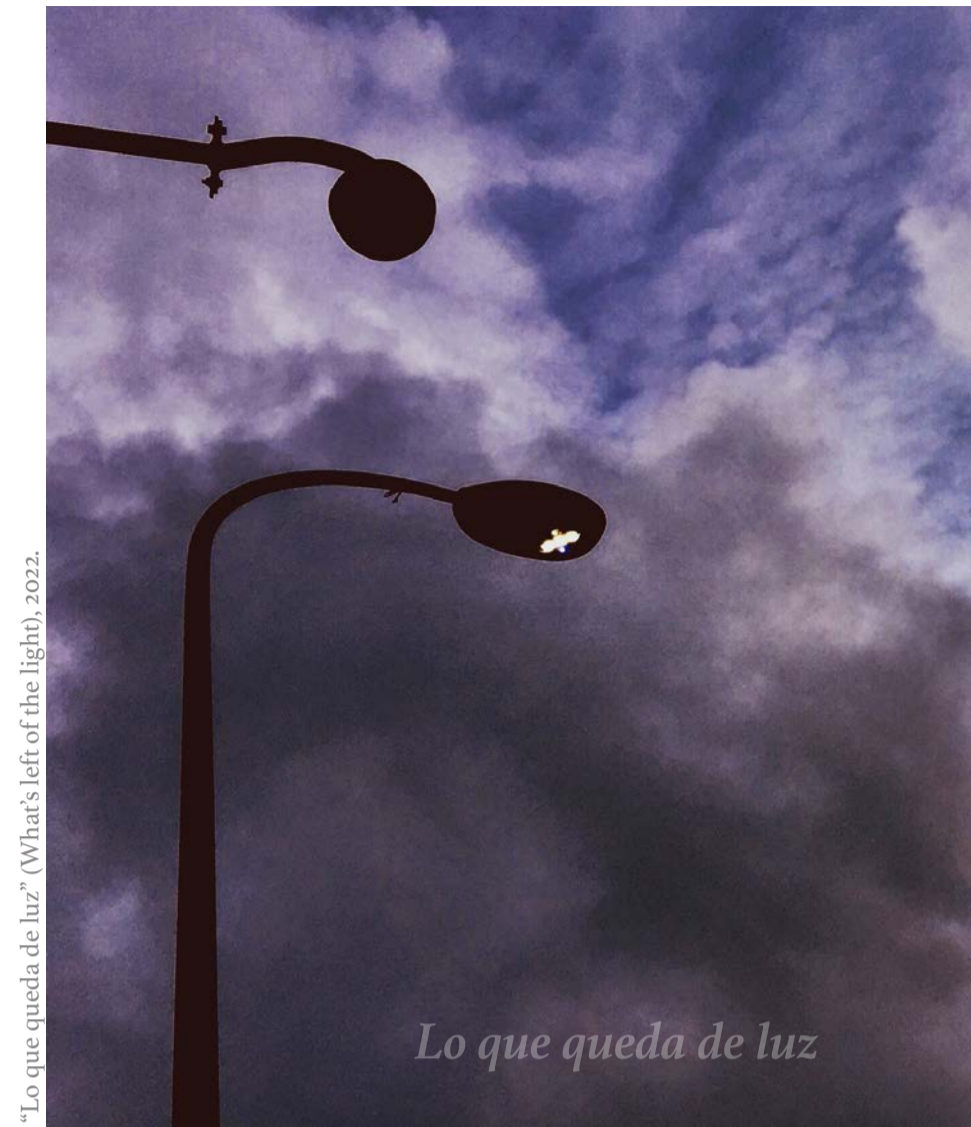
During one of our WhatsApp meetings, on October 6, 2022, a huge electric storm interrupted our conversation. Despite the poor connection, I could hear the rain, the wind and loud bangs. "Are you alright?" I asked him. "We just lost power. We will talk another day. Abrazo."

Cubans continuously face multiple blackouts due to outdated electricity-generating plants and fuel shortages. Daily blackouts of three to four hours in Santiago de Cuba in May 2022 increased to more than 10 to 12 hours per day at the end of the same summer. In concrete terms, this means (among other things) that Cubans do not sleep well because they cannot use fans and/or air conditioners to alleviate the extreme summer heat. In addition, the long blackouts mean they cannot preserve food, bank transactions and purchases are constantly disrupted, and accessing the Internet at home is unreliable. Blackouts add to an already constraining reality where food is difficult to access and extremely expensive.

"No me hablen que no escucho" (Don't speak to me, I'm not listening), 2022.



"Don't speak to me, I'm not listening" goes beyond the edifices and rooftops overlooking a local café where Demián was sitting. The shapes can be interpreted as a boomerang or a road. It doesn't matter. What matters is the "weight of the moment," caused by an increased context of polarization and what is known today as the "largest mass emigration in Cuba's history."⁴ A report published by the Center for Democracy in the Americas states that according to data collected by U.S. Customs and Border Protection agents, the number of Cubans trying to reach the U.S. has, in just the first seven months of 2022 (January to July), surpassed the two largest waves of Cuban migration to the U.S.; the 1980 Mariel boatlift and the 1994 Balsero crisis, a hemorrhage that will take years to resolve.⁵ Numbers are alarming; they indicate that leaving one's home is the only viable solution for many Cubans in spite of the dangers associated with the journey and the uncertainty of life ahead. During the summer of 2023, leaving Cuba was the main topic of conversation among Cubans. As it does for many Cubans, the current migration crisis affects Demián personally. While he was sitting in that local café, he looked up at the sky and this geometric abstraction meant: "Don't speak to me, what I need is peace."



“Lo que queda de luz” (What’s left of the light), 2022.



“Todavía queda luz” (There is still light), Series Documenta Santiago 2022.



“De lejos parecen moscas... (sentido cósmico)” From far away, they look like flies (cosmic sense), 2022.

It was very early in the morning when Demián captured “What’s left of the light.” As soon as we looked at this photo, Demián told me: “There are two ways to view a glass of water: as half-empty or half-full, and this photo is the half-empty version of the story.” There is a certain time of day when streetlamps, which are light sensitive, shift from on to off. This streetlamp, which was probably deficient, was stuck in the interstitial space between on and off. The light bulb was only half functioning. “I had just survived another night without electricity, and was feeling empty that morning. When I saw this light bulb, I spontaneously came up with a meaning,” Demián told me. “With poetry,” he added, it’s not just about being pessimistic or optimistic, I can amplify the polysemy of the work I do. I create on the spot, I theorize later. At this moment, the glass was half empty.” When I shared with Demián that I could see a white bird in the streetlamp on the right, he answered, “I did not see this. You saw this. And it’s really nice in this context, a suspended bird.” There might still be light in the end... “There is still light” is the glass half-full version of the story. It shows the slow invasion of the dark when night falls, a time when light is still there, still warm and comforting, yet changing under the invasion of darkness.

The economic crisis does not affect all Cubans the same way: women, marginalized, and elderly people are certainly more impacted by systemic pressure, and while they might have effective coping strategies to face the tensions, they remain more affected, and are more vulnerable to suffering from stress, anxiety, and hypertension, and as a consequence, tend to experience more breakdowns. In “Housewife,” the pressure is about to explode; it’s on fire, it’s red and hot. It looks like a huge pressure cooker, Demián told me—one of the main ways Cubans cook meat and beans.

The clouds also resemble the face of someone looking up, trying to escape the pressure. In the Cuban context, the responsibility of providing enough food to feed their children weighs heavily on women’s shoulders more so than on the men’s, as the figure of the *machista* prevails in heterosexual family relations. “The Cuban crisis is extremely hard for mothers,” Demián commented, taking a long pause.

Through his poetry and photography of the sky, Demián constructs his own critical discourse. He often contrasts the teachings of a system—the brainwashing or “propaganda” as he would say in Spanish—to alternative forms of thinking. “They say it’s the sky, but I know it’s hell” is another example. Cubans are told the story of Hatuey, the first Cuban rebel, a national hero. According to the legend, Hatuey, a Taíno Cacique (chief), paddled from Hispanola to Cuba in his canoe with 300 to 400 of his people to warn the Indigenous people of Cuba that Spanish invaders were coming. He fought against the Spaniards but was captured and burned in 1511. Before Hatuey died, a priest showed him a cross and asked him to accept Jesus to ensure his passage to heaven; otherwise, he would go to hell. Hatuey asked the priest if there were many Spaniards in heaven, to which the priest replied in the affirmative. Hatuey said that in this case he would prefer going to hell. Hatuey remains an important symbol of rebellion against colonialism and oppression for Cubans and the revolutionary government. “This is the cross of Hatuey,” Demián told me. “My interpretation of that moment is built on my past, my knowledge, and the teachings I have received throughout my life. When I saw that electric pole, I thought about Hatuey” he added. The title given to this photo also suggests that Demián desires to forge his own ideas and distance himself from what is being taught by the dominant voices.



“Ama de casa” (Housewife). Series Documenta Santiago, 2020.



Dicen que es el cielo, yo sé que es el infierno (They say it’s the sky, but I know it’s hell). Series Qué bonito campamento, 2022.

“From afar, they look like flies (cosmic sense)” shows birds flying in the sky. They symbolize freedom. Yet, from far away, they look like flies and the semantic suddenly changes: they are dirty. To better interpret life, Demián told me, one needs to distance oneself. If we are too much into something, too close to a phenomenon, and part of its temporal space (i.e. the clock in the right of the photo), then we lose the meaning of things. Demián strives to shed different light on the common and the banal of everyday life. His shots of the sky, whether they show only parts of the sky, an open sky, or an abstract version thereof, along with the title of each of his photos are what allow him to affirm his own vision. And for the moment, this is his freedom. ❖

Notes

1. Durham Peters, John, 2015, *The Marvelous Clouds: Toward a Philosophy of Elemental Media*. Chicago, The University of Chicago Press, p. 43.
2. Boudreault-Fournier, Alexandrine, 2019, *Aerial Imagination in Cuba: Stories from Above the Rooftop*. London: Routledge.
3. “Under Pressure: Catching the Pulse of a Cuban Crisis.” *Environment and Planning D: Society and Space* 2023, 41(3).
4. Vincent, Mauricio, “The largest mass emigration in Cuba’s history continues”, *El País*, September 14, 2022.
5. “Cuban migration surpasses Mariel and Balsero Crises combined,” *Centre for Democracy in the Americas*, August 16, 2022. Also Vincent (2022).

Herdade da Silveirona

Rui Gomes Coelho



Herdade da Silveirona, Estremoz, 1934. Archive of the National Museum of Archaeology, Lisbon (MNA.APMH-2-II-92 5). Courtesy of António Carvalho, director.

In the summer of 1934, archaeologist Manuel Heleno commissioned an aerial photograph of Herdade da Silveirona, a large property in Alentejo, southern Portugal (Cardoso 2013: 20). The image is significant because it was the first time that an archaeologist employed aerial photography while doing research about a site in the country. In archaeology, the emergence of aerial photography offered the possibility of recognizing buried buildings and other human made features on the landscape, which would be otherwise difficult to observe from the ground. More importantly, these images enabled the production of visual relationships and hierarchies without the commitment of topographers and cartographers. In the vastness of modern Mesopotamia, the military had been noting the immense potential of this medium since the beginning of the century, both for the sake of domination and scientific knowledge (Robic 2013). The bird's eye view of Silveirona invites us to consider a different genealogy of the aerial image—one in which archaeology, or the production of knowledge about the past, entangles the slow emergence of modern extractivism, and renders visibility to the origins of land grabbing and *latifundia*. At Silveirona, Heleno excavated the remains of a Roman *villa* and an early medieval cemetery.

Researchers have not yet agreed on how the *latifundium* took shape in what is now the south of Portugal. It is clear, however, that a new system of land management emerged in the first century of the common era, following perhaps the redistribution of land among Roman settlers. The land became the property of families headed by a patriarch, which was in turn embodied in their residence. The concentration of land ownership never stopped growing, and the sizeable dimension of some late antique *villae* is perhaps the most tangible evidence of this process (Sillières 1995; Lopes 2000). Landowners did not always run the properties. Throughout the Middle Ages, they seem to have leased the

land to farmers who would in turn employ their own tools and procure workers, often enslaved. The system became more prominent after the Portuguese conquest. When this violent process ended, by the mid-thirteenth century, most land had been grabbed by military orders and the nobility. The tangibility of this long-term process configured the imagination of colonial agents, as they experimented with new crops and labour management strategies that would shape plantation extractivism in the Atlantic world. The latest configuration of the *latifundium* in Alentejo, also known as *herdade*, appeared in the early nineteenth century, as ownership was transferred to capitalist-oriented landowners who sought to extract as much profit as they could (Beirante 1995). In addition to large tracts of land, they relied on a large mass of landless peasants whose political imagination had been shaped by centuries of exploitation and humiliation.

It is important to acknowledge the entanglement of archaeology, land ownership and management. Its agents took part in the definition of the nation state's boundaries, past and present, and in the process of crafting a visual imagination of what nationhood consisted of (see Coelho 2022; Hamilakis 2007). Aerial images helped archaeologists articulate what traditionally was a plantation technology—land surveying—with the simultaneous ordering of chronological time and agricultural labour. Such imagery was crucial to facilitate a growing distance between workers in the fields and experts in offices or museums, where objectivity about the past was much easier to claim. This attitude was part of a wider transformative process that started in early modern plantations across the Atlantic, where the promises of unlimited extraction and accumulation configured by slavery were contingent on what Nicholas Mirzoeff (2011: 48-76) called the “oversight”—a combination of “violent enforcement” and “visualized surveillance”.

Manuel Heleno's quest for the past was shaped by a visual complex that afforded him the chance to shape the boundaries of the knowable and the controllable. Not coincidentally, Heleno was also the director of the National Museum in Lisbon. He benefited from his position to establish good connections with Alentejo's landowners and facilitate the accumulation of collections in his institution. He commissioned a photograph intended to enable the epistemic extractivism of archaeology in Alentejo, validating a system of land management that relied on land grabbing and on the labour of exploited landless peasants that worked in the fields as farmers and excavators.

Fieldwork at Silveirona was executed by a team of seven men who were photographed on site, in a brief pause from work. The image is also part of the museum's archive, just as everything else extracted by Heleno in that summer. They appear prematurely aged, as it was common among rural workers in Alentejo. We know very little about these men but it seems that one of them improvised a quatrain when the excavation ended. Heleno wrote it down in his notebook: “Farewell Silveirona/ you have your yard swept./ I can't get my mind off it/ even if I want to.” The care for land embedded in these verses contrasts with Heleno's attitude as someone who grabbed words just as he did with the artefacts found at the site. Not surprisingly, occasional visitors from the wider region regarded the excavation with discomfort. Another local poet, Eduardo José Serra, voiced this uneasiness in writing about the excavation of human remains at Silveirona, or the lack of acknowledgement of the site's discoverer, a tenant farmer (Gago et al. 2013: 231-232). We can understand the suspicion of Alentejo's communities towards archaeological extractivism as part of a wider struggle for land and dignity. The land as seen from above, without people, mirrors a past that does not belong to anyone but to the archaeologist who claimed it first. Eyal Weizman (2018: 274) has



Newly planted olive grove with the ruins of the Roman villa of Pisões in the foreground. Beja, 2017. Vast expanses of Alentejo's centuries-old *latifundia* are now being reconfigured by agribusiness, destroying many archaeological sites. Courtesy of Miguel Serra.

suggested to those studying the colonial entanglements of aerial imagery that we must consider “the technology and politics that placed the camera up in the air in the first place.” The bird's view of Silveirona was first imagined by a man concerned with the ordering of time and labour routines, committed to expand the vast collections of a national museum under a new fascist regime. Yet, the contours of this image started appearing much before. It was the Romans who first turned the landscape into *latifundia* similar to what we see today in Alentejo. The material configuration they have put forward—large agricultural properties dependent on unfree labour and headed by a patriarch in his villa—seems to have outlasted the empire. It followed the Portuguese in plantations across the ocean, where they continue to prosper. But here, too, the plantation continues to be reinvented. Alentejo is now a new agricultural frontier in which Roman ruins get to be sieged and crumbled by the machinery that prepares the fields for olive groves (see Dias 2017). The precariousness of its workers' lives, mostly immigrants, make the international headlines (Sousa 2020).

The full perversity of capitalist extractivism is best revealed in the contradictions that Alentejo's archaeologists are confronted with in their everyday lives. The scale of the threats posed by agricultural works is far beyond anything that Heleno could have imagined in his time. Archaeologists, too, are very different. Torn between a disciplinary framework shaped by epistemic extractivism and a commitment to care for the land and their own communities, archaeologists are now forced to photograph a fast-changing landscape and to be hopelessly trapped in the oversight context. The logics of extraction continue to thrive, and it seems that there is very little left for us to do but to squeeze the shutter button to document the damage, grounded in a routine set in motion by the old plantation. ❖

References Cited

- Beirante, Maria Ângela. 1995. La “herdade” alentejana au Moyen Age. In *Du latifundium au latifondo: Un héritage de Rome, une création médiévale ou moderne?* Diffusion de Boccard, pp. 301-307.
- Cardoso, João Luís. 2013. O Professor de Arqueologia e de Pré-História (1923-1964). In Cardoso, João Luís (ed), Manuel Heleno, pioneiro do ensino e da investigação arqueológica em Portugal (1923-1963). Museu Nacional de Arqueologia, pp. 17-28.
- Coelho, Rui Gomes. 2022. Heritage and the visual ecology of the Plantationocene. In Bangstad, Torgeir Rinke and Þóra Pétursdóttir (eds) *Heritage Ecologies*. Routledge, pp. 350-368.
- Dias, Carlos. 2017. Ponte romana e sítios arqueológicos destruídos para plantar amendoal. Público, October 9th.
- Gago, Alice Borges, Carla Martinho and Luís Raposo. 2013. Manuel Heleno: fotobiografia. Museu Nacional de Arqueologia.
- Hamilakis, Yannis. 2007. *The Nation and Its Ruins: Antiquity, Archaeology and National Imagination in Greece*. Oxford University Press.
- Lopes, Maria da Conceição. 2000. *A Cidade Romana de Beja*. PhD thesis, University of Coimbra.
- Mirzoeff, Nicholas. 2011. *The Fight to Look: A Counterhistory of Visuality*. Duke University Press.
- Robic, Marie-Claire. 2013. *From the Sky to the Ground. The Aerial View and the Ideal of the Vue Raisonnée in Geography during the 1920s*. In Dorrain, Mark and Frédéric Poussin (eds), *Seeing from Above. The Aerial View in Visual Culture*. Bloomsbury, pp. 163-187.
- Sillières, Pierre. 1995. *Approche d'un espace rural antique: l'exemple de Vila de Frades em Lusitania méridionale. In Du latifundium au latifondo: Un héritage de Rome, une création médiévale ou moderne?* Diffusion de Boccard, pp. 21-29. www.publico.pt/2017/10/09/local/noticia/beja-ponte-romana-e-sitos-arqueologicos-foram-destruidos-para-plantar-amendoal-1787981.
- Sousa, Ana Naomi de. 2020. In Portugal, Asian workers pick fruit and live precariously. Al Jazeera, November 23rd. <https://www.aljazeera.com/features/2020/11/23/south-asian-workers-portugal>
- Weizman, Eyal. 2018. *Forensic architecture: violence at the threshold of detectability*. Zone Books.

Street View dwelling from above, 16mm film, and the labor of public urban space

Toma Peiu

From above, movement is slow or frozen. The stuff of life is mysterious, flattened – wounds of extraction, gentrification, displacement captured in stasis. Abstracted, yet specific. Advocacy groups and civil investigators use publicly available aerial material to document human rights violations; urban communities use imagery and maps from Google's database to organize or structure their resistance to political or economic forces; with drones, environmental activists trace the harm being done in places where their access is otherwise denied. Whether they drive a truck across the country or try to find a store across the street, satellites guide people to their destinations, coding their presence in the world in cartographic projection.

In Bensonhurst, a residential neighborhood in South Brooklyn, home to Italian, East Asian, and Central Asian Russian-speaking immigrant communities, Google Earth reveals rows of tree-lined streets of townhouses and apartment buildings, sliced by surface-level subway lines. These lines mark historical expansions of greater New York's transportation system at the turn of the 20th century: the IND Culver Line and BMT West End Line – both, elevated, and the BMT Sea Beach Line – an open cut from Sunset Park to the terminal in Coney Island, where the three lines converge.

The view from above is engrained in the experience of everyday life in Bensonhurst. Elevated trains rumble along to other parts of the city, tracing "lines of desire" to places with which commuters have deep affective, cultural, and economic ties – as distant as Rego Park or Flushing in Queens, or as near as Seagate and Sheepshead Bay. This "view from above" is mobile, flowing, liminal. It is also intimately linked to the transient immigrant experience of the city.

Another high-angle perspective marks the way residents, visitors and surveyors sense the city remotely. Google Earth and its extension, Street View, stitch together freeze frames to construct an operationalized referent, an idealized reality rendered for commerce – a digital environment of semblance.

From a research perspective, how may we repurpose this taxonomic impulse behind Google Street View, Earth, Maps to interrogate place historically? I here use three types of images "from above:" some captured directly from an archive of Google Earth & Street View documentation; others – 16mm B&W hand processed film, on which I have re-recorded images from the same dataset; along with images shot directly on 16mm from higher vantage points available to the city dweller: subway platforms, rooftops, places one may encounter in the everyday. Transferring Street View to 16mm film, and filming 2020s New York on 16mm Kodak film disrupts Google's corporate geoaesthetics; this work aims to de-naturalize image making, slow down recognition and create a critical distance between the viewer and a world they may now see differently.

Scratches and interruptions

"I was 17 when I followed my mother to New York, after she applied for political asylum. From our 7th floor apartment in Tashkent, the four of us moved to a semibasement. I wanted to return every day. Everyone was speaking Russian, our language. Uzbek food was everywhere. It seemed to me that from Uzbekistan we had moved to Uzbekistan! Except there was no time to be young here. No skyscrapers, no yellow cabs. Why had we moved?" Kolya recalls, about his early days in New York. "I never imagined that such a wealthy city could tolerate so much poverty without doing anything about it." aunt Nastia told me, about her first impression moving to Bensonhurst from Kyrgyzstan, at 63. Ilya, who came to Brooklyn on his own as a teenager, in the early 2000s, recalls: "There used to be a street corner where you would go every Sunday if you were looking for work. Black cars would drive by slowly, you would get in and tell them what you could do. Sometimes they would

just drive you away: a construction site, a warehouse, a restaurant, a store, a car shop, a barber shop – if you're lucky. No one wanted to spend too much time on the block. The people felt gloomy. You didn't know who to trust." These types of fractures and discontinuities punctuate every oral history interview that I have recorded with ethnic Koreans from Central Asia who have moved to Brooklyn over the past 20 years.

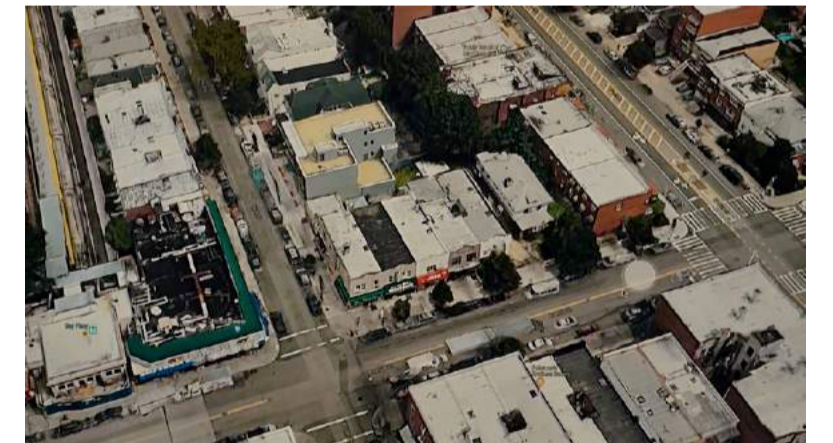
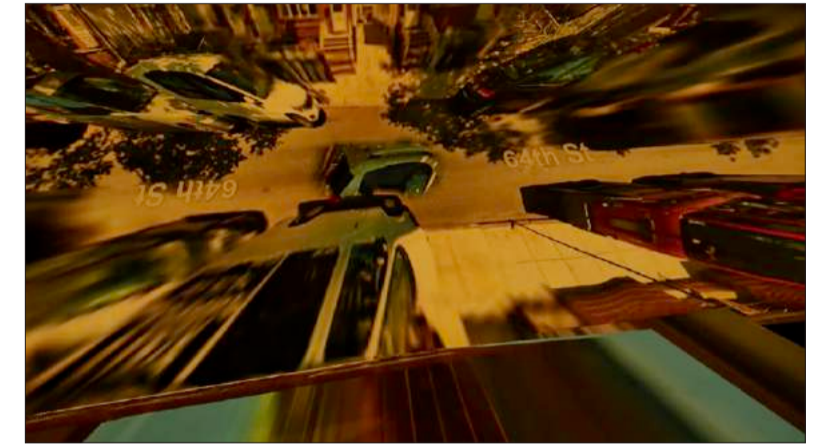
I reshot some of the Google Earth and Street View documentation I have been collecting on black-and-white 16mm film, which I then processed by hand. Through this intimate photochemical process, I see how crystal halides de-compose Street View imagery and the hyper-realistic environment becomes uncanny. Once the mimetic pretense fades away, the indexicality of the image is suspended. Shops, street corners and subway stops are still there, now only as signifiers. New visuality reveals the assemblage behind an image once immanent, opaque.

As the film dried up and I projected it, images came back less perfect, the urban flow at times stilted or interrupted. Certain details were striking, contrasts apparent despite the scratches on the film and the contingencies of my work in the Soviet-made Lomo development tank.

Google Earth and Street View reveal the labor the city relies on, hidden in plain sight: construction; car washes; laundromats; loading; delivery; food truck and sidewalk business; the gendered work of bakery; caregiving; hospitality; babysitting; dog walking. In its concealment of eyes, and a revelation of working hands, backs and legs, Street View becomes a palimpsest that aggregates evidence of structural inequality; one where an individual is not signified through their facial expression or presence – the "mug shot"; but through their socio-economic persona, a knot in a web of relations.

"Objection against science: this world does not deserve to be known! . . .

Whether or not there is a solution to our problems only concerns few people; that feelings really do not have a point of origin, that they don't really lead anywhere, that they are lost onto themselves: this is the unconscious drama that everyone shares, the affective insoluble that all matter suffers from, without giving it second thought."



Poor resolution, freeze-frames, visual gaps, vertical, de-centered and mobile vantage points make the transformation of place palpable, its histories resonant. "This looks like some footage of a Soviet city! You can't tell if it's 2023 or 1985" Denis exclaims. He came to New York recently, as a researcher at a lab in Manhattan. Apartment buildings in Brighton Beach remind him of multi-story housing complexes by the Syr Darya. Celluloid erases differences in the quality and fabric of the image – making affect tangible. Denis' experience of place becomes superimposed on his memory of growing up in post-Soviet Kazakhstan.

A world that deserves to be known

The 20th Century Transylvanian born philosopher E.M. Cioran foregrounded a philosophy of pessimism: the pursuit to fully master the ways of the world is futile because it is grounded in wishful thinking. Scientific knowledge is instrumentalized for control over the

fundamentally irresolvable mystery of difference and incongruity. Cioran felt that such an outcome was neither attainable, nor desirable.

The affective insoluble designates a sensorium that cannot be described, typified, or quantified. People act in the world based on their feelings. Yet, the origin of those feelings remains largely inaccessible. It is both a shared condition and a field of specificity. Feelings are elusive and individual, but their collective consequences shape the world. There is a crack that can't be filled between experience and its knowing through science. Can we repurpose visual observation or surveillance imagery to expose the gaps in our definitions of the world as we know it, so we may then, collectively, and individually, reach a world worth knowing? Sampling images we've taken for granted and juxtaposing the aerial and vertical perspective with oral histories from the ground can make concrete the affective dimension of life in

contested urban places. Scratches, interruptions, gaps puncture access points into an experience that can be productively de-naturalized. A hyper-mediated, image-flooded world can become worth knowing when we slow down and ask ourselves what we've been missing all along. ❖

Notes

1. Cioran, *Syllogismes de l'amertume* [In English, *All Gall is Divided*] – my trans., Ed. Gallimard, 1952, p. 37
2. *ibid.*p.39 – my trans. // In original, "l'insoluble affectif"

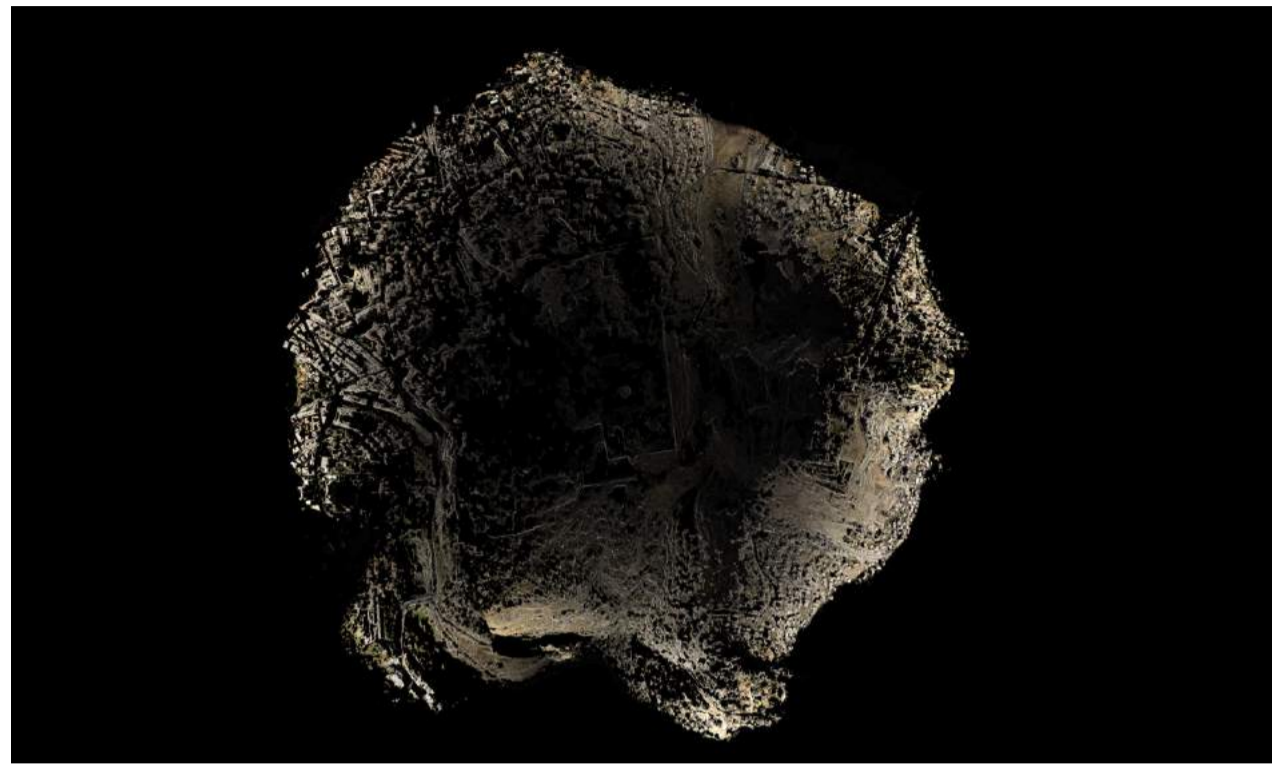
Jerusalem is a city famous for its walls. The walls of the old city and the infamous separation wall are some well-known examples. Yet less known is another invisible wall that encircles the old city and its surroundings. Centred on the Haram al-sharif, Temple Mount, and spanning approximately 3km in diameter, a cylindrical digital barrier known as a "GeoFence" extends from the ground and up into the skies, set to prevent drone flights into or from within the area. This technologically restricted zone follows the geographic coordinates of an already present regulatory No-Fly Zone (NFZ) that has been set and enforced by the Israeli security apparatus for more than two decades.

The geofence is a recent technological layer added to an increasingly dense infrastructural sensor stratigraphy in the city. It spans wide-ranging volumetric technologies, from underground seismic and waterflow sensors; through heat, sound and optical street-level monitoring systems; to an assemblage of remote-sensing aerial and satellite-based geographic information systems. However, developed and exclusively controlled and managed by the Chinese drone manufacturer DJI,¹ this geofencing technology serves as a unique example for an emergent mode of blended sovereignty, between the airspace controlled by Israel and the drone flight regulation controlled by DJI.² Particularly in urban contexts, data infrastructures are becoming increasingly dominant in directing the various layers of everyday life and rapidly shaping technopolitical futures. It can be argued that one of the biggest challenges we face regarding the datafication of cities is the fact that algorithmic infrastructures are opaque and illegible to most of us, therefore very hard to audit and critique. Should we understand these rapid and powerful changes as historical rupture in our understanding of urbanism? Is there space and time for intervention, refusal, and resistance - for "slow urbanism" within the overwhelming acceptance of data-driven smart cities?

This project, Terra Ex Machina, is a prototype and a critique that addresses these questions as they directly pertain to movement and sensing in the aerial domain. It began with an intuitive question, a curiosity to see how the geofence works in real-time and space, how it effects the ability to see from above. It then continued with a movement between on-the-ground actions and data interrogation using 3D model space to explore and possibly suggest, ways of seeing that makes this machine-readable digital barrier public.

Working with the geofence as an instrument of seeing

The first stage of our work was to fly a drone toward the geofence and witness the operation of this digital barrier as it suspends the drone in mid-air. "Crashing" against its perimeter, our drone traversed the threshold of the geofence, its camera lens constantly directed to the epicentre of the restricted zone, the golden dome - Haram al-Sharif. Close to 10000 images taken in sequence during this flight were then processed using structure from motion photogrammetry, the myriad of viewpoints were computationally transcoded into nodal points, triangulated then plotted within virtual three-dimensional space. After weeks of processing, the effect



of this data infrastructure of the geofence on conditions of visibility were made visible through our spatial model. Observing it from above, as an orthophoto, we could clearly see a circular outer rim of dense visibility, fading gradually towards a sparse, voided center. The model turns the geofence into a thing in the world, visible and tangible. In its current iteration we are contrasting the geofence's top-down technology and the way it prescribes the conditions of visibility by adding layers of balloon and kite aerial photography, that subvert its technological and epistemological standing.

Disrupting the Geofence, reclaiming the data gaze

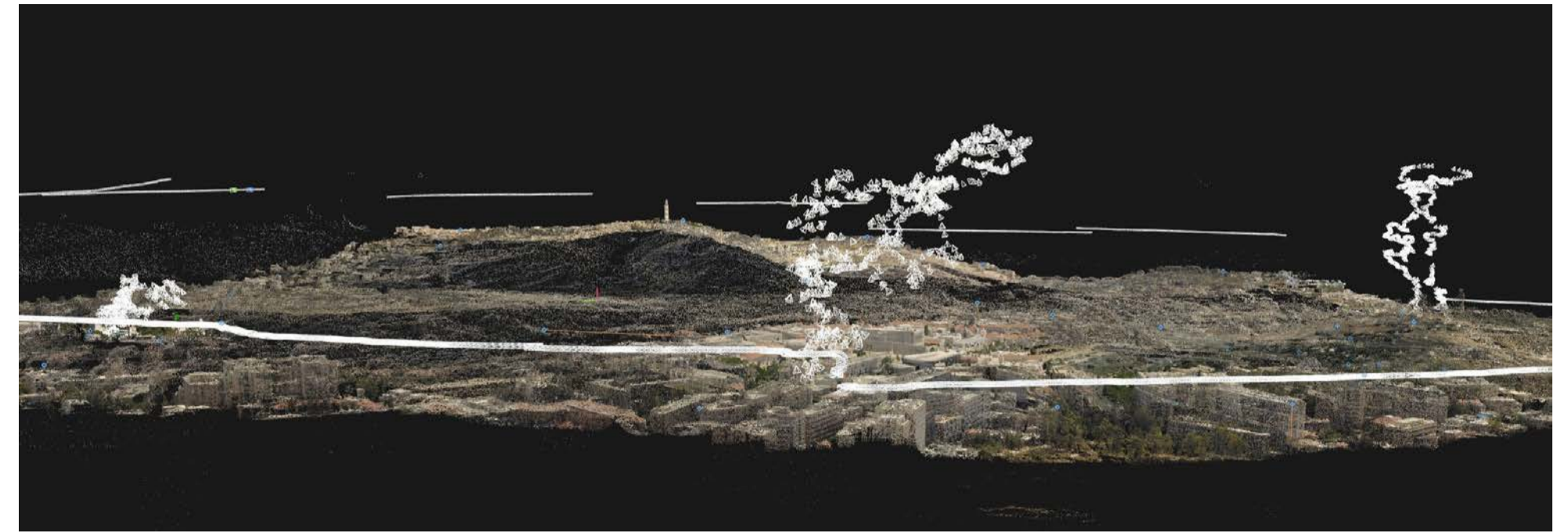
Since the geofence is embedded within drones' GPS system, it both prescribes and enforces a flight restriction that creates a de-facto gradual 'draining' of aerial spatial data from its perimeter towards the centre.³ As such, it is minimizing the multitude of viewpoints that may emerge within this area of protracted conflict at any given time. The point cloud of the no-fly zone exposes a dense visualization of urban space at its rims and sparse, blackened areas of missing data towards its centre. The 3D model is therefore a visualization of the material and epistemic effects of the geofence - it visualizes the geofence as a real-world data infrastructure that changes the urban space by shedding an aerial blackout. The model, however, allows to visualize the real-world effects of this aerial blackout over this part of the city. Indeed, the geofence perimeters encoded into the drone's navigation system can be hacked or even unlocked temporarily pending approval by DJI, yet even



if the fencing is unlocked, flying a drone in Jerusalem is highly restricted and can be risky if done illegally.⁴ But there is no algorithm (yet) that can ban the flight of a camera tethered to a kite or helium balloon.

Between 2011 and 2016 co-author Hagit Keysar has created do-it-yourself aerial photographs with residents, activists, and researchers in Israel/Palestine, using balloons and kites. Each photographic map embeds situated knowledges and techniques that challenge the aerial "gaze from nowhere" - a myth of a technological, disembodied gaze that is free from human interpretation and bias.

We were using open hardware based on a pocket camera that is lifted into the air by a kite, and an open software to stitch these images together into photographic georectified mosaics. This age-old technique of Kite Aerial photography was developed in the 2010's as a tool for civic and community science by the open-source

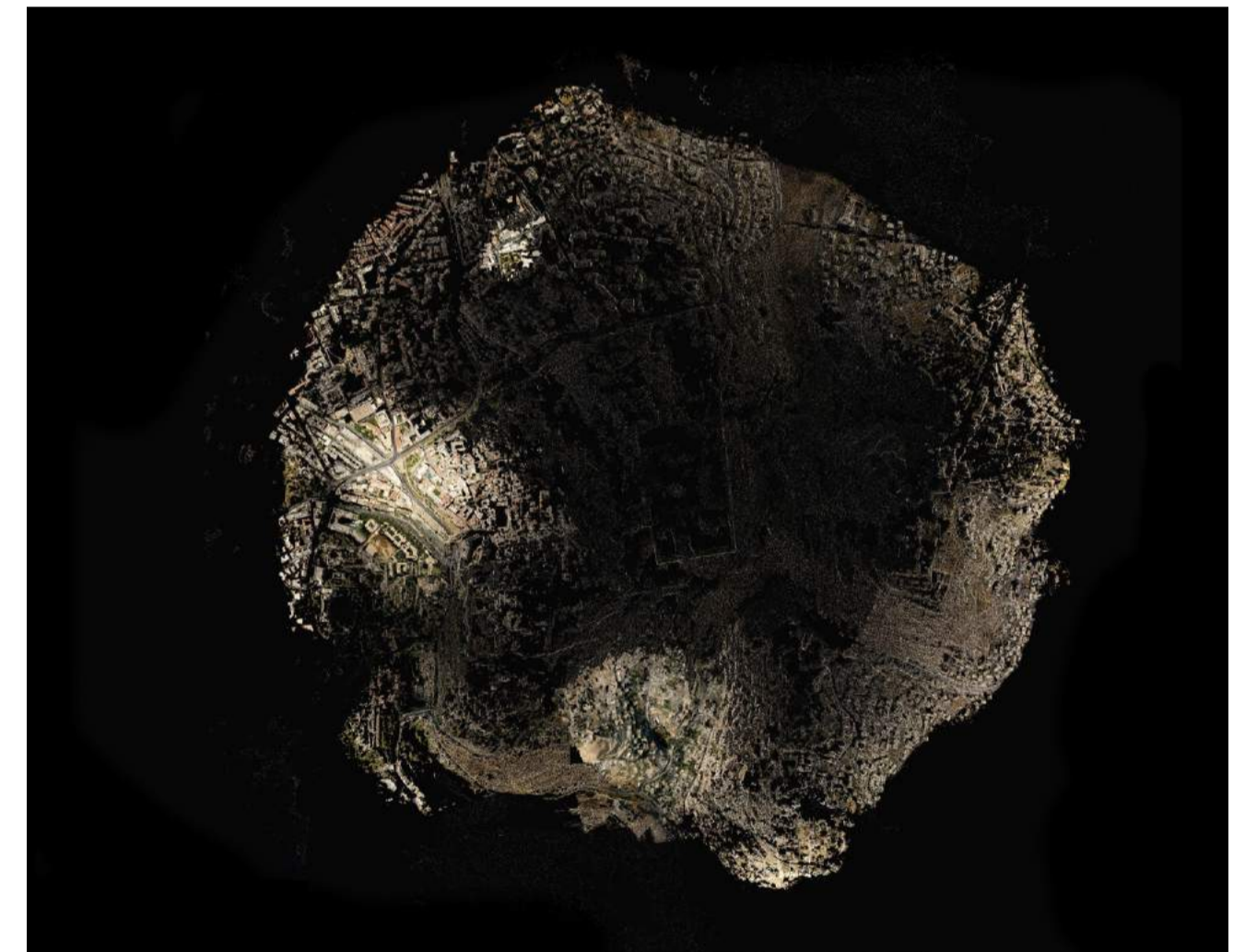


community "Public Lab". It calls for unlearning some of the invisible barriers that inform and construct our ways of seeing, knowing, and living in the world.⁵ Namely, our understanding of expertise, authority and truth, as well as our relations with technological instruments and images. In each kite or balloon flight, hundreds of images are created but only a dozen or so are chosen for stitching a geo-rectified orthophoto. In creating the 3D photographic model, we reused all the images captured in each of these three cases.

Prototyping past the geofence: future-making

Our efforts to make seen an inherently invisible data infrastructure that can only be observed and experienced by a drone system, have opened unexpected opportunities for audit, critique, and intervention. The drone itself turns into an indispensable research device, without which the virtual turnstile of the geofence cannot be detected. It wasn't until we reconstructed the restricted space through photogrammetry that we were able to make this technopolitical restriction an actual thing, a discrete object, rather than distributed and dissociated effects in the world. Terra ex-machina is altered by machines for machines, while translating it to human vision and opening to intervention. We suggest that models - as both 3D virtual objects and experimental environments - can serve as augmented sites for making sense of opaque data infrastructures that increasingly restructure urban space. As a prototype, the model is an experimental data infrastructure in itself - it can function as ground for reimagining and speculating on the potential future meanings of urban data infrastructures.

The concluding image shows how the black hole of missing data "blushes" with highly dense visual data retrieved from cameras tethered to balloons and kites, and tightly connected to people on the ground in different places and times. Drawing on Ursula Le Guin's metaphor of the "carrier bag", we take Terra ex Machina as a "carrier bag" that has the capacity to gather and collect, bring together many things that cannot be reduced into one dominant story. The carrier bag collects, preserves, and maintains the multiplicity of life and experience, its contradictions, and frictions. We see this 3D data infrastructure as an opportunity to collect and gather, rather than restrict and unify. Diversifying the data that constructs this virtual terra-ex-machina with multiple and subversive ways of seeing is an attempt to turn the data-gaze on its head by reaffirming the irreducible and recalcitrant nature of human agency. ❖



Notes

1. Geo-fencing is proprietary technology, originally developed in 2015 to help states monitor, regulate and control the movement of small-scale commercial drones in their sovereign air-space.
2. Keysar, H., 2020. Who owns the sky? Aerial resistance and the state/corporate no-fly zone. *Visual Studies*, 35(5), pp.465-477.
3. DJI's geofence does not affect drones that are not manufactured by DJI, however, the company controls more than 70% of the global drone market and is the main company sold in Israel.
4. One example that demonstrates resistance against this form of spatial control in the old city is a drone flight by an operator who managed to bypass the ban and fly a Palestinian flag tethered to a drone in protest of the violent Flags March on May 30th 2022, "Jerusalem Day", by religious nationalist Israelis. The drone was shot by the Israeli authorities and according to some reports the operator was arrested. <https://www.newarab.com/news/drone-palestinian-flag-flies-over-jerusalem-amid-march>
5. The balloon and kite photography technique was developed by Jeff Warren and the Public Lab's community. (<https://publiclab.org/tag/balloon-mapping>).

Drawing the Drone Archive

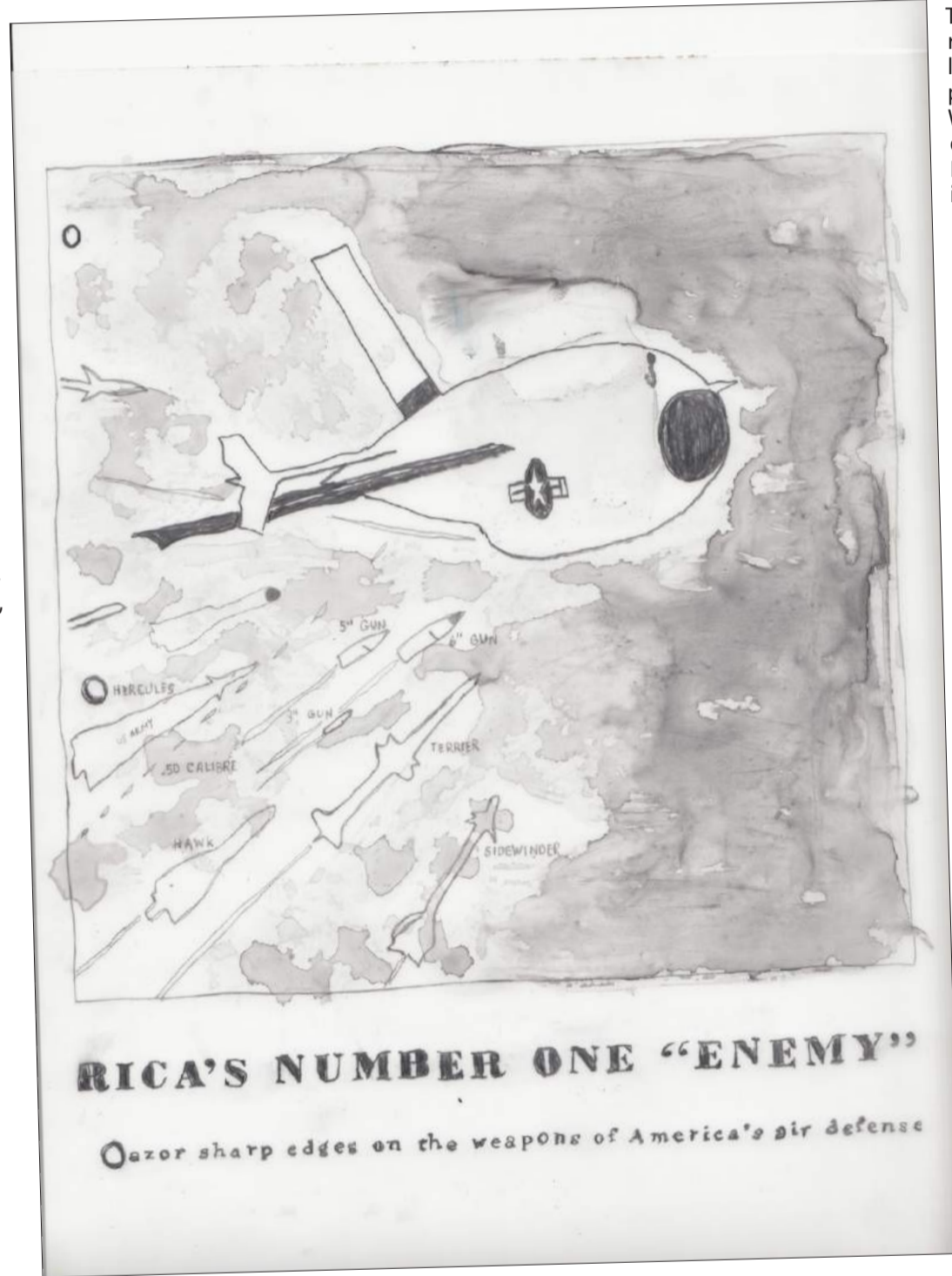
Katherine Chandler & Hillary Mushkin

The Drone Archive started by tracing photocopies of photographs, technical images, promotional material and records of drone flight. By looking closely and remaking these materials by hand, we ask: Who shot the pictures, wrote the texts, authorized the publications of and collected these images (Paglen, 2012; Chandler, 2020)? What violence is shown or hidden? How are these practices concurrent with the deployment of drone technologies? How is the “drone” animated by engineers, industry contractors and military personnel who both shape and respond to broader economic, social and political aims (Fast, 2011; Vertesi, 2015)? And how does the archive authorize and disembody these animations? Drones and archives alike are systems that make vision, knowledge, and power. Our lines, smudges, hand-written notes and errors counteract the apparent neutrality of the archived document (Raad, 1989; Dumas, 2009; Mushkin 2017). The Drone Archive is an attempt to address the emergence of so-called “unmanned” warfare technologies as an outcome of human perspectives and decisions that both shaped and were shaped by social, cultural, political, and economic processes (Galison and Daston, 2007).

There are many possible beginnings to the drone. All of them predate the twenty-first century and are reminders that “new” ways of waging war build on the culture and violence of imperialism and colonialism (Haraway, 1988; Gregory, 2011; Satia, 2014; Kindervater, 2016; Tahir, 2017; Durrani, 2022; Chaar-López, forthcoming). In the Cold War, the American public was trained to be perpetually prepared for attack with the invention and proliferation of the nuclear bomb and aerial surveillance (Edwards, 1996; Krupar, 2013; Masco, 2006, 2014). Before this, in the 18th and 19th centuries, “remote” wars in the Unit-

ed States served to expand the nation through violent takeover of lands formerly held by indigenous people, Mexico and Spain. Today, weaponized drone aircraft are often figured primarily as a vertical occupation (Parks, 2018). Their tendrils of violence extend beyond declared war zones and are tied to sovereign power organized by aerial flight, video imagery and data transmission. Government secrecy purposely obscures the role of the drone pilot and instead, targeted killings are rendered as a mechanized and distant form of warfare mediated by screens and information (Richardson, 2018).

The Drone Archive troubles these assertions, revealing instead the human hand that manipulates the machine and a long history joining aerial power, violence and the everyday (Sontag, 2003, Weizman, 2019). We find the archival traces of drone aircraft at test sites in Southern California, Israel and in New Mexico, at laboratories in Washington, DC and Princeton, and in a multitude of companies that include not only military industry but the Radio Corporation of America, General Electric and Ford (Orr, 2006; Stewart, 2007; Lepselter, 2016). By hand-re-making the archive, we reckon with practices of war and the forms of dehumanization for which the drone stands. ❖

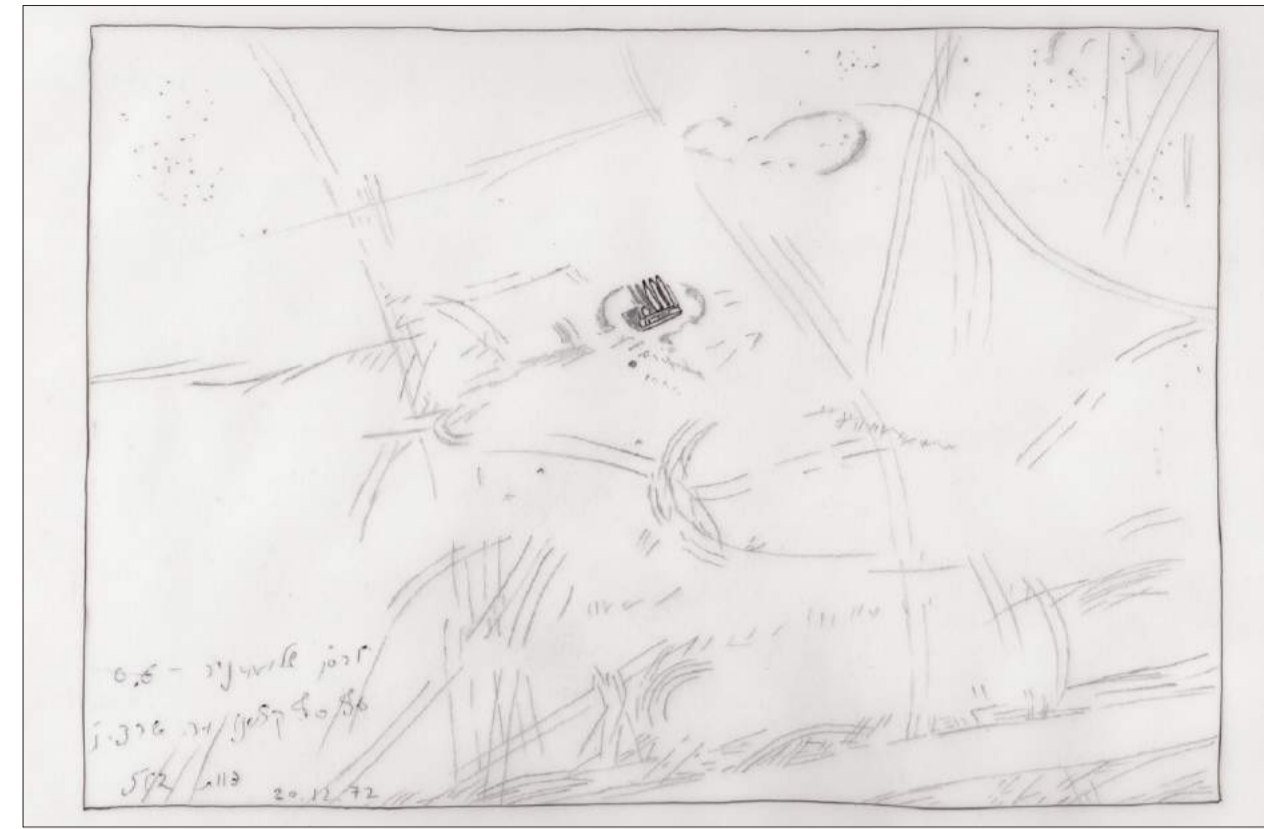


“America’s #1 Enemy,” Firebee target drone propaganda from the National Air and Space Museum Archives, Technical Files on the Firebee, circa 1960. (drawing experiment 1, October 5-15, 2017).¹²³

1 Ryan Aeronautical was the leading producer of jet-powered target drones in America during the 1950s. The BQM-34 Firebee was later acquired by Northrop Grumman and continues to be produced as “the most capable and reliable high-performance aerial target system” (BQM-34 Technical Files). The unmanned aircraft mimicked the speed and flight of jet aircraft to train ground-to-air, sea-to-air and air-to-air defenses. A secret contract was given to the company in 1948 and throughout the United States, the company supplied remotely guided drones to train missile defenses, which were tested in Florida, New Mexico and California and later flown in China and Vietnam.

2 Can a machine be biological, be murdered, have babies, bodily fluids? What happens when a machine gets dirty? What is this one excreting under attack? Sidewinder, terrier, and hawk sound like pets. I think they are coming after her, or riding alongside. She seems less than efficient as her jet streams out in short, shaky strokes, the wing and tail tangled. The heavy graphite muck closes in, though it breaks up as she approaches. Her razor sharpness and the rest of the drama was 3-hole punched out in an office somewhere. The letters’ wiggles and blobs raise questions about the stability of the sharp edges they claim are there. What is an “enemy” in quotes? Is it the messy, unruly mass of liquified and reconstituted graphite broken up by the brush, water, and slippery substrate this whole thing is written upon? Is it the shaky hand that made it? The scribble at the nose is like Snoopy’s, but I know it’s a lot less benign.

3 The Firebee was promoted as an American “enemy” in a series of advertisements that appeared in aeronautical magazines (BQM-34 Technical Files). The propaganda is an impossible image: a mass of weapons apparently all fired at the same time against the Firebee. Yet, the slogan itself is strange, suggesting that the American “enemy” was actually a product of the United States’ military-industrial complex. One perhaps might read this as a kind of advertising Freudian slip. While the Firebee is the “enemy,” it clearly takes center stage in the propaganda. The advertising associates the drone with the space age tropes of the Cold War and the now anachronistic images of the future. It might well be a personal flying machine, tying together war, hobbies and home appliances.



Aerial image from drone of Egyptian surface-to-air-missiles, December 20, 1972. Private collection in Israel. (drawing experiment 2, March 6-11, 2018).⁴⁵⁶⁷

4 This photograph was taken December 20, 1972 from a Firebee drone launched from the Sinai Peninsula, presaging the 1973 Israeli-Arab War. In 1971, the Israeli Defense Forces closed a deal with Teledyne-Ryan, the San Diego based defense firm, to purchase drone aircraft for reconnaissance. Personnel for the newly formed 200th Squadron of the Air Force were sent to San Diego for training (Their mission was top-secret, though their visit was announced while attending a baseball game as guests of the defense company). In 1972, personnel from Teledyne-Ryan traveled to Israel to complete training (Sloan and Wagner, 1992; Ryan Aeronautical Archive). Their visit turned into an operational mission, however, as the reconnaissance drone was deployed from Sinai to find surface-to-air-missiles (SAM) protecting the Suez Canal. This is a picture of the SA-6 in the desert.

5 This image has its own story; they all do. The gist of it is the same as the others: something nefarious is on the ground; a nefarious aircraft takes a picture of it from above; suspicion leads to investigation, that is, information is ordered and collected, including such important facts as this image; the facts are arranged, ordered to make sense; a story is born of the facts, ordered and arranged.

6 The tracks in the image are important. What distinguishes the SA-6 from other anti-aircraft systems is that it is mobile. This also renders the photograph of the system relatively meaningless. The process to develop aerial photographs took several hours, meaning that the mobile unit could be moved before military personnel could look at the reconnaissance images. The engineers who developed contemporary drone aircraft to transmit real-time information through video describe this problem as the one that they aimed to solve. Instead of relying on an aerial platform to take photographs that would need to be collected from the aircraft, developed and sent back to military commanders, the idea was to set up image transmission from the drone to a monitor. Tracking SAM systems in real-time meant that it was not only mobile defense systems that might be monitored, but also vehicles and persons that operated them. Here, we can think about what might come to be called pattern-of-life analyses.

7 The lines are a mess. Tandem wires crisscross across the surface of the plain, bound tightly by a neat edge firmly established in solid black ink. It is not to be crossed: this edge is strict. The wispy pencil lines tickle the edges, lightly tease and test but make no impression on them. Someone wrote a note on top of all this! The gall! It was there for anyone to see, and now there is an intermediary telling us something else, bounding the story with extra-visual information. It’s a crime. The dots across the surface on the upper left and right corners are really trying to speak for themselves, aren’t they? Yes, I know there are some missile shapes screaming for attention smack dab in the center, even going to the extent of proclaiming themselves in that same inflexible adamant black ink. It can’t be denied, they are important. But what of the unspoken-for areas, blank and unclaimed, and the incomplete traces of vehicles who apparently drove all over this place, unbounded by spatial regularity, free to either get wherever they were going with utmost efficiency or make donuts and peel out in the dust.

References Cited

Chandler, Kate. 2020. *Unmanning*. New Brunswick, NJ: Rutgers University Press.

Chaar-López, Iván. 2024. *The Cybernetic Border: Drones, Technology & Intrusion*. Durham, NC: Duke University Press.

Daston, Lorraine and Peter Galison. 2007. *Objectivity*. New York, NY: Zone Books.

Dumas, Marlene. 2009. *Wall Wailing*. Oil on canvas, (180 x 300 cm). Museum of Modern Art, New York, NY.

Durrani, Mariam. 2022. “The Imperial Optic: Mapping the Impact of the Global War on Terror on Higher Education in the US and Pakistan.” *Transforming Anthropology* 30, no. 1: 66-69.

Edwards, Paul N. 1999. *The Closed World*. Boston, MA: The MIT Press.

Fast, Omer, dir. 2011. *5,000 Feet is the Best*. Copenhagen, Denmark: Commonwealth Projects.

Gregory, Derek. 2012. “From a View to a Kill: Drones and Late Modern War.” *Theory, Culture & Society* 28, no. 7-8: 188-215.

Haraway, Donna. 1988. “Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective.” *Feminist Studies* 14, no. 3: 575-599.

Kindervater, Katharine Hall. 2016. “The Emergence of Lethal Surveillance: Watching and Killing in the History of Drone Technology.” *Security Dialogue* 47, no. 3: 223-238.

Lepselter, Susan. 2016. *The Resonance of Unseen Things: Poetics, Power, Captivity, and UFOs in the American Uncanny*. Ann Arbor, MI: University of Michigan Press.

Orr, Jackie. 2006. *Panic Diaries: A Genealogy of Panic Disorder*. Durham, NC: Duke University Press.

Masco, Joseph. 2006. *The Nuclear Borderlands: The Manhattan Project in Post-Cold War New Mexico*. Princeton, NJ: Princeton University Press.

Masco, Joseph. 2014. *The Theater of Operations: National Security Affect from the Cold War to the War on Terror*. Durham, NC: Duke University Press.

Mushkin, Hillary. 2017. *Project Series 51: Incendiary Traces*. Claremont: Pomona College Museum of Art.

Paglen, Trevor. 2012. *Untitled (Reaper Drone)*. Chromogenic color print, 49 x 61 in. (124.5 x 154.9 cm). Institute of Contemporary Art, Boston, MA.

Parks, Lisa. 2018. *Re-thinking Media Coverage: Vertical Mediation and the War on Terror*. New York, NY: Routledge.

Raad, Walid. 2004. *The Atlas Group (1989-2004): A Project by Walid Raad*. Cologne, Germany: Buchhandlung Walther König.

Richardson, Michael. 2019. “Drone’s-eye View: Affective Witnessing and Technicities of Perception.” In *Image Testimonies: Witnessing in Times of Social Media*, edited by Kerstin Schankweiler, Verena Straub, Tobias Wendt. New York, NY: Routledge.

Satia, Priya. 2014. “Drones: A History from the British Middle East.” *Humanity: An International Journal of Human Rights, Humanitarianism, and Development* 5, no. 1: 1-31.

Sontag, Susan. 2013. *Regarding the Pain of Others*. New York, NY: Farrar, Straus and Giroux.

Stewart, Kathleen. 2007. *Ordinary Affects*. Durham, NC: Duke University Press.

Tahir, Madiha. 2017. “The Containment Zone.” In *Life in the Age of Drone Warfare*, edited by Lisa Parks and Caren Kaplan, 220-240. Durham, NC: Duke University Press.

Vertesi, Janet. 2015. *Seeing like a Rover: How Robots, Teams, and Images Craft Knowledge of Mars*. Chicago, IL: University of Chicago Press.

Weizman, Eyal. 2017. *Forensic Architecture: Violence at the Threshold of Detectability*. New York, NY: Zone Books.

Wide and Close, Above and Below: Visualizing the African City

Filip De Boeck

What angle to adopt and how to position oneself in order to write an ethnography on the scale of the city? This is a question that many urban anthropologists are confronting and struggling with.¹ From the start, my own urban anthropology of Kinshasa, the teeming capital of the Democratic Republic of Congo, has experimented with possible responses to this issue through a sustained collaboration with a number of photographers, visual artists and filmmakers with whom, over the years, I have been exploring some of the multiple possibilities that lay dormant in the combination of text and image in a joint effort to come up with a more adequate understanding of what cityness in such a context is all about.

One such collaboration has been with visual artist Sammy Baloji. I would like to start this short essay with one of his photographs, produced in 2013 during a joint research period in Kinshasa. What—at first glance—looks like an aerial photograph of one of the neighborhoods of Kinshasa, turns out to be something completely different upon closer inspection. It is a photograph of a maquette, an architectural model from the Belgian colonial period. Between 1949 and 1959, the Belgian colonial administration launched a massive infrastructural plan, known as the *Plan décennal du Congo Belge*.² A major part of this plan consisted of a large-scale urban overhaul for the whole of the Congo. In an urgent response to the rising demographic pressure in Belgian Congo's urban centers³, the colonial authorities proceeded to build tens of thousands of housing units across the Congo. The photograph shows the maquette of Kinkole City, one of the last fully planned zones of Kinshasa (then still called Leopoldville). It was to become a new satellite city to the east of the capital, but due to Congo's independence in 1960, the plan was never fully implemented and was only very partially realized in the late 1960s and early 1970s. Today, the decaying maquette of this urban planning dream that never materialized gathers dust in a corridor of the municipal house of Nsele (one of Kinshasa's 24 municipalities). The photograph of this maquette became part of a book and exhibition project that Sammy Baloji and I co-authored later on.⁴



To us, this photograph, shot from above by Sammy, represents the illusion of a colonial modernist planning ideal that, by means of its comprehensive and authoritarian eagle-eye perspective, tried to extend its control and impose its planning logic onto what it considered to be a sprawling, unruly, and anarchic urban world in urgent need of domestication and civilization. As for me, the photograph of the Kinkole maquette also continued a reflection that had started years before, in 2002, when I attended the Lagos Platform 4 of the Documenta 11, curated



by Okwui Enwezor. I was invited to present an early version of my collaborative work on Kinshasa with photographer Marie-Françoise Plissart.⁵ On the same occasion the renowned Dutch architect Rem Koolhaas presented his research on Lagos, while also using his stay at the conference to shoot the film *Lagos/Koolhaas*, in which he famously presents Lagos hovering above the city in the helicopter of the city's governor.⁶ In his analysis of Lagos, Koolhaas surveyed the city from this bird's eye view, aptly but also coldly capturing some major infrastructural bottlenecks and drawing out the flows of people and transport. Lagos viewed through this distant gaze essentially remained a dehumanized city, in which the bodies of the millions of Nigerians who populate the city were erased or reduced to the size of insects; a city in which urban dwellers' voices, stories, dreams and aspirations barely, if at all, resonated. In sharp contrast with Koolhaas' aerial visuality (a representational choice for which he was criticized by many during and after the Lagos event)⁷, my own lecture attempted to present an ethnography of Kinshasa by using a 'vocabulary of the legs' and by staying close to the ground and the level of the street as the main starting point from which to zoom out to a wider angle to narrate the city. Plissart later translated this idea of scaling from the close to the wide angle in a collage that subsequently became part of our joint book publication and accompanying exhibition.⁸ In his initial response during the Lagos meeting, however, Koolhaas considered the close angle approach to be 'mere story-telling', an ineffectual attempt to capture the city. In his view this near and close-up perspective prevented him from truly 'seeing' and understanding the structure of the city because there was too much foreground and too little distance. Significantly, though, in 2004, Koolhaas re-edited and re-released his film as *Lagos. Wide and Close*, in an attempt to also include the 'close' angle.⁹

In some of his own work Sammy Baloji has been addressing similar issues. His *Essay on Urban Planning*, a large photomontage that was created in the same year as the photograph of the maquette that I mentioned above¹⁰ he offers another critique to the panoptic planning 'view from above'. The montage consists of six aerial photos of the urban landscape of Lubumbashi, shot by Baloji from a commercial airliner just before landing at the local airport, interspersed with six photographs he made of insects from the colonial entomological collection of the National Museum of Lubumbashi. Completing the artwork is an archival colonial postcard that Baloji found in the archives of the Union Minière du Haut Katanga, Belgian Congo's largest copper mining enterprise. The picture shows two Congolese workmen of the UMHK in front of a heap of flies and mosquitoes which they had to collect on a daily basis in return for a food ration handed out to them by the mining company. Juxtaposing all these images, Baloji critiques the all-encompassing segregationist colonial urban planning order that consisted in designing so-called neutral

uninhabited *zones tampons* or *cordons sanitaires*, in view of separating European and African neighborhoods. While the racial segregation thus effectively materialized in the colonial city (the neutral zones are still very visible in Baloji's aerial photos), this separation was rationalized by means of a sanitary discourse and in terms of a public health necessity, in order to prevent European contamination by African germs that were supposedly spread by mosquitoes living in the African parts of town.

With the growing accessibility of drone technology, aerial vision has once again attained a prominent place in thinking about and dreaming of the city yet to come. In 2008, a British-Zambian real estate company released a video in 3D animation to promote the construction design of *La Cité du Fleuve*, a new satellite city to rise from 2 artificial islands that were to be created in the Congo River.¹¹ Typically, the video starts with a view from above, slowly descending through the clouds and zooming in on this new promised island city that, as the video's voiceover states, will become 'a haven of modernity, sobriety, friendliness and the pleasure of living', 'a white water lily', 'a satellite floating on the riverside of the majestic Congo River' that will showcase the new era of African economic development'. The descent from the skies has become a hallmark of the genre, and has been used over and over again to showcase similar projects elsewhere on the continent. Emblematic of a global architectural aesthetics and spectrality that promises to lift the new citizen out of the existing city's infrastructural and social decay¹², the drone visuality that has become a standard part of this kind of urban vision conjures up imagined city futures for (still largely hypothetical) urban middle and upper classes while simultaneously rekindling the older segregationist politics of colonialist modernity's urban planning ideals, with their obsessive aversion of disorder and their irrational fear of 'the slum' as a site of possible contagion and contestation.

At the same time, this aerial visuality also recycles the optical strategies so successfully used by postcolonial autocrats such as Mobutu, whose dictatorial grip on Congo spanned more than three decades, from 1965 to 1997. Older Congolese still have vivid memories of the propaganda film that, for years, was broadcasted on national television several times a day. In this clip Mobutu appeared as a godlike figure, descending from the clouds with a saintly halo around his head.¹³ Today, the authoritarian and religious overtones of such political propaganda are revived in the drone visuality used by Christian fundamentalist preachers in Kinshasa. One of the city's largest neo-charismatic churches, the Ministère Amen of preacher and televangelist Leopold Mutombo, is designed in such a way that evangelical prayer meetings may be filmed from above by drones, visually underscoring the authoritarian omniscience of the Holy Ghost and the popularity of its chosen preacher's message.



In the meantime, however, the very same drone visuality has been appropriated by local artists to subvert the colonizing gaze from above: by kidnapping the drone as it were, they use it to plunge us back into the animated life of Kinshasa's streets. In 2017, for example, KOKOKO!, a Kinshasa-based band, released a video clip to promote its debut album. The clip was one of the first in what has by now become a familiar genre in which the visual possibilities of a newly available and affordable drone technology are explored. The clip opens with a view of Kinshasa filmed at a great height, and then the drone takes a dazzling dive, and as the camera progressively zooms in on Kinshasa's street level, the city's ground zero, a different kind of urban ground, full of creative energy, opens up.¹⁴

In this, and many other ways, Congolese artists decolonize the view from above, subversively converting the vertical view into a lateral vision, in a reflexive attempt to appropriate colonizing surveillance visualities and to relocate our attention to the urban surface, edge and (under)ground. As such, their artistic interventions may be understood as activist exercises to make visible some of the most vital spaces of urbanity in the African city. In this they rejoin recent efforts in the field of Southern urban theory to decenter and redirect the scope of the hegemonic grammars of Western urban planning and theory in which these crucial spaces have often remained invisible, unnoticed or poorly understood.¹⁵ ♦



Notes

- See e.g. Hilgers, Mathieu, 2009, *Une ethnographie à l'échelle de la ville. Urbanité, histoire et reconnaissance à Koudougou (Burkina Faso)*. Paris, Karthala.
- Wigny, Pierre et al. 1949. *Plan décennal pour le développement économique et social du Congo belge*. Brussels: Les éditions de Visscher. 2 volumes.
- In Kinshasa (then still called Leopoldville), the urban population grew from 45.000 in 1940 to more than 400.000 by 1960. Today, Kinshasa houses a population of over 15 million.
- De Boeck, Filip and Sammy Baloji. 2016. *Suturing the City. Living Together in Congo's Urban Worlds*. London: Autograph ABP; Sammy Baloji and Filip De Boeck. 2016. *Urban Now. City Life in Congo*. Brussels: WIELS.
- De Boeck, Filip. 2002. Kinshasa : *Tales of the Invisible City and the Second World*. In O. Enwezor et al. (Eds.), *Dokumenta 11 Platform 4. Under Siege: Four African cities. Freetown, Johannesburg, Kinshasa, Lagos*. Ostfildern-Ruit, Germany: Hatje Cantz.
- Koolhaas, R. (2002). Fragments of a lecture on Lagos. In O. Enwezor et al. op.cit; van der Haak, Bregtje. 2002. *Lagos / Koolhaas*.

- Hecker, Tim. 2010. The Slum Pastoral: Helicopter Visuality and Koolhaas's Lagos. *Space and Culture* 13 (3): 256-269; Fourchard, Laurent. 2011. Lagos, Koolhaas and Partisan Politics in Nigeria. *International Journal of Urban and Regional Research* 35 (1): 40-56.
- De Boeck, Filip and Marie-Françoise Plissart. 2004. Kinshasa. *Tales of the Invisible City*. Gent / Tervuren: Ludion / Royal Museum for Central Africa. On the exhibition at the 9th International Architecture Exhibition of the 2004 Venice Biennale of Architecture also see: <https://www.vai.be/nieuws/belgian-pavillon-biennale-venue-wins-golden-lion-kinshasa-the-imaginary-city-1>.
- See <http://lagos.submarinechannel.com>
- De Boeck Filip and Sammy Baloji, op. cit: 42-43.
- De Boeck, Filip. 2011. Inhabiting Ocular Ground. Kinshasa's Future in the Light of Congo's Spectral Urban Politics. *Cultural Anthropology* 26 (2): 263-286. The video itself may be watched at: <https://www.youtube.com/watch?v=wdEPK5C1hE>
- See also Easterling, Keller. 2005. *Enduring Innocence: Global Architecture and Its Political Masquerades*. UK: MIT Press.

- To watch the video clip see: https://www.reddit.com/r/PropagandaPosters/comments/u3ucns/zairecongo_state_news_would_start_its_broadcast/?dt=40453
- To watch this video clip see: https://www.youtube.com/channel/UC_ID1HfMMXjGs64TnG6Ckztg
- See Mbembe, Achille and Sarah Nuttall, 2008. Introduction: Atropolis. In Sarah Nuttall and Achille Mbembe (Eds.), *Johannesburg: The Elusive Metropolis*. See also: De Boeck, Filip, 2022. Suturing the (W)hole. Vitalities of Everyday Urban Living in Congo. In: Ash Amin and Michele Lancione (Eds.), *Grammars of the Urban Ground*. Durham: Duke University Press.

On one level I got a kind of Star Trek moment. The crew members of the Enterprise get beamed down, teleported into this other space, and we were an alien visitation in a way. Especially, when you're coming in as a team. What has that left behind? Because in that moment we were interference. Maybe that interference has added just a little more potential to the wave.

Our presence in that space has expanded us now into creating Broken Ground. We must assume that on the other side of the door, this place where we left, this expansion is taking place at another level. Because if it is expanding for us, by universal law, it must also be expanding for that which we left behind in that realm at another level.

Nii Obodai

Broken Ground: Expanding Landscapes

Mark R. Westmoreland with Nii Obodai





We have been driving across northeastern Ghana tracking down a connection to a Fulani settlement given to us by another anthropologist. In Garu we pick up our contact, a local researcher who will make introductions. He navigates the driver through a convoluted set of turns as we travel further away from the main road. The scattered trees and shrubs extending across the horizon obscure a clear line of sight and I'm soon lost in the landscape. After about twenty minutes of driving, we pull into a small village and our contact calls over to another man who joins us in order to complete a three-way translation between the English-speaking anthropologists and the Fulani. They guide us further into the bush through a network of dirt roads until we finally arrive at a small circular settlement. Goats, chickens, and children scramble excitedly out of the way.

We exchange greetings and our introductions reference common acquaintances. The hosts invite us to settle onto a couple of benches under a large tree in the center of the settlement's yard. Facing a few adults and a range of children, we begin to incrementally explain why we've come. We are anthropologists interested in better understanding the relationships between cattle herders and farmers and how they respond to the challenges created by changing environmental conditions. We are doing an exploratory project to see if participatory visual methods can help us see and present these landscapes of extraction in new ways, possibly opening new frameworks for social and environmental research to rethink precarious relationships with land resources.

Although recurrent droughts have been a common feature of the Sahel region for centuries, African governments seeking to capitalize on increased rainfall pushed pastoralists further north creating unsustainable conditions. The droughts that followed in the early 1970s exposed this vulnerability, leading to severe famine, and forcing many Fulani pastoralists to move south from Burkina Faso into northern Ghana. While some herders developed symbiotic relationships with farmers by offering pastoral care to their cattle in exchange for access to land, Fulani pastoralists generally experience exclusion from sociopolitical participation and competition over land use has led to xenophobic hostility and violent conflict.

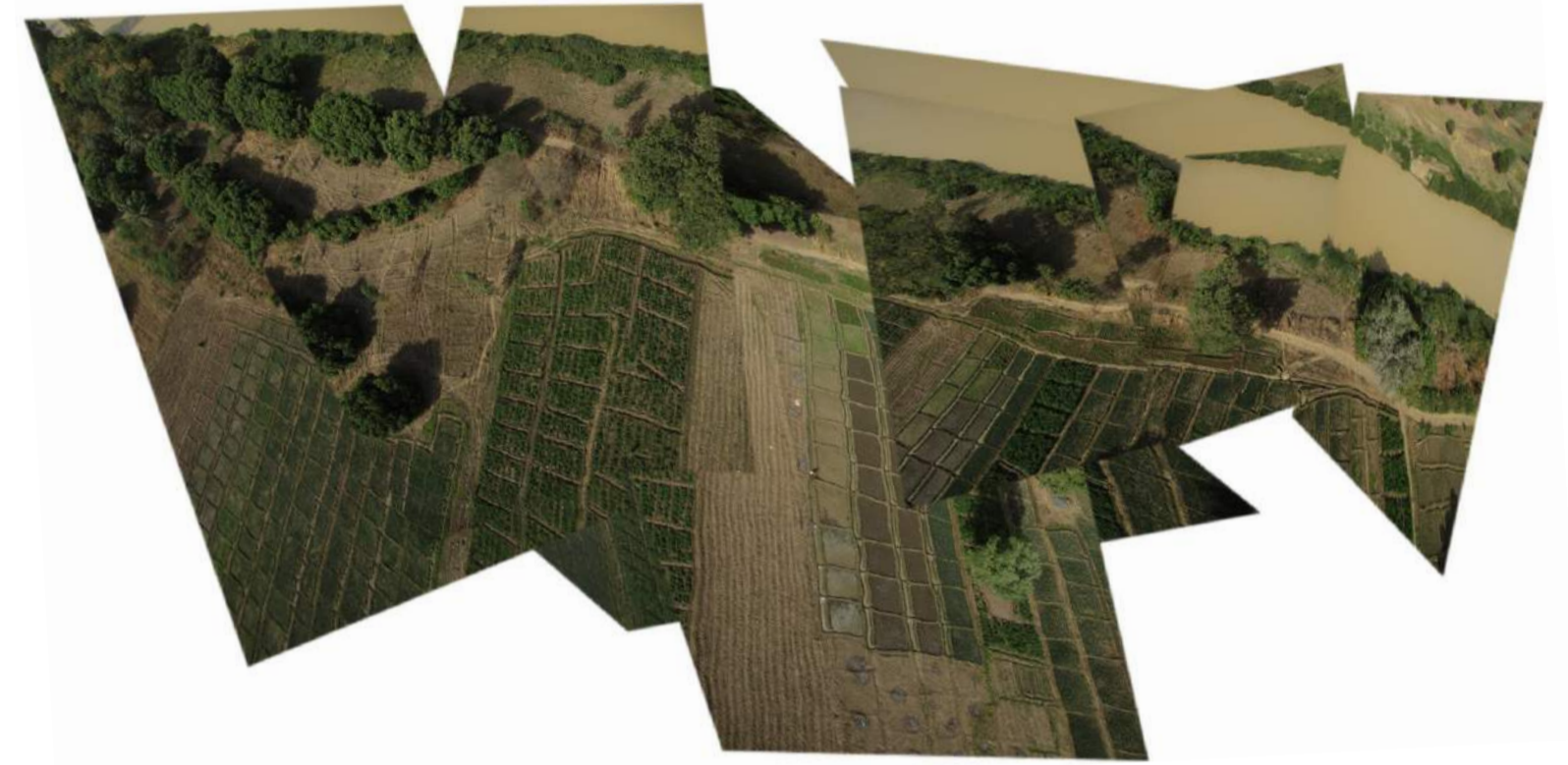
As this multilayered translation slowly unfolds, my colleague discovers a common language with the eldest man, who indicates a more diverse encampment here than only Fulani. As she explains the method of DIY aerial photography using a kite to lift a camera, I have my eye on the way the gentle breeze occasionally rustles the leaves in the tree above. When we left Bolgatanga around 6:00 am, I consulted the forecast in Windfinder. With a two-hour drive ahead of us, I calculated that we should arrive in time to catch the morning wind. The journey had taken longer than anticipated and now the atmosphere already showed signs of stagnating. Expressing concern about the situation, my colleague translates the urgency of acting quickly.

The herdsman readily agree and we begin setting up our kite and assembling the accompanying camera rig. Placing the kite downwind and unspooling about 10 meters of line, we make several attempts to get it aloft. After watching with curiosity, the herdsman join in and try to help us hoist the kite into the air, but it soon becomes apparent that our flight is grounded for the day. We express our regret, thank them, and ask to take our leave. Despite or perhaps because of this failure, the herdsman express their gratitude by insisting that we take a chicken. Grateful for the hospitality but disappointed by the outcome, we pack our gear and the chicken into the vehicle and bid our hosts farewell. When we reach Nakpanduri, we drop our contact and offer him the chicken to take to his family. We set off on the long journey to Tamale. Tomorrow we will fly to Accra. Our final effort to fly the kite seems to have failed, but our driver offers a suggestion for one more opportunity.

As we approach Pong Tamale on the outskirts of the growing sprawl, the driver pulls the SUV off the road near a settlement of mud huts. We walk off the shoulder of the road onto a path to a nearby cluster of mud huts. Greetings are made and common languages are discovered again with the extended group of women and children. We methodologically explain our project about the differing uses of the landscape by different inhabitants. We express our wishes to take photos of their land and their herds. They say that the head of the household is away and we'd have to come back the next day.

Hopeful for this final opportunity to send our kite soaring with the Fulani herdsman, we return the next morning. As I get the kite aloft, I walk a large perimeter around their settlement. A dozen or so children cheer me on and tag along. I give them the opportunity to pilot the kite as we all shuffle along in the dusty fields. After reeling the rig back in and retrieving the camera from its flight, some of the children initiate a celebratory dance and we begin laughing together at this odd occasion. I insert the SD card into my laptop and locate an image taken above the herd. Voices crowding around the screen begin naming the different cows and this opens a conversation about the heritage of herding and multispecies reciprocity. Now, as we aviate toward Accra, I look out the aircraft's window and marvel at our own small miracle of flight.

A week earlier, a more common scene unfolded further south around the town of Agogo, where four security personnel had allegedly been shot by Fulani herders when responding to a distress call by a farmer whose fields were being trampled by stray cattle. In response, a joint military and police task force slaughtered hundreds of cattle as a reprisal. This shoot-to-kill order was the latest expression of a national policy known as Operation Cow Leg aimed at expelling Fulani pastoralists from Ghana.



A few years ago, I introduced experimental audiovisual methods to a colleague working on sustainability issues in sites of small-scale gold mining in West Africa, which led to a collaboration with Ghanaian documentary photographers Nii Obodai and Dennis Akuoku-Frimpong. Our common interest provided the context for a sort of interdisciplinary expedition to engage various stakeholders in experimental participatory strategies for visualizing complex relations in the landscape including farming, herding, and mining. We approached these landscapes not just as a thin layer of earth, water, and air surrounding our globe as an ethereal space that sustains a delicate ecosystem of humans, animals, plants, insects, and microbes, but also an animate reality that recognizes the past traces and current presence of ancestors and spirits dwelling in these landscapes, who convey humanity's heritage, inform our collective consciousness, and reorient ways of relating to our shared, if broken, planet.

We came to call our project Broken Ground to gesture to the complicated relationship between the wounded history of particular places and the aspirations made possible by transforming the material world into resources. While exemplified by mining and the literal process of breaking open the earth to extract resources buried below, we find this notion suggestive of other land-based labor processes. Broken Ground also suggested the breaking of ground at the start of a construction project as well as capturing the notion of groundbreaking innovations that carry promises of revitalization and possibilities of technological catastrophe.

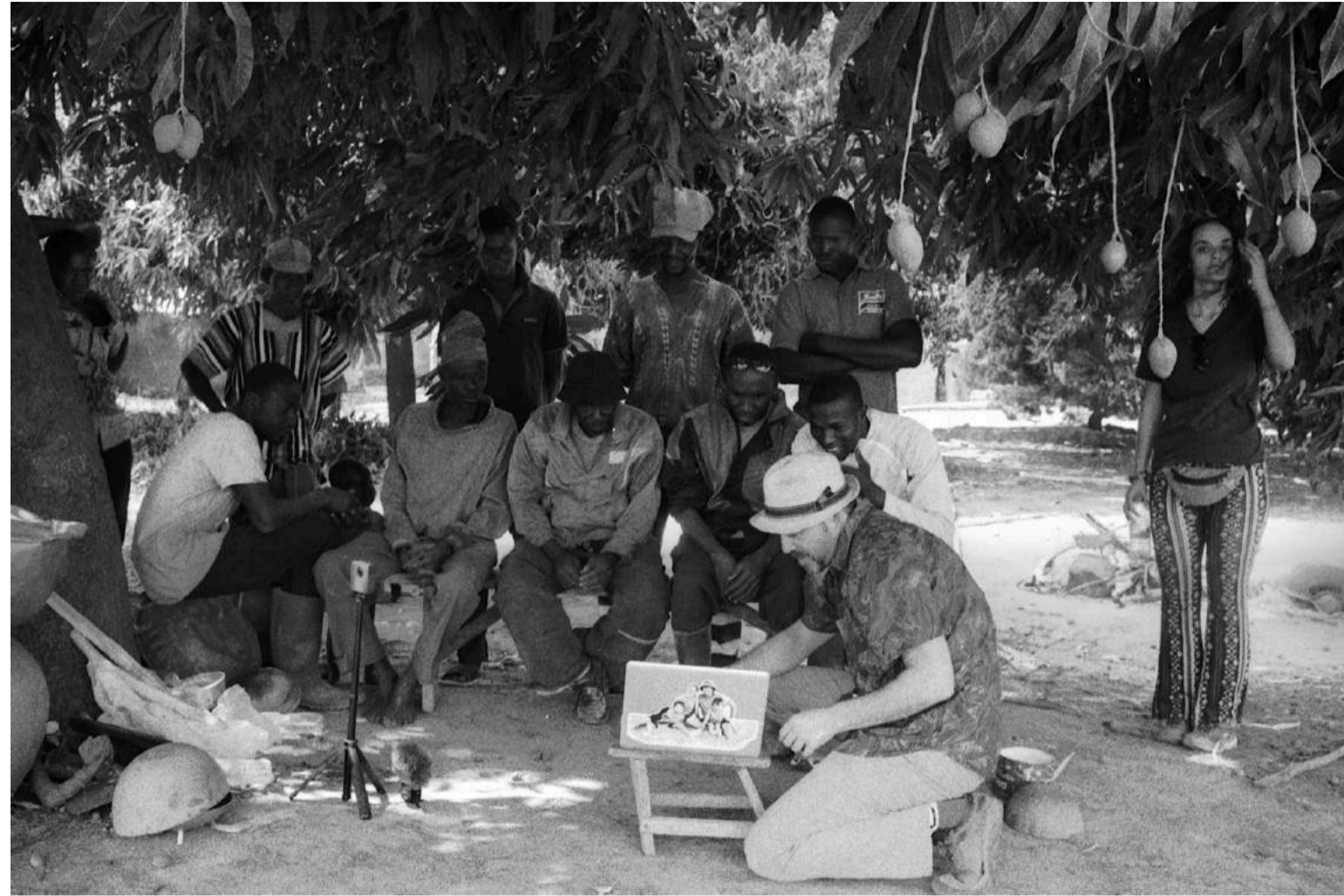
We initiated this exploratory research project to rethink the representations of extractive landscapes, bringing these mundane livelihoods to bear on more troubled forms of resource extraction steeped in histories of slavery, colonialism, and crony capitalism. We were particularly interested in how participatory methods provide opportunities to engender new conversations about sustainability on multiple

scales from local neighborly relations to national resource management to global climate change. Collaborating with a diverse set of local inhabitants involved in different forms of resource extraction, including seasonal agricultural practices and nomadic pastoralism (among others not featured here), we adopted a participatory DIY aerial photography approach developed by citizen science advocacy initiatives, which has been used to help local communities substantiate claims about their environment.

While traversing well-traveled tropes of Western expertise and techno-deterministic modes of scientific authority, we attempted to shift the narrative by engaging in more speculative and playful approaches to aerial photography. This meant intentionally eschewing drone technologies. Drones offer many benefits in the hands of a skilled pilot, like programming flight patterns for data collection in systematic grids, navigating to precise vantage points to capture the "ground truth," or performing search and rescue missions around unstable constructions. In other contexts, however, there may be some compelling reasons for avoiding the use of drones including cost consideration, permit requirements, and no-fly zones. Beyond these practical points, one may reject the associations with surveillance and military applications. While no technology has inherently democratic or exploitative qualities, too often drone pilots take for granted the way technology collapses the experience of landscape visualization. For instance, as the drone may become lost to the naked eye, the tablet-based controls pull one's attention into the screen where one navigates the space virtually. While drones can be productively deployed in participatory research, we found more rudimentary forms of aerial photography help emphasize process over product that disrupt these underlying scopic regimes. By using citizen science and activist-oriented strategies to engage DIY aerial photography with local communities, we aimed to engender a "civil view from above" (Keysar 2016). This gesture allowed us to relinquish an element of

outsider expertise in order to draw on more local skills and knowledge.

While we had purchased a "Balloon Mapping Kit" from Public Lab to expand our options in windless conditions, the limited supply, high cost, and strict regulations around the use of helium in Ghana put this option beyond the scope of our democratizing methods. This narrowing of aerial technologies concentrated our understanding of landscapes around the instability of atmospheric conditions. The way kite flying relies on learning environmental conditions made us intimately aware of wind, precipitation, and temperature conditions. Furthermore, being tethered to the kite meant carefully navigating trees, rivers, power lines, irrigation ditches, and other irregularities in the landscape. A kite pulls your attention up to the heavens, but walking demands that you give equal attention to how you tread the earth. This interplay between body and place invites a more contemplative practice of image making, in which what initially appeared as open ground is revealed instead as a restrictive space that demands attention. Rather than a lone pilot, the DIY aerial photography mediates a distributed agency oscillating between wind, kite, string, pilot, and ground in combination with lens, shutter, memory card, suspension system, etc. This distribution of agency extends to our model of collaboration that includes a network of relations between researchers, artists, local gatekeepers, inhabitants, and nonhumans, in which partners learn new strategies from one another. In our collaboration with Fulani herdsman and local farmers, the images we produced facilitated rich discussions about features on the landscape that we as outsiders could not recognize, including variations in farming and irrigation practices and intimate aspects of human/non-human relations.



One week earlier ... the driver navigates the SUV off the road just south of the White Volta River and maneuvers the vehicle through a section of tall reeds before entering into a canopy of trees. We continue parallel to the river along a dirt track. Sections of the road have deep muddy puddles to drive around. After a few moments, we pull up under a tree where our guide has already arrived on motorbike. We unload and carry our gear further on foot. As we exit the woods, an expansive farmland opens across the landscape. We walk past more clusters of trees until we see an immense power line dominating the horizon. With the electrical towers behind us, we drop our gear and begin to set up in a fallow field. Wind measurements are made with the anemometer. The readings jump about and waver. Undeterred, we try various techniques to get the kite to soar, but fleeting moments of lift continually dissipate as the kite crashes into the ground again and again.

Exasperated, I lay down on the 2-meter kite and stare up at the still sky while ruminating on the failures of the past week. My crazy plan to do DIY aerial photography has been repeatedly stymied – no source of helium to lift a balloon and no wind to lift a kite. As novice kite flyers, we are learning as we go, but these were not methods completely under our control.

A couple of days later, we return to the same farm fields along the White Volta River. Holding the anemometer toward the breeze, I'm getting readings approaching 10 m/s and the kite rustling on the ground looks eager to take flight. Acting fast to seize the moment, I coordinate different team members to the different ends of the kite line and begin preparing the camera. Utilizing a DIY method developed by the citizen science organization Public Lab, I secure a small pebble with an elastic band on the shutter-release of a point-and-shoot camera to keep

it engaged in burst mode. Approximately every 2 seconds, I can hear the shutter capturing a new image. With the help of my collaborators, we place the lens through the opening in the plastic food container that has been retrofitted to securely cradle the camera while in flight and to protect it when it lands. A closed circle of string has been threaded through the four corners of the rig in a makeshift Picavet suspension system that loops through two carabiners above that are secured to the kite line approximately 10 meters downline to reduce turbulence from the kite. As wind gathers under the kite, it pulls the rig along the ground, then lurching upwards, the line carries the small rig up into the air. As the camera peers down below, we release it further as it begins to soar high above. The more line we let out the more the wind pushes the kite laterally away from us. We learn to unspool the line more gradually and periodically pull back to create more tension on the line.



We begin to walk the kite, guiding the pilot around the field as we navigate rows of onions, irrigation ditches, powerlines, and trees, while constantly attentive to the way the wind jostles the kite and the tension on the line either sends it higher or dropping down away from us. Over the next 30 minutes, we complete a large loop that brings us back to where we have left our pile of bags and gear. As I retrieve the camera, everyone huddles around to catch a glimpse of the 2434 images captured on the SD card.

Jubilated by our first successful flight, a few moments later we move over to the other side of the powerline to complete a second mapping walk. We easily get the kite aloft again. Spooling out the line the kite soars into the sky. SNAP! The line abruptly breaks. The wind takes the kite and the rig in tow in the direction of the White Volta River. I start running, imagining everything suddenly lost, as they disappear beneath the horizon.

I find the kite laying limp a couple of meters short of the river, but where is the camera rig? The yellow kite line extends back through the thicket and into the field. I backtrack 20 meters, 40 meters, 60 meters until I see the string lift off the ground into the canopy of a towering tree. The tree grabbed the kite out of the sky, but now holds the rig suspended

8 or 10 meters above us. Pulling on the string fails to release it. Walking a wide perimeter and tugging in the direction from which it came does little to move the entangled rig. Soon the tugging breaks the string as the force sets the rig spinning wildly but unmoved. Dangling from a branch high above, the camera continues to snap close-up images of the foliage.

Someone calls to one of the farmers and a young man arrives. No more than 150 cm in stature, he quickly moves his way up the trunk and nimbly clings to different branches as he enters the tree's canopy. He now moves more slowly and cautiously along the branch toward the suspended rig. With his body lying balanced across the branch, he reaches out and pulls the small container toward himself. He very carefully untangles the string and gathers it into his hand. Below we grab the edges of the kite and spread them out to create a soft target for him to drop the rig. As he gently releases the apparatus, we catch it in a celebratory cheer. Someone snaps a photo of me and him exchanging cash as we smile at the camera. We count our blessings and call it a day.

A couple of days later, we return to the farm fields again with selected images on a laptop to show a group of farmers who have been called together

to meet us. Assembled in the shade of a tree, we show the farmers a selection of the images. I explain how the kite lifts the camera to take images from above that show us perspectives that we cannot usually obtain. Through translation, my explanation is shared with the farmers and their reactions are partially translated back. One particular image generates a lot of discussion. This clear shot of several garden plots planted with onions offers an ideal perspective. Looking squarely downward toward the nadir reduces distortions and I can zoom in on the image to show the details of each plot. A man in the back comes to dominate the discussion. He points out inconsistencies in the garden plots, noting the various empty patches among the leafy crops, which he claims result from overwatering. To demonstrate his point, Mr. Morgan marched everyone to the far end of the farming plain to show off his flawless fields of onions.

While walking the long route back to the car, a group of women asked us why they had not been consulted about our project, thereby opening an invitation that will guide future discussions about these landscapes of extraction.



This turbulent methodology extends into the next steps of working with the images. After transferring the 2434 photos taken that morning to my computer, I begin scanning through the images wondering how to manage the excessive quantity. The sequence begins with a series of shots of the team watching while I mount the camera, which is then followed by the camera sitting face down on the ground capturing a series of "soil samples" snapped as it haltingly lurches across the ground when the kite pulls and slackens. Soon the view captures feet, legs, and shadows as the camera lifts off the ground and begins to quickly ascend overhead.

This animation of the process of getting the camera mounted on the kite line evokes a sense that the camera looks at us in anticipation before lifting out of our grasp and rising far overhead. Within a couple of dozen shots, it is high above the White Volta River, each shot dominated by the creamy contours of this muddy body twisting through the dark vegetation of the farm fields and trees along the bank of the river. The happenstance interplay between multiple atmospheric and physical forces swings the rig from side to side, capturing glimpses of a blue horizon and occasionally the sky as a whole. I'm struck by the unanticipated perspectives gazing at the Earth upside-down, perhaps hinting at its slight curvature. The constant yaw-pitch-roll of the fuselage means that every shot offers a unique position. This variation renders any composite a tedious if not impossible task. As if adhering to some default setting, I begin to look for moments when the camera snapped a photo at the "equilibrium position," which would reduce the distortion inevitable in these more oblique positions.

While there are many images interesting in their own right that lend themselves to detailed analysis, careful looking, and participatory photo elicitation, I became interested in finding patterns in their combinations. In the visualization of all this data together, new insights emerge around themed selections of soil samples, wind disturbances, upside-down horizons, oblique perspectives, figures looking up in amazement, and crash landings. Individually, each photo seems much like the next, giving the appearance of excessive redundancy (despite their uniqueness). Utilizing the photomerge tool in Adobe Photoshop requires careful curation of overlapping images that seek matching features while also expanding the coverage in different directions. This combination relinquished the normativity of rectangular framing and each combination created a completely unique shape, like a snowflake falling from the sky.

By the standards of mid-20th century archaeologists and anthropologists (Vogt 1974), our efforts produced mostly useless data. But rather than privileging the ability of these technologies to create high-resolution realistic records, we found that they had much more to share through their unintended outputs. While there is a level of unpredictability that comes from depending on the wind and elements, this turbulent methodology engaged landscapes in ways that could enliven conversations between stakeholders about the overlapping and unsettled qualities of these landscapes, while also leading to some unexpected perspectives that characterize artwork. Rather than defaulting into predictable modes that are mostly about satisfying a sense of recognizability, the instability of the kite's flight path revealed the prospect of discovering unanticipated insights and the pregnant possibilities hidden in this fragmented landscape. The abstract geometric shapes formed by stitching multiple images together can disrupt our expectations of what landscapes should look like. And the strange patterns produced in the excess of digital imagery may help us (re) claim perspectives taken for granted. ❖

References cited

Keysar, Hagit. "Prototyping the Civic View from Above: Do-It-Yourself Aerial Photography in Israel-Palestine." Doctoral thesis, Ben-Gurion University of the Negev, 2016.

Vogt, Evon Z., ed. *Aerial Photography in Anthropological Field Research*. Cambridge, Mass.: Harvard University Press, 1974.





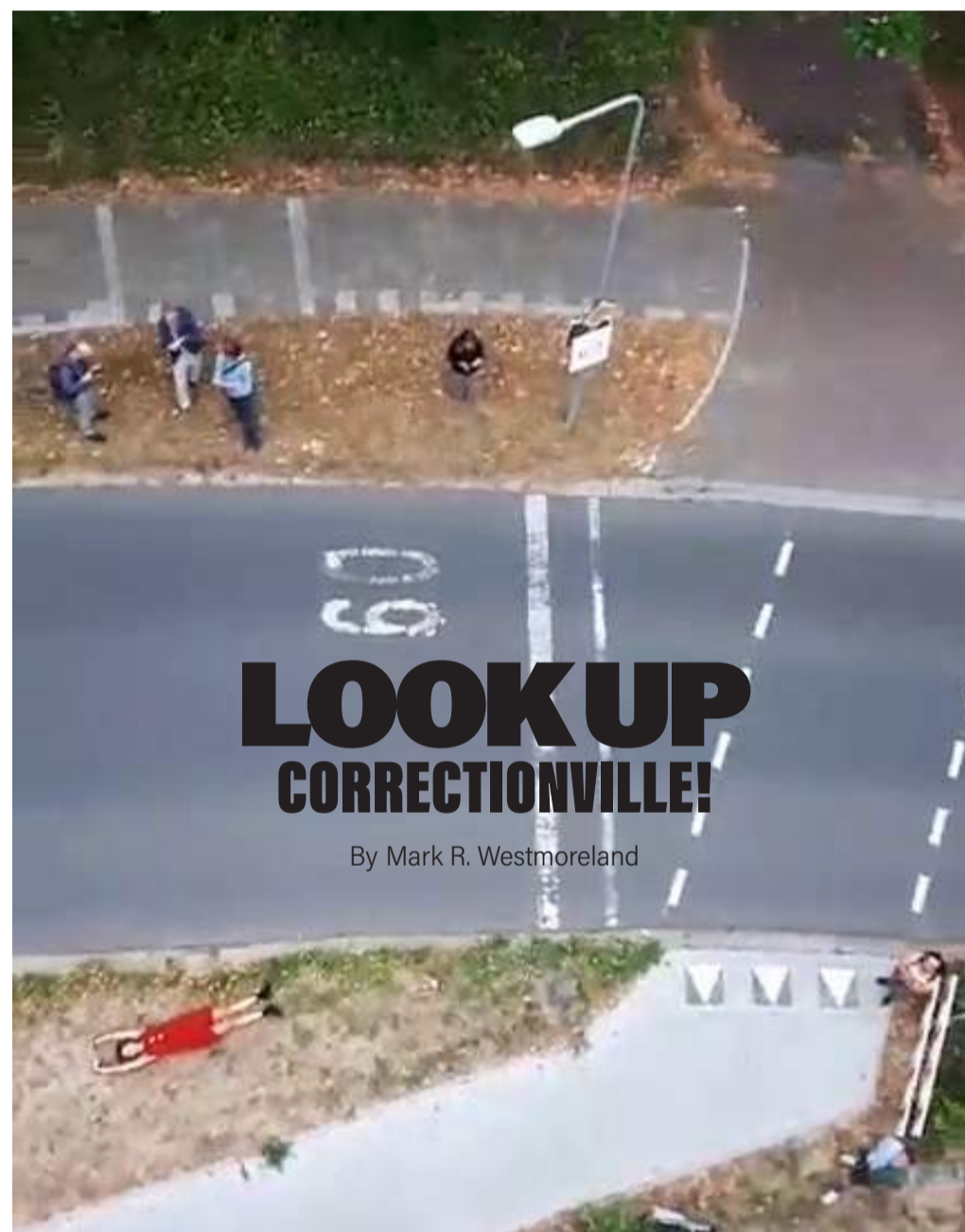
Given the ethical problems with using a nonrenewable gas to elevate a balloon and the hazardous nature of floating string lines in environments with powerlines and other obstructions, I decided to test pole aerial photography for CORRECTIONVILLE #03. My proposed intervention proposed to make a fragmented map of "stepping stones" comprised of aerial images taken along a particular path and then see if those on the expedition could figure out how to read this fragmented map. To prepare, I made some solo expeditions with my pole-camera. Compared to kite and balloon techniques, the maneuverability of the pole allowed aerial images to be taken in forested areas, but walking with an extended pole overhead required new navigation skills.

Trekking along roads, through fields, and under tree canopies meant learning a variety of cautious gestures with this elongated utensil. Even the subtlest movements at one end had significant implications for the images created at the other end. The constant shooting of photographs captured both this movement and the fluctuating exposure conditions. Working at very low altitude, only about 5 meters, I confronted me with the problem of proximity/distance -- being too close to the ground makes it impossible to map the landscape. Merging photos into larger puzzle pieces thus captured mere fragments along the 2km path. Despite the navigational challenges, these "stepping stones" gave shape to the expedition and the recurrent discussions about the anomalies in the landscape.

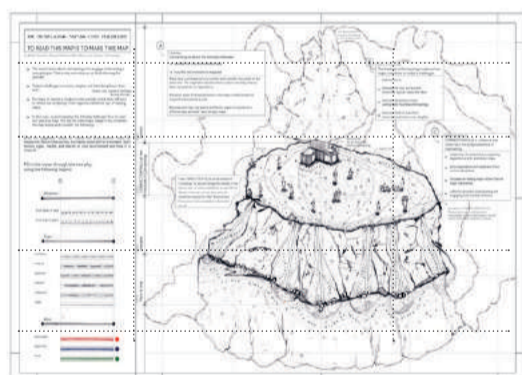
This insert offers two sides of a conversation made in different modalities. One side offers a full-size map of CORRECTIONVILLE #03 created by Marlies Vermeulen, Suzanne Dekker, and Remy Kroese of the Institute of Cartopology that invites the map-reader to finish the map themselves as a way of becoming a cartopologist. Premised on an "interplay" between wonder for place and question of how to map it, the centerfold serves as an intervention in acts of looking upon landscapes. Holding each page pulled wide, head pitched downward, eyes moving attentively along intersecting lines, the viewer is invited into the habitus of the overview. In this rendering, the body on display is a disassembled mountain top, which is befitting the institute's new home halfway to "the highest summit of European Netherlands" (322m) and encircled by a spiral roundabout that delivery drivers can't seem to find. Meanwhile, the process of folding this drawing into a pocket map reveals a photo zine on the other side that recounts my own misadventures in cartopology at the second and third editions of the festiVille. Leading expeditions that use DIY practices of aerial photography with balloons and extension poles presented me and my companions with a series of incongruencies realized through embodied acts of mapping.



All photos by Mark R. Westmoreland unless otherwise indicated.



TO FOLD THE MAP IS TO MAKE THE ZINE!



Fold backwards along all horizontal lines, then fold backwards along both vertical lines. Finally, close the zine.

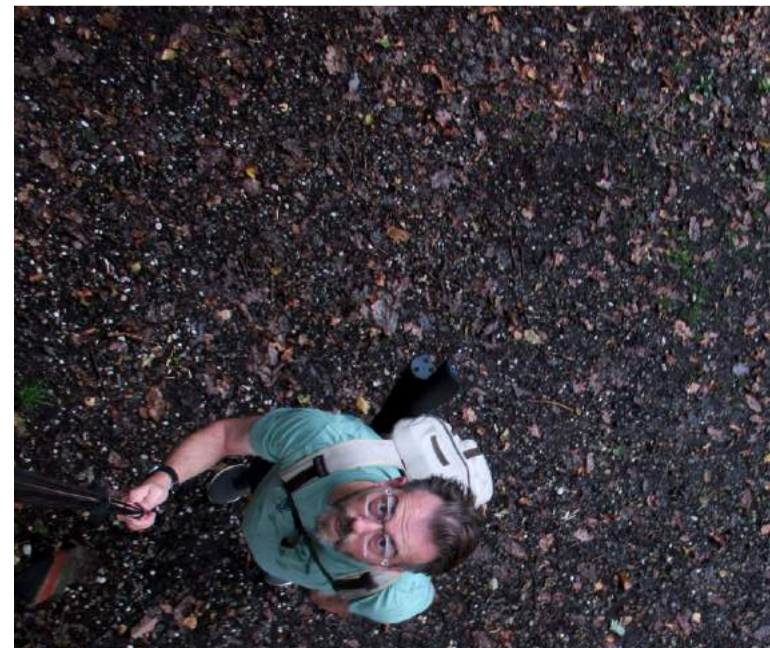
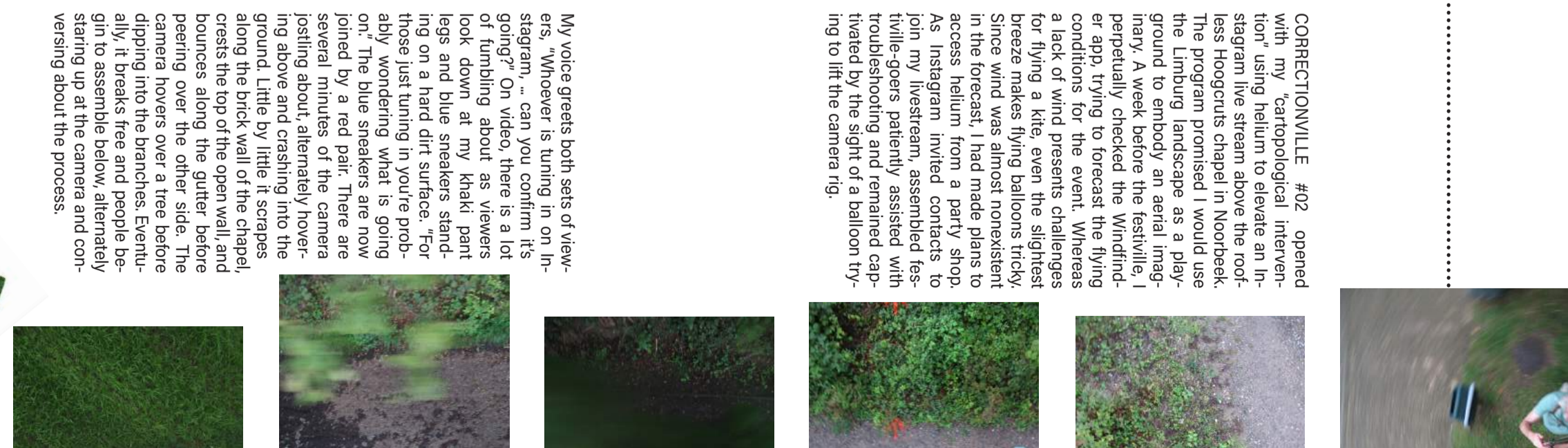
TO UNFOLD THE ZINE IS TO MAKE THE MAP!



Photo by Petra Vroomen

No, really. Look it up.

There is a small town in Iowa named Correctionville where cartographers resolved the geometric anomalies produced by the Rectangular Survey System, which parceled out perfectly square land claims for American settlers according to Thomas Jefferson's Land Ordinance of 1785. The colonization of indigenous lands offered a vital revenue stream for the new republic, but failed to realize the expansive landmass was part of a larger spherical object. Today a memorial sits at the intersection of Fifth Street and Driftwood, surveyors addressed these discrepancies by periodically creating jogs in north/south roads. But the larger infrastructural grid that spans three-quarters of the continental United States reveals a more profound transformation of the American frontier with extensive infrastructures designed to rework entire ecosystems at the service of an enterprising nation as captured by the work of Gerco de Ruijter. In homage to this town's place in map-making history and inspired by de Ruijter's body of work, the Institute of Cartopology initiated an annual "festiVille" where map-curious visitors and presenters can explore "the (im)possibilities of map-making."



My voice greets both sets of viewers, "Whoever is tuning in on Instagram, ... can you confirm it's going?" On video, there is a lot of tumbling about as viewers look down at my khaki pants legs and blue sneakers standing on a hard dirt surface. "For those just tuning in you're probably wondering what is going on!" The blue sneakers are now joined by a red pair. There are several minutes of the camera jostling about, alternately hovering above and crashing into the ground. Little by little it scrapes along the brick wall of the chapel, crests the top of the open wall, and bounces along the gutter before peering over the other side. The camera hovers over a tree before dipping into the branches. Eventually, it breaks free and people begin to assemble below, alternately staring up at the camera and conversing about the process.

CORRECTIONVILLE #02 opened with my "cartopological intervention" using helium to elevate an Instagram live stream above the roofless Hoogcrucis chapel in Noorbeek. The program promised I would use the Limburg landscape as a playground to embody an aerial imaginary. A week before the festiVille, I peripatetically checked the Windfinder app, trying to forecast the flying conditions for the event. Whereas a lack of wind presents challenges for flying a kite, even the slightest breeze makes flying balloons tricky. Since wind was almost nonexistent in the forecast, I had made plans to access helium from a party shop. As Instagram invited contacts to join my livestream, assembled festiVille-goers patiently assisted with troubleshooting and remained captivated by the sight of a balloon trying to lift the camera rig.

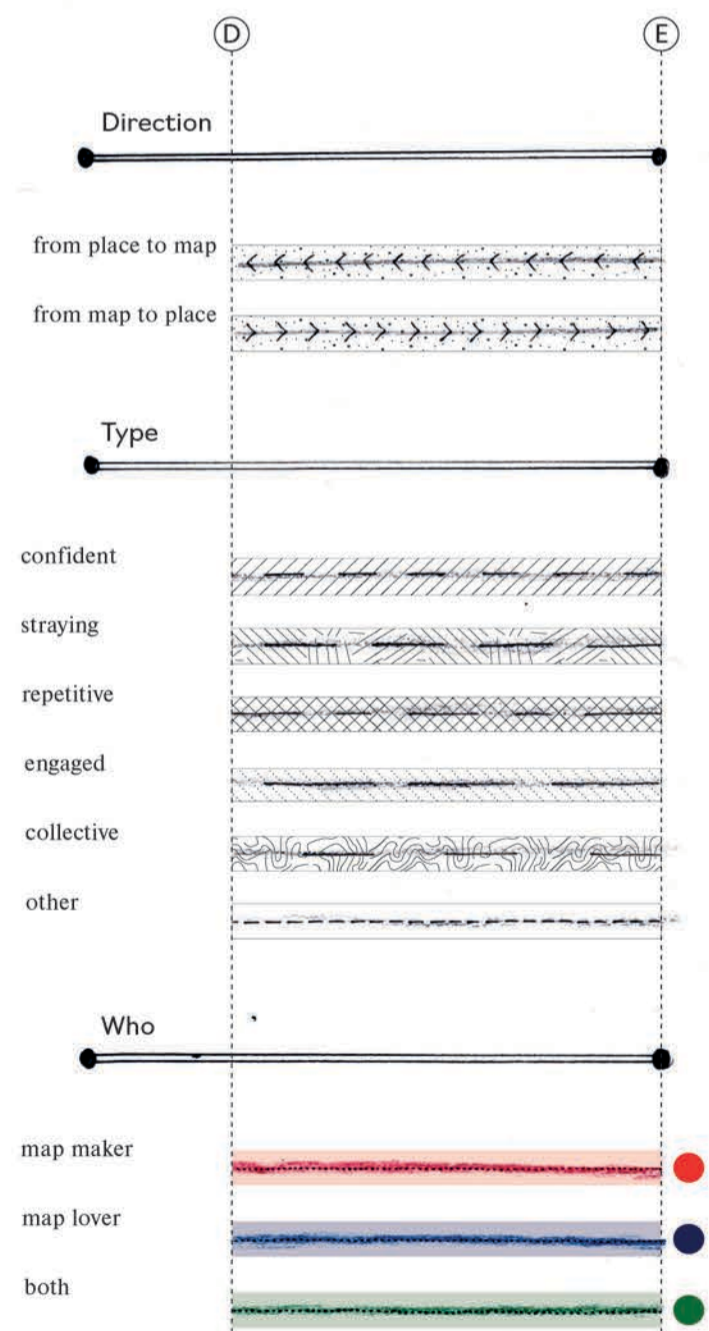
TO READ THIS MAP IS TO MAKE THIS MAP

by Marlies Vermeulen, Suzanne Dekker and Remy Kroese of the Institute of Cartopology.

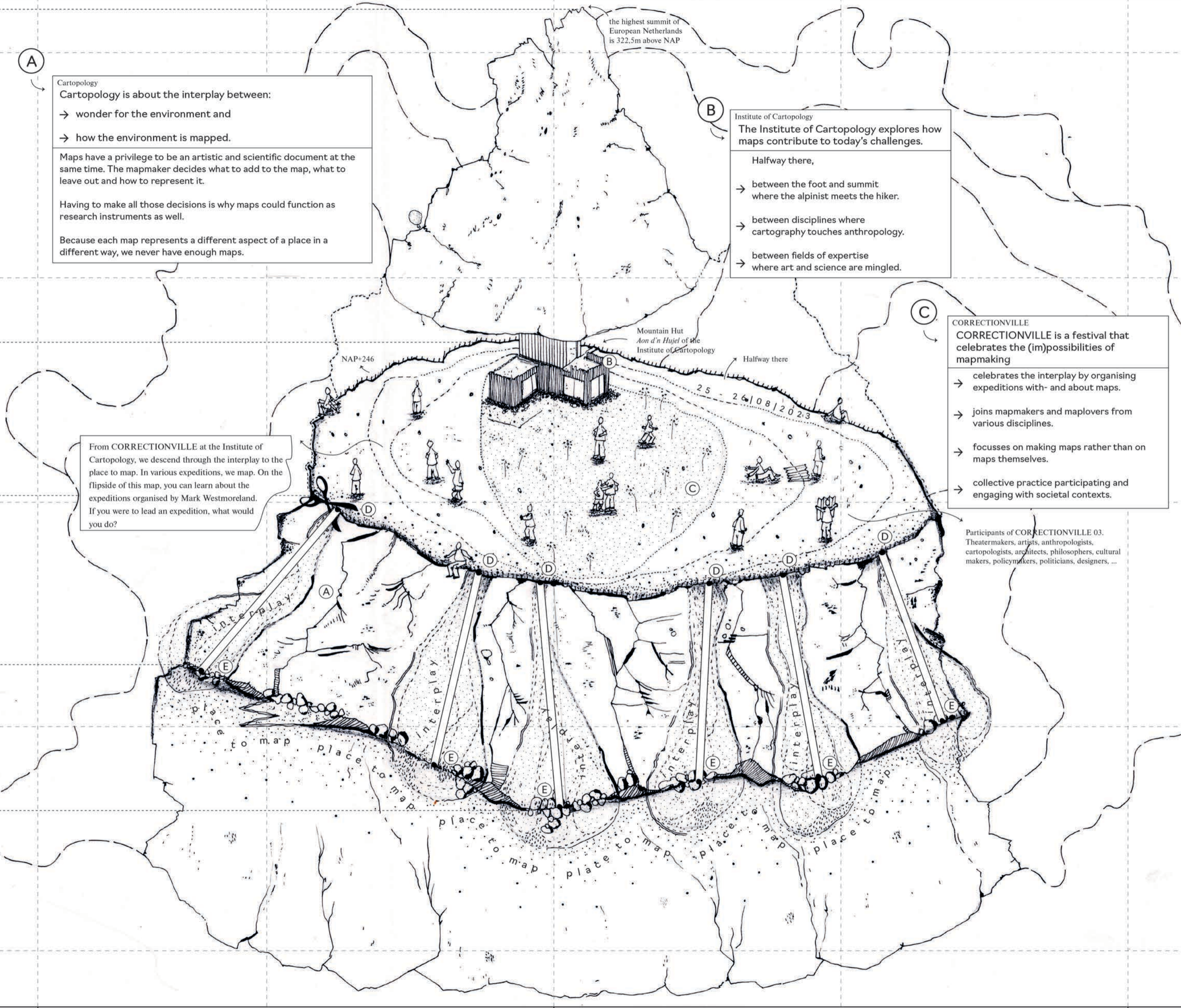
- The way to learn about cartopology is to engage in becoming a cartopologist. That is why we invite you to finish this map for yourself.
- Today's challenges are more complex and interdisciplinary than ever. climate crisis, migration challenges, housing shortage,...
- For maps to remain a window to the outside world, they will have to reflect its complexity. This requires a different way of making maps.
- In this case, we are mapping the interplay between 'how to map' and 'place to map'. The way we make maps matters. So, complete the map wisely and consider the following:

Draw the suggested routes. Or maybe not. Draw another route. Or maybe not. Record the journey, but maybe stand still for a moment. Start moving again, maybe, and marvel at your environment and how it is mapped.

Fill in the routes through the interplay, using the following legend



section Summit
CORRECTIONVILLE at the Institute of Cartopology
section Interplay
section Place to map

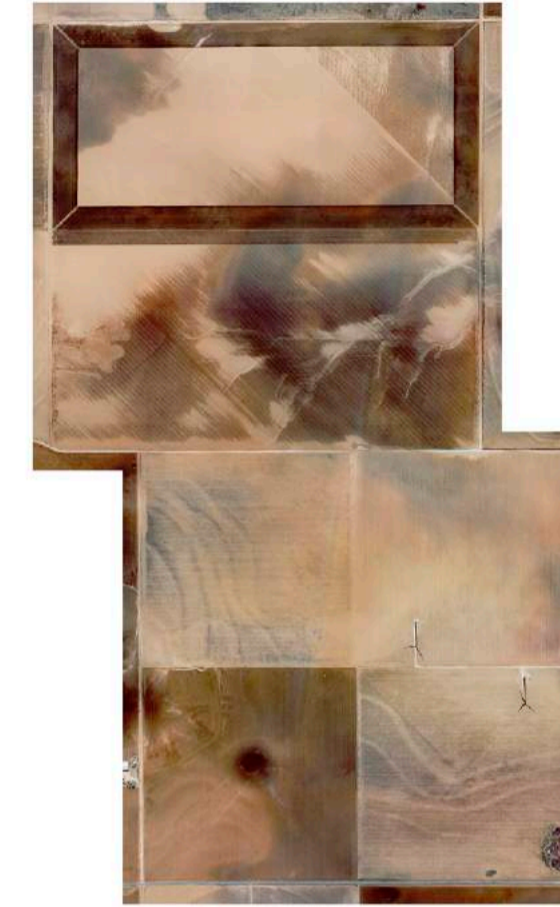


Zooming in, while Zooming out

Gerco de Ruijter

From the ground, standing between these circles,
you barely notice the circular shape. They are just too big.
The surprise only happens when seeing them from space...

(From an interview with Kelly Margolis)



In 1992, like my fellow students at the Willem de Kooning Academy, I was painting canvases, rotating them in steps of 90 degrees trying to achieve abstraction. Landscapes transformed into paintings, leaving only a hint of reality. Kirkeby was our hero. Per Kirkeby was a Danish painter with a background in geology. He painted landscapes like reverse excavations, building textures of paint, layer on layer.

At that time I was living on a farm on the outskirts of Rotterdam. For leisure, I had built some small kites to pass the time among the cows and sheep, the clouds and larks in the meadows. Looking for spare parts in a kite store I found the book "Fotograferende Vliegers" (Photographing Kites). Inside this book were all kinds of practical information on building kites and rigs and some black-and-white landscape photographs. In these landscape photographs, I recognized the abstract landscape painting I was trying to create. An abstraction developed from a different way of looking at a landscape.

After sewing a large Sanjo Kite and constructing a simple rig I made my first steps into kite aerial photography. Starting at the farm I walked the kite and the dangling camera, like walking the dog, trying to capture the landscape vertically downwards. These first photos became the starting point (like a blueprint) for my paintings and lithos.

Gradually my kite skills improved and I became confident enough to use better and more expensive cameras. The images became richer: sharper and more detailed. My painting skills matched up to the large texture but I could not handle these small details. Finally, I stopped painting and graduated with a series of small black-and-white landscape photos.

By strictly framing these landscapes in squares, relationships are formed across the frame between textures, lines and unexpected details. The English use the word capture for making a photo which is appropriate here.

In 2003 I made my first trip to New Mexico, USA. I was attracted to New Mexico after looking at images of the desert where, unlike the Netherlands, there is no green layer showing the present tense but instead rocks and dirt revealing geological time. No perceptible human interventions, a scaleless landscape.

Strangely enough New Mexico was also the place where I became fascinated by the "center pivot irrigation circles" south of Farmington. They looked like green patches covering the desert. With my kite-camera I tried to photograph these circles but because of their size I only captured a tiny part of the circle in the frame. Actually, it was hard to tell you were looking at an (incomplete) circle.

The scale jump in the American landscape made me shift my interest from the kite to the satellite. For me Google Earth is just a high-flying kite. In this satellite perspective, I am zooming out and getting rid of the visual noise (cars, roads and people in general).

During 2012 I started collecting irrigation circles in Google Earth as screensaves, hundreds of them in all seasons and geographical locations. From these 2000 low-res screensaves, I developed a stop-motion animation film as clockwork time sequence (*CROPS*) and some imaginary grid landscapes.

It's a juxtaposition of textures and details, where every visual element has the same importance, without a hint of hierarchy

(Kelly Margolis "From on High")

For me the square mile grid is very similar to the photographic frame. The standardized geometric parceling of the United States means that the landscape only exists within and thanks to the frame. Like the photographic frame, the Jeffersonian Grid is a frame used to capture the land with a 1:1 map placed upon it to define ownership. Began in 1785, President Jefferson commissioned surveyors to divide the Midwest and Southwest of the United States into square lots, each exactly one

mile long and one mile wide. The demarcated landscape enabled colonialists to choose their plots. But the surveyors had a problem. It is not possible simply to divide the earth into square plots. One cannot roll out a geometric, two-dimensional grid over a spherical planet.

With the grid in mind, I got invited as Artist in Residence at the Ulrich Museum of Art in Wichita Kansas, summer 2015. Studying maps and Google Earth got me wondering about some twists in the grid I had found north of Wichita. This rather dull agricultural landscape (similar to the North of France but without any historical backdrop) revealed a mysterious subject: Grid Corrections.

Since a round earth does not lend itself to a repeating network of equal-sized squares, the checkerboard of roads is fractionally shifted. If you want to cover the earth with checkerboards, you can only do so if you outsmart the folds in the paper. The system has to be corrected in order to continue as though nothing has been corrected.

(From Peter Delpeut's *The Seduction of the Grid*)

Again I tried to photograph these T-junctions with my kite (in this case I used a panoramic 360-degree camera) walking another mile under the Kansas sun to

find the next correction. Back home I started following the East-West parallel lines in Google Earth all through North America and found thousands of these grid corrections: in cities and deserts, throughout the seasons. A selection of these was used for a short film and for the book, *Grid Corrections* (2018).

The most recent project *Footprint* (in collaboration with Peter Delpeut) started with a phenomenon I encountered on Google Earth while looking at airports. In the winter, planes are stripped of ice. On the concrete, the imprint of an airplane remains just long enough for the satellite to photograph it. Do these giant drawings of airplanes really belong on a map? Or is Google Earth not a map, but a unique image of the world? ❖

Images

Cropped-Source / Ultrachrome print 44"x135" (2012)
Grid Correction #496 / Ultrachrome print 20"x40" (2018)
Footprint Dallas TX / Ultrachrome print 6"x6" (2022)

References Cited

Gerard van der Loo and Nop Velthuisen. *Fotograferende Vliegers*. Elmar, Rijswijk.
Kelly Gordon Margolis. From on high in *Almost Nature*. Timmer Art Books, Eindhoven. Design by Yvo Zijlstra
Peter Delpeut. *The Seduction of the Grid* in *Grid Corrections*. nai010, Rotterdam. Design by Irma Boom
Gerco de Ruijter & Peter Delpeut. *Footprint*. Fw-books, Amsterdam. Design by Hans Gremmen

Google Earth related work:

CROPS (Short film 2012) <https://vimeo.com/62594731>, *Cropped* (Archival Prints 2012-2020), *Playground* (Short film 2015), *Grid Corrections* (Short film, book and installation 2018) www.nai010.com/nl/publicaties/gerco-de-ruijter-grid-corrections/240707, *Footprint* (Book and installation 2022)

Witnessing Change: A Repeat Photography Project in the Canadian Rockies

Sarah Jacobs & Eric Higgs

Between 1888 and 1958, hundreds of government surveyors summited Canada's mountains, took photographs, and with the help of trigonometry, created accurate maps. The maps were valuable, guiding settlement and resource extraction. Left in the wake of their map-making were over 120,000 photographic negatives. These were not so valuable, and were stored and ignored for decades, until accident, determination and serendipity combined to bring an elusive trove of archival images in Ottawa back into circulation. For ecologists first viewing these decades-old images, one question was front of mind: how do these images differ from the landscape today? So began what grew into the Mountain Legacy Project (MLP), as intrepid researchers – from the sciences, social sciences, humanities and arts – went into the field, climbed mountains, stood where surveyors had before and began to systematically repeat the photographs in order to better understand the ecological and cultural history of Canada's mountainous regions.

The changes the repeat photographs capture are remarkable. In heavily mined regions of southwestern Alberta, mountaintops are missing from the contemporary landscape, at times causing some doubt as to the location and orientation of the original photographs. In Jasper National Park, protected "wilderness" spaces have undergone remarkable transformations, as meadow and shrub are replaced with conifer stands, gondolas and ski resorts. These striking contrasts leave MLP researchers to speak about the "testimonial" quality of the image pairs and the "visual arguments" they present. Indeed, much has been written about evidence and witnessing in photography (Baer 2002, Bell 2011, Blocker 2009, Edwards 2001, Ghosh 2019, Lyndon 2010, McKee and Forsyth 2019, Tucker 2006), although the focus tends to be on the photographs themselves. Indeed, Larsen (2008, pg. 143) argues that anthropologists often shift "directly to the representational worlds of photographs and skip over their production, movement and circulation." Which is why our account of making images dwells on the labours, sensibilities, technologies, institutions and lands that are brought together in productive ways to enable MLP repeat photography.

First, it is important to note the MLP researchers rarely work with photographs as we once understood them – printed and preserved in albums, stored in shoeboxes or displayed in frames. They work in digital copies of glass plate negatives, digital repeat images edited using software to match up to the "original" in spatial resolution, and copies of historical photographs printed to sheets of letter-sized printer paper which they carry into the field. Prior to fieldwork, they immerse themselves in other visual media too – both physical and digital maps and renderings on Google Earth – in order to familiarize themselves with terrain and plan their route. In addition, various trip reports will be relied upon, including notes from MLP field teams and accounts on popular hiking and climbing websites. As they study their objective, they begin to anticipate the day and all the challenges and pleasures it will present.

They incorporate these details as measured distance and elevation gain, but also as the cumbersome bushwhack, the easy trail, the stretches where they will hop across a talus field and where they will slide down scree (even when they're trying to go up).

Most often, MLP teams work in groups of three (a good number in case of emergency), lugging a specially adapted tripod, camera (recently, a Fuji GFX-100), azimuth, handheld weather meter, survival gear, and copies of the surveyor photographs – printed ones stored on a clipboard and perhaps digital copies accessible on their phones – up a mountain to the surveyor "station" (the site from which the original photo was taken). As they near the summit, they will begin to see familiar terrain.

It's familiar in the sense that they recognize it, though they have likely never been there before. Hours spent

managed the discomforts and dangers of fieldwork, to how they composed an "objective" image. For instance, M.P. Bridgland was tidy and meticulous (MacLaren, Higgs, and Zezulka-Mailloux, 2005). Care and pride are evident in the hand-painted lantern slides he produced. Other surveyors occasionally capture members of the crew in the foreground – sometimes resting, sometimes moving – perhaps suggesting an impatience to carry on, although perhaps also an assurance that the scientific method can tidy up any such messiness. In other words, the images are not passive reflections of the world (objective or otherwise). Moreover, in order for repeat photographs to become fixed points of comparison – capable of witnessing change and enacting arguments of environmental degradation or lost Indigenous stewardship on the land – memories and media must be mobilized in exacting ways. The images shown here are

of the historical landscape that are created with the assistance of custom software and machine learning. These models enable new views of the past, as if the original photographs were aerial in orientation. But they also help generate new work relationships, jargon, even postures, as researchers gathered in a lab, hunch over computers, crack jokes about pixels and rely on trained, collective intuitions, to skillfully reconstruct the past.

As Grasseni (2010) discusses, to exercise skilled vision means to belong socially to communities that more or less share aesthetic sensibilities. Writing specifically about photographs, Pinney (2004, pg. 8) proposes we consider "corporetics," or embodied aesthetics. Similarly, Poole (1997) writes about "gut aesthetics." In either case, what is emphasized is that aesthetic judgement is not (just) cerebral or visual, but embodied, social, and sensual. Learning to see in the correct manner (and in

new ways) casts people into relationships with peers, tutors and students, things, images, places, and computer programs as they develop a shared sensibility alongside precision photography and mountaineering skills. During MLP work, modes of attention and visual attunement are continually reconfigured, moving back and forth between landscapes, forms of photographs (high-res, low-res, digital, print), and various computer models, artifacts that can

powerfully mediate and generate a common sense. To witness, then, is not to see in a narrow sense. Seeing is a whole-bodied social practice, variously trained, intuited and reflected upon. Producing MLP images of the landscape does not merely document places but is itself an embodied act of place-making (see Low 2017). ❖



References cited

- Baer, Ulrich. 2002. *Spectral Evidence: The Photography of Trauma*. Cambridge, MA: MIT Press.
- Bell, Lynne. 2011. "Unsettling Acts: Photography as Decolonizing Testimony in Centennial Memory." In Payne, C., Kunard, K. (Eds.), *The Cultural Work of Photography in Canada*, pp. 165–182. Montreal, QC: McGill-Queen's University Press.
- Blocker, Jane. 2009. *Seeing Witness: Visuality and the Ethics of Testimony*. Minneapolis: University of Minnesota Press.
- Edwards, Elizabeth. 2001. *Raw Histories: Photographs, Anthropology and Museums*. Oxford: Berg.
- Gell, Alfred. 1998. *Art and Agency*. Oxford: Clarendon Press.
- Ghosh, Tanushree. 2019. "Witnessing Famine: The Testimonial Work of Famine Photographs and Anti-Colonial Spectatorship." *Journal of Visual Culture*, 18(3):327-357.
- Grasseni, Cristina. 2010. Introduction to *Skilled Visions: Between Apprenticeship and Standards*, pp. 1-20. Edited by Cristina Grasseni. New York: Berghahn Books.
- Hevia, James. 2009. "The Photography Complex: Exposing
- Boxer Era China (1900–1901), Making Civilization," in *Photographies East: The Camera and Its Histories in East and Southeast Asia*, ed. Rosalind C. Morris. Durham: Duke University Press
- Latour, Bruno. 1987. *Science in Action*. Milton Keynes, UK: Open University.
- Latour, Bruno. 1990. "Drawing Things Together," in *Representation in Scientific Practice*, ed. M. Lynch and S. Woolgar. Cambridge MA: MIT Press.
- Latour, Bruno. 2005. *Reassembling the Social*. Oxford: Oxford University Press.
- Low, Seta. 2017. *Spatializing Culture: The Ethnography of Space and Place*. New York: Routledge.
- Lydon, Jane. 2010b. "Behold the Tears: Photography as Colonial Witness." *History of Photography* 34(3):234-250.
- McKee, Taylor and Janice Forsyth. 2019. "Witnessing Painful Pasts: Understanding Images of Sports at Canadian Indian Residential Schools." *Journal of Sport History*, 46 (2): 175–188.
- MacLaren, Ian M, Eric Higgs, and Gabrielle Zezulka-Mailloux. 2005. *Mapper of Mountains: M.P. Bridgland in the Canadian Rockies 1902-1930*. Edmonton: University of Alberta Press.
- Pinney, Christopher. 2006. "Four Types of Visual Culture" In *Handbook of Material Culture*, Chris Tilley, Webb Keane, Susanne Kuechler, Mike Rowlands and Patricia Spyer (Eds.), pp. Thousand Oaks, CA: SAGE
- Poole, Deborah. 1997. *Vision, Race and Modernity: A Visual Economy of the Andean Image World*. Princeton, NJ: Princeton University Press.
- Smith, Trudi. 2007. "Repeat Photography as a Method in Visual Anthropology." *Visual Anthropology*, 20(2-3): 179-200.
- Tucker, Jennifer. 2006. *Nature Exposed: Photography as Eye-witness in Victorian Science*. Baltimore, MD: Johns Hopkins University Press.

Diorama Map Beppu

Sohei Nishino

Cities are always "amplifying" themselves repeatedly. They emerge and disappear as they continue to integrate themselves. With a camera in hand, I walk through specific cities to take photographs--those of bird's-eye views, of views captured by looking up above me, or views from various locations along the road.

Thereafter, referring to a map, I put together all the "fragments" that I have captured on various canvases, so as to reconstruct my memories and enable myself to render into images the specificity of the respective cities and the appearance of "the present" whose glimpse the cities have given me. By doing so, I try to express the geographical representations by using photographs of specific things and events that are completely different from the symbolic representations on maps. This is my attempt to express the appearance of the cities by integrating my personal experiences and memories. What results is not at all a map to convey precise information, but the record of how I, as a human being, have walked through and looked at a city's streets. The constant "movement" constitutes one of the most important elements of the Series, Diorama in Map. The series is the result of my experiences and my time spent encountering the various phenomena as I move through a certain place.

At the same time, by using all my methods of photographing as the elements that constitute a map I try to actualize, in the form of a bird's-eye-view, my awareness of the world that spreads out before me, immediately before my eyes. Along with being the representation of my awareness, it is the appearance of a city's vitality. I try to capture the cities, not necessarily as the entities consisting of the symbolized information and material buildings, but as the fresh and organic life that is the accumulation of the experiences and activities or the history or memory of the people who live there.

A great many processes are included in the production of this work. I can say that each of these processes constitutes a part of my journey through the cities. The reason for that is my belief that photographs are not completed at the moment they are taken, but are completed in the process of recollecting the memories thereafter by confronting them again. I believe that what results from confronting these enormous numbers of photographs and integrating them again in the form of a map is a way of actualizing both my personal portrait as well as the appearance of a specific city whose glimpse it has given me. Moreover, by emphasizing "repetitions" in this series, I try to see the transformation in my personal way of responding to cities

and of my way of communicating them, not to mention the actual transformations of the cities as structures. I do so by looking at one and the same city at a specific time. For instance, I produced "Tokyo" in 2004 and once again in 2014. Diorama Map Beppu was created in 2020, when I visited Oita, Japan, one of the most well-known cities for ONSEN (hot springs). For that, I spent about a month shooting over 200 hot springs including very small ONSEN for local people and more commercial ones open to the public. For this work, many of the shots are taken indoors, capturing more of the people's expressions. ❖



The Vertical View

Nathaniel White-Steele

But maps are two-dimensional. Attempting to represent reality on two-dimensional surfaces, they not only mirror it but also shape the thing they represent. As much as describing the world, they create it.

Weizmann, 2002



In 1849 the United States of America and of Mexico agreed that the international boundary between the two nations would run along the deepest channel of the Rio Grande/Rio Bravo del Norte, from El Paso to the Gulf of Mexico. This boundary line was decided with no real knowledge of the region; neither state had mapped or surveyed the course of the river. Nor did they extend any consideration to the Carrizo, the Lipan and the Tigua who, among others, populated the area. It was decided that the boundary would run the course of a river. However, a river does not make for the neat boundary line that was intended. The Rio Grande is a river that moves and meanders, defying easy delineation. And so the natural world had to be brought to heel. The river does not redraw the boundary as it changes course, it is instead rudely and crudely forced back into its old bed that runs along the border line.

A border is an assemblage of lines of sight, argues C.J. Alvarez in his book *Border Land, Border Water: A History of Infrastructure Building along the US/Mexico Divide*. The vertical gaze, in this instance is a "one-way gaze of superiors onto inferiors, a looking down from high to low" (Steyerl, 2013, p. 13). Created with the intention of stripping back complexity, this gaze manufactures a land simple enough to satisfy the "cartographic imagination inherited from the military and political spatialities of the modern state" (Weizman, 2002). It is of no surprise then that since the treaty of 1849 the vast majority of aerial depictions of the Rio Grande between El Paso and the Gulf have been created or commissioned by institutions of state for the purposes of border surveillance, flood planning, and wall building. The view from above is the visual register of authority. It defines and inscribes lines of power on the land.

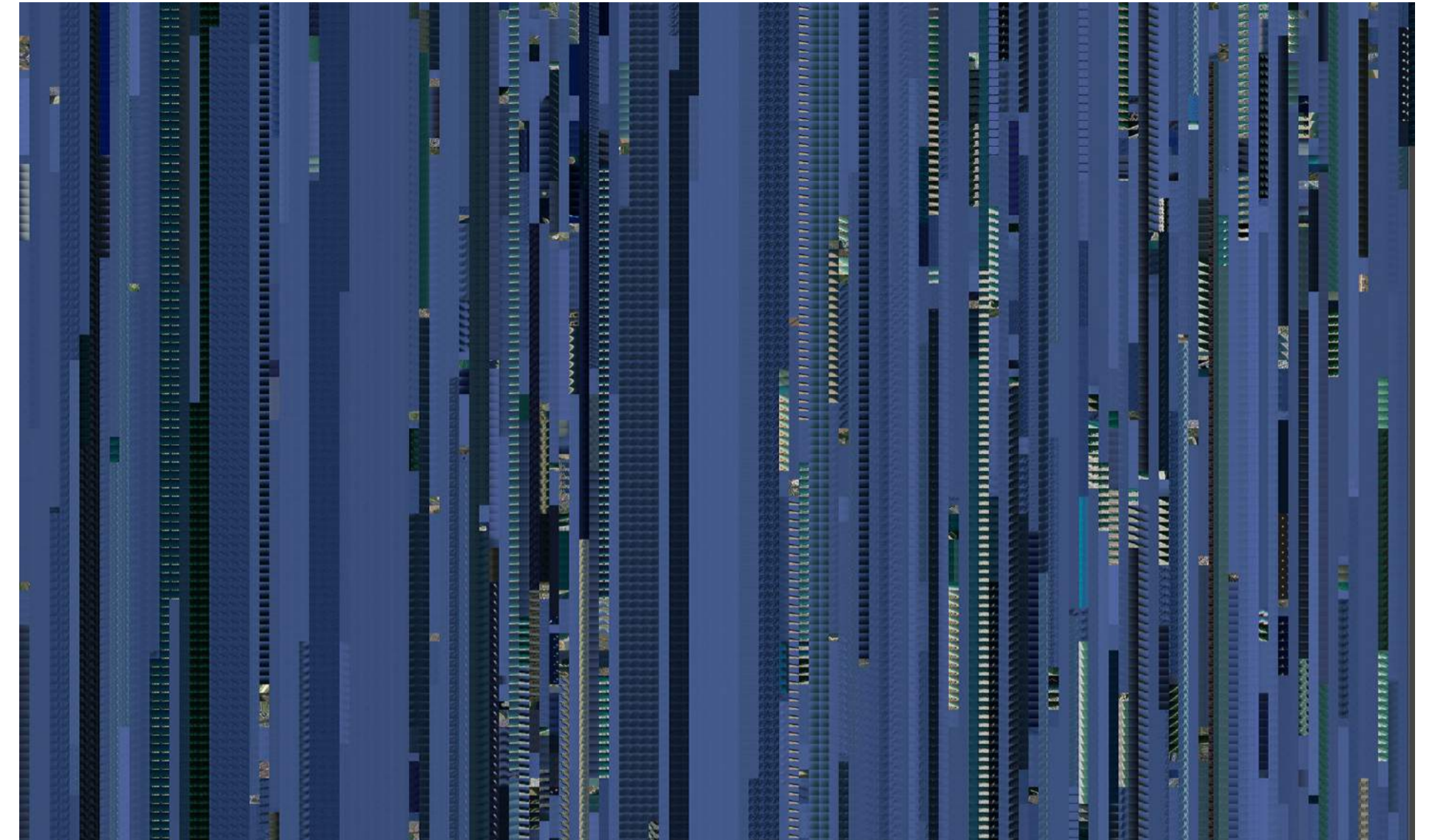
In my most recent work, *A Line in the Water*, I look at how the border both requires and undoes the vertical view. Those who drew the line paid no heed to whether it made sense for the border to be there. The work looks at how in the 174 years since the treaty was signed, this act has spawned a whole slew of maintenance practices, infrastructures, industries and ideas about how to keep the border and the river aligned. It looks too at how the sculpting of the land into a neat demarcation of the state employs all forms of unusual practices. In the early 20th century, landholders on both sides of the border built pontoons into the river. These were designed to divert the current and send the fast-moving water to the opposite bank to eat away the land there. They simultaneously protected one's own bank from erosion, and

the border was shifted erratically north and south in this manner. Much later, to prevent erosion a species of fast-growing cane was introduced, with the intention of stabilising the riverbanks. However, the cane is invasive and swiftly took over, not only blocking the view of the border enforcement apparatus, but acting as a levee, pushing any high water to the opposite bank and worsening flooding. The organisations that govern the river waged biological warfare at first, attempting to control the cane with a species of wasp, before ultimately turning to broad spectrum herbicide and slash and burn tactics. Where the vertical view is clean, the view from the ground is messier. The realities of the landscape subvert the vertical in everyday life. Attempts to control the river and the borderland spawn all manner of tactics that are opportunistic and defensive, but nevertheless ever-present improvisations. It is that tension that *A Line in the Water* is responding to.

Sometimes, the vertical perspective serves land and population control. The images produced for the border survey are created with a purpose of showing how the land can be utilised, made logical, extracted and privatised. The early border surveyor for the United States was one William H. Emory, an army captain, and as a part of his survey, much time was given to the categorisation and documentation of the flora and fauna of

the region, arguing for where areas could be settled by white Anglo-Americans. Sometimes, the vertical gaze is a boast. When Eadweard Muybridge photographed his mammoth plate panorama of San Francisco in 1887, it was taken from the unfinished viewing tower of the mansion of railway magnate Mark Hopkins. Looking down on the city it shows a view that can never be reached by the ordinary citizen and shows not only the existing wealth and ownership of the commissioners, such as Leland Stanford's stables, but the unwritten knowledge that this was their city, their view, and that that view connoted their dominion.

Novel technologies have increasingly enabled ordinary citizens to inhabit the vertical gaze, from the window of an aeroplane, the personal drone, the satellite image. In response, new forms of controlling that view have been invented. We might think of the strange artistic blurrings of Dutch military sites, as in Mishka Henner's work, or the empty map tiles where Chinese state concentration camps for the Uyghur population sit, as shown by the reporting of Megha Rajagopalan, Alison Killing, and Christo Buschek. Nevertheless, the democratisation of the aerial view has provided photographers and investigators the tools to refract that power.



In my own work, *Routes*, I used images extracted from Google Earth to scramble perceptions of the European landscape. In looking at *Routes* the spectator is similarly placeless, confronted with a wall of small, often indistinct squares, poor images all. The images are arranged into an enormous collage, overspilling the wall and on to the floor. This collage of 17,967 images shows each location where someone died or went missing while moving along 3 of Europe's major migration routes between January 1st, 2014 and April 6th, 2020. Each image in the collage has been extracted from google earth, and for cases in which more than one person died or went missing, the image has been repeated, so that every individual is represented. The result then, is a landscape, consisting of "implausible concatenations of times and spaces alike", to borrow Steyerl's phrase (Steyerl, 2013, p. 14). These people did not die, did not go missing at the same time, and not within view of each other. But in coalescing these moments of space and time, the work seeks to overwhelm, and rush out from the wall, creating something dizzying, and horrifying - the consequences of our border regime.

What does it do to look down? In his 1980 book *The Practice of Everyday Life*, Michel de Certeau gives the example of the view from the top of the World Trade

Centre as the "view from nowhere" - the "atopia-utopia of optical knowledge". Any elevated view, the pursuit of which is analogous to the desire for power, "transforms the bewitching world by which one was 'possessed' into a text that lies before one's eyes. It allows one to read, to be a solar Eye, looking down like a God." This is an eerie perspective. In her 2013 essay *In Free Fall: A Thought Experiment on Vertical Perspective*, Hito Steyerl discusses how in looking down upon the world, the horizon loses its power for the orientation and placement of the individual spectator. In losing the horizon, the spectator comes to inhabit a floating and ghostly point of view. As in the paintings of JMW Turner, the spectator inhabits a viewpoint "suspended in the mist, floating over an absent ground" (Steyerl, 2013, p. 11). As Steyerl elucidates, in Turner's 1840 painting *Slavers Throwing overboard the Dead and Dying—Typhoon coming on*, the viewer is not part of the landscape, looking upon the world, but they sit above it, hanging in the air.

A similar perspective is adopted in the tintype image of the Rio Grande's path. The base image is made through a programme called QGIS, which uses LiDAR data to map the topography of a given area. The technology strips back everything from the land, showing only the contours of the earth. The viewer then, is not only

dislocated from the river, but from real space entirely. This viewpoint mimics the logic of instrumentalisation and delineation which border regimes place on the landscape. This image however also contains the uncertainties of that delineation, the presence of multiple lines, multiple river paths, confusing the eye of the state as to the extent of its own body. It presents evidence of the border's and river's movement, shown in the various snaking paths. The image has been rephotographed onto tintype, a wet plate collodion process similar to one used for the initial boundary surveys.

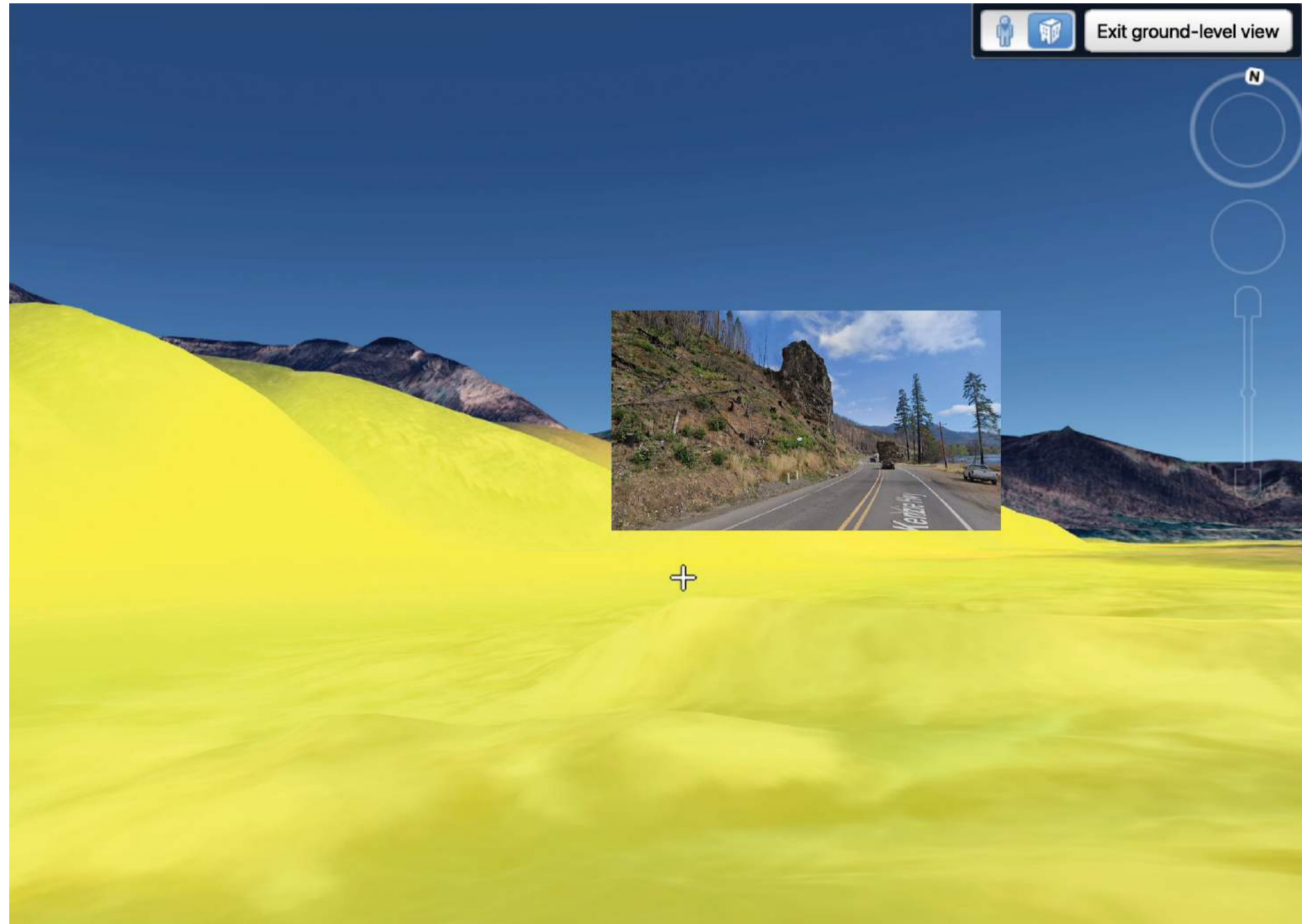
In my work both the vertical and the horizontal begin to meld. In creating a clean and understandable line from above, other lines of sight must be met, the watchtower must be erected, the vegetation cleared. The border demands lines of sight. The bareness of the map must be met, the clear view of the border that we see from above informs the clearing of cane, the building of walls and the placing of barrier buoys. These activities are as much about seeing the border as they are about bringing it into being. ❖

References Cited

- Steyerl, H. (2013). *In Free Fall: A Thought Experiment on Vertical Perspective. the Wretched of the Screen*, Sternberg Press, New York, 2013, pp. 12-30.
- Weizman, E. (2002). *The politics of verticality*. retrieved from opendemocracy.net
- de Certeau, M. (1988) *The Practice of Everyday Life*. Univ. of California Press, Berkeley 2013.

Entanglements of smoke and pixels

Suzanne Schaaf



At this point I've spent more time reflecting on, deconstructing, reconstructing my memories of the fieldwork than I've actually spent in the field. My memories have become strangely connected with the footage that I extracted, perhaps the footage even has become my memory. Photos and videos have been sorted into folders on my hard drive. The folders stick to an empty white background, the space between the titles create a distance that organizes the matter into clear compartments. My memory is broken up into compartments as well, and re-assembled through the process of editing and dreaming. I sometimes dream of images that were never recorded with my camera.

The smell of old growth forests and the sound of the McKenzie River blends with the image of the inside of a house the doors are left open, wind blows through the windows are covered with ashes of distant burning forests the sound of a helicopter comes near it blows the ashes through the living room reminding me of a glitching TV screen this is not a dream In the voice over of my film I share a dream 'a dream that really happened, more or less, which means it is more like a memory that I remembered in my sleep' anyway, in the film I play with fiction and reality, like we do when we're dreaming where we compose fragments of memories, impressions, place and time to a synthesis a distancing move that allows me to come to a deeper understanding of how we experience our environment

When I revisit the landscape of my fieldwork on Google Maps, it becomes a landscape of pixels. The pixels change form and color with every click of the mouse. These images have traveled through space, visited satellites, before they form the digital landscape on my screen. Through an exploration of the digital landscape, I discovered a mode in Google Earth that made me think of video games. Somehow it really struck me, and I found myself in a playful mode of exploring and re-discovering a landscape that has become familiar to me. Only this time, from a completely different perspective. By now I've spent hours and hours floating above the burnt valleys of the Willamette National Forest, where the clicking of my mouse allows me to travel between the time of 'before' to 'after' the fire.

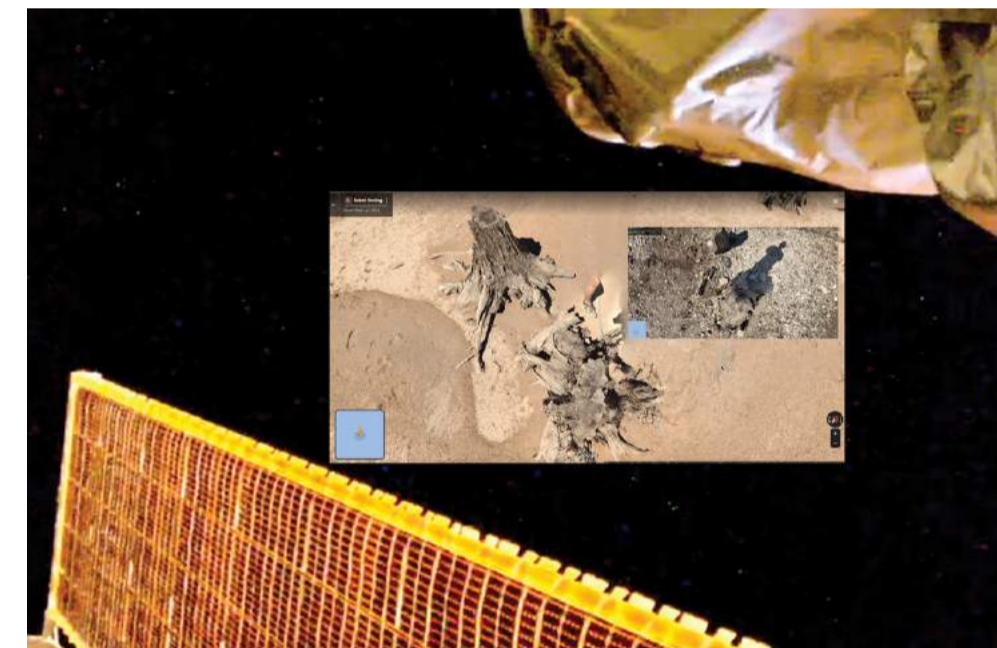
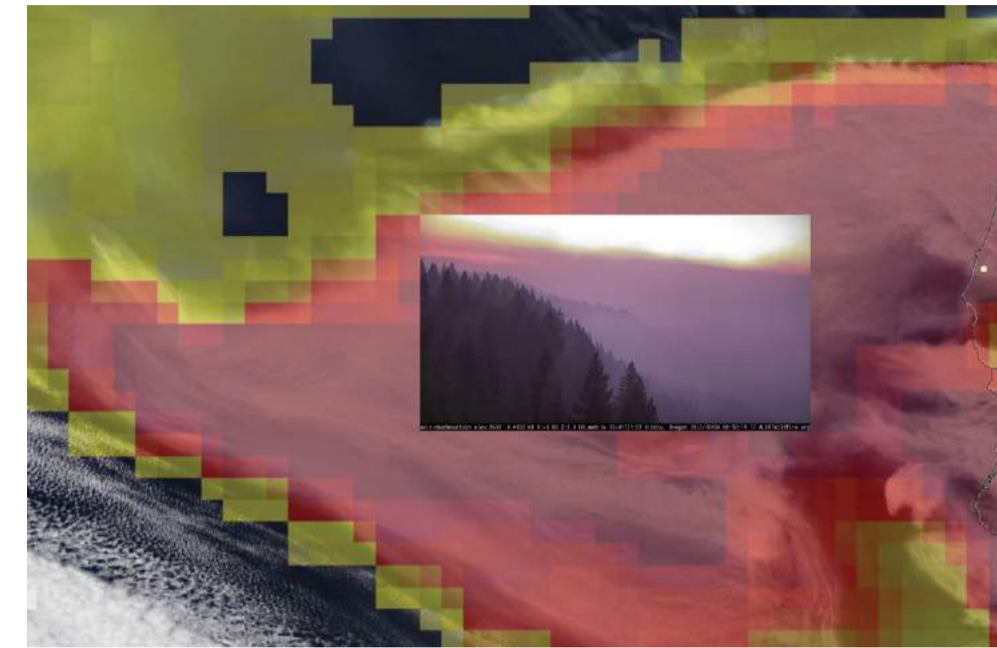
In this mode the view becomes glitched. Windows are deformed and trees become strange entities, entangled with the sky and buildings around them. The glitched landscape relates to the recovering landscape that I experienced during my fieldwork in a daunting way. They are both transformations that connect with the experience of loss. The digital landscape is vulnerable to updates, as the landscape is to fire, like memory is to time.

Google Maps merely has data of months before, and months after the fire. A strange thought, as if the time in-between was just an 'event' that accidentally wasn't recorded. Or perhaps never happened. Like film, with gaps between every frame. It's like a montage that evokes action (eventness) through juxtaposition. A montage that troubles past, present and future within the concept of linear time.

So-called Glitchers explore unknown perspectives of digital landscapes. Perspectives that provide possibilities for different narratives. According to Alan Meades, 'those who use glitches to go 'under the map' are presented with shifting incoherent vistas that shimmer, fracture and break, as planes and objects are pushed in-and-out of system memory.' (2015) The shimmering, fracturing and breaking objects that are pushed in and out of system memory show how glitching can relate to Karen Barad's concept of spacetime mattering, where:

"Each moment is thickly threaded through with all other moments, each a holographic condensation of specific diffraction patterns created by a plethora of virtual wanderings, alternative histories of what is/ might yet be/ have been. Re-membering, then, is not merely subjective, a fleeting lash of a past event in the inner workings of an individual human brain; rather, it is a constitutive part of the field of spacetime mattering." (Barad in Tsing et al., 2017: 113)

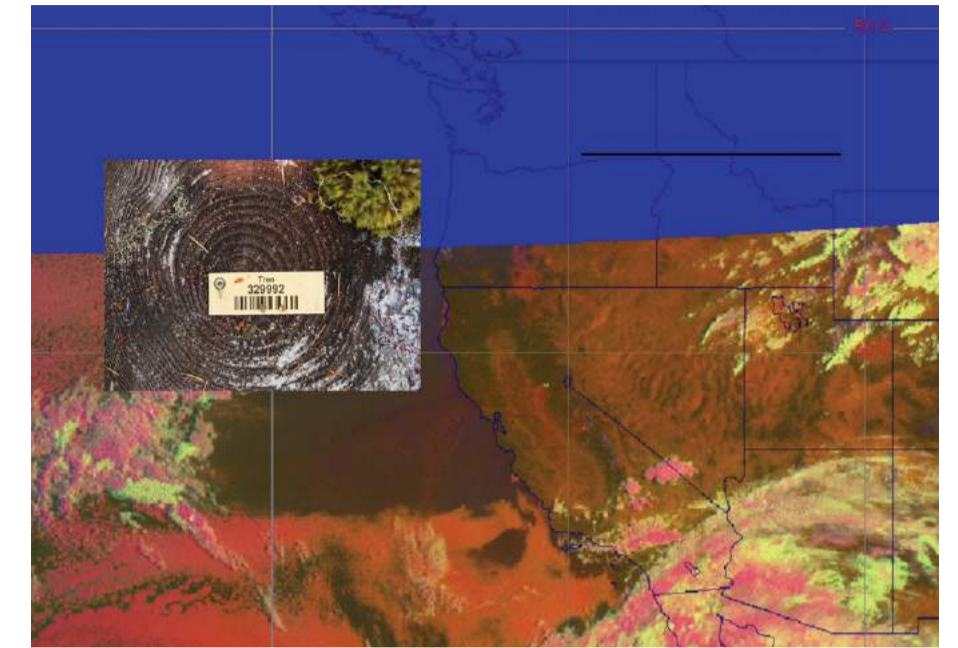
At their turn, the digital landscapes trouble the idea of landscapes as objective matter, and show that they are a result of complex relationships between humans and non-humans, mediated in the present via the digital realm. In an attempt to trouble landscapes as objective matter, I have selected and assembled images that depict the area near the Willamette forest in Oregon. This area was burnt in the Labour Day Fires in 2020. The images show different perspectives on the affected landscape and explore how it is captured with multiple technological tools.



'I read in a newspaper that one by one, lookouts are being shut down.' (Schaaf, 2023, 0:14:10) Now, landscapes which are vulnerable to fire are being watched continuously through surveillance cameras. It seems like a distancing move, like when you explore a place from the viewpoint of a Google Maps car. However, human and non-human entanglements show through the digitally registered spreading of fire smoke. The smoke haunts the skies, confusing human and non-human beings in their perception of time, leaving them drowsy from the deprivation of oxygen. The particles aren't visible to the eye, however, the multiplication of particles creates an eerie orange sky. For days, the particles are held hostage in the valleys between mountains. Once they start traveling, the surface of the land is entangled with the sky as the smoke finds its way through the air and reaches human and non-human beings across the world. Its movement is traced by satellites that float from a far enough distance, in deep spacetime, to see not from within a fog of particles, but from above. Their images are sent back to the earth, and are formed into digital maps. The digital maps depict how fire transformed tree, plastic, metal and animal particles float through the atmosphere, and become matter of other matters.

The realities of digital landscapes like Google Maps are haunted by 'ineliminable digital features of existing material conditions' (Barad in Tsing, Et al. 2017:106-107) as much as 'real life' landscapes are. An example of how digital remnants of the past linger in the digital landscape of Google maps can be found

in my film *The Memory of Glitch* (Schaaf, 2023). In the film I use technology like surveillance cameras, satellite images and Google Earth to look for traces of the past in the present, which results in a form of memory forensics. In a shot of a Google Maps exploration (Ibid.: 0:23:04) the cursor moves over the burnt landscape near Detroit, Oregon. It shows images of the aftermath of the Labour Day fires that were uploaded by an unknown person, while in the same landscape another person uploaded his family get-together on a boat, floating the lake of Detroit, as if nothing ever happened. When we follow the cursor we come upon something curious: these aren't just images uploaded into the landscape, but the images themselves become a landscape that is at the same time constructed by people who were there, but aren't there anymore. Parts of their bodies, or shadows still exist, but the technology of Google Maps has glitched them out of the picture. These tree trunk-human-leg compositions (image 4) are glitches that accidentally assemble the human and non-human within this landscape, playing with fiction and reality, like we do when we're dreaming. They create possibilities for alternative narratives about this place, where humans become pixels become shadows become tree trunks become glitches become memories that once may have belonged to someone else but have now started to blend with my own. ❖



Images

Image 1: Google Earth. Maxar Technologies. Landsat/Copernicus. GNES/Airbus. 09-29-2020. Exact location unknown. Burnt hillsides are glitched and become yellow. View from within, game view.

Image 1.2: Google Maps. 44128522, -122.380999. OR-126, Vida, OR 97488. View from a Google Maps car. goo.gl/maps/ugQBvQDS7XIV4fZA

Image 2: FIRMS. Satellite images. A fire resource map shows where the smoke traveled during the Labour Day Fires. Red and yellow layers show the intensity of the smoke. View from above. firms.modaps.eosdis.nasa.gov

Image 2.2: ALERTwildfire.org. Surveillance camera shows the spreading of an active fire from Dead Mountain in 2022. Camera view - DEAD MTN OR. www.alertwildfire.org

Image 3: NASA. N. America GOES-W. 09-07-2020. Multi Channel RGB. Satellite images. View from above. satcorps.larc.nasa.gov

Image 3.2: Sony A7III. Photo taken by author. 07-2022. Post-fire clear cut area in Detroit, Oregon. View from above/camera view.

Image 4: Live High-Definition Views from the International Space Station (Official NASA Stream) - YouTube, 2022. Camera shows images of earth and space, parts of the ISS or glitches due to loss of signal. View from above. www.youtube.com/watch?v=KG6SL6Mf7ak

Image 4.2: Google Street View. Detroit Lake State Recreation Area. Robert Gerding, 2015. Remnants of a human leg, soil and tree have become entangled through a glitch. Fragmented view.

Image 4.3: Brian Bonham. Detroit Lake State Recreation Area. 2015. Remnants of human shadow and tree trunk have become entangled through a glitch. Fragmented view.

Notes

1. This text was loosely inspired by Freek Vlieten's play *Zo Gaat Het* and Kurt Vonnegut's book *Slaughterhouse Five*. One of Freek Vlieten's sentences (2015: 24) was translated from Dutch to English by me and placed in context of my own memories and words.

References cited

Barad, K. (2007). *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Durham, NC: Duke University Press.

Barad, K. (2017). *No Small Matter: Mushroom Clouds, Ecologies of Nothingness, and Strange Topologies of SpacetimeMattering*. In: *Arts of Living on a Damaged Planet. Ghosts of the Anthropocene*. ed. Anna Tsing et al.(eds.), 103-120. Minneapolis/London: University of Minnesota Press.

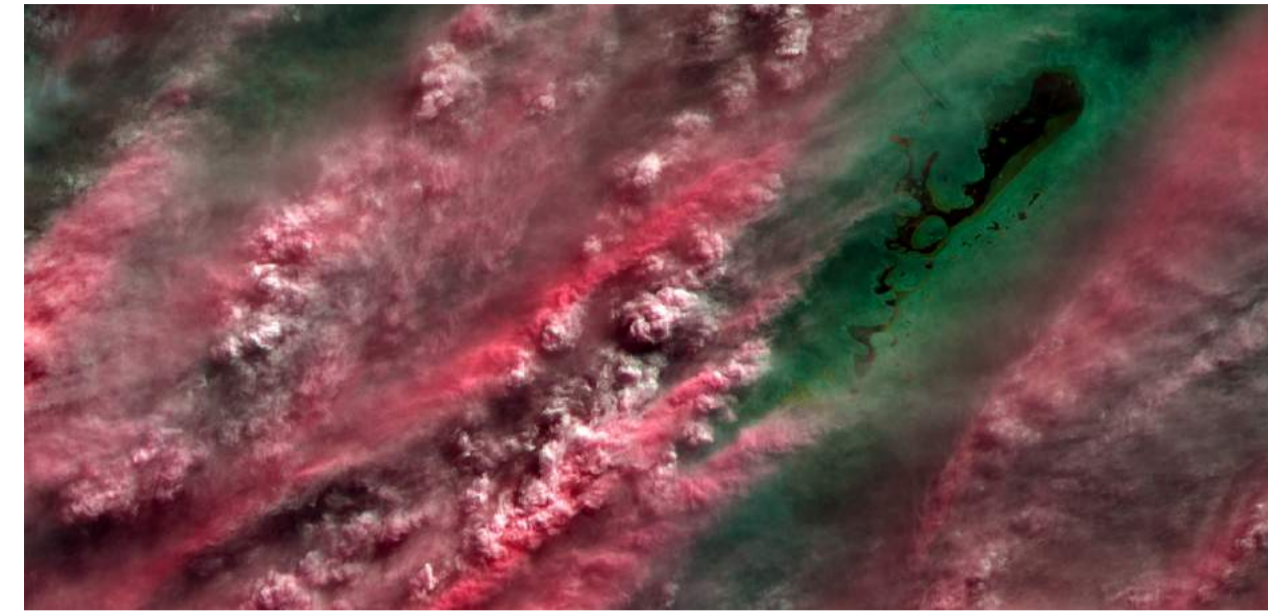
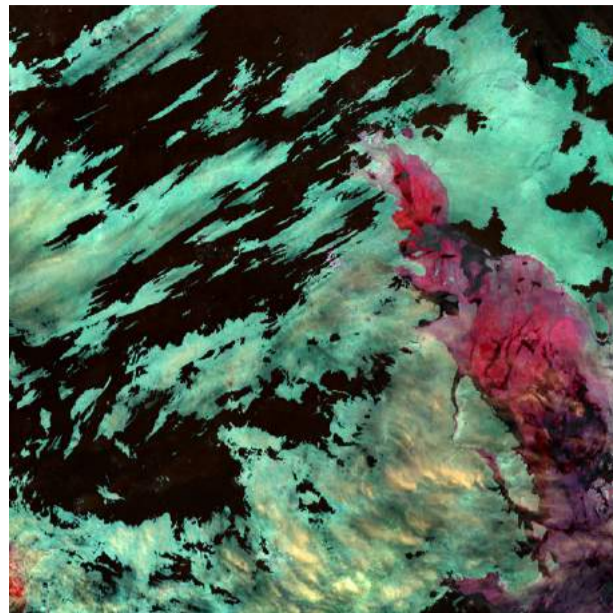
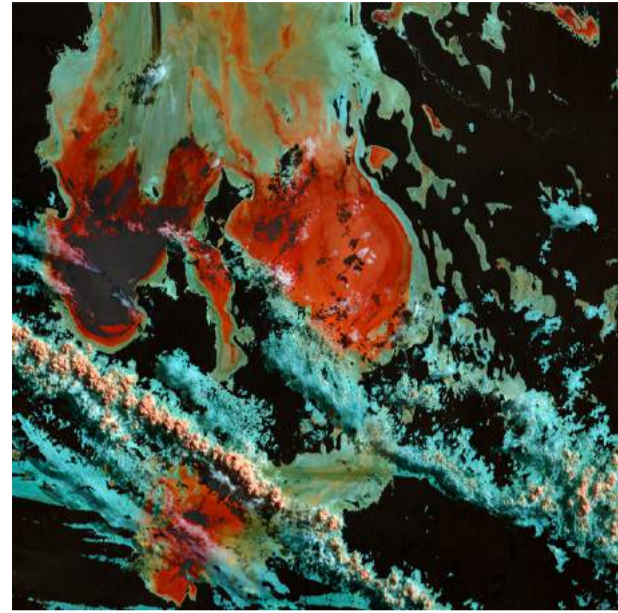
Meades, A. (2015). *Beyond the Animated Landscape: Videogame, Glitches and the sublime*. In: Pallant, C. (ed.) *Animated Landscapes*. New York: Bloomsbury.

Schaaf, S. (2023). *The Memory of Glitch*. Digital. The Netherlands.

Vlieten, F. (2019). *ZO GAAT HET*. De Nieuwe Toneel Bibliotheek, 521.24. Amsterdam.

Blind Spots in the Orbital Sensorium

Grayson Cooke

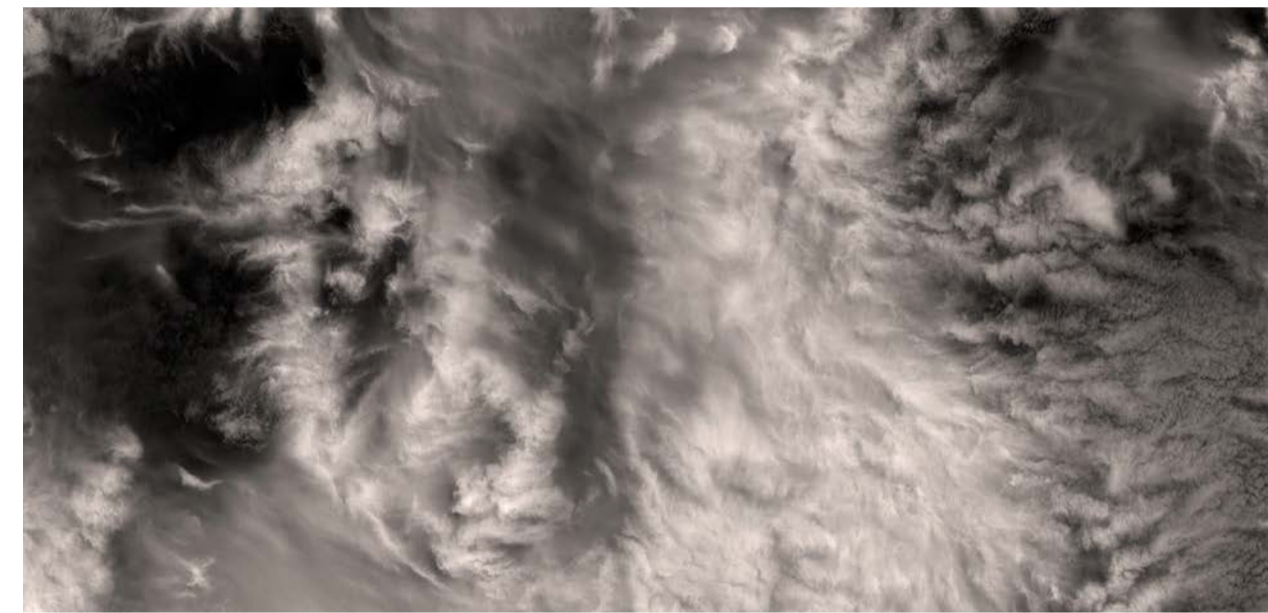
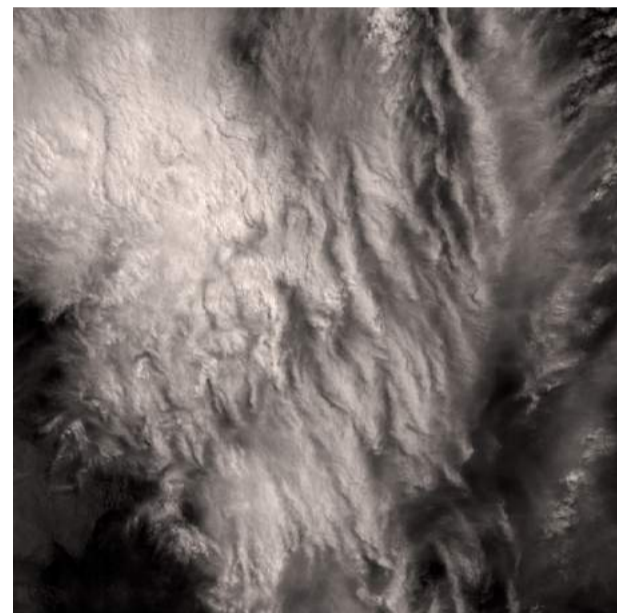
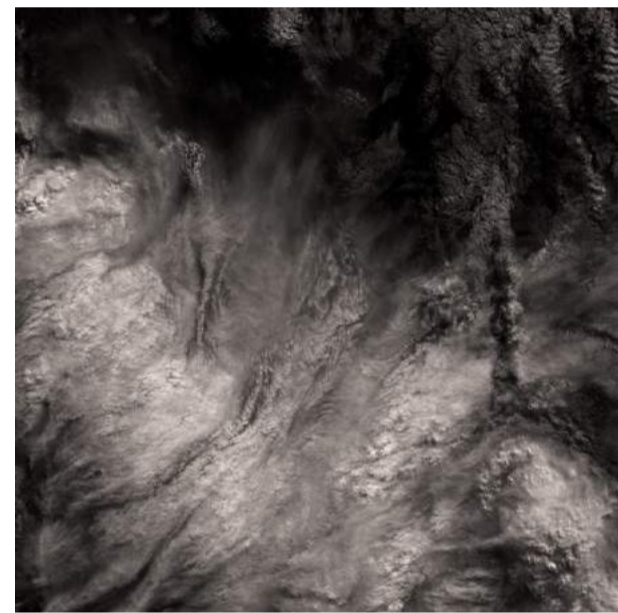


Kati Thanda / Lake Eyre 2017-03-12

Lake Torrence 2017-05-15

Lake Gilles 2018-01-10

Lake Gilles 2018-06-19



Great Australian Bight 2019-03-07

Great Australian Bight 2014-11-13

Great Australian Bight 2015-09-11

Great Australian Bight 2018-07-29

On 23 July 1972, the enterprise of Earth observation from space was inaugurated with the launch of the Earth Resources Technology Satellite, later renamed Landsat 1. Since then, Landsat 1 has been joined by a vast and ever-growing panoply of remote-sensing satellites dedicated to gathering physical, chemical and meteorological data about the Earth, not to mention the thousands of satellites used by militaries and the private sector for telecommunications, global navigation, surveillance and covert intelligence.

Earth observation satellites bristle with sensors, using optical, radar and lidar sensing to gather many forms of data about Earth's surface and atmosphere. Programs such as Landsat and Sentinel, run by the United States Geological Survey and the European Space Agency respectively, track the health of vegetation, the presence of water, the changing of coastlines and waterways, using infrared and thermal imaging to gain insight into phenomena invisible to the human eye. We could think of this system as an enormous prosthetic cyborgian sensorium, an orbital sensory apparatus that sees, hears and feels the changing Earth in ever new ways.

Mostly it is scientists doing the sensing, and for good reason: Earth observation data informs everything from mineral exploration to agricultural management and environmental restoration, and it is used by climate scientists to track the effects of anthropogenic environmental change. But this disciplinary restriction begs the question: what are we missing out on,

by virtue of this instrumental focus? What are the blind spots in the orbital sensorium? What would an interdisciplinary approach to satellite data look like? What else is it possible to think and feel if we expand the purposes and contexts for using satellite data?

Geoscientists use satellite data to monitor environmental change – but because over 60% of the Earth's surface is covered by clouds at any one time, they use complex algorithms to filter clouds and cloud shadow from the data pixel by pixel. The result of this filtering is classed "invalid data" and once filtered is never used again. Yet this shadow archive contains wonders – a vast global record of the planet's cloud layer intricately sliced out from the surface below.

Inverting normal scientific process, my "Invalid Data" project¹ is derived solely from the filtered data, showing everything deemed unusable for the purposes of scientific Earth observation. The resulting images are simultaneously algorithmic, computational and photographic, and when rendered using near- and short-wave-infrared light, enable a surreal colour space that separates cloud layers and types, foregrounds atmospheric textures and phenomena invisible to the human eye, and brings insight into the incredible variety, energy and often sublime creativity of the cloud layer.

The algorithm does more than just record images of cloud though. It also picks up a great deal of the land when visible through thin cloud, as we see in the Kati Thanda and Lake Torrence images. Or it confuses

features on the ground for cloud pixels; under certain conditions, elements of the land that would normally be classified as "valid", such as roads or the reflections off salt lakes and dune systems, are assessed as being sufficiently like a cloud to be removed. Through this we gain visual insight into the equivocality of the algorithm. These "false positives", or false negatives really, have an awkward epistemological status; discarded as invalid, yet valid in parts, they stand as fascinating visual evidence of the planet's stubborn resistance to conform to algorithmic logic.

The images invite a multi-sensory and a cognitive reading. We can view and feel them as aesthetic confections, richly textured and coloured depictions of clouds and landforms that through the use of infrared light are rendered unfamiliar and prompt closer investigation. But we can also read them as data, or rather, as an index of how data comes into being. The black parts of the image, in the Kati Thanda and Lake Torrence images for instance, are cloud-free pixels classified as valid, hence they do not appear in this data-set. The coloured areas, classified as invalid, show us the actual salt lake blended with stripes of cumulus cloud, and we only see the land because of its spectral interaction with the clouds. All of which might lead us to realize that an entirely black image in this series would be an entirely "valid" image!

The other set of images shown here are derived from the "cirrus" band of the Landsat 8 satellite, and show a series of cloud formations over the Great Australian

Bight.² Satellite sensors are multi-spectral, recording discrete wavelength ranges of the electromagnetic spectrum in separate "bands" which are combined in different ways to highlight environmental phenomena. In addition to bands for visible and infrared light, Landsat 8 records a single extremely narrow band in the shortwave infrared, 1.36-1.39 microns, designed solely to gather images of cirrus clouds. Cirrus are very high and very cold, and their thin wispy forms are often difficult to see and so constitute a form of noise in optical data; the cirrus band is recorded so it can be used for filtering and image adjustment.

In other words, Landsat 8 records images of cirrus clouds the world over, solely in order to remove them from the record. These stunning and dramatically lit confections of wispy cloud and towering thunderstorms are gathered for algorithmic purposes and are never meant to be seen by human eyes. They are im/possible images, images under erasure, their very existence a complex form of algorithmic self-denial.

What strikes me so intensely about these images is the way they equivocate between conceptual and actual. As with "Invalid Data", there is the illicit thrill of viewing an image that was not made to be seen,

an image that in fact has no status as a "picture" of something and is simply a cluster of pixels destined for machine vision and algorithmic adjustment. Yet this conceptual layer is almost dwarfed by the physical reality of the clouds themselves. They are a kind of "atmospheric sublime" – these towering portents of weather and climate, their rippling forms, splashed across the sky and ablaze with solar radiation.

All of which gives me to think: if the blind spots stay blind, we will never get to experience images like those in the projects shown here, and all that they can give us to think, feel and know, especially about the Earth as a living, changing system. That is why widening the range of disciplines that work with satellite data is important – it brings new realms of knowledge and experience to the already thriving usages of satellite data in the sciences. ❖

References cited

1. Produced with the support of [Geoscience Australia and Digital Earth Australia](#).
2. Images made available by [USGS Earth Explorer](#).

Sensing from above via transitional concepts (Aquifer, Porosities, Image)

Andrea Ballesterio



Lately, I have developed a habit of extending an invitation when I present my research on the worlds of aquifers. I ask audiences to pause and direct their attention to their feet, the wheels of a wheelchair if they use one. I ask them to envision the points of contact between themselves and the surface, and how those are points where they push against the ground. I then ask them to try and extend their sensorium and move downwards, reach into the underground, and sense the movement of water underneath. Not through a pipe, but through the pores and minimal spaces that constitute the subsurface. I ask them to try and perceive that movement, to sense from above. But, evidently, the invitation is far from straightforward. How can people move downwards, to places that are inaccessible, and sense from above that which is beyond reach?

Doing research on aquifers has required I do just that. I have had to cultivate a form of sensing that turns my imagination downwards, acknowledging the ways one senses from above. This work seeks to disturb the extractivist imaginary that has become normative in public portrayals of the subsurface, a vision that reduces the underground to a deep-time vault containing valuable resources. One way to unsettle that vision is to look for texture, that which sits between vision and touch. Rather than identifying objects of the subsurface, one focuses on texture although not as finding; here texture is clue.

In my collaboration with geographer and artist Nick Bauch, I explored sensing from above by zeroing in on the textural qualities of aquifers. I did so via the concept of porosity. In tandem with a semester-long exploration with a group of students that joined the Ethnography Studio, I produced a series of portraits of porous substrates as seen from above. The portraits take as their subject a sponge that I photographed, from above, against different backgrounds. While portraits evoke presumptions of naturalism via their form—as images that claim to capture a subject for posterity—they are, as expected, cultural productions that embody dense and long-standing assumptions of what it means to be a subject, how said subject's history or context can or cannot be part of their portrait, and what might the artist/maker of the portrait wishes to convey. My sponge portraits offer textural renderings of the porous character of the subsurface. They turn sponge into subject.

Sponges have been critical for my thinking. Originally offered as a model by the hydrogeologists I collaborate with in Costa Rica, the sponge and its texture yielded the notion of spongy aquifers that I have explored elsewhere. As geophysical model, the sponge goes beyond the "tank" model that has become so instrumental for the extractivist worldview. When presumed a tank, an aquifer is managed as a container of financial and material liquidities waiting to be extracted. In contrast, when taken as a spongy porous

substrate, aquifers consist of arrangements of empty space, irregular movement, and the push of water against rock. These three porous properties become shared objects of concern for my collaborators and myself as we come to terms with the newly gained attention that aquifers have garnered in Costa Rica. What is presumed or made empty? How does movement channel money, water, and information in some directions but not others? How are people and other beings pushed against, brought to their limits, pressed against what seems the limit of the possible? The porosities of the sponge help shape these questions and their ethnographic exploration. In this process, porosities operate as a transitional concept.

A transitional concept guides empirical exploration in a manner that suspends the familiar tropes that take over our reflections. If, in order to apprehend the world otherwise, one has to deal with the problem of ideas that creep in and take over as common-sense explanations, how does one pause that impulse? A transitional concept effects that pause. It offers a counterbalance to what one of my advisors once called the "flashlight approach to ethnography." The latter is the fantasy that one can go to a place called the field, turn on a flashlight, and leave it on until interesting or important things automatically appear as significant. That approach presumes, first, an ethnographer that is detached from the worlds they study. A person that doesn't already have political and analytic stakes connected to the subject of investigation. Second, that approach also leaves unexplored why some things appear relevant and not others. It takes for granted the habits of thought that push one to make sense of the world in one way and not another. A transitional concept is a temporary antidote that interrupts habits of thought and makes explicit not only their ubiquity but also the fact that one's analytics are always part of the worlds one encounters. A transitional concept does not take for granted why some things, and not others, appear as important.

The portrait series I present here materializes the transitional power of porosities as a concept to sense from above. It connects the sponge, an ethnographic object my interlocutors introduced me to, and the insights one might pursue out of its significance for scientific and political mobilization in Costa Rica. Porosities is a hinge that prevents me from reducing the sponge to literary metaphor—one of my habits of thought. The portrait series is a snapshot of the process of learning how to sense beyond those habits to reach what was not originally seen. It is a snapshot of the analytic means one can use to come to terms with our view from above, moving our attention to that which sits beneath our feet and cannot be seen. The portraits in this series offer the analytic space to think transitionally in the path towards non-reproductive forms of thinking and being in the world. ❖



*We dedicate this issue to the people of Gaza
and elsewhere for whom the sky has become a
source of horror rather than solace.*

Writing with Light Collective

