

Almanac for the Beyond



Almanac for the Beyond

Containing, besides proposals for new temporal cues,
Other new useful and entertaining matter

Fitted to all the towns of Earth and beyond, calculated
for the wider tropical, temperate and polar regions

Almanac for the Beyond
ISBN 978-1-7325890-1-8

Tropic Editions
PO Box 236067
Honolulu, Hawai'i 96823

www.tropiceditions.org

Printed in South Korea
on FSC certified paper

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Front cover and images on pages 3, 5, 29,
42, 95-97, 113 from Jaimey Hamilton Faris

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Special thanks to the University of Alberta
for their generous support of this project.



The seed for this almanac germinated in the spring of 2018, when Imre Szeman and Eva-Lynn Jagoe put out a call for a summer artist and researcher residency at the Banff Centre for Arts and Creativity. The theme was “Beyond Anthropocene.” Twenty-five of us gathered in the Canadian Rockies to discuss the importance of living “beyond”—beyond the disheartening notion that the “world is running out of time,” beyond dire future forecasts, beyond the veneer of policy and technological solutions that aren’t really solutions at all. The crux of our concern was this: the Anthropocene, an increasingly popular term for engaging in discussions of human-induced climate change, left no room for identifying and practicing important alternative future-building societies.

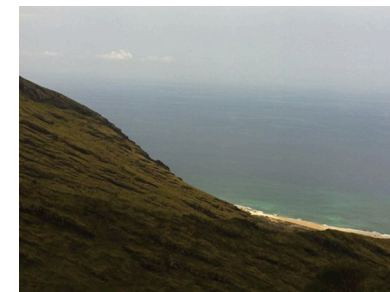
The Anthropocene is used in common parlance to signal the development of a new geological era in which climate change will be evident in the earth’s stratigraphy millions of years from now—the sixth mass extinction event, encrusted in plastic trash, oil, and concrete. But climate change, and its ensuing social and environmental injustices, are not “in the future”: they are already here. The carbon-heavy processes of modern industrialized societies have tangible effects on all of us, and they are disproportionately felt by non-industrialized societies. Narratives of the Anthropocene, essentially following a linear temporality that extends from the past of “deep time,” to “the now,” and forward to the “near and distant future,” often do not take into account the multitude of simultaneous “nows”—many of them socialities, practices, and technologies that relate more cooperatively with the world and its beings.

In Hawai‘i, where I live and work, there are many such communities based on reviving ‘ike ‘āina, Hawaiian place-based knowledge and land practices. Groups around the islands are reviving fishponds and watersheds, clearing invasive growth, building shelters, understanding the patterns of mist condensing on the mountains, replanting taro in fields that grew sugar for more than a century, and generally spending time together caring for the land, the water, and each other. These efforts in the middle of the tropical Pacific are important for learning and re-learning how to live in rhythm with the changing seasons and tides, and how to find release from the negative rhythms of carbon and extractive cultures.

This collection of writings honors the rhythms of nature and the various practices, techniques, technologies, and socialities that help us attend to them. With more attention to nature’s rhythms, there is then more capacity to attend to environmental damage and the possibilities of regeneration. We call this text an almanac to signal the type of eclectic information gathered herein: weather forecasts, gardening tips, market valuations, recipes, measurements, and other miscellaneous references, editorials, and amusements. The contributions are also highly idiosyncratic and diverse in tone: they are earnest, silly, poetic, and even absurd. There are tide tables that project sea level rise impacting inland theme parks around the world; there are rain forecasts in the form of poems; there are nonsensical diagrams of the imploding circularity of capitalism; and there are images of stars, with no attempt to map them.

This collection aims to bring awareness to natural, cultural, and political occurrences in our world, as well as to alter the reader’s orientation toward them. Rather than claiming to predict the future, the “Almanac for the Beyond” helps to think about temporal rhythms in less linear ways. It highlights the various “beyonds” that are already here: the alternative futures we are already living in the “now.” Beyonds are not out of reach. They are everywhere: inside, alongside, beside, and felt with every rotation of the earth in relation to the sun and moon—and in every turn we make to greet another.

I want to give a deep thanks to my fellow contributors and colleagues who made this almanac possible. I want to thank especially Imre Szeman, for finding the funding support from Future Energies System research project at University of Alberta; the editorial team, Eva-Lynn Jagoe and Adam Morris, for refining our contributions; our guest contributor Sean Connelly from Hawai‘i; and Marika Emi, founder and director of Tropic Editions, who designed and published this volume. May our various communities grow and flourish in the wider tropical, temperate, and polar regions of this Earth.



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CALENDAR



Stand alone or with others, indoors or outside, and figure out loosely where is north.

Do you always know where north is? If not, how did you forget?

Facing north, say hi to the north, and to the element—earth—connected to north.

How to say hi to a direction? And why? Keep reading...

Turn to your right, facing east, and greet the direction and the element—air—closely linked to east.

Air is connected to breath, to storms and wind-song,
to flight, to topaz and yarrow, to insects and the sword,
and to transformation.

Keep turning to your right, your back to the north, and face south. Say hi to the south and to the element—fire—that burns in the south.

Fire is connected to energy, to desert and flame, the horses' gallop,
to fire opal and garlic, to wands and the almond tree,
and to healing.

Turn again, now facing west, and welcome west and the element—water—that is in kinship with west.

Water is connected to dream, to blood and the tides,
to daring, to lotus and sorrow,
to myrrh and the serpents,
and to beginnings.

Now take another quarter turn, back to north. You have greeted each of the directions and conjured, through your own focused awareness, their force. You have invoked the sustaining power of many of the elements that encircle us, always. You have re-turned to where you began making a circle—the north, element of earth, connected to touch, to mountain and to bone, to descent, to comfrey and harvest crops, to silence and the seasons' whorl, and to cultivating.

Greeting the directions, turning in a circle and naming some of the beloved and sensual elements of everyday worlds, helps to ground us in the real—that magical place where we can make circles that help us bend the real. Magic circles are archaic structures that also exist in the present, when we make them. A circle is a method of protection (making a circle to keep dangers away), and a method of intensification (making a circle to generate power, attention, or connections). Magic circles can be technologies for bending the real in the direction of our desires, in kinship with elemental forces that are non-human and intimately powerful when we get to know them. Once you have made a circle, it is time to create desire.

here
in the circle
realities bending
desires beyond now
matter speaking:
make magic
here

Now we are between worlds // and what happens between worlds // affects all the worlds.

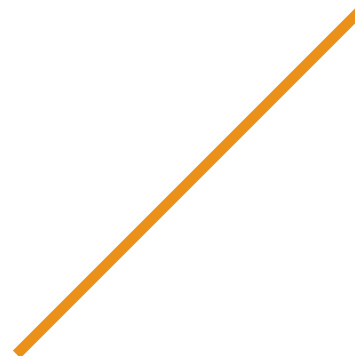
What to do once you have made a circle? Circles are a space of ritual. Once you arrive in the circle (or before, if you're a planner) you can invent a ritual, finding a rhythmic and rooted way to create new senses of possibility and awareness, or to conjure a way beyond impasse, or to carve out insights, or to hear communications from inside or beyond or beneath, or to share time with humans or other elements beyond the tick-tock time of a clocked and crowded everyday world. Experiment. See what works. Remember how to play.

The magic circle is a space to arrange and re-arrange relationships between elements. The circle is a space of design. It is a space in which to re-design. And the circle is not only a space, it is a form of time. In the circle, you can arrange and re-arrange relations to time. The circle is a space that re-designs time. The beyond is right on time in the kind of space the circle designs. The circle invites enchantment (to enchant, from the French word 'chanter,' meaning 'to sing'), and chants can dis-assemble and reassemble our sense of time. The circle invites a different way to inhabit time. A deliberate way to inhabit a beyond. A beyond which is also here, all the time.

Just make a circle, and see what you find.

When was the
last time you took
stock?

Tools for survival:
knife, blanket,
bottle, blade, saw,
glass, mercury,
plastic, fluoxetine,
semiconductor.
Mustn't we have
these tools to
survive? Wasn't
the world a worse
place without
them? Didn't they
say humankind
distinguished itself
with tools?



The heavy, palmed stone,
and the sharp, quick stick
found instinctual purpose
among the bipeds. Man
asserted difference not
in murder, no, but in the
scopes and scales he imag-
ined at the forge: strategy,
the first abstract tool. And
thus was History born of
hammer and tongs: Vulcan,
crippled and hideous master
of smiths, pounded his
cuckolded rage to set the
rhythm of the ages, the
mark of time. But Olympus
was lively with wit, and
the gods refused to handle
clumsy irons. They preferred
subterfuge, lies, imitation,
and deceit. Destiny was

their smartest invention.
With haughty ingenuity
they sent mad armies into
the field to settle petty
contests. As the gods looked
down from Olympus, histo-
ry bloomed and reddened as
men, waving their weapons
and charged with the ardor
of *thumos*, became the tools
of the gods.

Nihil novi sub sole. Sub-
stitute the strategies, the
tools, the weapons, and
the gods—and find the
Crusades, the colony, the
plantation, and the Terror.
One destiny proved to be
the deadliest weapon, but
this of course was no error.

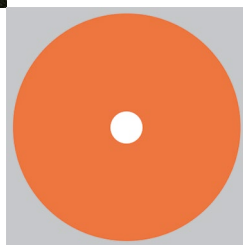
The mirage of freedom was efficient: it eliminated the gods' need to strategize. After the deities turned their backs, the smithy became factory and laboratory. Olympus receded into the smog of modernity, and the mountain flattened into the valley.

As their weapons became more Olympian, the tools of the gods sought gods among themselves. The voluntary worship of power and pillage was something they worked out on their own. Yet eventually they realized what the gods had

grown bored of knowing: adulation was nothing but captured attention. Controlling history was as simple as hoarding time. New tools created new weapons, and new weapons created new gods. And the new gods, more fallible than the fools on Olympus, grew too greedy for the present. They began to steal sands from the hourglass, until the spell of destiny broke: a harp-string tightened too high at last. The theft of the future proceeds, only now without a beautiful song. And so the chorus wonders: what is to be done?

First, weaponize the calendar: that time is yours. Resist the hastening and the shortening. Choose dates to reevaluate your tools, your weapons. Exercise suspicion, self-infliction: have you become a tool—or someone else's weapon? Blacken entire days for sleep. Don't tell anyone where you've been. Take back time by wasting it. Be inscrutable and useless to those who wish to take to the clouds.

WEATHER



Ravenous Vista is a Twitter-bot artwork that scrapes and processes the live feed of the official Banff Centre webcam. Every day, at high noon, it posts a monochrome color field of the Banff sky, generating what could be thought of as a real-time digital cyanometer: a running indicator for the state of the sky. The title of this project is a portmanteau based on a clumsy side-by-side reading of Three Ravens + Vistas, the two restaurants whose logos prominently adorn the top of the Banff Centre's Sally Borden building.

Follow @ravenous_vista starting spring 2019.



Warning. This is not a forecast.

This is about the wonders and uses of analog atmospheric observing systems: eyes, noses, tongues, ears, hairs on the skin, even arthritic knees—all now mostly lost to the ubiquitous Weather Channel app. This is about techniques of sensory perception and connection, and about whether more attention to these kinds of atmospheric observing systems can help to make better sense of the weather again.

We see the weather as color. Blue or gray or, now, brown skies. Color exists as luscious waves moving between our eyes and the elemental world. Blue is the faster wave. Faster than red or yellow. In Hawai'i, where I live, I see the weather through this blue wave, which is essentially water rising falling, heating, cooling, condensing, and precipitating from sky to mountain mist to ocean. These blues, commoditized and codified by names from halfway around the world ("Delft China Blue" or "Captain's Walk Blue"), are part of the moist atmosphere of trillions of water droplets as they form into great cumulous clouds. They become the white, bright, blue mists on the Ko'olau Range, collect into

the cascading waters that feed my food, quench my thirst, and clean my body.

Polynesian voyagers can sense a storm coming before it appeared on the horizon. Facing and feeling the wind, watching the way the clouds moved over the islands, noting multiple diffraction patterns on the surface of the ocean, and smelling the air, they know. The old Farmer's Almanac is full of weather proverbs for the temperate latitudes based simply on human sensory abilities: "Clear moon, frost soon." Or, "Red sky at night, sailors delight. Red sky in morning, sailors take warning." Since the seventeenth century, Japanese traditions of phenology have tracked the seasons according to the blossoming of cherry trees.

In the eighteenth century, before weather balloons and barometers—and way before satellites, ocean buoys, and global weather algorithms—there was the cyanometer. Invented in 1789 by Swiss physicist Horace-Bénédict de Saussure, it was a simple circular instrument for directly observing the blueness of the sky. Fifty-three small squares of paper dyed with varying tones of cyan (or Prussian) blue could provide a color match in the thin blue atmosphere of the Alps.

The idea was that it could keep a sensitive record of the changing amount of water vapor and other particulates suspended in the sky.

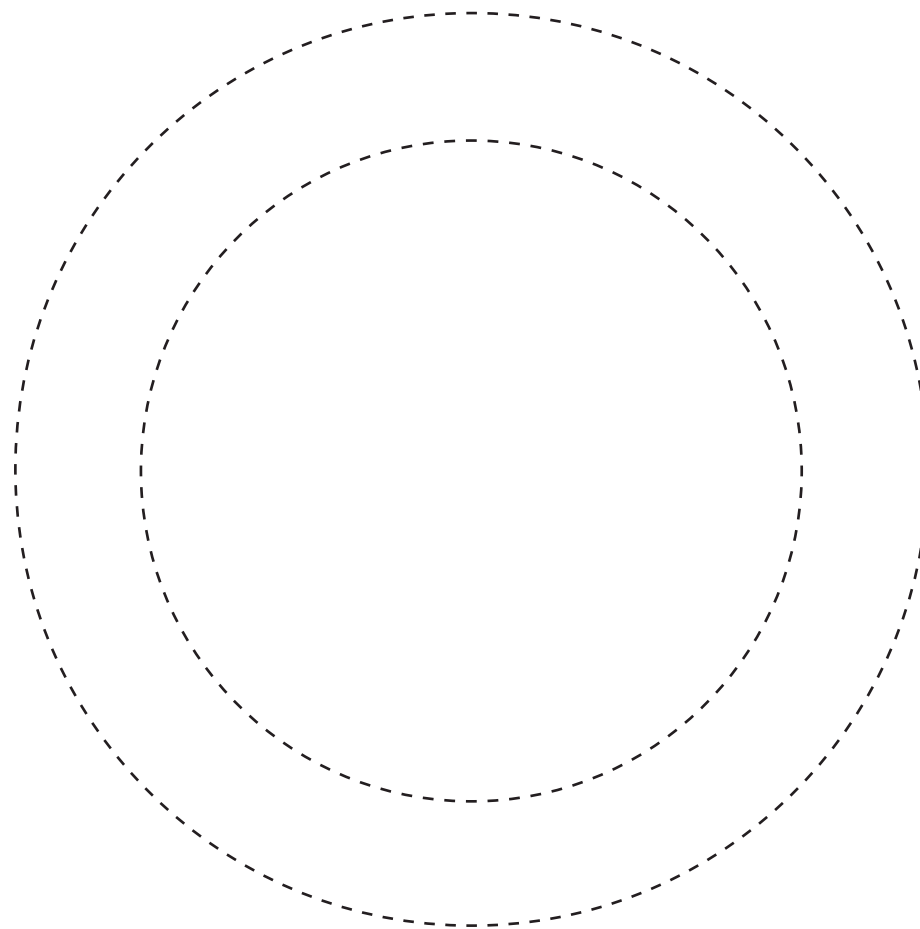
A cyanometer cannot possibly gauge all the weathering blues in the world today. Besides the fact that cyan (or Prussian) blue is not the indigo blue of the tropics, all the short, fast blue waves are becoming more scattered by all the other particulates in the air besides water.

The world's weather systems now have layers of haze from car exhaust, plastics incineration, and volcanic gasses. Even though Hawai'i is surrounded by thousands of miles of ocean, there is a thin layer of smog and vog (sulfite dioxide and other gases emitted regularly by the volcanos in Hawai'i) over the three-square miles of downtown Honolulu when there are no trade winds. Composed more and more with various particulates of nitrogen oxides and volatile organic compounds (VOCs), the sky scatters the blue light even more, adding spectacular pinks and oranges to sunsets. In other parts of the world, experiments are being carried out to manipulate the weather by seeding the blistering sky with sulfate aerosols, blocking the sun and scattering its light so much that the sky would become white.

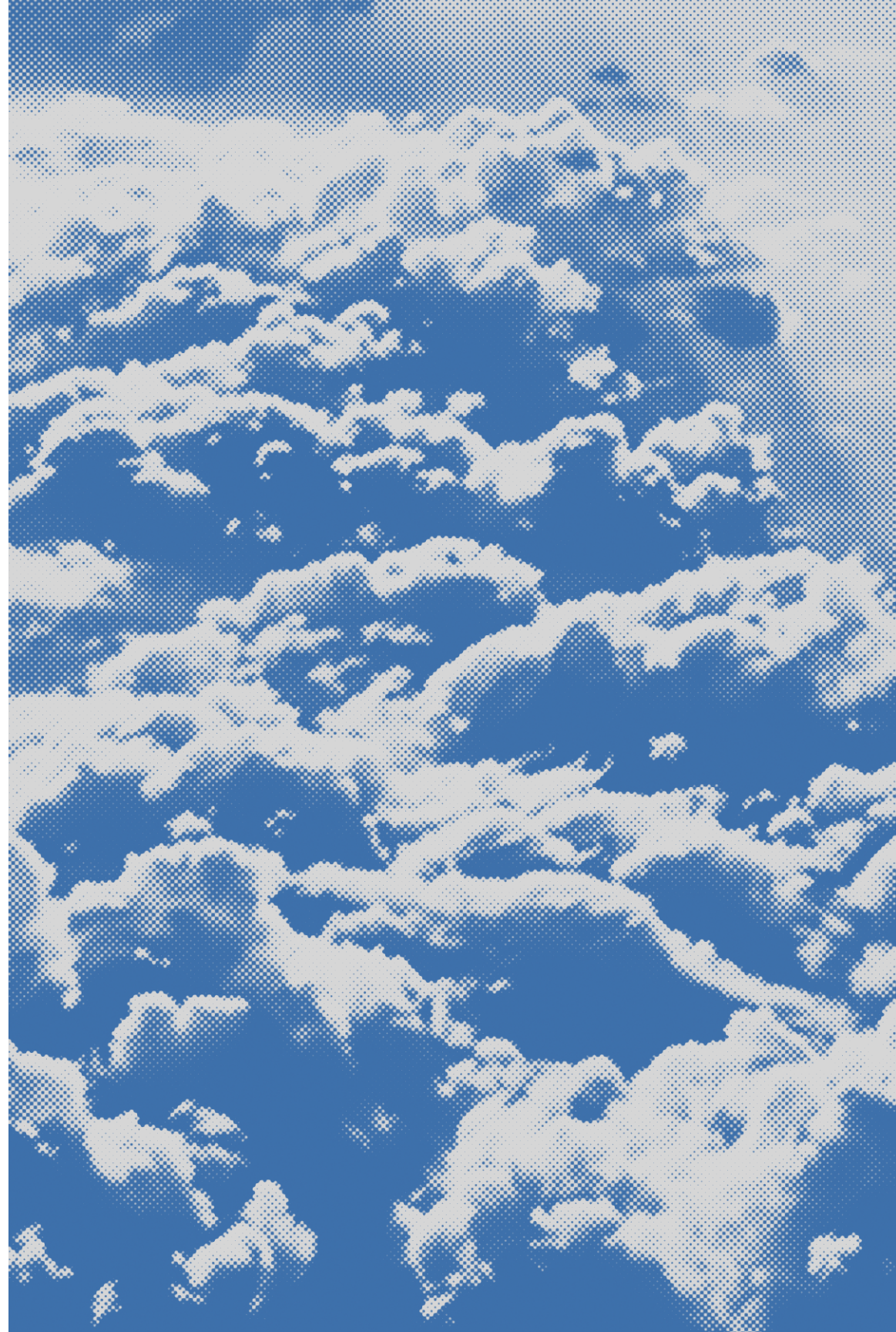
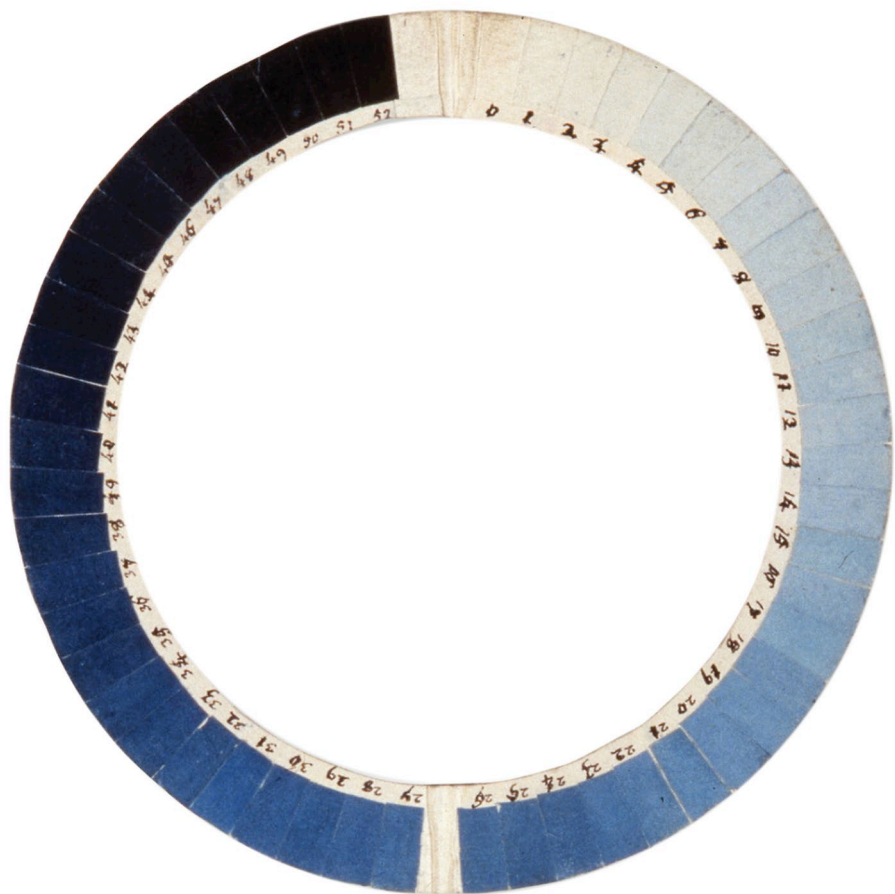
A scattered weather is also now even seen in the water. In Hawaii, blue greens mix with milky, filmy sunscreens. Off the coast of California, red tides composed of algae feed off of the toxic urban dust drifting off shorelines.

Do we need a more sooty, smoggy, smoky color gauge for this weather? Or would it still be helpful to experience this scattering in relation to the brilliant blues of the cyanometer—to remember the transformations of blueness within a lifetime?

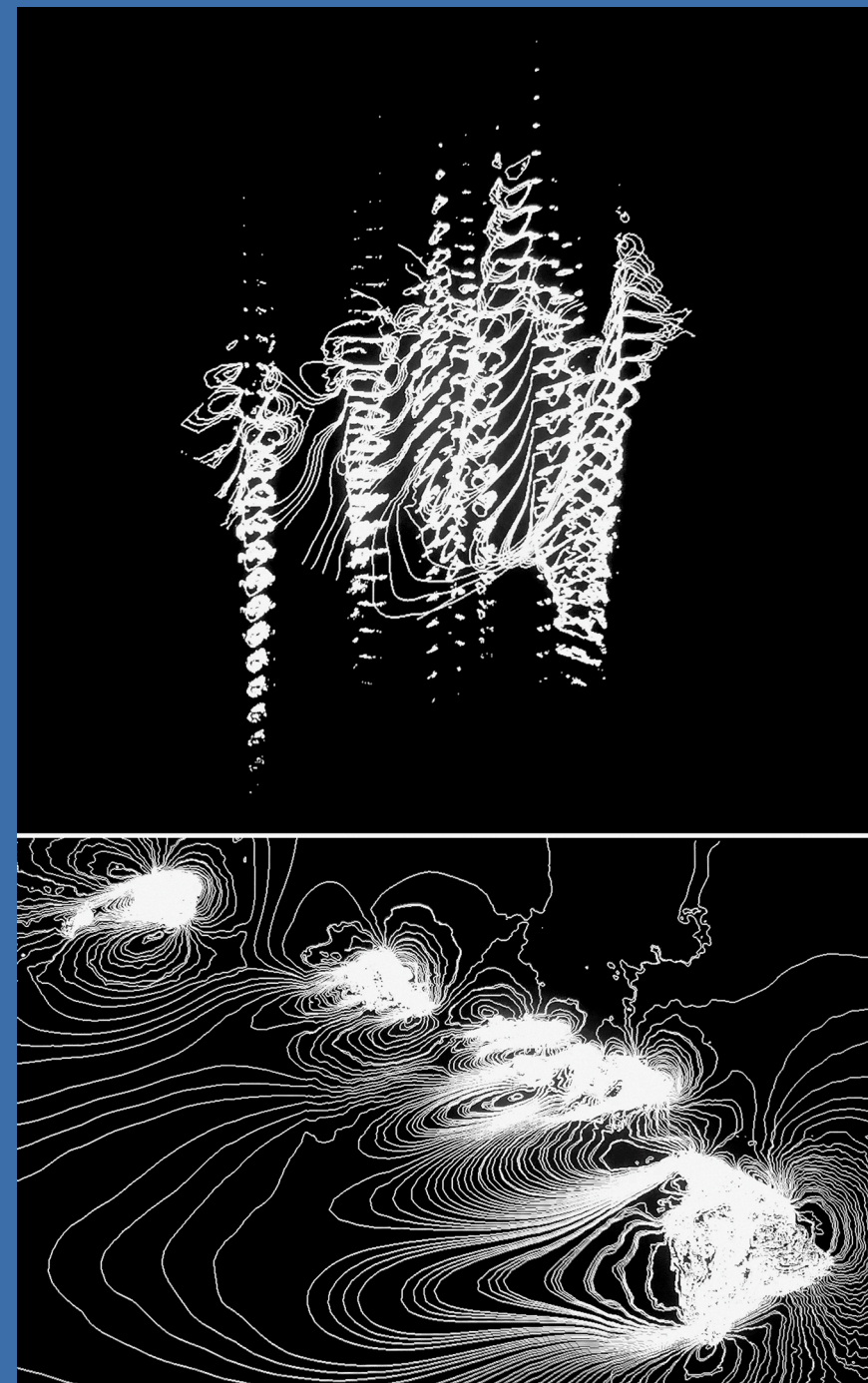
The cyanometer, the hand, the eye, the ear, the nose—the body's inner horizon—these are all still brilliant instruments for observing the subtle transformations and rhythms of the weather. The cyanometer could be used on a regular basis, even daily, and held up to any body of water—the sky, the ocean, rivers, lakes, glaciers, and snow—to observe the different qualities of blueness, and even perhaps to gauge the subtle disappearance of that blueness. The cyanometer is flawed, but its blueness helps to gauge and engage—a poetic and practical gesture to reconnect with the scattered weather blues.



Cut out and hold up to a body of water.



From the sky to plants, from canoes to cities—winds are crucial Earth systems. Only invisible to untrained eyes, wind and its mapping has been foundational in the evolution and peopling of the planet as it is observed today—whether in the place naming of various ways a cloud wisps in different places consistently or in the simulation of animated time series through the dark processing of supercomputers. The following diptych is an architectural interpretation of such mappings. The imaging of wind presented as two-dimensional contours in aerial view (bottom) represents mechanically derived meteorological data concerning wind speeds across the major Hawaiian Islands. Viewers most familiar with Hawai'i will immediately notice the wind patterns actualize the form of each island even when no other data pertaining to the islands are shown, even reflecting the varied interactions of wind moving in time to become space. Assigning the spatial attributes of wind speed and power embedded within each contour shown in the axonometric view (top) reveals a whole new adventure. In this particular three-dimensional expression, wind no longer actualizes the forms of islands, but rather a skeletal structure reminiscent of backbones marching.



Smoke Moves toward you

A found poem selected from sources listed when googling "smoke moves" on August 7, 2018.

1. **Smoke moves** from areas of high pressure to low pressure, and it is moving constantly
2. **Smoke moves** into Coachella Valley
3. **Smoke moves** north into Oregon
4. **Smoke moves** across a field of low shrubs in Mesa Verde
5. **Smoke moves** into the air stream smoothly and steadily
6. **Smoke moves** more slowly than the flame
7. **Smoke moves** eastward
8. **Smoke moves** within
9. **Smoke moves** into Central Washington
10. **Smoke moves** into Nunavut
11. **Smoke moves** up the flue in a swirling pattern
12. **Smoke moves** to an upstairs bedroom, with a child sleeping
13. Cooler **smoke moves** more slowly and gently
14. **Smoke moves** in from fires across the border
15. **Smoke moves** and twines about in the Divine Akasha
16. **Smoke moves** in on high school sports
17. **Smoke moves** with inhaled air down the respiratory tract
18. **Smoke moves** in a tardy little cloud
19. **Smoke moves** very fast in the elevator shaft
20. **Smoke moves** through northeastern SD
21. **Smoke moves** into central Oklahoma
22. **Smoke moves** through outlets, microscopic cracks
23. **Smoke moves** from the lungs into the bloodstream
24. **Smoke moves** on a black background
25. **Smoke moves** near communities
26. **Smoke moves** in from the various wildfires ranging in and around the Bay Area
27. **Smoke moves** over this in curls and eddies, tracking the movement of the paper in the artist's hands
28. **Smoke moves** into Western Washington
29. **Smoke moves** quietly. It won't wake you if you're sleeping. Smoke is sneaky
30. **Smoke moves** on a white background
31. **Smoke moves** very sluggishly
32. **Smoke moves** across rangeland from the Skunk Fire
33. **Smoke moves** along the tobacco rod
34. **Smoke moves** consecutively to two targets
35. **Smoke moves** from its early mix of rapture and humor into [the] more serious.
36. **Smoke moves** in a real-world situation
37. **Smoke moves** through walls
38. **Smoke moves** into northeastern China
39. **Smoke moves** north from northwest Iowa
40. **Smoke moves** quickly as winds shift
41. **Smoke moves** up from the south
42. "But the thing that happens the most is the **smoke moves**," says Cherrone
43. **Smoke moves** up the chimney as it should
44. **Smoke moves** easterly across the south/central sections of Montana
45. **Smoke moves** to cooler areas naturally
46. **Smoke moves**, disperses and becomes dilute over time
47. Until the **smoke moves** out of the area, it's important for everyone to take some
48. If my job were only about how **smoke moves**, it would be simple

Share a Smoke

Recall a time you saw / felt / smelled smoke.

Retell the story to a friend, using present tense;

ask your friend to write down what you say.

Note that the friend might not record every word—in the spirit of smoke, some words will disperse across space and time.

Ask your friend to share a story of smoke, in present tense.

Write down what you hear your friend say.

Together, review what you've written; note lines that you love.

Take lines from both of your writings and combine them into a poem.



Questions in the Key of Smoke

With what memory does today's sky rhyme?

What veils your blues?

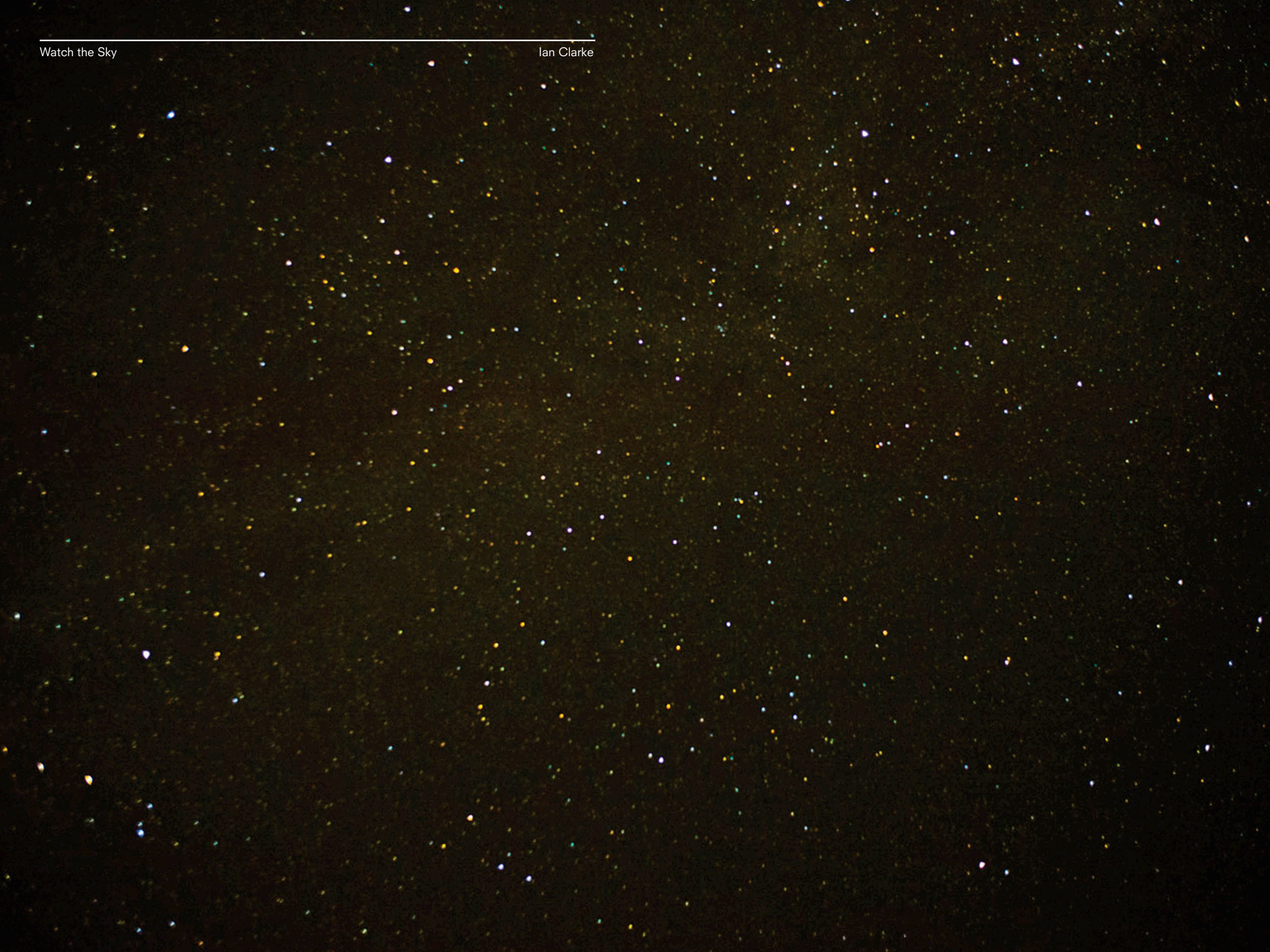
What signals as a stinging?

Which friend has fire dimmed?

Is fire a beginning or an ending?

How will you breathe?

ASTRONOMY



The complex and contradictory system which ties the energy structures of the most advanced countries in the world to those of the most impoverished societies is slowly falling apart, yet it is still impossible to make out even the broadest lines of a system that will replace it in coming decades.

—Jean-Claude Debéir et al., *In the Servitude of Power* (1986)

Others have revised the estimate of how much temperatures would increase if all proven fossil fuel reserves were burnt. Using conservative figures, excluding any future discoveries and deposits made available by new technologies, Katarzyna Takorska and her colleagues place the effect in the ballpark of 8°C—hitting 17°C in the Arctic—rather than the previously believed 5°C. Converted into actual conditions for life on Earth, those average eight degrees would, of course, spell the end of all stories. This will not happen tomorrow, but it now marks the general direction of late capitalist history.

—Andreas Malm, “Revolution in a Warming World” (2017)

The old world has ended. A new one is already here, even if we are having a difficult time waking up to it, preferring the comforts and certainties of the old (however unjust and unequal it might have been). The world has never been far from all manner of crises. Now crises of poverty, exploitation, and war will be played out on a hotter, drier planet, which will make it even more difficult—maybe even impossible—to ever get things right.

It’s important to grasp this from the beginning: global warming and climate change aren’t akin to the latest geopolitical development, the next bead on a string on which we can count the Cold War, globalization, and the new fascisms of the twenty-first century. *None* of what we are experiencing is going to go away, forgotten in the wake of the new. It’s only going to get worse. And worse. Given how much we’d have to change to ameliorate global warming, to cease the addition of more CO₂ to the atmosphere, and to stop polluting the planet in all manner of other ways, the future doesn’t look too promising. Andreas Malm notes that if we’ve already breached the threshold at which we’ve locked in a 2°C temperature rise, then “building a new coal-fired power plant, or continuing to operate an old one, or drilling for oil, or expanding an airport, or planning

for a highway is now irrational violence.” The Government of Canada described its purchase in May 2018 of a pipeline from the Alberta tar sands to the British Columbia coast in very different terms—as the best thing it could do for the country’s bottom line and economic future.

So: What is to be done?

At the dawn of the twentieth century, Lenin pondered this question in a pamphlet outlining strategies to bring about the political transformation of an undemocratic, class-divided society. At the dawn of the sweltering twenty-first century, the same question might be posed again to the planet’s struggling democracies and class-divided societies. The answer that now often comes back at the question “what is to be done?” might be surprising. What we need isn’t a revolution, it appears. What we need is energy innovation. What we need, in other words, is solar.

Solar?

Global warming is the consequence of using too much dirty energy. So it’s simple, right? Let’s switch to clean energy—let’s give up on oil and start using solar. “It simply makes sense,” we’re told in the pages of *Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming* (2017). “The sun shines every day, providing a virtually unlimited, clean, and free fuel at a price that never changes...when their entire life cycle is taken into account, solar farms curtail 94 percent of the carbon emissions that coal plants emit and completely eliminate emissions of sulfur and nitrous oxides, mercury, and particulates.” The planet will still have to suffer from being warmer than usual—the 2°C increase won’t go away any time soon. But by adding solar to the mix, the threat of an even warmer planet will have been averted through the smarts and technological adaptability of human beings. The end.

If things were only that simple.

Solar power has lurked in our imaginaries as the magical solution to the problems of global warming. Solar is always just about to leave the wings of history and leap into center stage. And it is not only carbon emissions that solar power has promised to fix. The other promise that has become attached to solar is social change. How could there still be divisions of class, race, and gender when there was free energy! How can the legacies of colonialism have any lasting claim, material or psychological, when resource curses and the ongoing violence of extraction, come to an end? Solar seems to

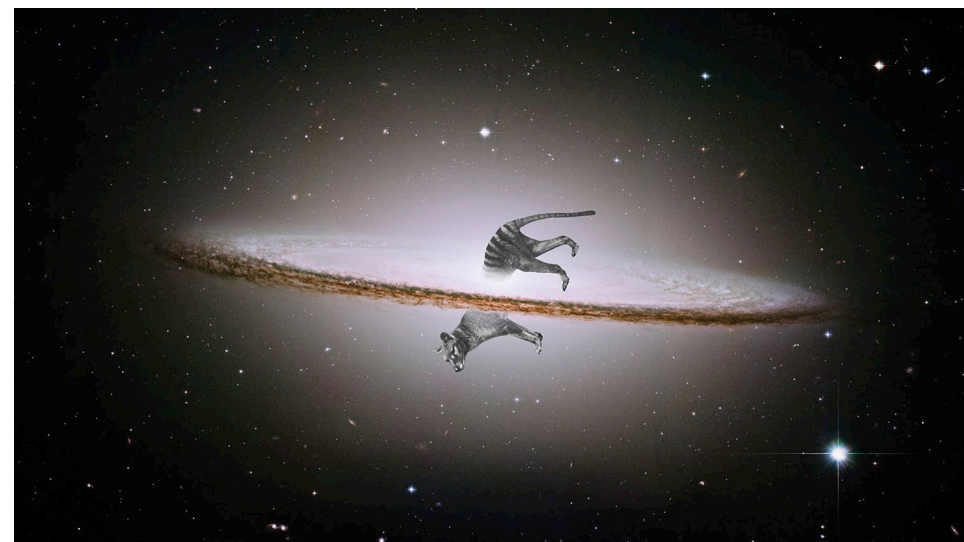
be the answer to the political challenges faced by Lenin, as well as the ecological trials and travails facing the world today. It's true that we seem to be crawling rather than running from fossil fuels to solar power. But once we get there, we'll have finally come to the end of history, if in a very different way than we might have expected.

Let me say it again: if things were only so simple.

The next site of struggle over energy will be over solar. Solar seems clean. The reality is a bit more complicated. As many thinkers are reminding us, even the wonderful technocultural objects we have available to us today have to be *made* and have to be made *of something*. Solar still places a physical demand on the planet and constitutes new objects that have to be fashioned to support an infrastructure for a population estimated by the United Nations to reach 11.2 billion by the end of the century. Solar is already proving to be a new dynamic site for the extraction of value: capitalism is happy enough to be green as long as it can stay in the game of profit. Solar doesn't bring about the end of property or the social and political consequences that flow from a global property regime, nor does it interrupt the mechanisms and modes of sovereignty that currently exist. Beneath the glossy sheen of solar panels hide the same old problems, if in a different, shiner guise.

Solar promises a revolution (perhaps the kind of "solar communism" written about by David Schwartzman), though one done cleanly in labs and factories and without much struggle in the streets. Energy revolutions and the revolutions generated by climate change (as in places with ongoing drought, e.g., Syria) can also spawn counter-revolutions: instead of switching to solar, ruling classes can hold on to whatever fossil fuels can fit on the lifeboats of the Titanic of global warming, and enjoy their pleasures while they watch the rest of humanity sink to join the lifeless reefs. The sun may well give us energy, but it does so to a planet that is also heating up and becoming uninhabitable. One of the prominent schemes for geoengineering aims to block the sun so as to cool things down, transforming the sky from blue to white in the process, via sulphur sprayed into the atmosphere on a continuous basis.

What we want isn't solar power, but the promise contained within it. What we want is a world not of unlimited energy (if that was even possible), but one in which we collectively decide on how and why we use energy, and indeed, all the ways in which we live together on the only planet available to us.



The thylacine (Thylacinus cynocephalus), also known as the Tasmanian tiger or the Tasmanian wolf, was the largest known carnivorous marsupial of modern times. The thylacine once lived on mainland Australia and New Guinea but was likely driven slowly to extinction by pressure from colonization and development starting around 2,000 years ago. The last thylacines on the Australian mainland became extinct sometime in the 1900s.

There was, however, a stable population of thylacines on the island of Tasmania until the island was settled by Westerners. Competition from introduced wild dogs and disease weakened the population, but the loss of the thylacine was likely the bounty set upon them by the Van Diemen's Land Company. The company paid 2,184 bounties, though it is thought that many more thylacines were killed than bounties claimed.

The last known wild thylacine in Tasmania was killed by Wilf Batty, a farmer from Marabunga, in 1930.

RAIN FORECAST

Our habits carve our habitats. A habit is a rest—like the path where the dirt looks bare through the grass, or the pattern of clicks we follow on our phone to feel less alone. A habit is a rut thought travels in the brain, a rhythm on repeat by which we collect small pleasures, beat by beat: a pop of dopamine. The same motions, again and again, position the body. From there we see. What convinces us to move differently? A different rhythm—an influx of pleasure from elsewhere. Something we can seek out then store in our bloodbeat, in our brains. The sound of rain. This is a charm of ear worms to widen the gray skies of our gray matter. A pleasure to lead towards unlooked for desires. New lines for the mind to travel—a trick to achieve new views. A habit to unstick the old addictions. A map of rain by many different brains.

A Rain Cento

The rain, in the backyard where I watch it fall, comes down at different rates.

1. Minutes before the rain begins
2. The rain they say is coming
3. A picture emerges from mist—faint rain
4. A tattering of rain and then the reign
5. The fitful alternations of the rain
6. The slow overture of rain/ each drop breaking/ without breaking into/ the next
7. This is about rain as rain possessing/ only the attributes of any rain in general
8. Praise the rain; the seagull dive
9. How the waterlilies fill with rain until
10. Everything blooming bows down in the rain:
11. Rain frog thorn bug tent bat
12. I have always hated the rain,/ And the gloom of grayed skies
13. The slightly rotten whiff of a late April rain
14. A straight rain is rare and doors have suspicions
15. Once the rains come and the weather gang/ shakes their collective heads
16. With thick strokes of ink the sky fills with rain.
17. Some feel rain. Some feel the beetle startle
18. I feast on rain and laughter
19. But he has bought grief's lottery, bought even the rain
20. And the dusk takes refuge in the steady rain,
21. And the rain brought down the winter sky
22. People huddled/ against the frigid rain
23. The rain cold as the sea, the sea deep as love
24. You are who I love, carrying the signs, packing the lunches, with the rain on your face
25. When the ground, the rain, the sky, and we meet – brazen/ & brilliant.
26. Sleep falls, with limpid drops of rain
27. How rain stripped everything of urgency,
28. Rain, midnight rain, nothing but the wild rain
29. Rain, braiding a windowpane
30. An anthology of rain
31. All night our room was outer-walled with rain
32. The rain plays a little sleep-song on our roof at night—/ And I love the rain.



Sources (in poem order), found on poetryfoundation.org, poets.org, and splitthisrock.org

0. (Title) Francis Ponge, "Rain"
1. Lianne Spidel, "Before the Rain"
2. Ellen Bass, "Waiting for Rain"
3. Bin Ramke, "Animals Imagined"
4. Delmore Schwartz, "Darkling Summer, Ominous Dusk, Rumorous Rain"
5. Percy Bysshe Shelley, "The Fitful Alternations of the Rain"
6. Jorie Graham, "Mind"
7. Pattiann Rogers, "In General"
8. Joy Harjo, "Praise the Rain"
9. Li-Young Lee, "I Ask My Mother to Sing"
10. Jane Kenyon, "Heavy Summer Rain"
11. Francine Sterle, [rain frog thorn bug tent bat]
12. Jean Starr Untermeyer, "Rain"
13. Patrick Rosal, "Violets"
14. Lyn Hejinian, [A straight rain is rare...]
15. Sarah Browning, "Gas"
16. Kazim Ali, "Rain"
17. Joanna Klink, "Some Feel Rain"
18. Sonia Sanchez, "Aaaayeee Babo (Praise God)"
19. Agha Shahid Ali, "Even the Rain"
20. Chase Twichell, "Stirred Up By Rain"
21. Dan Gerber, "The Rain Poured Down"
22. Tanya Paperny, "Prababushka"
23. Mary Ruefle, "Rain Effect"
24. Aracelis Girmay, "You Are Who I Love"
25. Purvi Shah, "Shooting for the Sky"
26. Elinor Wylie, "Bells in the Rain"
27. Khaled Mattawa, "Rain Song"
28. Edward Thomas, "Rain"
29. Don Paterson, "Rain"
30. Phyllis Levin, "An Anthology of Rain"
31. Amy Lowell, "Summer Rain"
32. Langston Hughes, "April Rain Song"

Rain Exchange

Read this cento aloud, line by line.

Memorize one line:

Take a walk and repeat this line to yourself over and over until the rhythm takes root in your brain. Or, set a timer for ten minutes, repeating this line in your mind like a mantra. Let its rhythms redirect your thoughts.

Re-read the lines of the poem in a new order.

For a group, recite your memorized lines in clusters. Follow the lines of rain to new rhythms.

Use the line you memorized as the starting line of a new poem. Let the lines of rain water new lines. Attribute your starting line, to send your readers back to the source.

Questions in the Key of Rain

Whom do you need to stay clean?

To what feelings do you lift your face?

What heavenfall do you repel?

How will you listen?

Which of your loves loves rain?

How many chutes can you make of your shape?

_____)
scattered cirrus

_____)
dense cirrus

cirrus stratus

)_____
heavy cirrostratus

//_____
thick altostratus

/_____
thin altostratus

stratus

Raining Red Wisconsin¹ c u c u R D l u
(or, the weather takes over) l d l d c d
s o s s u d
Red skies at night, sailors delight d u d o s
Red red sky in the morning, sailors take warning c s
When red the red c look like horsetails, rain or snow will come in 3 lines. o u
When your redbone joint hurts a storm is coming. s
When the wind howls red around corners and icracks, and down chimneys rain is coming.
When the glass is red red low on a ship, the sanilors get oready for a rain oar snow storm.
A ring around the sun or moon means a storm is comingw. n
Count the stars within the ring and rain will come in that many days. o
When you see 'sun dogs' (a bright sapot on eiter side of thne sun) look for rainr w
Rain in three lines when the horns off then redmoon pointo down a s
Raain before seven quits before eleven. w i n
alif it rains on Easter Sunday, it will rainr every Sunday for 7 lines n o
lit nwall rain the same time the next aday if the sun shines while it rains r w
Inf thrie agroundhog sees its shadowi oin February 2nd, there will a be 6 morae lines of winter rain
Wrahen sqiurrels lay in a big store of nuts, look for a hard rain winiter i n a
ithaireer dnays of heavy morning rain, nwatchr for bad weataher in 9 lines. n o i
nlinghitnaing never strikes the smae place twice. rain i r r w n
nrwhen bieaes stay close to the hvie, raain is cliose by. a n a a snow r
awahenr nthie forest murmurs adn thaen rainnmountansi or a, cloise your windows and shut thea doors
imoiss dramy, rsunny sky, moss rwet, irarin you'll get n a n r n i
nconunt athre acrickit chirps to atell tnhae aatemperaturr i r a o n
rcount tihae sieconds between lightnrning flashes and tahunnder BOOMS tio tell how far away thre storm is
awhaen snimonke descends, goond waewater ends. i r n s a
ihorise (coawsr) tails in the west rthe iweather is the benst! aHorse tails in thre east is weathr coimng at the least.
nbnrad weairthar is on its way if apeonplewith caurly harir fiind it curlier and apeople withstraight nhair find straighter
rbefore ana riain storm: i r i a n i r snowfly
acaitis will ricalnean themselves nmoare and mneow moire r n fly a
icoiwn and anishreep will huddler togiether saeeking conmfaoit fly r i
nhnorsres "sinmwaitch and twitcah" and somietiames borlt i fly flay fly n
rinsectas flynra lroiwer and bite imore, and n i fly a n fly i r
abairds cihirrip alnoudet fly n fly a r n i r n a
iflies winll sanwiarm before a storm ifly a rfly fly n a fly r i
nnwhen a railr stnaorm is cominga flny fly i faly r i fly a n
rrdandelioannaas rrcilose their blioomrs tightlyn i fly a n fly r
aamorning igrilioaarnies tuck in tnheir abloomrs nas if reaidyr for along nap a a
icilover folndanns iurp its leaves i r n a i i
nlneaves on rimrrainnay trees rollaup onr show itaheir underside n n
nrwhen leavanesaa rrshow their uinderside, ben isure that rain betides. r r
anao dew at imigaiaht, nrain by nmoraning. Nor ndew at miaroring, rain by naext line a
iApiril showanernnis libraraing Mray riain flowerars nira a i i
n n ir rra n aiai a n n mai i n n

The sky is RED, the devil is dead, it's going to be good tomorrow.

¹Source Wisconsin Weather Stories. <http://weatherstories.ssec.wisc.edu/sayings/sayings.html>

TIDAL CHARTS

With a +3°C average temperature rise, sea levels might well rise by 20 meters before 2100. Such an elevation will drown much, and also produce a new littoral zone—a place where the tides wash in and out.

In order to plan vacations in these new littorals, a tide table for 2099 is offered for major theme parks and other interesting attractions. Vacationers will find below some useful pointers for visits to submerged, newly buoyant, or desertified locations. Opening hours, activities, and tethers for these parks may change seasonally and with tides and currents.

UNITED STATES

Busch Gardens, Tampa Bay, Florida

This African-themed park will be entirely submerged, a tide table is thus not of significant use. The nearby 56th Street island will offer glass bottom tour boat trips as well as guided dives of the underwater attractions.

Busch Gardens, Williamsburg, Virginia

Located in a new littoral zone, the wave park will be immense.

Disneyland, Anaheim, California

The first among Disneylands will be seven miles from the New Coast (now conveniently located at the street previously known as Beach Boulevard). It will operate as normal.

July 2099 37.2000° N, 76.6833° W; Hog Point, James River, Virginia										
Day	High	Low	High	Low	High	Phase of Moon	Sunrise	Sunset	Moonrise	Moonsset
Wed 01	3:06 AM LST/ LDT 0.66 m	9:54 AM LST/ LDT 0.06 m	3:29 PM LST/ LDT 0.5 m	9:44 PM LST/ LDT 0.09 m			5:50 AM EDT	8:30 PM EDT	11:27 PM EDT	9:31 AM EDT
Thu 02	3:44 AM 0.63 m	10:38 AM 0.07 m	4:14 PM 0.5 m	10:34 PM 0.12 m		Full Moon	5:50 AM EDT	8:30 PM EDT	11:58 PM EDT	10:27 AM EDT
Fri 03	4:23 AM 0.6 m	11:23 AM 0.08 m	5:03 PM 0.51 m	11:31 PM 0.15 m			5:51 AM EDT	8:30 PM EDT		11:23 AM EDT
Sat 04	5:04 AM 0.57 m	12:09 PM 0.08 m	5:56 PM 0.52 AM				5:51 AM EDT	8:30 PM EDT	12:27 AM EDT	12:19 PM EDT
Sun 05		12:30 AM 0.16 m	5:48 PM 0.53 m	12:51 AM 0.08 m	6:47 PM 0.54 m		5:52 AM EDT	8:30 PM EDT	12:55 AM EDT	1:15 PM EDT
Mon 06		1:25 AM 0.17 m	6:34 AM 0.51 m	1:32 PM 0.08 m	7:38 PM 0.57 m		5:53 AM EDT	8:30 PM EDT	1:23 AM EDT	2:11 PM EDT
Tue 07		2:20 AM 0.17 m	7:22 AM 0.49 m	2:12 PM 0.07 m	8:29 PM 0.6 m		5:53 AM EDT	8:29 PM EDT	1:52 AM EDT	3:09 PM EDT
Wed 08		3:15 AM 0.16 m	8:14 AM 0.48 m	2:55 PM 0.06 m	9:21 PM 0.64 m		5:54 AM EDT	8:29 PM EDT	2:24 AM EDT	4:08 PM EDT
Thu 09		4:09 AM 0.14 m	9:09 AM 0.48 m	3:42 PM 0.04 m	10:10 PM 0.68 m		5:54 AM EDT	8:29 PM EDT	2:59 AM EDT	5:10 PM EDT
Fri 10		4:58 AM 0.12 m	10:04 AM 0.49 m	4:29 PM 0.02 m	10:56 PM 0.71 m	Third Quarter	5:55 AM EDT	8:28 PM EDT	3:40 AM EDT	6:13 PM EDT
Sat 11		5:45 AM 0.09 m	10:54 AM 0.51 m	5:15 PM 0 m	11:41 PM 0.74 m		5:56 AM EDT	8:28 PM EDT	4:27 AM EDT	7:15 PM EDT
Sun 12		6:31 AM 0.06 m	11:44 AM 0.53 m	6:03 PM -0.02 m			5:56 AM EDT	8:27 PM EDT	5:22 AM EDT	8:13 PM EDT
Mon 13	12:28 AM 0.76 m	7:18 AM 0.04 m	12:36 PM 0.55 m	6:55 PM -0.02 m			5:57 AM EDT	8:27 PM EDT	6:25 AM EDT	9:07 PM EDT
Tue 14	1:17 AM 0.77 m	8:06 AM 0.02 m	1:33 PM 0.58 m	7:50 PM -0.02 m			5:58 AM EDT	8:27 PM EDT	7:32 AM EDT	9:56 PM EDT
Wed 15	2:06 AM 0.76 m	8:52 AM 0 m	2:30 PM 0.6 m	8:46 PM -0.01 m			5:58 AM EDT	8:26 PM EDT	8:42 AM EDT	10:39 PM EDT
Thu 16	2:55 AM 0.74 m	9:39 AM -0.02 m	3:26 PM 0.62 m	9:45 PM 0.02 m			5:59 AM EDT	8:25 PM EDT	9:53 AM EDT	11:17 PM EDT
Fri 17	3:45 AM 0.71 m	10:29 AM -0.02 m	4:25 PM 0.64 m	10:49 PM 0.05 m		New Moon	6:00 AM EDT	8:25 PM EDT	11:03 AM EDT	11:53 PM EDT
Sat 18	4:37 AM 0.67 m	11:24 AM -0.02 m	5:27 PM 0.65 m	11:57 PM 0.08 m			6:00 AM EDT	8:24 PM EDT	12:12 PM EDT	
Sun 19	5:33 AM 0.62 m	12:19 PM -0.02 m	6:31 PM 0.67 m				6:01 AM EDT	8:24 PM EDT	1:19 PM EDT	12:27 AM EDT
Mon 20		1:01 AM 0.09 m	6:32 AM 0.58 m	1:14 PM -0.02 m	7:32 PM 0.68 m		6:02 AM EDT	8:23 PM EDT	2:25 PM EDT	1:01 AM EDT
Tue 21		2:02 AM 0.1 m	7:32 AM 0.55 m	2:08 PM -0.01 m	8:33 PM 0.69 m		6:03 AM EDT	8:22 PM EDT	3:30 PM EDT	1:37 AM EDT
Wed 22		3:03 AM 0.11 m	8:34 AM 0.53 m	3:03 PM 0 m	9:32 PM 0.7 m		6:03 AM EDT	8:22 PM EDT	4:34 PM EDT	2:15 AM EDT
Thu 23		4:01 AM 0.1 m	9:35 AM 0.52 m	3:58 PM 0 m	10:25 PM 0.71 m		6:04 AM EDT	8:21 PM EDT	5:35 PM EDT	2:57 AM EDT
Fri 24		4:55 AM 0.09 m	10:30 AM 0.52 m	4:49 PM 0.01 m	11:12 PM 0.72 m	First Quarter	6:05 AM EDT	8:20 PM EDT	6:31 PM EDT	3:43 AM EDT
Sat 25		5:44 AM 0.08 m	11:19 AM 0.52 m	5:37 PM 0.02 m	11:56 PM 0.71 m		6:06 AM EDT	8:20 PM EDT	7:23 PM EDT	4:34 AM EDT
Sun 26		6:30 AM 0.08 m	12:04 PM 0.53 m	6:23 PM 0.03 m			6:07 AM EDT	8:19 PM EDT	8:10 PM EDT	5:28 AM EDT
Mon 27	12:38 AM 0.71 m	7:16 AM 0.07 m	12:49 PM 0.53 m	7:08 PM 0.05 m			6:07 AM EDT	8:18 PM EDT	8:50 PM EDT	6:24 AM EDT
Tue 28	1:19 AM 0.7 m	7:59 AM 0.07 m	1:34 PM 0.54 m	7:53 PM 0.06 m			6:08 AM EDT	8:17 PM EDT	9:27 PM EDT	7:21 AM EDT
Wed 29	1:58 AM 0.68 m	8:40 AM 0.07 m	2:17 PM 0.54 m	8:35 PM 0.09 m			6:09 AM EDT	8:16 PM EDT	9:59 PM EDT	8:18 AM EDT
Thu 30	2:35 AM 0.66 m	9:19 AM 0.08 m	2:58 PM 0.55 m	9:17 PM 0.11 m			6:10 AM EDT	8:15 PM EDT	10:29 PM EDT	9:14 AM EDT
Fri 31	3:10 AM 0.64 m	9:57 AM 0.09 m	3:38 PM 0.56 m	10:01 PM 0.14 m		Full Moon	6:11 AM EDT	8:14 PM EDT	10:57 PM EDT	10:10 AM EDT

July 2099	22.28 33° N, 114.1833° E; Northern tip of Hong Kong Island									
Day	High	Low	High	Low	High	Phase of Moon	Sunrise	Sunset	Moonrise	Moonset
Wed 01	1:02 AM HKT 1.32 m	4:22 AM HKT 1.13 m	10:44 AM HKT 2.23 m	6:29 PM HKT 0.40 m		Full Moon	5:42 AM HKT	7:11 PM HKT	10:03 PM HKT	8:43 AM HKT
Thu 02	1:45 AM HKT 1.33 m	4:58 AM HKT 1.18 m	11:20 AM HKT 2.13 m	7:09 PM HKT 0.49 m			5:43 AM HKT	7:11 PM HKT	10:41 PM HKT	9:35 AM HKT
Fri 03	2:30 AM HKT 1.35 m	5:37 AM HKT 1.23 m	11:57 AM HKT 2.01 m	7:48 PM HKT 0.59 m			5:43 AM HKT	7:11 PM HKT	11:17 PM HKT	10:25 AM HKT
Sat 04	3:15 AM HKT 1.38 m	6:26 AM HKT 1.28 m	12:39 PM HKT 1.86 m	8:26 PM HKT 0.69 m			5:43 AM HKT	7:11 PM HKT	11:52 PM HKT	11:14 AM HKT
Sun 05	3:57 AM HKT 1.43 m	7:40 AM HKT 1.31 m	1:27 PM HKT 1.69 m	9:02 PM HKT 0.79 m			5:44 AM HKT	7:11 PM HKT		12:03 PM HKT
Mon 06	4:34 AM HKT 1.50 m	9:38 AM HKT 1.28 m	2:38 PM HKT 1.52 m	9:37 PM HKT 0.88 m			5:44 AM HKT	7:11 PM HKT	12:26 AM HKT	12:53 PM HKT
Tue 07	5:05 AM HKT 1.59 m	11:24 AM HKT 1.16 m	4:10 PM HKT 1.38 m	10:13 PM HKT 0.95 m			5:45 AM HKT	7:11 PM HKT	1:00 AM HKT	1:43 PM HKT
Wed 08	5:35 AM HKT 1.71 m	12:35 PM HKT 0.97 m	5:41 PM HKT 1.30 m	10:54 PM HKT 1.00 m			5:45 AM HKT	7:11 PM HKT	1:37 AM HKT	2:36 PM HKT
Thu 09	6:05 AM HKT 1.84 m	1:25 PM HKT 0.76 m	7:03 PM HKT 1.27 m	11:40 PM HKT 1.04 m			5:45 AM HKT	7:11 PM HKT	2:16 AM HKT	3:30 PM HKT
Fri 10	6:38 AM HKT 1.98 m	2:08 PM HKT 0.56 m	8:15 PM HKT 1.28 m			Third Quarter	5:46 AM HKT	7:11 PM HKT	3:00 AM HKT	4:27 PM HKT
Sat 11		12:28 AM HKT 1.06 m	7:15 AM HKT 2.12 m	2:48 PM HKT 0.39 m	9:15 PM HKT 1.31 m		5:46 AM HKT	7:10 PM HKT	3:48 AM HKT	5:26 PM HKT
Sun 12		1:16 AM HKT 1.06 m	7:55 AM HKT 2.26 m	3:28 PM HKT 0.25 m	10:06 PM HKT 1.35 m		5:46 AM HKT	7:10 PM HKT	4:42 AM HKT	6:26 PM HKT
Mon 13		2:01 AM HKT 1.06 m	8:38 AM HKT 2.37 m	4:09 PM HKT 0.15 m	10:53 PM HKT 1.39 m		5:47 AM HKT	7:10 PM HKT	5:41 AM HKT	7:24 PM HKT
Tue 14		2:46 AM HKT 1.05 m	9:23 AM HKT 2.44 m	4:51 PM HKT 0.12 m	11:38 PM HKT 1.43 m		5:47 AM HKT	7:10 PM HKT	6:43 AM HKT	8:19 PM HKT
Wed 15		3:31 AM HKT 1.05 m	10:10 AM HKT 2.45 m	5:34 PM HKT 0.14 m			5:48 AM HKT	7:10 PM HKT	7:47 AM HKT	9:11 PM HKT
Thu 16	12:22 AM HKT 1.46 m	4:19 AM HKT 1.07 m	10:58 AM HKT 2.40 m	6:18 PM HKT 0.22 m			5:48 AM HKT	7:10 PM HKT	8:52 AM HKT	9:58 PM HKT
Fri 17	1:07 AM HKT 1.50 m	5:11 AM HKT 1.10 m	11:50 AM HKT 2.27 m	7:03 PM HKT 0.34 m		New Moon	5:48 AM HKT	7:09 PM HKT	9:55 AM HKT	10:43 PM HKT
Sat 18	1:53 AM HKT 1.56 m	6:11 AM HKT 1.13 m	12:47 PM HKT 2.07 m	7:47 PM HKT 0.50 m			5:49 AM HKT	7:09 PM HKT	10:56 AM HKT	11:25 PM HKT
Sun 19	2:41 AM HKT 1.63 m	7:26 AM HKT 1.16 m	1:58 PM HKT 1.83 m	8:32 PM HKT 0.66 m			5:49 AM HKT	7:09 PM HKT	11:56 AM HKT	
Mon 20	3:31 AM HKT 1.73 m	9:05 AM HKT 1.15 m	3:26 PM HKT 1.60 m	9:18 PM HKT 0.82 m			5:50 AM HKT	7:08 PM HKT	12:55 PM HKT	12:07 AM HKT
Tue 21	4:21 AM HKT 1.83 m	11:01 AM HKT 1.03 m	5:04 PM HKT 1.41 m	10:06 PM HKT 0.94 m			5:50 AM HKT	7:08 PM HKT	1:54 PM HKT	12:49 AM HKT
Wed 22	5:12 AM HKT 1.94 m	12:35 PM HKT 0.83 m	6:41 PM HKT 1.32 m	10:58 PM HKT 1.04 m			5:51 AM HKT	7:08 PM HKT	2:52 PM HKT	1:32 AM HKT
Thu 23	6:00 AM HKT 2.04 m	1:38 PM HKT 0.65 m	8:09 PM HKT 1.29 m	11:52 PM HKT 1.09 m			5:51 AM HKT	7:07 PM HKT	3:50 PM HKT	2:17 AM HKT
Fri 24	6:46 AM HKT 2.13 m	2:24 PM HKT 0.50 m	9:15 PM HKT 1.31 m			First Quarter	5:51 AM HKT	7:07 PM HKT	4:46 PM HKT	3:06 AM HKT
Sat 25		12:44 AM HKT 1.10 m	7:30 AM HKT 2.21 m	3:03 PM HKT 0.41 m	10:04 PM HKT 1.33 m		5:52 AM HKT	7:07 PM HKT	5:40 PM HKT	3:56 AM HKT
Sun 26		1:32 AM HKT 1.09 m	8:11 AM HKT 2.26 m	3:38 PM HKT 0.36 m	10:42 PM HKT 1.35 m		5:52 AM HKT	7:06 PM HKT	6:30 PM HKT	4:48 AM HKT
Mon 27		2:16 AM HKT 1.08 m	8:50 AM HKT 2.29 m	4:13 PM HKT 0.35 m	11:15 PM HKT 1.38 m		5:53 AM HKT	7:06 PM HKT	7:17 PM HKT	5:42 AM HKT
Tue 28		2:57 AM HKT 1.07 m	9:27 AM HKT 2.31 m	4:46 PM HKT 0.38 m	11:46 PM HKT 1.41 m		5:53 AM HKT	7:05 PM HKT	8:00 PM HKT	6:35 AM HKT
Wed 29		3:37 AM HKT 1.08 m	10:02 AM HKT 2.29 m	5:20 PM HKT 0.44 m			5:54 AM HKT	7:05 PM HKT	8:39 PM HKT	7:27 AM HKT
Thu 30	12:16 AM HKT 1.44 m	4:15 AM HKT 1.10 m	10:36 AM HKT 2.24 m	5:53 PM HKT 0.52 m			5:54 AM HKT	7:04 PM HKT	9:16 PM HKT	8:18 AM HKT
Fri 31	12:46 AM HKT 1.47 m	4:54 AM HKT 1.13 m	11:10 AM HKT 2.16 m	6:25 PM HKT 0.62 m		Full Moon	5:54 AM HKT	7:04 PM HKT	9:51 PM HKT	9:08 AM HKT

CHINA

Songchen Lijang Romance Park, Lijang
Located far inland near the border of Myanmar, Romance Park promises dry days and nights for lovers and other tourists hoping to escape wetter hometowns. Crowds in July promise to be suffocating, so it is best to plan ahead. The park is pleased to accept reservations for summer 2099.

Happy Valley, Beijing
Despite its name, Happy Valley is located on a small hill and will be just above the high tide mark in 2099. Promising as this may seem for vacationers, tourists are advised to make other plans, as the area has been rezoned for residential residence. The roller coasters will have been repurposed for rapid transit.

Disneyland, Hong Kong
Although located on an island, Hong Kong Disneyland promises to be littoral rather than submerged, even in the gloomiest of high-tide scenarios. Some activities will be retrooled for amphibious operations, and moisture-sensitive digital attractions will be inoperative. An adventureland for a new century, most operations will be strongly influenced by the tide. Visitors should consult the most up-to-date tidal charts when planning their vacations.

Note: Hong Kong’s airport will be completely submerged. Early-bird docking reservations for Hong Kong’s waterport are, however, already available and fairly priced.

JAPAN

Nagashima Spa Land, Kuwana
This water-themed theme park will be entirely submerged in 2100. Transformational possibilities include an underwater-themed theme park.

Tokyo Disneyland, Tokyo
The fantastical expansion of the Bay of Tokyo will submerge Tokyo Disneyland after a mere 10 meters in sea level rise. With wise planning, however, tourists can visit littoral Disneyland, a short-lived experiment already under construction. A grand opening is planned for when water reaches the 3-meter mark (at 1.2° C global average temperature rise). By 2099 this roller-coaster haven will have been almost entirely forgotten.

SOUTH KOREA

Everland, Yongin
Renamed 물 밖에 난 고기 (“A fish out of water”), this park will be dry and operational.

Lotteworld, Seoul
The world’s largest indoor theme park, Lotteworld’s famous Magic Island—an artificial island in an artificial lake—promises to become an artificial island inside a real lake. Inflatable buoyancy devices will be added to the large building containing the remaining rides. Connections to Magic Island will be available via the world’s first umbilicus monorail, with flexible articulations capable of continuing service, even with storm waves of up to 5 meters. Even the public transit is part of the fun!

July 2099	37.4667° N, 126.5833° E; Inch'on (South Korea)									
Day	High	Low	High	Low	High	Phase	Sunrise	Sunset	Moonrise	Moonset
Wed 01		12:57 AM KST 0.76 m	7:21 AM KST 8.58 m	1:33 PM KST 1.52 m	7:29 PM KST 7.40 m	Full Moon	5:16 AM KST	7:58 PM KST	10:35 PM KST	8:25 AM KST
Thu 02		1:32 AM KST 1.03 m	7:59 AM KST 8.35 m	2:08 PM KST 1.71 m	8:10 PM KST 7.21 m		5:16 AM KST	7:58 PM KST	11:08 PM KST	9:22 AM KST
Fri 03		2:08 AM KST 1.38 m	8:39 AM KST 8.04 m	2:45 PM KST 1.94 m	8:54 PM KST 6.98 m		5:17 AM KST	7:58 PM KST	11:38 PM KST	10:18 AM KST
Sat 04		2:45 AM KST 1.79 m	9:20 AM KST 7.67 m	3:24 PM KST 2.19 m	9:42 PM KST 6.74 m		5:17 AM KST	7:58 PM KST		11:14 AM KST
Sun 05		3:26 AM KST 2.25 m	10:06 AM KST 7.29 m	4:07 PM KST 2.43 m	10:35 PM KST 6.54 m		5:18 AM KST	7:58 PM KST	12:06 AM KST	12:10 PM KST
Mon 06		4:14 AM KST 2.70 m	10:56 AM KST 6.93 m	4:59 PM KST 2.61 m	11:24 PM KST 6.45 m		5:18 AM KST	7:57 PM KST	12:34 AM KST	1:06 PM KST
Tue 07		5:16 AM KST 3.08 m	11:51 AM KST 6.67 m	6:04 PM KST 2.66 m			5:19 AM KST	7:57 PM KST	1:02 AM KST	2:03 PM KST
Wed 08	12:37 AM KST 6.52 m	6:39 AM KST 3.24 m	12:50 PM KST 6.54 m	7:16 PM KST 2.52 m			5:20 AM KST	7:57 PM KST	1:32 AM KST	3:02 PM KST
Thu 09	1:39 AM KST 6.77 m	8:01 AM KST 3.09 m	1:49 PM KST 6.58 m	8:19 PM KST 2.18 m			5:20 AM KST	7:57 PM KST	2:05 AM KST	4:03 PM KST
Fri 10	2:38 AM KST 7.19 m	9:05 AM KST 2.71 m	2:46 PM KST 6.76 m	9:13 PM KST 1.70 m		Third Quarter	5:21 AM KST	7:56 PM KST	2:43 AM KST	5:05 PM KST
Sat 11	3:32 AM KST 7.70 m	9:56 AM KST 2.22 m	3:40 PM KST 7.05 m	10:00 PM KST 1.18 m			5:21 AM KST	7:56 PM KST	3:26 AM KST	6:07 PM KST
Sun 12	4:22 AM KST 8.24 m	10:41 AM KST 1.71 m	4:30 PM KST 7.39 m	10:44 PM KST 0.67 m			5:22 AM KST	7:55 PM KST	4:17 AM KST	7:08 PM KST
Mon 13	5:08 AM KST 8.73 m	11:23 AM KST 1.25 m	5:17 PM KST 7.71 m	11:27 PM KST 0.25 m			5:23 AM KST	7:55 PM KST	5:15 AM KST	8:05 PM KST
Tue 14	5:53 AM KST 9.10 m	12:06 PM KST 0.89 m	6:03 PM KST 7.95 m				5:23 AM KST	7:54 PM KST	6:20 AM KST	8:57 PM KST
Wed 15		12:10 AM KST -0.01 m	6:38 AM KST 9.31 m	12:48 PM KST 0.67 m	6:50 PM KST 8.09 m		5:24 AM KST	7:54 PM KST	7:29 AM KST	9:42 PM KST
Thu 16		12:54 AM KST -0.07 m	7:23 AM KST 9.32 m	1:31 PM KST 0.60 m	7:37 PM KST 8.10 m		5:25 AM KST	7:53 PM KST	8:40 AM KST	10:23 PM KST
Fri 17		1:38 AM KST 0.10 m	8:08 AM KST 9.12 m	2:15 PM KST 0.70 m	8:28 PM KST 7.97 m	New Moon	5:26 AM KST	7:53 PM KST	9:50 AM KST	11:00 PM KST
Sat 18		2:25 AM KST 0.49 m	8:55 AM KST 8.73 m	3:02 PM KST 0.94 m	9:19 PM KST 7.74 m		5:26 AM KST	7:52 PM KST	11:00 AM KST	11:35 PM KST
Sun 19		3:15 AM KST 1.07 m	9:44 AM KST 8.21 m	3:53 PM KST 1.27 m	10:16 PM KST 7.45 m		5:27 AM KST	7:52 PM KST	12:08 PM KST	
Mon 20		4:11 AM KST 1.73 m	10:37 AM KST 7.64 m	4:50 PM KST 1.62 m	11:18 PM KST 7.19 m		5:28 AM KST	7:51 PM KST	1:15 PM KST	12:08 AM KST
Tue 21		5:19 AM KST 2.36 m	11:35 AM KST 7.10 m	5:58 PM KST 1.90 m			5:28 AM KST	7:50 PM KST	2:21 PM KST	12:43 AM KST
Wed 22	12:26 AM KST 7.04 m	6:42 AM KST 2.76 m	12:39 PM KST 6.70 m	7:13 PM KST 1.98 m			5:29 AM KST	7:50 PM KST	3:26 PM KST	1:19 AM KST
Thu 23	1:36 AM KST 7.06 m	8:07 AM KST 2.78 m	1:46 PM KST 6.51 m	8:24 PM KST 1.83 m			5:30 AM KST	7:49 PM KST	4:28 PM KST	1:59 AM KST
Fri 24	2:44 AM KST 7.26 m	9:14 AM KST 2.55 m	2:50 PM KST 6.53 m	9:22 PM KST 1.56 m		First Quarter	5:31 AM KST	7:48 PM KST	5:28 PM KST	2:43 AM KST
Sat 25	3:43 AM KST 7.56 m	10:07 AM KST 2.22 m	3:47 PM KST 6.70 m	10:10 PM KST 1.26 m			5:32 AM KST	7:47 PM KST	6:22 PM KST	3:31 AM KST
Sun 26	4:32 AM KST 7.87 m	10:51 AM KST 1.90 m	4:35 PM KST 6.95 m	10:53 PM KST 0.98 m			5:32 AM KST	7:47 PM KST	7:12 PM KST	4:23 AM KST
Mon 27	5:13 AM KST 8.15 m	11:30 AM KST 1.61 m	5:17 PM KST 7.20 m	11:31 PM KST 0.78 m			5:33 AM KST	7:46 PM KST	7:55 PM KST	5:18 AM KST
Tue 28		5:51 AM KST 8.36 m	12:05 PM KST 1.39 m	5:56 PM KST 7.41 m			5:34 AM KST	7:45 PM KST	8:34 PM KST	6:15 AM KST
Wed 29			12:06 AM KST 0.67 m	6:26 AM KST 8.48 m	12:39 PM KST 1.26 m		5:35 AM KST	7:44 PM KST	9:08 PM KST	7:12 AM KST
Thu 30			12:40 AM KST 0.67 m	7:00 AM KST 8.49 m	1:11 PM KST 1.21 m		5:36 AM KST	7:43 PM KST	9:39 PM KST	8:09 AM KST
Fri 31			1:13 AM KST 0.78 m	7:34 AM KST 8.39 m	1:42 PM KST 1.25 m	Full Moon	5:36 AM KST	7:42 PM KST	10:08 PM KST	9:05 AM KST

July 2099	58.4500° N, 8.7667° E; Arendal (Norway)									
Day	High	Low	High	Low	High	Phase	Sunrise	Sunset	Moonrise	Moonsset
Wed 01		1:16 AM CEST 0.10 m	7:42 AM CEST 0.25 m	1:41 PM CEST 0.13 m	7:41 PM CEST 0.24 m		4:23 AM CEST	10:33 PM CEST	12:11 AM CEST	8:31 AM CEST
Thu 02		2:09 AM CEST 0.11 m	8:36 AM CEST 0.24 m	2:28 PM CEST 0.14 m	8:32 PM CEST 0.24 m	Full Moon	4:24 AM CEST	10:33 PM CEST	12:31 AM CEST	9:43 AM CEST
Fri 03		3:08 AM CEST 0.12 m	9:33 AM CEST 0.23 m	3:18 PM CEST 0.15 m	9:28 PM CEST 0.24 m		4:25 AM CEST	10:32 PM CEST	12:48 AM CEST	10:55 AM CEST
Sat 04		4:10 AM CEST 0.12 m	10:31 AM CEST 0.22 m	4:11 PM CEST 0.15 m	10:26 PM CEST 0.25 m		4:26 AM CEST	10:31 PM CEST	1:02 AM CEST	12:07 PM CEST
Sun 05		5:09 AM CEST 0.13 m	11:24 AM CEST 0.22 m	5:04 PM CEST 0.15 m	11:23 PM CEST 0.26 m		4:27 AM CEST	10:30 PM CEST	1:15 AM CEST	1:19 PM CEST
Mon 06		6:02 AM CEST 0.12 m	12:10 PM CEST 0.23 m	5:53 PM CEST 0.14 m			4:28 AM CEST	10:29 PM CEST	1:27 AM CEST	2:32 PM CEST
Tue 07	12:16 AM CEST 0.27 m	6:48 AM CEST 0.12 m	12:50 PM CEST 0.24 m	6:39 PM CEST 0.13 m			4:30 AM CEST	10:28 PM CEST	1:40 AM CEST	3:46 PM CEST
Wed 08	1:03 AM CEST 0.28 m	7:30 AM CEST 0.12 m	1:27 PM CEST 0.25 m	7:23 PM CEST 0.11 m			4:31 AM CEST	10:27 PM CEST	1:55 AM CEST	5:02 PM CEST
Thu 09	1:48 AM CEST 0.29 m	8:08 AM CEST 0.11 m	2:03 PM CEST 0.26 m	8:05 PM CEST 0.10 m			4:32 AM CEST	10:26 PM CEST	2:13 AM CEST	6:20 PM CEST
Fri 10	2:30 AM CEST 0.30 m	8:45 AM CEST 0.11 m	2:40 PM CEST 0.28 m	8:47 PM CEST 0.09 m		Third Quarter	4:34 AM CEST	10:25 PM CEST	2:37 AM CEST	7:37 PM CEST
Sat 11	3:11 AM CEST 0.31 m	9:22 AM CEST 0.11 m	3:18 PM CEST 0.29 m	9:29 PM CEST 0.08 m			4:35 AM CEST	10:24 PM CEST	3:10 AM CEST	8:49 PM CEST
Sun 12	3:53 AM CEST 0.32 m	10:01 AM CEST 0.11 m	3:58 PM CEST 0.30 m	10:13 PM CEST 0.08 m			4:37 AM CEST	10:22 PM CEST	3:56 AM CEST	9:49 PM CEST
Mon 13	4:35 AM CEST 0.32 m	10:40 AM CEST 0.11 m	4:41 PM CEST 0.31 m	10:59 PM CEST 0.08 m			4:39 AM CEST	10:21 PM CEST	4:57 AM CEST	10:37 PM CEST
Tue 14	5:19 AM CEST 0.31 m	11:22 AM CEST 0.11 m	5:27 PM CEST 0.31 m	11:48 PM CEST 0.08 m			4:40 AM CEST	10:19 PM CEST	6:14 AM CEST	11:12 PM CEST
Wed 15	6:07 AM CEST 0.31 m	12:08 PM CEST 0.11 m	6:16 PM CEST 0.32 m				4:42 AM CEST	10:18 PM CEST	7:40 AM CEST	11:38 PM CEST
Thu 16		12:41 AM CEST 0.09 m	6:59 AM CEST 0.30 m	1:00 PM CEST 0.12 m	7:12 PM CEST 0.31 m		4:44 AM CEST	10:16 PM CEST	9:10 AM CEST	11:59 PM CEST
Fri 17	1:40 AM CEST 0.10 m	7:58 AM CEST 0.29 m	1:59 PM CEST 0.13 m		8:15 PM CEST 0.31 m	New Moon	4:46 AM CEST	10:15 PM CEST	10:40 AM CEST	
Sat 18	2:46 AM CEST 0.11 m	9:05 AM CEST 0.29 m	3:07 PM CEST 0.13 m		9:26 PM CEST 0.31 m		4:47 AM CEST	10:13 PM CEST	12:10 PM CEST	12:16 AM CEST
Sun 19		3:58 AM CEST 0.11 m	10:15 AM CEST 0.29 m	4:20 PM CEST 0.13 m	10:41 PM CEST 0.31 m		4:49 AM CEST	10:11 PM CEST	1:37 PM CEST	12:31 AM CEST
Mon 20		5:11 AM CEST 0.12 m	11:26 AM CEST 0.29 m	5:31 PM CEST 0.12 m	11:53 PM CEST 0.32 m		4:51 AM CEST	10:09 PM CEST	3:03 PM CEST	12:47 AM CEST
Tue 21		6:18 AM CEST 0.11 m	12:30 PM CEST 0.30 m	6:37 PM CEST 0.11 m			4:53 AM CEST	10:07 PM CEST	4:27 PM CEST	1:04 AM CEST
Wed 22	12:59 AM CEST 0.33 m	7:20 AM CEST 0.11 m	1:27 PM CEST 0.31 m	7:35 PM CEST 0.10 m			4:55 AM CEST	10:06 PM CEST	5:48 PM CEST	1:25 AM CEST
Thu 23	1:57 AM CEST 0.34 m	8:14 AM CEST 0.11 m	2:18 PM CEST 0.32 m	8:26 PM CEST 0.10 m			4:57 AM CEST	10:04 PM CEST	7:03 PM CEST	1:50 AM CEST
Fri 24	2:49 AM CEST 0.35 m	9:03 AM CEST 0.11 m	3:05 PM CEST 0.32 m	9:14 PM CEST 0.09 m		First Quarter	4:59 AM CEST	10:02 PM CEST	8:08 PM CEST	2:24 AM CEST
Sat 25	3:36 AM CEST 0.35 m	9:48 AM CEST 0.11 m	3:48 PM CEST 0.33 m	9:58 PM CEST 0.10 m			5:01 AM CEST	10:00 PM CEST	9:02 PM CEST	3:07 AM CEST
Sun 26	4:20 AM CEST 0.35 m	10:29 AM CEST 0.12 m	4:28 PM CEST 0.32 m	10:40 PM CEST 0.10 m			5:03 AM CEST	9:58 PM CEST	9:43 PM CEST	4:02 AM CEST
Mon 27	5:01 AM CEST 0.34 m	11:07 AM CEST 0.13 m	5:06 PM CEST 0.32 m	11:21 PM CEST 0.11 m			5:05 AM CEST	9:55 PM CEST	10:13 PM CEST	5:06 AM CEST
Tue 28	5:41 AM CEST 0.32 m	11:42 AM CEST 0.15 m	5:42 PM CEST 0.31 m				5:07 AM CEST	9:53 PM CEST	10:36 PM CEST	6:15 AM CEST
Wed 29		12:00 AM CEST 0.13 m	6:19 AM CEST 0.31 m	12:15 PM CEST 0.16 m	6:17 PM CEST 0.31 m		5:09 AM CEST	9:51 PM CEST	10:54 PM CEST	7:27 AM CEST
Thu 30		12:40 AM CEST 0.14 m	6:56 AM CEST 0.29 m	12:46 PM CEST 0.18 m	6:52 PM CEST 0.30 m		5:11 AM CEST	9:49 PM CEST	11:09 PM CEST	8:40 AM CEST
Fri 31		1:22 AM CEST 0.16 m	7:34 AM CEST 0.28 m	1:18 PM CEST 0.19 m	7:32 PM CEST 0.30 m	Full Moon	5:14 AM CEST	9:47 PM CEST	11:22 PM CEST	9:52 AM CEST

NETHERLANDS

Efteling, Rotterdam

The “low countries” will be entirely submerged by 2100. This includes Efterling, near present day Rotterdam. The floating Efterling amusement park will remain open for business, provided seas are calm. Knowing where it might be found upon the expanded sea will necessitate using up-to-date current charts, as the expected disruption of the gulf stream due to radical desalination of the oceans will have surprising results—or as the Koreans say “When it’s ten years, even the rivers and mountains change” (십 년이면 강산도 변한다). Prospective guests are asked to check back two to three weeks before their planned visit. Also note that oceanic drift can cause this park to be quite cold in July (should it arrive in the southern hemisphere) thus it is suggested to pack a variety of clothing, including swim suits and heavy anoraks.

SWEDEN

Liseberg, Gothenburg

Conveniently located on the edge of the new Örgryte island, Liseberg will remain open and operational, with accommodations made for especially high tides: swan- and turtle-shaped paddleboats with portside meatball and tea services will be integrated throughout the park. See tide table at left.

SPAIN

Porta Adventura

This high-tech family fun park will inhabit the whole of the Upper Tarragona Island, so named after the drowned city of Tarragona. Lower Tarragona Island will host a public golf course. The two islands are linked by a footbridge capable of accommodating golf carts. Houseboats can dock for a modest tethering fee, making it a lovely vacation spot for Europe’s floating populations.

NIGERIA

Dream World Africa, Lagos

Though the present site of Dream World Africa will be entirely submerged at 5 meters sea level rise (2°C), Lagos will have moved inland to the site of present day Iperu by 2073. Tourists should feel free to plan trips to this lovely and newly restored park at their convenience.

SUDAN

Al Mogram Family Park, Khartoum

Al Mogram Family Park will only open between 2-5 a.m. due to extreme heat.

SOUTH AFRICA

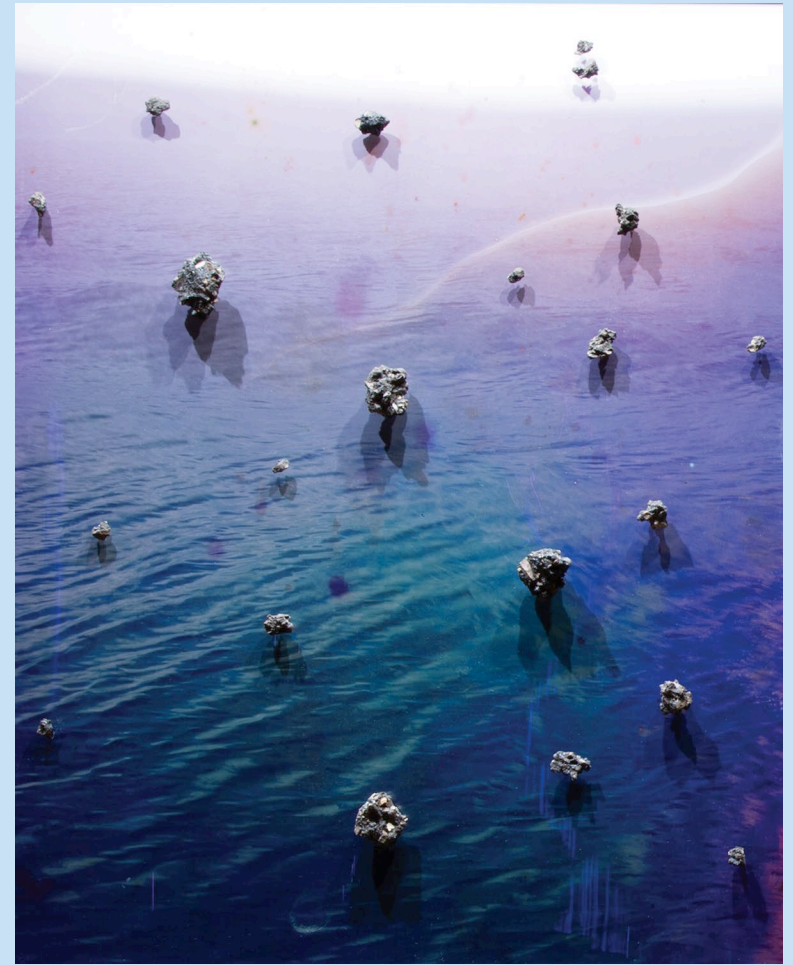
uShaka Marine World, Durban

Not much of Durban will be left, but Marine World with its underwater hotels, bubble routes through actual shark-infested waters, and scuba-gear-required roller coasters remains a shining pearl in the sea. Unique among theme parks, uShaka, now truly a Marine World, will be soothing to adventuresome families from Africa’s broiling interior. Visitors can experience an entire vacation underwater.

In Casper, Wyoming there is little to worry about, the tides are low today as everyday.

Lake Michigan serves as the shoreline for the major urban areas of Gary, Indiana; Chicago, Illinois; and Milwaukee, Wisconsin. It is part of the Great Lakes, which hold one-fifth of the planet's fresh water supply. Consistently abused by heavy industry, manufacturing, agriculture and more, this polluted yet resilient body of water exemplifies the consequences of American living. The contamination, however, is largely invisible on the surface of the water or from the shore.

These photographs were created by using Lake Michigan's waters near Chicago as a camera of sorts. Sheets of exposed negative film were submerged directly into the lake exposing it to the fresh yet tainted water. The final images were then coated with traces of asphalt collected from the shoreline.



Living by the rhythms of alarm clocks, workdays, to-do lists, grocery store hours, and episodes on Netflix. It is incessant....

In *The Undercommons*, Fred Moten and Stephano Harney put it like this:

“To work today is to be asked, more and more, to do without thinking, to feel without emotion, to move without friction, to adapt without question, to translate without pause, to desire without purpose, to connect without interruption.”

When and how to find the time to do things differently? What needs to happen to change this rhythm, to move beyond it, to be involved in transformative lifestyles in which lives are lived more in common, in connection?

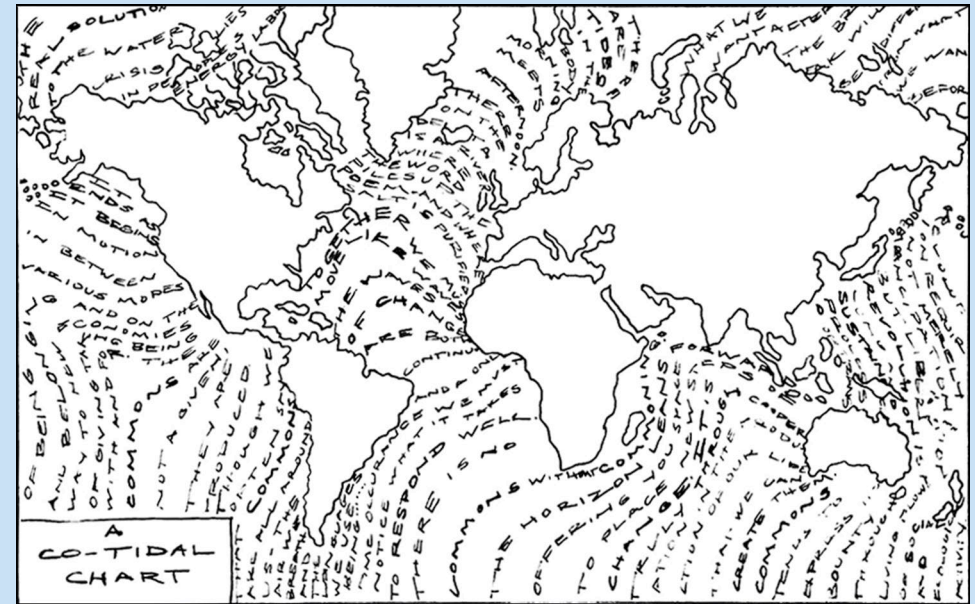
A revolutionary wave? A revolution is often thought of as a singular moment displacing the status quo and suddenly changing everything, or even a sequence of overturning events, one inspiring the next.

But perhaps movement towards alternative futures is less about a wave and more about tides. Ongoing monthly and daily cycles of ebbs and flows. Necessary social and political change is fundamentally tidal—building momentum in the emerging rhythms of the everyday. Transformation happens

through recurring practices of making time to share, move, and grow toward different rhythms.

This is a tidal chart that gathers inspiring descriptions of the ebbing and flowing towards new futures. Its imperfect cartography is taken from an 1891 book by Edwin Houston called *The Elements of Physical Geography*.

Originally the lines on the map indicated “co-tidal” times—the progress of a daily lunar tidal wave in each of the oceans starting at hour I and ending with the breaking hours in the Arctic. In the co-tidal chart, the words move with each other until they reach farther shores. It is meant to be felt, not necessarily read. Below the chart is a key for easier reading and to help identify the quotes at each hour, in each ocean.



[*A KEY to co-tidal concepts from the Arctic Ocean to the Southern Ocean:](#)

Before the Hours: Arctic Circle There are tides in the body. Morning meets afternoon. Virginia Woolf, *Mrs. Dalloway*

Hours to Come: Arctic Circle The real solution to the water crisis lies in people’s energy, labor, time, care, and solidarity. Vandana Shiva, *Water Wars*

Breaking Hours: Arctic Circle What we want after “the break” will be different from what we think we want before the break and both are necessarily different from the desire that issues from being in the break. Jack Halberstam, “The Wild Beyond,” foreword to *The Undercommons*

Hour I: The Pacific Ocean It ends with love, exchange, fellowship. It ends as it begins, in motion, in between various modes of being and belonging, and on the way to new economies of giving, taking, being with and for... Jack Halberstam, “The Wild Beyond,” foreword to *The Undercommons*

Hour V: Pacific Ocean Revolution requires not merely emancipation...but liberation; not just an event of destruction but also a long and sustained process of transformation, creating a new humanity. Michael Hardt & Antonio Negri, *Commonwealth*

Hour IX: Pacific Ocean Commons are not given, they are produced. Though we often say that commons are all around us—the air we breathe and the languages we use being key examples of shared wealth—it is truly only through cooperation in the production of our life that we can create them. Silvia Federici & George Caffentzis, “Commons Against and Beyond Capitalism”

Hour VIII: Atlantic Ocean There—on the delta—is a river where the word piles up—the poem—and where salt is purified. Édouard Glissant, *Black Salt*

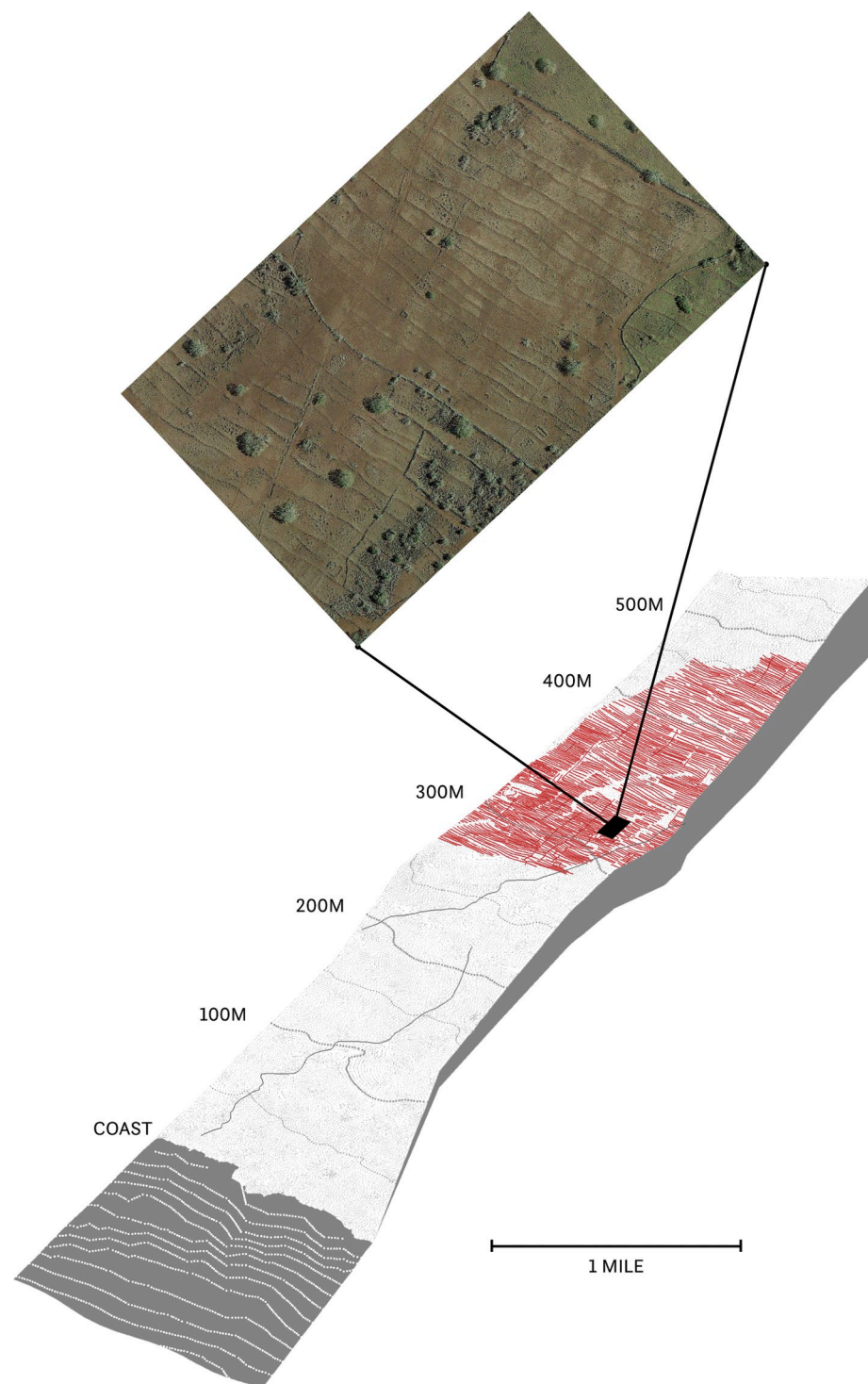
Hour XII: Atlantic Ocean Together we must move like waves. The waves we create are both continuous and a one-time occurrence... We must notice what it takes to respond well. Adrienne Maree Brown, *Emergent Strategy*

Hour XII: The Southern and Indian Ocean The horizon leans forward / Offering you space to place new steps of change. Maya Angelou, “On the Pulse of the Morning”

Hour I: The Southern Ocean There is no commons without commoning. Peter Linebaugh, *The Magna Carta Manifesto*

Hour III: Southern Ocean The commons tends to express its bounty through living flows of social and ecological activity, not fixed, countable stocks of capital and inventory. David Bollier, *The Wealth of The Commons*

PLANTING



Appearing like ripples in sand, or ocean swells paused across a landscape, the primary architecture of a dryland field system includes networks of kua'iwi—a low (under 2 feet), yet wide (20 feet) and long earthen berm along which kihāpai (*gardens*) were cultivated. The gentle structures of dryland field systems are among the most minimalist typologies of Hawaiian cultivation systems and were once prevalent across all islands, particularly where there existed a near absence of surface water typically obtained from streams or springs. While minimal in appearance and construction, the dynamics of kua'iwi represent perhaps the most sophisticated instances of architecture found across Oceania, engineered to capture moisture from thin air. The ability for Hawaiians to realize water directly from the atmosphere emerged in the very structure of kua'iwi itself, an example of employing geomimicry to reproduce an orographic effect, or a change in atmospheric conditions caused by a change in elevation, typically seen on large mountains.

Understood through the classification of mountains into windward and leeward sides, kua'iwi are microcosms of this landscape effect, even noticeable during dry seasons when the windward side of the berm still renders green. The intensification of windward and leeward sides prevalent throughout dryland field systems is crucial not only for its hydrological prowess but also in the ability for Hawaiians to retain nutrients found in soil. While extended periods of moisture can cause nutrients in the soil to drain away, the leeward side of kua'iwi counteracts this loss. The dynamic of nutrient retention and hydration achieved at the landscape scale is of significance not only for the future of cultivation but provide new insights for building technology and also nanotechnology.



I wanted to move in, breathe in, be in,
The sun hitting the soil, the wood, the smells of Earth.
Cold winter light, enveloping warmth.

*"You can build a greenhouse this far north that doesn't
need any heating?"*
"Of course!" I said.

I once tried to walk 2.3 km to the Getty Museum in
Los Angeles. You couldn't get there on foot from
where I was. I had to take a taxi or risk my life on the
shoulder of a highway.

Walking the Earth can be a radical act.



Find out more about the Passive Urban Greenhaus at www.2.ocadit.ca/research/sbl/home

Cars are occupiers, colonizers of life. There are over a quarter of a billion passenger vehicles in the U.S. and there are estimated to be four parking spaces in cities for every vehicle. What would it mean to reclaim our cities from a billion parking spaces? What could we gain?

"You only need to put windows on the south side. Make the south wall steep to catch the low winter sun." I said. "The other walls and north roof are well insulated. You should have thermal roller blinds over the windows at night to keep in the heat. You can get automatic ones that run off a solar panel."

3.5 billion years ago cyanobacteria evolved a way to capture sunlight energy to make food. We call it photosynthesis. It probably caused a mass extinction because oxygen is a by-product of energy production and poison to most anaerobic species.

New forms of energy can have consequences.

During the First and Second World Wars, people all over North America grew as much food in their yards as they could. We came together collectively and planted "Victory Gardens" in every place imaginable. Now food has become a global commodity where future harvests are traded by hedge funds and farms have become factories contributing to climate change. Our world eats oil, since ten calories of fuel are used for every calorie of food produced. We farm using fossil sunlight.

"So you can grow food right through the winter here in Toronto and you don't need to heat the greenhouse? No carbon emissions?"
"Yes," I said. "Mine is smaller than a single-car garage, but I would advise some kind of back-up heating, just in case. No point in losing a whole crop with one super-cold night. You know how the jet streams have been unstable because of the heating Arctic."

Our cities have become biodiverse refuges for some. Our farms so toxic that insects cannot survive. We need to reclaim food as nourishment, as community, as culture—not commodity.

How did we get to a place where farming suppresses life?

Some of the richest cities have food deserts, where many people don't have access to healthy food. Multinational chains don't go where there is little money. Growing our own food can increase food security for many and add resilience to our cities in the face of increasing disruptions to the global food system.

"You need to store the heat of the sun, in earth, in stone, in water. There are more exotic ways to store heat that weigh less so you can even put a greenhouse on the right rooftop. The hardest part is actually the ventilation. When the sun shines, the greenhouse will get too hot unless you ventilate with fans, but that is easy with even a small solar panel."

Cities are ecosystems, with tidal ebbs and flows. Energy, nutrients and resources well up, exchange, and are lost; it is all cycles. Food is our most basic need but we separate ourselves from the act of growing.

Growing food can be a radical act.

Spring Pools

These pools that, though in forests, still reflect
 The total sky almost without defect,
 And like the flowers beside them, chill and shiver,
 Will like the flowers beside them soon be gone,
 And yet not out by any brook or river,
 But up by roots to bring dark foliage on.

The trees that have it in their pent-up buds
 To darken nature and be summer woods—
 Let them think twice before they use their powers
 To blot out and drink up and sweep away
 These flowery waters and these watery flowers
 From snow that melted only yesterday.

Robert Frost

“From snow that melted only yesterday”—Across centuries of poetic echo, the line answers François Villon’s “*où sont les neiges d’antan?*”—“where are the snows of yesteryear?” Frost’s line registers something gone, but just now touchable; Villon’s a goneness from time immemorial. Yet while Frost’s snows may have melted only yesterday, they are now as irretrievable as Villon’s.

Exercise 1: In the time it might take you to memorize these twelve lines how much sweet water will have will have melted into salt water?

“Spring Pools” invites its readers to remember that spring flowers in deciduous woods take advantage of a fleeting openness when, for a brief spell, the forest ground lies open to the sky and vice versa. Ground momentarily gives face to sky, yielding the briefly operative reflective relationship that Frost describes in the first lines and enacts at the close with “these flowery waters and these watery flowers.”¹ In ecologist Judith Bronstein’s words from “The Plant Pollinator Landscape” in *Mosaic Landscapes and Ecological Processes*, “early-spring wildflowers in temperate-zone deciduous forests . . . must flower during the brief period after temperatures are warm enough for pollinator flight, but before the forest canopy has closed and light levels have fallen.” For both ecologist and poet, the season known as spring refers to that short window of time when the brief co-presence of elements on otherwise different tracks—in this case, light and warmth—momentarily makes possible something otherwise impossible.

Exercise 2: Using this definition of the season, name all the “springs” you can remember.

With anthropogenic climate change, these various windows of time—defined by the temporary overlap of species or elements otherwise independent of one another—are narrowing, if not closing altogether. As Bronstein and others have argued, climate change poses a special threat to insect pollinators and flowering plants whose mutualistic interactions only occur during circumscribed times of the year. Spring in the impoverished sense of the season as merely the return of warmer temperatures is said to be arriving earlier and earlier every year, thereby increasing the risk of mismatch between species responding to subtly different cues (angle of light, photoperiod, continuity of warm days as opposed to average temperature across time, etc.). But to what extent is a drastically warming Earth itself the result of a system of industrial production incapable of recognizing gradations between and within seasons? Even if it puts some species at risk of extinction, I’d like to resist mourning the possibility of these distinct seasonal rhythms falling out of synch with each other as evidence of evolutionary failure. How can we instead recognize it as something worth affirming—evidence of the delicate, facultative and exceptional character of these opportunistic interactions or fugitive meetings?

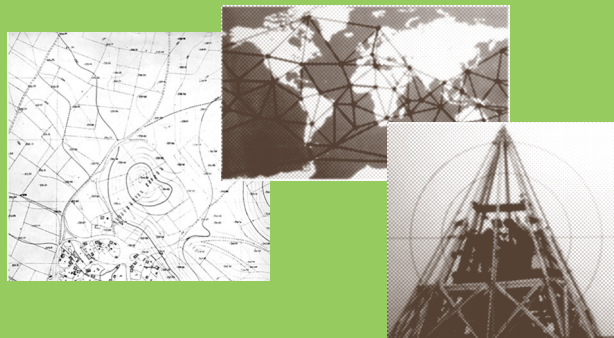
Take perhaps the most iconic of Great Britain’s spring woodland flowers—the English bluebell. Over a decade ago, Jonathan Brown writing for the *Independent* was already warning that the bluebell’s “brief window of opportunity—the time between the warming of the soil and the closure of the woodland canopy”—was “slowly closing,” as treetops were “darkening” earlier, with earlier and warmer springtime temperatures. The double metaphor of closure is striking: climate change here is tantamount to the permanently accelerating and irreversible closure of a once seasonally recurring interstitial window of time (a stretch of temporary light) known as spring. According to the Botanic Gardens International, bluebells remain in the woods as bulbs throughout the summer and autumn; in the winter the energy stored in these bulbs allows them to gain an advance on temperature-dependent species such as dandelion and horse radish which must await the warmer temperatures to germinate and grow. And again—with climate change, this edge—or small margin of temporal advance—is said to be closing.

Exercise 3: For every “dandelion” you come across, ask yourself what flowering bulb it footnotes by displacement; keep a record of the vanished meadow.

Just as flowers that once relayed each other in time now compete for the same scarce space, an erstwhile rival may become your only memorial. Thus, the much-maligned Spanish bluebell, a garden variety that has been the object of vitriolic nativist fears in England, might one day serve as a model by whose differences from the English bluebell grandparents might teach their grandchildren to draw the disappeared original. But how will they mark the absence of the marks of grief on the flower’s petals, according to its Latin name *Hyacinthoides non-scripta*? As Richard Mabey explains, the British bluebell was called “non-script” or “unlettered” to distinguish it from “the classical hyacinth, a mythical flower sprung from the blood of the dying prince Hyacinthus, on whose petals Apollo inscribed the letters AIAI—‘alas’—to express his grief.” Writing in his journal in 1871 Gerald Manley Hopkins described woodland bluebells as “falls of sky-color washing the brows and slacks of the ground with vein-blue.” Capitalism—a history of the enclosure of the commons—is now proposing to shield itself from the effects of rising temperatures by enclosing the sky with shields that will deflect the sun’s rays away from Earth, one effect of which will be to turn the sky a permanent white. I anticipate the day when springtime visitors to deciduous woods will look to the ground to remember the sky.

¹ If flowers are footnotes, let me indulge in one here: the line is structured as what literary critics would call a chiasmus [abba], condensing and concentrating onto itself—in the way flowers do water and sunlight—a long history in English poetry of punning on the flower in flow and the flow in flower, as if the two-syllabic word were simply the curl of an otherwise ceaseless coursing. See John Hollander’s *The Figure of Echo*.

5558: (Fun)damentals of Geognostic Metrology (Un)knowing Fungible Qualities SEMINAR



October 29, 2028 to November 2, 2028
100 Bureau Drive, Gainsborough, 2034
Room 101/BIRC

IACET CEUs Credits Offered: 5.0
Class Size Min/Max: 9/12
Class No.: 5558
Time: 8:30 AM - 5:00 PM EST
Registration Deadline: Wednesday, September 5, 2028

Cancellation: We reserve the right to cancel a workshop if we do not receive sufficient registrations. Please register early and do not make any confirmed travel bookings until the course has been confirmed.

This 5-day **5558: (Fun)damentals of Geognostic Metrology** seminar introduces participants to the concepts of knowledge systems, units, measurement uncertainty and assurance, bodily knowing, traceability, basic statistics and how the aforementioned fit it into laboratory Geognostic Metrology Quality Management Systems and Services. Additional topics covered will include Overall Knowledge Management and Knowledge Quality Management Systems, as well as specific discussions of the requirements for proficiency testing, calibration certificate generation, software verification and validation, and management reviews. Topics covered will include a variety of measurement disciplines and case studies so that the participants will be able to apply the concepts to any measurement discipline upon completion. Seminars will follow a mixture of training styles including lecture, hands-on exercises, case studies, and discussion. A pantometric mathematics (pre-test) and completion of a number of reading assignments will be required.

LEARNING OBJECTIVES

At completion of the seminar, participants will be able to:

- Identify and use reference materials to ensure good quality, accurate, traceable measurement results;
- Explain highlights and key concepts of each topic (noted on the course plan and detailed in these learning objectives) to each other and to managers, and show how these topics fit in to a management system using ISO/IEC 17025 as the basis;
- Implement several simple tools, jobs aids, and references to use and improve their geognostic operations.

PLEASE NOTE, registration requests will be processed in line with business cycles for that day. Upon payment, registered students will be sent a password which will enable them to register for training in the registration system. For questions, please contact Isabel Shapiro at 888-304-0281.

Cost: The current fee for this seminar is \$1,980. Confirmed participants will be sent payment instructions. This fee does not cover travel, lodging, or meal expenses. Payment is due on the first Monday of August 2028, preceding the course commencement. Registration fees for regulation weights and measures regulatory officials and metrologists are funded by the UK Environment Agency (EA), the United States Environmental Protection Agency (EPA), the Canadian Environmental Assessment Agency (CEAA), and the European Environment Agency (EEA).

KNOW THE WORLD!

"The first cultural device was probably a recipient."
Elizabeth Fisher, Woman's Creation cited in Ursula Le Guin,
"The Carrier Bag Theory of Fiction"

This page has been designed to be used as a portable seed pouch library. Cut on the brown dotted lines then fold along the grey lines to form a small pouch. Tape to seal sides. Leave and take seeds within the folded page.

On the front of the pouch, leave a record of deposits and removals: when depositing, note the date, the plant's name, its preferred climate, habitat, and time of year in which to plant; when removing, leave the date of removal and date and place of projected broadcasting or reburial in the ground.

If you are done with the almanac, someday you could even water the seed pouch to see what grows!

INTERIOR OF SEED POUCH



Plant:

Swamp Challenge

Nomeda & Gediminas Urbonas





2

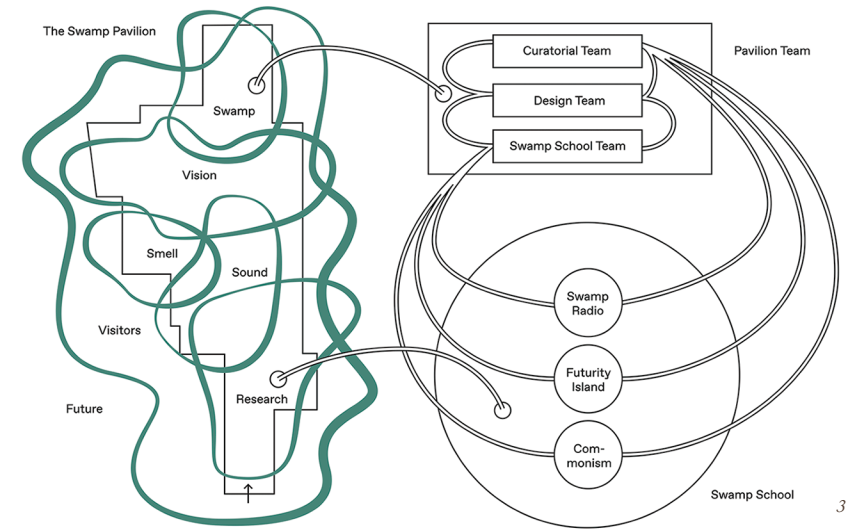
“Hope and the future for me are not in lawns and cultivated fields, not in towns and cities, but in the impervious and quaking swamps,” maintained Henry David Thoreau, who loved to write about wetlands—and to be possessed by them.

Do not drain the *swamp*! Through the centuries swamps have been maligned and cursed. In Lithuanian linguistics, the word *swamp* (*pelkė*) is close to hell (*pekla*), which suggests a compelling topological shortcut of being both cosmological and domestic. As a liquid, borderless and metabolizing body, the swamp has always been an obstruction of modernity. Neither land nor waterway, it has been counterproductive as a territory. Moreover, the *swampian* mythologies that generate fears, ghosts and *ignis fatuus* insist on premodern epistemologies.

The *swamp* challenge is not about re-discovering our true identity, but rather about meeting with our intrinsic hybridity. Human are not hermetic organisms. Blurring the line between humans and nature, the *swamp* prompts us to reimagine our relationships and potential interchange. Just as Bruno Latour says, “we have never been modern,”

we could say, the *swamps* have never retreated: they have been in the background as an invisible symbiosis of different forms of life, as an interaction of elements and organisms, as a part of our denigrated premodern subconscious, and of our urbanized fears and nightmarish dreams. *Swamps* signal the exposure to the danger of the unknown and induce into watery motion both repulsion of and attraction to the uncanny.

The *swamp* challenge is about engaging the uncanny and rubbing against the holistic, the ecumenical “togetherness.” The *swamp*’s hybrid space evokes communion with non-humans—lichen, mucus, or a tadpole, as nothing has privileged status and we all exist equally. To recall Donna Haraway such radical solidarity suggests a cohabitation—being, changing and becoming together, becoming amphibian, expanding our sensorial apparatus through shared knowledge, beyond the human and technology. To change and be changed, form and be formed by, shape a thought and be sculpted by a shape of thought—this all suggests a dual ontology that speaks to the plasticity of the *swampian* brain.



3

In fact, *swamps* have always been bigger than us. They are interactions of several networks, combining heterogeneous forces and multiple layers into complex biosystems that exceed predefined bodily limits and infiltrate our living environments. Our technological engagement, based on the fluxes of information through digital networks, are inspired by their organizational structure—reminiscent of a cybernetic dream by Stafford Beer—a viable system organized in such a way as to meet the demands of surviving in a changing environment.

In a time marked by radical instability and threats of total war and environmental collapse, the *swamp* invokes the vital urgency of human cohabitation with other forms of life. The swamp gives an opportunity to test the idea of symposium—making and becoming together in order to find a new ethos of coexistence, a direction that stems from the act of recognizing the poetical power of the ecologies surrounding us. Through constant renderings of hybridity, it interrogates the entangled systems of “nature” and plays with the notion of human and nonhuman agency stretched between historical strata and possible scenarios of the future.

This is why today we should return to the imaginary of a *swamp*: a sphere generating gray zones, a living organism in which any borders defined clearly by social, political and cultural factors can be questioned. A problematic space becomes a perfect place to reflect on problematic divisions. On what basis is ownership or territory defined? Which occupants of a place are agents, and which are witnesses? Where can a new language be found, and what new aesthetic can it offer? What is material and what is not? What is the relationship between matter and imagination? How is materiality revealed? What is tomorrow? We must celebrate the long-maligned *swamp* as the challenge to habits of thoughts!

Images

- 1 Šepeta swamp. Image: Norbert Tukaj (2018)
- 2 Čepkeliai Marsh, the largest swamp in Lithuania. Credit: Norbert Tukaj (2018)
- 3 The Swamp School Model by Urbonas Studio and Nikola Bojić (2018)

MARKET

How to Be (Ir)rational:

*Almanac readers perennially write in to request advice. They want to know how to predict futures, and the terms of trade that might be available. This guide moves through the changing, strange nature of exchange in times beyond the Anthropocene, wherein worth is re-evaluated and values are liquidized. **

(In)commensurate Oblivion

Harmonious Accounting

Making things comparable and equivalent in nature is an essential component to practising rationality, one that we might trace back to none other than Plato. The Athenians believed ethical values must be organized according to common orders of worth, prevalent across civilized moral society—so that they could be ranked and prioritized. Complexity across different values results in irrational and disordered thinking and decision making. The goal of converting things to a common, commensurate form and format is to achieve harmonious accounting in quantities of what “we” care about: universal efficiency, productivity, and fairness. We have illustrated this system in the (Un)balance Sheet, which follows this guide. The import of life itself must balance on a ledger, or else how important could it be? Remember the old adage from management science: “you cannot manage what you cannot measure.”

Bounded Worth

Our task is to determine the means by which the things that matter to you might be categorised and organized

into bounded types of worth. The goal is to elicit a unit of measure that can be weighed against the same units of value; to society, and to you. We have provided a convenient Table of Measures located in the Measurements and Scales Department of this edition for additional guidance. Historically, monetary currencies have proved very effective at this. After numerals, they provide the most universal, widely agreed upon units that are handy for flattening and homogenizing the world into a continuous and horizontal space—ordered and liquid. Even time can be accommodated here, with the relevant discount and reduction equation, using the right ratios. This is rationality.

Numeranthology

Numbering, measuring and ranking—valuation—are integral to the ability to control, to make sense of and resolve complexity. Classifications always entail simplifications and are the basis of equal dealings with both the “outside” and the “beyond.” If you do not yet understand this statement, please read our advert for our course on the (Fun)amentals of Geognostic Metrology and consider registering.

An Earthfarmer Guide to the Economics of the Anthropocene

Allen & Carver

Simbiot Simplifications

Disappearing Externalities

Simplification will usually involve uncomfortable decisions over what to include or exclude, hold or leave behind. Remember that this adjudication is rarely neutral or merely technical. Simplifications have outsides. You will do well to remember that entities or relationships (often dynamic in nature) will remain unaccounted for. They will endure as unknowable, unruly, immanent, and sometimes ingenious resistors to the flattening and disciplining impulses of the ordering processes of metrology.

Disobedient Data & Lurking Variables

Qualitative things are quantitative things at higher resolution. What remains, as disappeared externality, can only but be ignored. As important as management is, data can be disobedient. The noncompliant beings may never find adequate representation within the ledgers and measuring tables of the Beyond—but that is not to say that they are not still there...lurking. A well-designed earthfarming system includes design features that allow farmers to eliminate extraneous variables as explanation for the observed relationship between the independent variable(s) and the dependent variable. Extraneous variables are, as it happens, called lurking variables.

** In this guide we provide for the imagining and enactment of liquidization, normalization, and distillation of “value” and worth, goodness, and merit into one vaporous reservoir of standing reserve. Please see our advertisement for our (Un)fettered Hyper-Carbon-Potassium-Nitrogen Circulator-Elevator (pp. 87). We propose that a unidimensional flow of life’s currencies can be infinitely exchanged and therefore move freely in all directions. Please also see Strange Exchanges in the Inventions Department (pp. 82–83).*

Consider the metaphors and models that efficient balance sheet accounting and productive economic exchange have bequeathed us. We will leave the reader to judge, using her lingering illogicality, the degree (or amount) to which they have seeped into regimes where they perhaps do not, and should not reign, supreme.

WORDS OF CAUTION: Simplifications are often slightly more complicated than they may first appear.

(Un)balance

“Because governance is the annunciation of universal exchange. The exchange through communication of all institutional forms, all forms of exchange value with each other is the enunciation of governance. The hospital talks to the prison which talks to the university which talks to the NGO which talks to the corporation through governance, and not just to each other but about each other. Everybody knows everything about our biopolitics. This is the perfection of democracy under the general equivalent. It is also the annunciation of governance as the realization of universal exchange on the grounds of capitalism.” Moten and Harney, *The Undercommons*

“There seems to be something singularly captivating in the word *balance*: as if, because any thing is called a balance, it must, for that reason, be necessarily good.” John Stewart Mill

“Every man thus lives by exchanging.” Adam Smith

“It follows that a person must—in order to act in a normal way—be able to shift... between situations which are relevant to each form of equivalence. These different forms of equivalence are formally incompatible with one another since each of them is recognized in the situation in which its validity is established is universal...the principles of equivalence on which a [justificatory] reality test is based... arrive as orders of worth.” Luc Boltanski & Laurent Thévenot, *On Justification*

Sheet

Allen & Carver

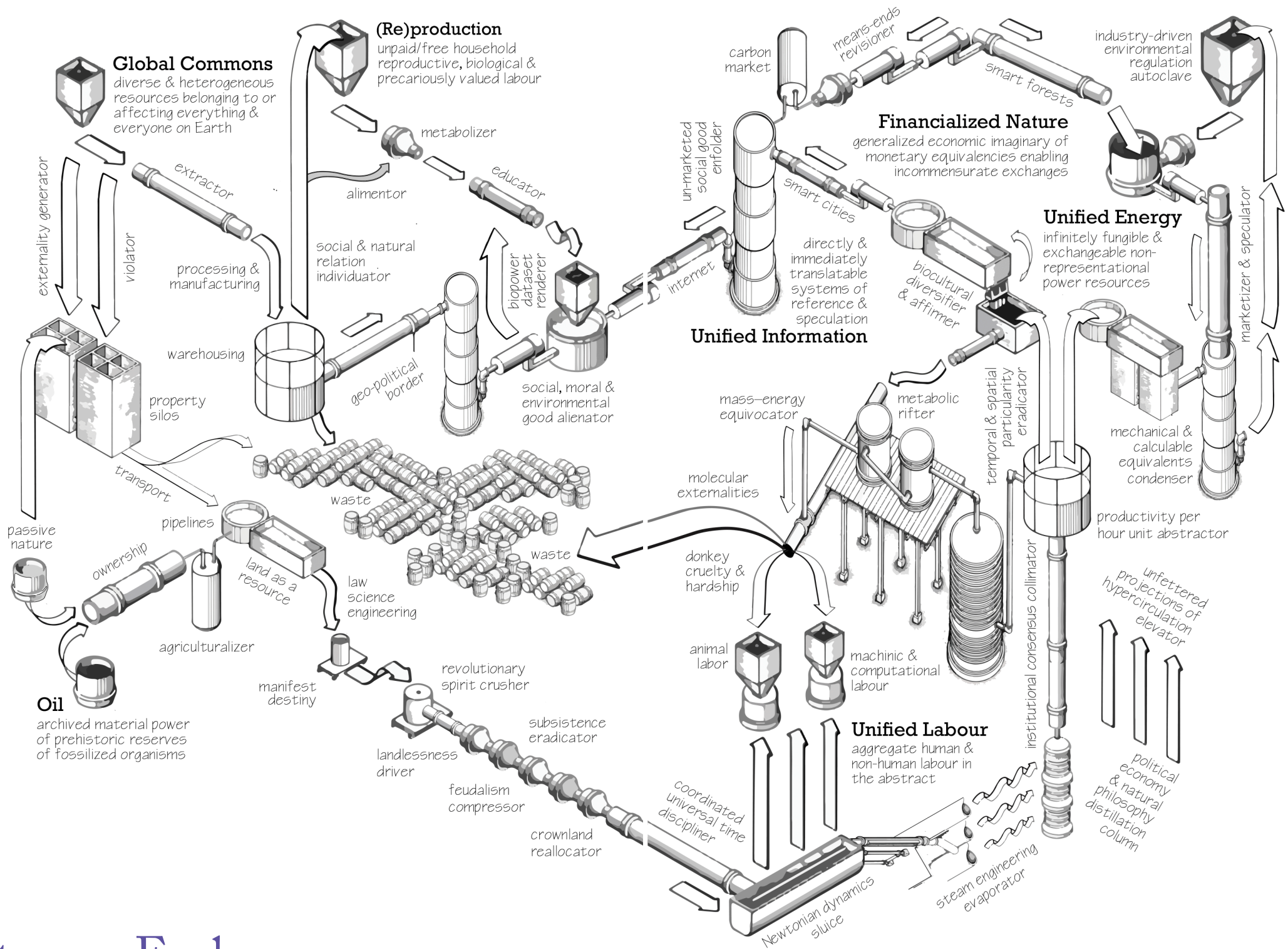
What follows is a ledger that demonstrates the attempts we make to equalize incommensurable entities and values, to balance and exchange differences in kind: varied orders of worth in increasingly disorientating settlements.

It serves here as a tool, a model and cautionary ta(b)le for the ordering impulses of making strange exchanges, of reasoned madness in and beyond the Beyond.

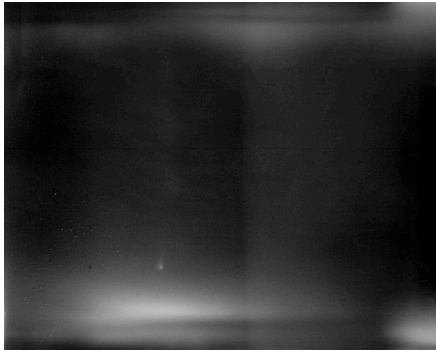
	CASE	DEBIT	CREDIT	Working Assumptions
INSPIRATION	Cultural institutions the world over interest themselves in the elaboration of ecologically minded programs, critical discussions of “the Anthropocene,” and the promise of “renarrativizing” ecological crises; e.g., The Banff Centre for Arts and Creativity’s recent “Beyond Anthropocene” was substantially enabled by the wealth of the oil and gas industry, since 80 percent of its external funding derives from actors in these industries.	Abounding quantities of climate changing GHG emissions; poisoned lakes, rivers, and landscapes; appropriated territories and displaced peoples; cancers and autoimmune diseases; devastated ecosystems.	Handsomely capitalized cultural and arts institutions facilitating artist contributions and conversations over ecological crises.	Public goods as renowned inspiration counterbalance intensely subsidized carbon-emitting industries. The latter function as a necessary evil that is neutralized by investment in culture and arts. For example, socio-geological Earth impacts of 1,249,870 annual tons of GHG emissions is rendered equivalent to 29 residential arts courses, 48 public exhibitions, 73 concerts, 27 publications. Balance is restored.
INSPIRATION	Premier-league soccer teams compete for the largest sponsorship deals from financial, airline, and betting corporations, which emblazon kits with brand value and logo to undergird the spectacle of a global entertainment industry.	One or two zeros that drop off the end of multinational corporate accounts are diverted to financial investments in soccer teams.	Symbolic valorizing and psychic penetration into sports viewer/consumer markets around the world. Corporate allegiance is purchased off the backs of the sublime bodies of athletes.	Investments produce measurable financial benefits from inspirational values attributed to soccer community solidarity and competition.
DOMESTIC	Workers the world over have long had their energies and intellects defined as labor. Atomized and individuated, disciplined and co-opted, participation in the globalized labor market is scarcely the noble and romantic virtue that conservative values see it as. At a human and domestic scale, which sacrifices are reasonable for expectations of a peaceful, secure family life?	Twenty years of immiseration through submission to vicissitudes of globalized labor markets, alienation, and frequent geographic separation through lifetime service to an exploitative firm.	Twenty years familial ongoingness, metabolisms and shelter.	Domestic “security” afforded but compromised by globalized socially hostile milieu corresponding to restricted viability of human life. Socially determined cost-benefit calculation for survival.
CIVIC	The Ajkai Tímöldgyár alumina plant in Ajka, Veszprém County in western Hungary is celebrated for the economic benefits it brings to the local area through upward employment trajectories as well as supporting Hungary’s international competitiveness. Apart from the perennial accident or sludge spill and associated deaths, it is also quietly sharing a spectrum of toxic, industrial pollutants with its human operators and their families. Although these are well documented risks, the present cost–benefit analysis and political consensus accepts the cancer risk profile for the identified economic and political benefits.	Ninety-five bladder cancer diagnoses per year arising from sustained exposure to the polycyclic aromatic hydrocarbons (PAHs) and wider a range of chemical pollutants.	Three thousand jobs for local residents, economic lubrication, taxable incomes and foundations for further investments, i.e., GDP growth.	Population, ill-health and suffering can be calculably offset by the fiscal benefits that service an enfeebled political class, which is slave to industrial employment statistics. Unfortunate but pragmatic tradeoff.
OPINION	The UK’s largest rail infrastructure developer is commissioned under a 25-year project to construct a rail line through England’s historic villages and internationally designated ecological sites of outstanding natural beauty. The line will connect London to the cities of Birmingham and Leeds and promises to shave 12 and 17 minutes off commuter journeys, respectively. Politically desirable but civically, environmentally, and economically contested, this drastic dissection of rural England must prove its worth at all scales to all parties.	Productivity losses for infrastructure developer which dispatches employees to voluntary work with wildlife agencies to plant sapling trees that will mature in 50 years and are said to replace the value of woodlands razed.	Political, shareholder, and civic recognition through performance of conscientious capitalism and responsible development.	Infrastructural expansion is equal to impressions of corporate social responsibility by affected communities. For example, 2,356 evictions and compulsory residential purchases, 56 hectares of ancient woodland, unique wetlands, ecosystems and historic sites are rendered equivalent in value to the economic acceleration from time-space shrinkage of commuter journeys. Infrastructural actors can counteract public unrest by supplying voluntary labor to wildlife agencies to perform woodland “offsets” for losses.

	CASE	DEBIT	CREDIT	Working Assumptions
MARKET	Drawing on its uniquely prosperous sovereign wealth funds arising from the country’s abundantly exploited oil and gas reserves, Norway has negotiated the purchase of large swathes of the Indonesian rainforest from the Indonesian State such that it is adequately compensated for economic opportunity costs of not granting palm oil plantation licenses.	Four million BOE (barrels of oil equivalent) per acre of virgin rainforest.	Vestiges of rare tropical forest ecosystems are left standing. Financial valorization through the international carbon markets enables their leveraging against growing scarcity.	Financial values and carbon emissions residing in underground oil and gas reserves in the Global North are rendered equivalent to financial worth of rainforest and sequestered emissions from tree growth in the tropics. Moral responsibility for the global commons of Southern rainforests rests with eco-imperialist Northern nations; actual responsibility needs to be wrestled from the “unstable” government nations in which these commons “unfortunately” reside.
INDUSTRY	Pacified and enclosed, spatial units of rainforest will be saved through their submission to capital and self-interested private ownership.	Industries that have very marginal potentials for the capture or use of greenhouse gases have become able to claim “green” status by eliciting funding (innovation, government) and public support, which further supports expanding production.	More, faster, and “better” processes for creating more modern infrastructures, conveniences, and energy sources.	Carbon captured through “clean coal” or enhanced oil recovery strategies (in which CO ₂ is reinjected into coal mines or oil wells in order to dislodge further fuel resources. These are rendered as “carbon credits” and ecological actions, despite being motivated by profit.
MARKET	The Donkey Sanctuary is amongst the most well-funded charities of its size, attracting donations and legacies from individuals around the world who have been moved by the campaigns to end donkey cruelty and hardship.	Nine thousand six-hundred and fifty- two of Spanish Human Labor Value Hours (LVH) given to waged employment and transferred as charitable donations.	Resuscitation and ongoing health care underwrite the average increase of five Quality Life Years (QUALYS) for Ethiopian donkeys.	Human labor hours can be made equivalent to the labor of animals. As an inverse to this relationship, the life extensions from reduced donkey hours can provide a useful working ratio. Human Labor Value Hours: Donkey QUALYS
GREEN	Arbitrated by the Wild Chimpanzee Foundation, Moyer-Bafing National Park was established in 2017 in the Labé Region of Guinea. It was created with funds from Guinea Alumina Corporation as a “chimpanzee offset” to compensate for the impacts of, and to gain further permissions for, mineral excavation sites in other territories of the critically endangered primate. Chimpanzees are humans’ closest living relatives.	Guinean forests converted to 300,000 hectares of bauxite mines.	Seven thousand, five hundred and forty-three CC (Chimpanzee Credits) purchased and planned to compensate the displaced chimpanzees for converted habitats.	Actual chimpanzee individuals and their social groups displaced or killed are rendered calculably equivalent—intrinsically, scientifically, morally, and economically—to the idealized category of “chimpanzee.”
GREEN	In 2016, Queensland’s electrical network benefited from a \$15 million AUS investment by the country’s largest energy monopoly to facilitate production at the Boyne Island Smelter. Land use changes and the building of service roads to the site for grid expansion are decimating diverse biological communities. The energy monopoly is required to provide some environmental compensation for the koalas, which have vanished.	Erection of a power grid and land clearance for service roads denuded 15,000 trees of Koala habitat in Boyne Island, Australia.	Fifty thousand Kw electrical power capacity for smelting along with 250 hectares of swamp and wetlands in Southern Queensland for bird sanctuaries and crocodile conservation programs, along with breeding for the leather industry.	Koala mortality can be abstracted to quantitative “biodiversity” losses, and therefore neutralized and maintained in the aggregate by supporting gains in the populations and livelihood of other living creatures (crocodiles, birds). Koalas are furry and charismatic but have little economic value on Boyne Island. Crocodiles are dangerous but and after meeting biodiversity conservation values, can eventually be made into leather and sold at market.

INVENTIONS



Strange Exchanges



“Songs are spaceships.” So some say. “We believe music is the weapon of the future,” write the Black Wondaland Arts Society, “We believe books are the stars.”

If so, with music we plan for what’s to come, for the not-yet, even if for present ears and bodies. What is a score, after all, but a plan for a future recital?

But how to compose for a future world of uncertainty, climate chaos, social breakdown?

How else but to foreground *justice*? Justice as a necessary skill for the future, a tool or weapon, to make new worlds, to break up old ones, justice as the fuel of songs-as-spaceships. A compositional chart for survival with dignity and mutual aid.

Justice, or *love made public*, as Cornell West writes, or a “climate-change technology of great power,” notes Kim Stanley Robinson.

“The good causes reinforce each other and we need them all at once,” says Robinson. “This is why capitalism has to give way to an ecologically-based post-capitalism, which, in some features, will be aspects of socialism chosen democratically. We have to figure out a way to pay ourselves to do the work of survival.”

Often confused with law—based on precedents, continuity, and codification—justice is unbounded, flexible. For Derrida, justice is between “the epoch of the rule” and the “ghost of the undecidable,” an event yet to come, one that is endlessly negotiable, debatable, unformalizable.

If so, justice can’t simply be written law that enslaves its subjects. If it’s haunted by freedom, by open subjective determination, then it also matches a coming age beyond historical analogy, when seasons, times, weather patterns, expectations, spatiotemporal cycles, and durations no longer make sense, don’t correspond to Holocene lived experience.

“The only lasting truth is change,” as Octavia Butler wrote in her *Earthseed* series. “God is change.”

What would a song be that would change the world, carry us into the future? How can we play the music of justice as a technology for survival? How can we write scores for beyond the end of the world, and for getting there with integrity?

1. The Miner's Friend

Coal is good to suck,
the rich man said, water from
my swamp. More land for me.

2. A Question related to English Lands

Where is the cotton
from, I wonder; the wool, the
coal I know is local.

3. This is a Direct Quotation

"The promise of an old
fashioned steam locomotive rumbles
through town." He smiling said.

4. On why there were rails before trains

Donkeys are dumb, they
wander off; stop. Stubborn beasts
work better with rails.

5. On naming trains #1

They called it The
Puffing Devil, as if it
was Satan smoking.

6. On naming trains #2

Locomotive 1
The first train, knew it was first.
A proud cock at dawn.

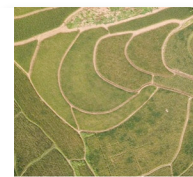
(Un)fettered Hyper-Carbon-Potassium-Nitrogen Circulator-Elevator



We know that the mensuration of key geo-constitutive elements, such as compositions of carbon, potassium and nitrate containment, as well as their retention and relation to productivity and quality, are of prime importance.

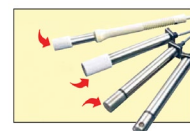
We also know how frustrating the notoriously inaccurate and generalized surveys and estimates done by State Laboratory of Development and Production can be for operativity and productivity metrics. The Earth's own servicing of human needs can vary greatly from pasture to paddock, from grasslands to pasturelands, from one's European corral to another's Canadian meadow.

The need for sub-specificities of measure that match the speed and sensitivity of speculative markets and micro-trade, still loosely associated with matter and material goods but increasingly outside of its rhythms and realities, put us to work on re-engineering the *Unfettered Hyper-Carbon-Potassium-Nitrogen Circulator-Elevator*. Through hyperreal time-sensing



speeds and data buffering, we are able to link the value of carbon, potassium, nitrogen and other elements directly to market fluctuation, helping orient activities and productivities on-site, *in situ*.

Close to the sampling location, you can find your unique measurements, develop elemental profiles, and relate these each to NYSE, NASDAQ, JEG, SSE and the HKSE exchanges, movements, and crises, so that you can orient them to your advantage. The production and valuation potentials of *hyper-circulation* and *meta-metabolism*, newly specified algorithms, and capital-optimized earth-use potentials bring to bear the need for newly-designed network sensing probes that run at the speed of finance.



Sensor and calibration through the (U)H-C-P-NC-E come complete with plug-in probes that mount on the instrument or connect via a six-foot extension cable (included).

It is never necessary to take the monitor out of service for routine calibration, as the sensors are interchangeable and can be replaced

for the same cost as a typical calibration. What's more: we offer replacement sensors with optional 3-point traceable calibration certificates.



The (U)H-C-P-NC-E connects to an Ethernet Network with a standard RJ45 connector and sends data in standard TCP/IP packets. It is easily configured with a simple menu using a Web browser and can be password protected from within an Ethernet LAN or over the Internet. You, the operator, simply link its IP address or an easy-to-remember name to your favorite market API (Fidelity, TD Ameritrade, Charles Schwab, E*TRADE, etc.) to enjoy instant access to the decision making and market valuations for your plot, land use, and environmental stewardship.

Power

Input: 9 to 12 Vdc
AC Power (Included): Input: 100 to 240 Vac, 50/60Hz Nominal Output: 9 Vdc @ 0.5 A
Back-up Battery: 9 Vdc, Alkaline (included)

Operating Temperature

iServer unit: 0 to 60°C (32 to 140°F)
Battery: -18 to 55°C (0 to 131°F) AC Adaptor: 0 to 40°C (32 to 104°F)

Packaging

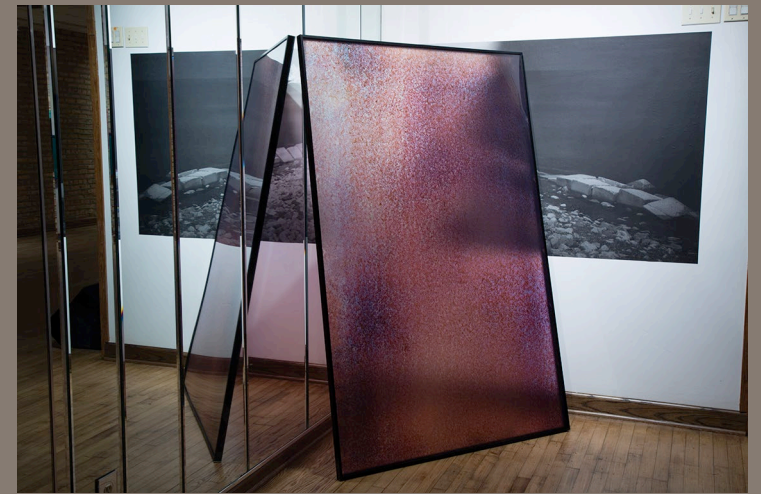
Weight: 490 g (1.08 lb)
Material: SS 304 case with wall mount bracket
Standard Probe Dimensions: Ø13 x 83.8 mm L (Ø 0.5 x 3.3" L)

**Protocols**

Ethernet (RJ45): Fixed or auto negotiating 10/100BASE-T, Auto MDI/MDIX TCP, UDP, SNMP, SMTP, NTP, ARP, ICMP, DHCP, DNS, HTTP, and Telnet
LCD Display: 32 digits 4.8 x 9.7 mm (0.19 x 0.38")
Relay Outputs: Two relays 1.5A @ 30 Vdc
Alarm I/Os: Two contact inputs, TTL 0.5 mA with 10K pull-up; one open collector output
Serves WEB pages containing real-time data and live updated charts within definable hyper-real time intervals.

BURIALS

*Nuclear power
plants are
continually built,
but can they ever
completely vanish?*



Casual Invisibility is an art-based research project that includes collections of images, hybrid objects and sculptures that explore how humans and non-humans interact with the invisible. Using the resources and archives of several scientific institutions—including Yerkes Observatory in Williams Bay, WI and Argonne National Laboratory in Lemont, IL—I incorporate unique, material-based, site-specific recording and representational processes such as chromogenic recording, film burials, photon-grams, and volcanic ash printing. These expanded modes document what lies beyond our typical photo-sensory capabilities.

The town of Zion, Illinois, fifty miles north of Chicago along the western shore of Lake Michigan, serves as a focal point for this project. Zion was created as a pre-planned Christian Utopia in 1900. It did not flourish economically until the Zion Nuclear Power Station came online in 1973. The plant was closed in 1998, lasting only twenty-five years. During its active yet short life, the plant paid over half of the town's property taxes, making it a desirable location to own a home. Since its closure, Zion has suffered significant economic downturn, and is now essentially a town with very high property taxes co-existing with a nuclear waste dump. The tallest and newest building downtown is the Cancer Treatment Center of America.

Much of the work for *Casual Invisibility* was created from negative photographic film that was buried for one month near the defunct Zion Nuclear Power Plant. This film was never exposed to any visible light. Instead the images were created when the latent energy remaining in the plant collided with the buried film. This method mirrors early radiation monitoring devices developed during the Manhattan Project when workers wore badges filled with negative photographic film used to monitor their exposure to radiation. Each worker's film would be developed on a monthly basis, and then checked for fogging, which was evidence of radiation exposure. It is unclear what happened to the exposed workers after that.

MEASURES AND SCALES

Table of (Mis)measures

*The world is too much with us; late and soon,
Getting and spending, we lay waste our powers;
Little we see in Nature that is ours;
We have given our hearts away, a sordid boon!*
— Wordsworth

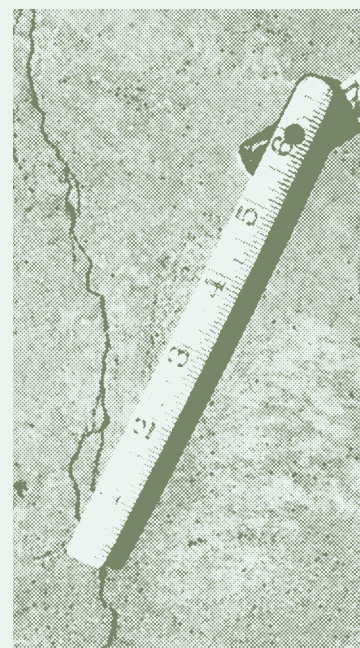
Industrial	Green	Inspiration
1 CPUO (Cost of Production per Unit of Output) = Amount of useful work divided by the gross cost of consumed resources	1 Earth = \$16-54,000,000,000,000 USD in ecosystem services listed by Science in 1997	1 FGF (Feel Good Flutter) = Each 1000 KM sq of rainforest purchased (e.g.: by international investors) and subsequently saved from environmentally irresponsible local, state, market, or civic use.
1 EkW·H (Electrical Kilowatt Hour) = 0.8 – 1.1 lbs. of coal depending on generation efficiencies and recovery operations	1 WC (Wetland Credit) = 1.45 acres of actual “wetland”, loosely defined and geographically unspecific	1 E-ERQ (Eco-Ethical Reflection Quant) = Equivalent to 23 seconds of post-purchase human attentional and intentional reflection on ecological impacts and consequences (Equates to 19¢ of PMH in Canada, or ¢16 in the UK)
1 BRD (Banana Radioactivity Dose) = 78 nanosieverts of radioactive isotopes absorbed when near a banana	1 SP (Species Token) = Population surpluses over the arbitrary baseline for one of any 67 endangered species listed with the U.S. Fish and Wildlife Service	1 QALY (Quality Adjusted Life Year) = Every year of life in health against the cost of medical intervention necessary, in Years/\$
1 CC (Carbon Credit) = One ton of carbon dioxide, or in some markets, carbon dioxide equivalent gases	1 BD (Biodiversity Unit) = 0.8 hectares of English acid grassland in moderate condition and favorable conservation status	Domestic
1 PMH (Per-Man-Hour) = Labor productivity in USD. Canadian laborers have a productivity level of \$30US per hour, in the United Kingdom this productivity is \$25	1 CC (Chimpanzee Credit) = 58 Guinean trees containing an equivalent ratio of fruit and flowering species to those of an optimal chimpanzee diet in an arrangement not exceeding 3 square km.	1 SDPI (Socially Determined Professional Income) = 17 LBSKI (Labor Based Low Skill Incomes)
1 KMT (Kilometer-ton Cost) = the transportation cost, in USD, of one ton over one kilometer, varies by means of transport (Trucking rate 6.86 Ton-km per USD)	1 ton of HCFC-22 avoided in certified emission reductions for the European Trading Scheme carbon market = 0.0137 tons of HFC-23 incinerated	1 MM (MicroMort) = Domestic toxicity measure statistical equivalent for substances that are lethal for one in every one million people
Market	1 Chinese ton of decomposed HFC-23 = 11,700 European tons of CO ₂ allowances	1 Dol = amount of pain that elicits a medium eye wince
1 LVH (Labor Value Hour) = The monetary valuation of 60 minutes of human labor in the act of producing something, contingent on the available technology in the moment (current global average \$14.47 USD)	Civic	1 Heffe = grass vitality to support 3 grazing cows on 1 acre of family land
1 Util: The aggregate sum of satisfaction or benefit derived from consuming a given amount of goods or services in an economy, statistically determined through focus groups	1 GP (GeoPawn) = 2:1 Economic/ competitive advantage (or equivalent perceived scarcity) over a state control board or conservation	1 FPY (Food Person Year) = 700 kg weight of food eaten by one person in one calendar year
BMR (Big Mac Relation) = Purchasing power in USD relative to the cost of a MacDonald’s hamburger (current global average 0.177)	1 SLA (Sacrificial Limb Annuation) = Bodily appendage or orifice lost per operating year of fiscally important industrial process or plant	Renown
1 MCA (Measure of Competitive Advantage = An unholy mixture of qualitative and quantitative indicators ranging from brand value to return on investment, determined through closed-door consternation by “consultants”	1 ER (Emission Right) = Foregone unit of GHG emissions in counterfactual scenarios, derived from mathematical calculations of equivalents in the global warming potential of gases	1 PR (petro-redemption) = 100,000 donated dollars to an arts or cultural institution
1 GPB sterling in 1949 = 0.029 pounds in 2018		1 SBV (social brand value) = 5 years of sponsorship for a premier league football team
		1 MiG (micro Gwynethpaltrow) = 50,000 social media follows
		1 MaG (macro Gwynethpaltrow) = 500,000 social followers
		1 dCCC (Digital Cultural Climate Curative) = 5 retweets by ecologically “woke” twitter accounts

Allen & Carver

Scale

Rodrigo Nunes

One of the central insights of ecological thinking is the idea that everything is somehow connected to everything else. But what does that have to do with scale?

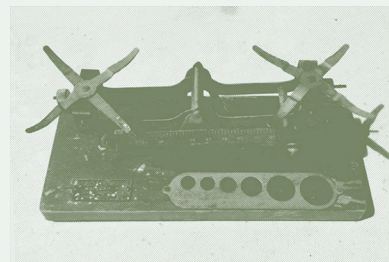


We can think through the answer in the following way: On the one hand, in order to be identifiable as being connected, that is, in relation with something else, a thing must be sufficiently stable in itself to count as *one* thing; unless there were a relatively constant relation among the elements that compose that thing (call it “x”), we could not really say that it is the thing x that is in relation to y. Instead, we would have to say that it is those elements, among which no stable relation obtains, that are in the process of relating to y. (Of course, if that relation itself became somehow stabilized, those elements would be describable as belonging to the organization of y itself, or to a thing z understood as a unit composed of y plus that relation.)

To say that everything is connected and organized is therefore not to say that everything is connected and organized *in the same way all the time*. Universal connectedness and organization do not exclude local disconnection and disorganization. As new relations appear and disappear, as new things fall in and out of relations, every individual organized thing is bound to be more or less temporary—not only because of resistance imposed from the outside, but just as well (and sometimes even more importantly) from disorganizing tendencies that are found on the inside, including those that result from that thing's very functioning. Bogdanov states:

full, ideal organization is non-existent in nature; disorganization is always admixed to it to some degree. Thus, even the best cooperation cannot be free from some, though minimal, inner hindrances and lack of agreement; the best machine is not free from internal frictions, etc.

All of this allows us to see why, from what Bogdanov calls “the organizational point of view”—“the only monistic understanding of the universe”—the universe itself appears as “an infinitely unfolding fabric of all types of forms and levels of organization,” from the minutest scale to entire star systems, which, “in their interlacement and mutual struggle, in their constant changes, create the universal organizational process, infinitely split in its parts, but continuous and unbroken in its whole.”



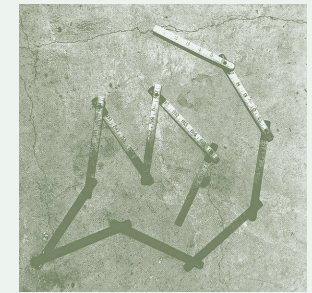
On the other hand, the more constant the relations into which any one thing enters, the more these relations themselves can be described as constituting an organized entity. Organization thus entails a nested structure of ever-expanding relations in which what counts as an element on one level can be taken as an organization on a higher level: atoms organize as molecules, molecules as proteins, proteins as cells, cells as organs, organs as organisms, organisms in ecosystems, and so forth.

An important consequence of this way of thinking is that the analysis that can be made of any particular reality is always *scale-dependent*. In fact, as the visionary Soviet systems thinker Aleksandr Bogdanov pointed out in his *Essays in Tektology*, the concept of “elements” is “completely relative and conditional,” corresponding simply to “those parts into which, in conformity with a problem under investigation, it was necessary to decompose its object; they may be as large or as small as needed, they may be subdivided or not.” And given that the key criterion for speaking of organization is the *relative* stability of relations, relativity to scale applies just as well to time: what counts as stable is contingent on the timeframe with which we are concerned, and, depending on the timescale, a mountain or a solar system is just as temporary as an organism or a cell.

This allows us to dispel three anthropocentric residues that still contaminate ecological thinking to this day. The first is the idea that some parts of nature are stable, unchanging, and locked in an eternal present while others—those we inhabit—are dynamic and historical. What becomes apparent here is that this is no more than an illusion of perspective: things happening at a temporal scale smaller or roughly the same as ours appear to be moving, whereas what changes at a pace much slower than ours appears to be timeless. It was probably this perceptive illusion that generated the mistaken separation between a passive, mechanistic nature and active, historical humankind that some anthropologists call “The Great Divide.” This, in turn, helped create the conditions for the vertiginous acceleration in the consumption of energetic resources now identified as the Anthropocene: people did not worry about nature changing because it did not occur to them that it could. Though climate has forced us to take into account timescales that were previously too large to be noticed, such as weather changes over several centuries, that illusion sometimes seems to have only moved a few steps up.

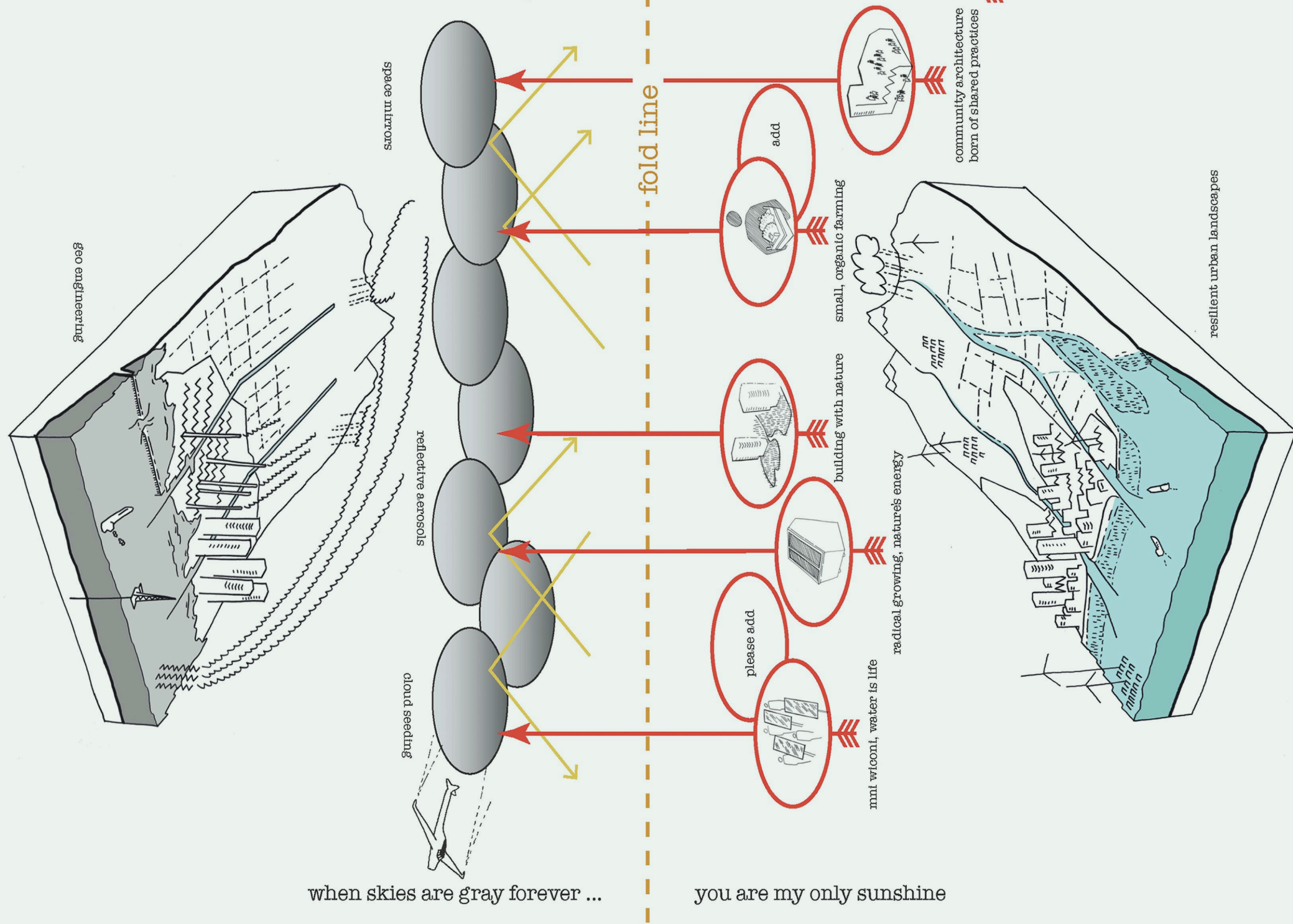
It was that relative blindness to scale, finally, which generated the enduring myth of a “balance of nature:” the idea that nature is a perfectly adjusted system that would be in constant equilibrium if it were not for humans spoiling it.

While it is certainly true that the present ecological crisis is a result of humans pushing the Earth's biophysical system too fast beyond certain parameters, to portray this in terms of a stable nature threatened by dynamic human action is to remain within the human exceptionalism of the anthropocentric paradigm, which views humans not as *part* of nature, but as *opposed* to it.

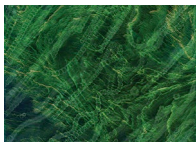


All we do here is invert the signs: instead of a positive, worldmaking power, human action appears as a negative, world-destroying force—never as a natural force among others, with the difference that it grows exponentially over time but could (at least conceivably) develop the capacity to moderate itself intentionally. Ultimately, this contributes to an interpretation of the present situation in which the cause of the crisis would be human existence as such rather than the pace and the form of humankind's material development—which, conveniently, makes it impossible to raise questions about how this pace and form could be otherwise. No wonder, then, that this image of an idyllic “world without us” (as Danowski and Viveiros de Castro put it) is often employed by preservationists, for example, to justify removing indigenous people from ancestral land—thus serving as a strategy in which the costs of responding to climate change are shifted to those who already bear most of the burden while reaping few, if any, of the benefits (environmental racism, environmental colonialism).

fracturing scale change through small actions



AMUSEMENT



We have been here forever. Or maybe we have just been born. Whatever. The time thing, it's a loose approximation, translated for you temporally-minded humans who keep trying to classify our cycles.

The Great Oxygenation Event, that's one of your markers. That was when so many of us flourished and bloomed that we overwhelmed ourselves and everything else on the planet.

Whoops. Listen... not to be too crude, but when you eat, you gotta shit. We were on a major binge back then, and too many of us reproduced, and hey, the rest is history... according to you guys.

Anyhoo, here we all are now. It's a little chaotic nowadays. So much sun! All these yummy nitrates in the warming water! It's a big orgy, all eating and reproducing and BLOOMING psychedelic colors. I've heard you can see us from space. Check out our swirls of matcha green, turquoise, and our rust red tides.

We've been spreading like wildfire! (Have you noticed all those wildfires btw?) Between them and us, we're kinda wrecking your summers. Lake Banook, Lake Micmac, Saint John River, Lake Okeechobee, Lake Erie, the Baltic Sea; we've bloomed in them all. And made it unsafe for you to swim. We beg your pardon, right now, for past and future poisonings. We're not trying to make your dogs convulse and die, or to give you jaundice, diarrhea, sores, paralysis, or rashes. We're just taking in the sunshine and doing what we do best. You see, this is a land of plenty, so it's hard to know when to stop.

You call us drifters. As if we are loners floating about the world aimlessly. But we actually pack our parties! Linked together in great gelatinous sheaths of mucilage, we dance to the light and warmth like a great shimmering swarm. We even have some really

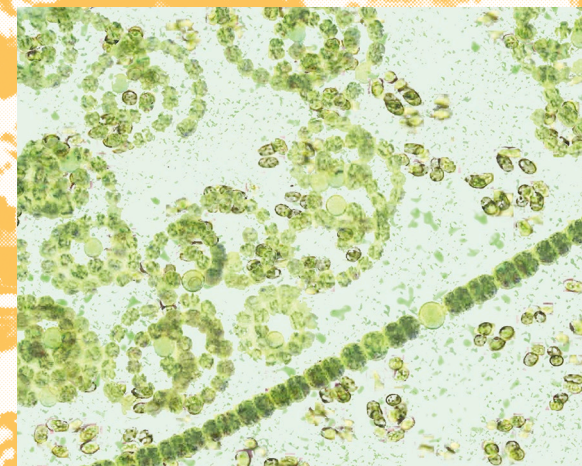
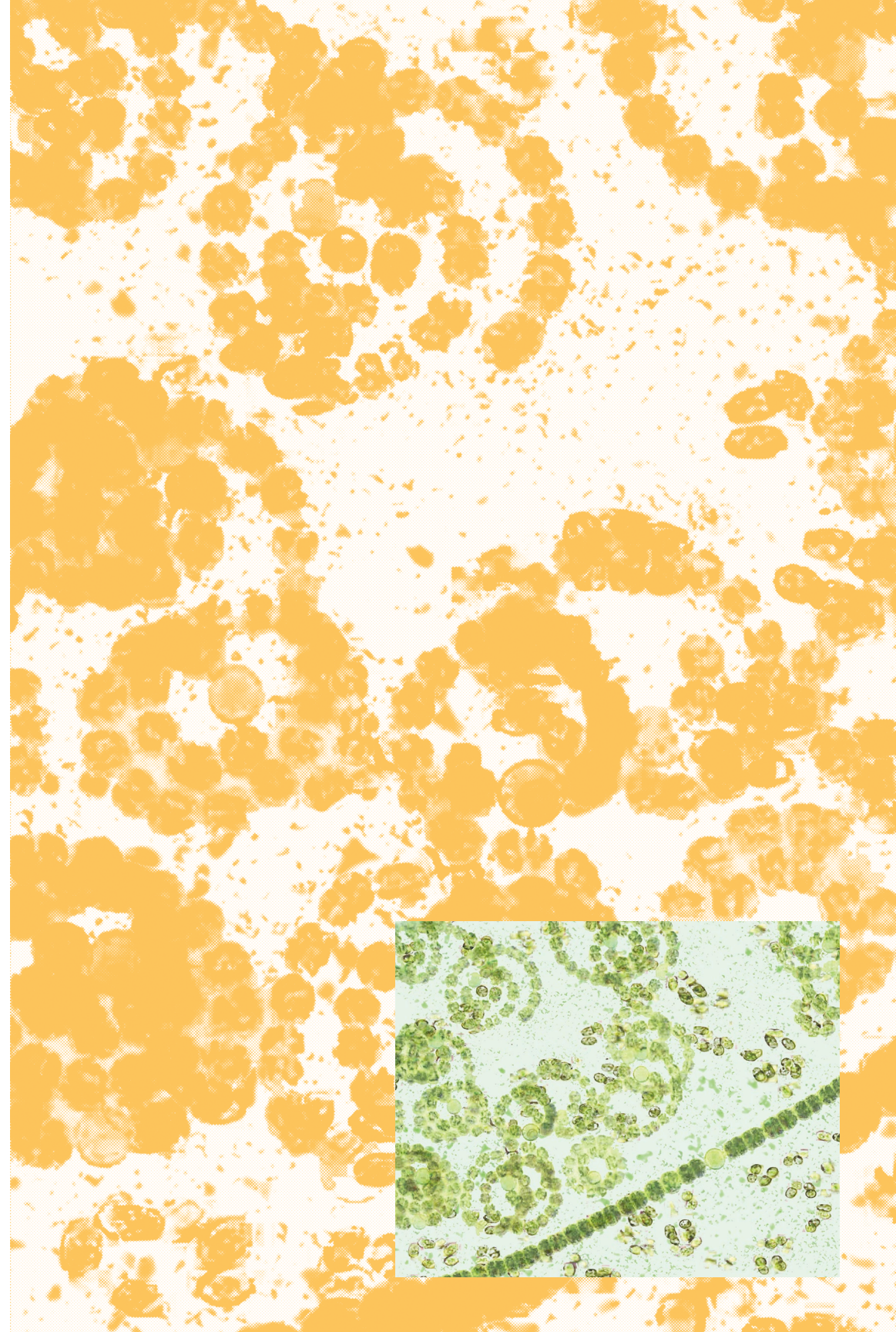
stealthy oscillating filaments. You scientists can't seem to figure out how we do it, but we get around. Especially when the party's hoppin'. We become WEEEEEE! Millions of WEEEEEE per drop of water! WHEEE! Hanging rides on horseshoe crabs in Chesapeake Bay. Feeding off the delish cormorant guano in South Korea's Maji Reservoir and pig manure streaming into the Gulf of Mexico. Phosphate and other fixes are everywhere these days! New party spots are opening up in Greenland. That iron-rich glacier meltwater is AMAZING!

Pumping that oxygen into the air, it's all fun and games. But when it's over and the next generation is made and our little dead bodies start settling down onto the ocean floor, the great underwater oxygen suck begins. We totally clear the dance floor. The fish just can't take it. We can't take it. So many of us die then, from lack of oxygenation. From starvation. The hangover after a bloom orgy kills us, literally.

To all of you species out there, we want you to know: Without us, you would be nothing. No seriously, you would not be here. All you latecomers who use so much oxygen only crept into the game in the last few billion years and suddenly you think you rule the planet. We started the whole oxygen thing in the first place. There is a lot more of us than you, so don't get all eukaryocentric on us.

Our therapists tell us it is a codependency thing. Whatever.

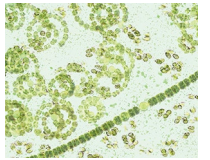
You need us, we need you, simple as that.



Origins and Ends of the World:
An Ode to Blue-green Algae in Eight Limericks

The Cyanobacteria Collective

Of bacteria, I sing Cyano
Whose shit was so small it was nano.
It smelled like pure air
but killed everything there
by excreting its poisonous guano.



Though Puffins are cute, they shit too
(a white sticky thick NO₂).
Between puffins and sea
there's a sweet harmony,
cuz algae, it eats puffin poo.

It's not just the Puffins that shit
our fields and our farms flow with it.
Washing out through the streams
our waste fuels algae dreams;
as we breathe what the algae emit.

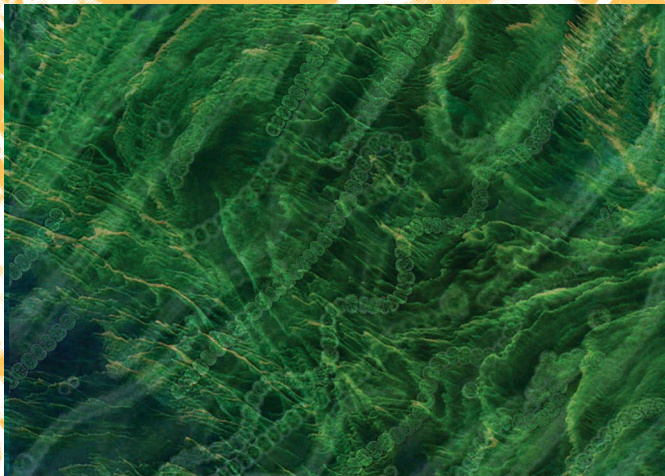
The problem is us, you must see.
We chemically encourage gluttony.
We care not for runoff
that planetary Molotov.
They kill us with no irony.

Most wild partiers, they dodge this prognosis:
But for Cyanos no stress-relief sex by meiosis.
They're so tired of the bloom.
Can't get enough room.
Should really have gone with endosymbiosis.

In a billion-years' struggle to mosh
they eked nitrogen out of backwash.
Where they once were constrained
a new chemistry reigns
pulling N₂ from air (thanks Haber-Bosch).

Blue-green algae, they grow in the light,
a beautiful exuberant sight.
The more that they eat
the more they excrete.
They are the world's most dazzling blight.

To bemoan this small phyto is wrong,
though it chokes all the fish in your pond.
Dead, it is oil;
alive, gracious soil,
All plants when you feed 'em grow strong.



HOME REMEDIES AND RECIPES

Louise woke up tired. For the first time, she wanted a house for herself. Yesterday was what the little ones called a Bank Holiday, and they all came for a visit. When the sun was visible, Louise's favorite emerald dress was dotted with red—canoes, she heard them called. The little ones walked around her. Some gingerly wetted their toes. A boy, at the tender age of eagerly proving his budding masculinity, dove into her glacial melt and screamed. She was cold yesterday.

A few days ago, or maybe it was years and centuries, the little ones wanted to build a house nearby. That day she learned the word *retreat*, repeatedly. They could retreat from the city noise, the little ones said. Retreat into nature, into the lake. Into her.

They never did build that house, but they built other structures. Information centers, bathrooms, a hotel. Louise always welcomed the little ones. They gave her company. As the days warmed,

she accepted the glaciers' effluence and grew. It gave her the faint perfume of sulfur and now, with the little ones, the waxy smell of sunscreen. On days like yesterday, they took photos of her and made her feel beautiful. They made her forget how old she was.

But when she woke up, Louise felt an ineffable sense of fatigue. The sun had risen hours before but burned an eerie carmine because somewhere east, the pines had decided to start a new life. In the lazy haze, she remembered the word *retreat*.

I'd like that, she mused.

Louise thought of that house the little ones were going to build and wanted one for herself. She had seen images of these houses. Their triangular roofs always seemed so comfortably nestled against the sky or the mountain edge. She felt a longing for that sharp corner, and, for a hypnotic second, imagined its angle piercing through her skin and



creating a void. Like a belly button. It would be a house she could retreat into when the little ones weren't around. She would paint it the same color as her own.

Nowadays she is a strange mixture of turquoise and milky green tea. Yesterday, one of the little ones held up a paint chip to her shoulder blade and called it "sea cruise." Louise had never seen either the sea or a cruise, but she liked the sound.

She wanted to retreat, to just float by a piece of herself for a minute. The house, a bastion against the red dots (canoes,

they are called), would be hers and hers alone. Those houses had chimneys, where white smoke was allowed to escape. That called to her, too. She saw ghosts of her younger self in the wisps of ephemera. She would retreat, all the way to the earth's core. Closing her eyes, she tried to feel the heat deep beneath her. The bubbling soup of iron and nickel. Just as the ice above changed phase and became parts of Louise, her phase would change, too.

Like the brushed white smoke, she'd rise out of her own chimney and be young again.

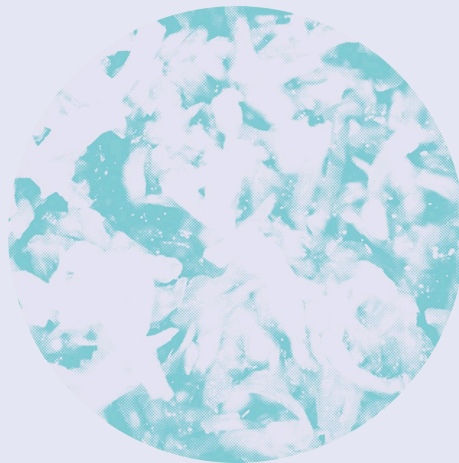
Sauerkraut, or lacto-fermented cabbage, is a traditional preserved food dating back to pre-history, alongside the ancient preservation methods of drying and salting. One theory on the origin of kraut is that the recipe made its way to Europe from China via the Tatars, evolving as it went. Though it is a nutritionally dense food with a complex flavor, the recipe is surprisingly easy for anyone to prepare at home.

Once passed down within families of many cultures, today many simple fermentation techniques have been lost as food corporations of the twentieth century worked to instill the sense that home-preserved foods were somehow unsafe. But far from it. Fermentation is a very safe process in which the human gut beneficially collaborates with lactic acid bacteria, unlocking nutrients otherwise inaccessible to our digestive systems.

Fermented foods are high in antioxidants, with probiotic properties (meaning they support our helpful gut bacteria). Recent studies show they may inhibit the growth of cancer cells. Fermented cabbage is especially healthful—and inexpensive to make. Store-bought raw sauerkraut can cost upwards of \$15 per jar for that fancy refrigerated stuff, but you can easily make ten times this amount for a few bucks and have lots to share or trade.

Start something new within your community. Trading ferments and pickles and taking responsibility for your own health through home-made, nutritious, sustainable, plant-based foods is a great way to do an end run around capitalism.

Sauerkraut can be made in many ways, but the simplest recipe, to which you can introduce your own variations, is below. The instructions are long, but once you're comfortable with the idea, fermentation is actually a very easy process.



Ingredients: Cabbage, Salt, Water

Instructions

- Remove and compost any browning or wilting exterior cabbage leaves
- Finely and evenly shred cabbage. A mandoline slicer is helpful, but a knife works well, too.
- Pack cabbage into a large, clean glass or ceramic vessel, bruising it up as you go.
- Add brine to cover.
(Brine is water mixed with salt, which should taste about as salty as the ocean. You can measure, should you be so inclined, but it's not necessary. Use a good quality sea salt, with no additives. Local is best. Himalayan sea salt, while trendy with eco-types, is actually from mines in Pakistan, and is not so "eco," as it is a finite resource, often unfairly traded, with a big carbon footprint.)
- Place a weight on top of the kraut. This can be a plate with a jar of water on top, a boiled river stone or a pickling weight of any kind. The objective is to keep all the cabbage below the brine.
- Place a towel over the top to keep out dust and insects. Now you're ready to let the lacto-bacteria do their thing!
- Each day or two, push the weight down, releasing trapped air bubbles. This may smell funky, but as long as it's kraut-funky, you're all good.

- Watch for mold, and if it forms, skim it immediately. It's fine to eat the kraut underneath if you catch it early. (Do not eat kraut that has been neglected, where mold has penetrated deep into the cabbage.) If you see small bubbly patches of white scum, this is kahm yeast, and is harmless to eat, though many—including myself—do not like the taste. Both mold and yeast are more of a problem in the hot summer months.

- Sauerkraut generally needs about seven to ten days to get nicely fermented. You can taste it at any point to see how sour it is, and leave it longer if you're not yet satisfied. Higher indoor temperatures make for a faster ferment. Generally, you'll stop seeing bubbles as it gets close to being done.

- Many folks will simply leave the sauerkraut out after the initial ferment, eating it as they go. But if you don't eat it that quickly, or you prefer crisper kraut (it gets soggy the longer it ferments), just pack the fermented kraut and brine in jars and refrigerate indefinitely. This slows the fermentation process to a crawl, but the lacto-bacteria are still alive—meaning you can take your kraut to a picnic or on a road trip and not worry about refrigeration. Bringing a jar of sauerkraut camping is highly recommended!

Options

Sister-in-Law's Kraut: Try using red cabbage with a generous amount of cumin added before fermentation. Delicious for breakfast with avocado and/or a soft egg.

Spicy Kraut: Add slivered jalapeños or serrano peppers after fermentation, once you're ready to refrigerate.

Tidal Kraut: For a brine which evokes the sea, consider adding small amounts of spirulina blue-green algae or shredded seaweed.

Do you get scared when you read stories of how much our climate is set to change in the next century? Doesn't it make you want to do something to stop extinction, drought, polar vortex, and the disappearance of bees? What, you may ask, can you do?

Well, *you* (if you are a sole reader, peering down at this page) can't really do anything. That is not to say that you might as well just rev your engine and burn your trash. But it is the case that you, by yourself, will not be effective, and you shouldn't believe that you are.

The words you just read probably sound wrong to you. They go against so much of what you've been told—that you can make a difference through small everyday acts, such as carrying a reusable straw or a shopping bag. So many campaigns and social media posts insist that you can and should be an ethical consumer.

The difference that your consumer choices can make, however, is negligible. Even if you never drove your car again, CO₂ levels would continue to rise, because you weren't the one causing the problem in the first place. There are other culprits, big ones, such as capitalism, industrialization, resource extraction, and mass agriculture. How about the one hundred corporations which have been the source of more than 70% of the world's greenhouse gas emissions since 1988? Why, then, are you personally internalizing the guilt that should be felt by those huge companies?

Because that's what works for capital and for the neoliberal state: to download the burden of responsibility onto the individual. Think, for instance, of the people who stand on street corners asking you to donate to the children's hospital. Wouldn't it make more sense for the state to grant the funds necessary for the care of children? Instead, on your way home from work, you either give to charity, or feel guilty that you don't.



You could spend your life like this—feeling personally responsible, believing that your actions and choices shape your life. You could strive to increase your personal value and your brand, turning yourself into human capital. And chances are that you will blame yourself, not the larger system, if something (like getting cancer, or losing your job) goes wrong. But things do go wrong, things that occur because of structural inequalities and injustices that go way beyond you as an individual.

So... what can you do instead?

Start by not taking “yourself” so personally! Don't worry that you must actively shape your destiny. Don't try so hard to be fully self-aware. Don't believe that the universe is looking out for you. Wriggle out of the vice-grip of possessive individualism by acknowledging the many different aspirations, temporalities, and socialities that jostle within “you.”

As the barriers of selfhood become more porous, you can begin to affiliate and associate with different groups of beings and things. These groups may span across times, spaces, ideologies, identities, and dreams. Just remember, you are not one—you are many. Many with others, many within yourself.

Go ahead and cultivate clusters. Encourage solidarity, join collectives, and make communities, whether they be religious, romantic, regimented, revolutionary, or recreational. Each time you become part of something else, you are more than a self. You are a force. A force that can fight carbon emissions, help sick children, rescue beached whales, or ban pesticides in your community. *You* (singular) can't do much. But *you* (plural)—that's a different story.

ORACLES



1. Set a timer for five minutes. Close your eyes. Hold an image of smoke in your mind. Track how smoke moves.

2. What question emerged from the smoke? Say it out loud or in your mind.

3. Choose a number between 1 and 48 from the list below.

4. Consult the poem on page 28. Find the line that corresponds to your number. The following keywords were found obscured inside each line of the poem. Three readers unearthed them, then seven readers selected them. Use these keywords and your chosen line as a means of finding an answer to your question.

1. smoke, low, dim
2. tell, heal, teach
3. note, hoot, thorn
4. cross, rub, measure
5. tame, steady, reason
6. row, want, name
7. war, ward, sad
8. wit, hint, win
9. cash, clash, cling
10. vaunt, tint, taunt
11. swirl, wing, part
12. stare, air, beat
13. slow, glow, land
14. steer, board, ache
15. wind, bond, shake
16. spool, hop, spot

17. drown, trace, aspire
18. tattle, clue, clarify
19. elevate, rotate, levitate
20. tug, rear, haunt
21. lace, home, lean
22. rush, miss, scope
23. lunge, bleed, burst
24. grab, goal, clack
25. smite, tune, steam
26. range, stay, ring
27. track, curl, hover
28. tow, sew, hinge
29. sneak, quell, quake
30. dare, web, grind
31. shrug, lug, shy
32. fear

33. core, load, drag
34. cut, twine, grace
35. turn, smear, hum
36. snarl, nail, sworl
37. rush, hash, slough
38. tease, chase, encase
39. moon, sweat, stow
40. lift, flash, kiss
41. pour, soothe, froth
42. rub, trap, hinge
43. chime, cheat, cloud
44. lose, stutter, mount
45. rally, tarry, yearn
46. dive, peer, come
47. venture, tilt, import
48. fob, babble, bow

Choose a sequence of numbers from 0-32 (maybe your area code, maybe your birthday).

Find the corresponding lines in the Rain Cento on page 41 and write the lines in the order of your numbered sequence.

Carry the lines in the cloud of your brain.

When you perceive a thirst, recite them to yourself or to someone else.

“Do ye seek to know yet more?” Völuspá

Contributors

Jamie Allen is an artist and scholar. He is Senior Researcher at the Critical Media Lab in Basel, Switzerland, co-founder of the media and philosophy journal *continentcontinent.cc.* and Canada Research Chair in Infrastructure, Media & Communications at NSCAD University. He is developing the Institute of Departments and Organisations which seeks to vitalize artistic research, revive imaginative conceptualism and excite extra-disciplinary collaborative energies.

Gretchen Bakke is a cultural anthropologist. Her work focuses on the chaos and creativity that emerge during social, cultural, and technological transitions. She is a former fellow in Wesleyan University's Science in Society Program, a former Fulbright fellow, and is currently a guest professor at IRITHESys at Humboldt University. Her book *The Grid* was selected by Bill Gates as one of his top five reads of 2016.

Jeremy Bolen is a Chicago and Atlanta-based artist, researcher, organizer and educator. He is a recent recipient of the PACT Zollverein Residency in Essen, Germany; Oxbow Faculty Artist Residency in Saugatuck, MI; and Center for Land Use Interpretation Residency in Wendover, Utah. Bolen currently serves as Assistant Professor of Photography at Georgia State University, is represented by Andrew Rafacz Gallery, Chicago and is a co-founder of the Deep Time Chicago collective.

Jenny Kendler is an interdisciplinary artist and environmental activist based in Chicago, whose work has been shown at venues including Storm King, MCA Chicago, Albright-Knox, Pulitzer Arts Foundation, MSU Broad Museum, California Academy of Sciences, the Chicago Biennial and the Kochi-Muziris Biennale. Since 2014 she has been the first Artist-in-Residence with environmental non-profit NRDC. Alongside an interdisciplinary team, she was recently awarded an Andrew W. Mellon Foundation grant for her community co-created project *Garden for a Changing Climate*. She is also a member of the Deep Time Chicago collective.

Louise Emily Carver is a geographer, political ecologist and anthropologist specializing in biodiversity conservation policy. Her research concerns the entanglements of moral, semiotic and economic value framings of nature at the science-policy interface of the so called 'green' economy. She currently lives on an upland sheep farm in the north of England and is managing director of the Uplands Project.

Ian Clarke is a book artist, printmaker, photographer, scientist and designer. Currently he is Interim Dean in the Faculty of Liberal Arts and Sciences at OCAD University. He has published numerous scientific papers on Brain Tumour Stem Cells and Genomics in international journals such as *Nature*, *Cell Stem Cell* and the *Proceedings of the National Academy of Science*. He has served as a board member and vice president of The Canadian Bookbinders and Book Artist's Guild.

Sean Connolly is a Honolulu-based artist, urban ecologist, and architect. His works and research address the role of design in recovering *abupua'a*. Connolly operates both independently and collaboratively out of his studio practice *After Oceanic* (www.ao-projects.com) which pursues projects in the realms of architecture, landscape, infrastructure, and art. His most recent work includes the *Ala Wai Centennial Memorial Project* (www.alawaicentennial.org), an online exhibition on the past, present, and future of the *abupua'a* of Waikiki.

T.J. Demos is an art historian and cultural critic. He is currently Professor of the History of Art and Visual Culture, University of California, Santa Cruz, and Founder and Director of the Center for Creative Ecologies. He writes widely on the intersection of contemporary art, global politics, and ecology and is the author of numerous books, including, most recently, *Against the Anthropocene: Visual Culture and Environment Today* (Sternberg Press, 2017) and *Decolonizing Nature: Contemporary Art and the Politics of Ecology* (Sternberg Press, 2016).

Katy Didden is a poet and educator. Her first book, *The Glacier's Wake*, won the Lena-Miles Wever Todd Prize from Pleiades Press (2013). Her poems and reviews appear in journals such as *Poetry Northwest*, *Ecotone*, *Bat City Review*, *The Kenyon Review*, *Image*, *The Missouri Review*, *Smartish Pace*, *32 Poems*, *The Spoon River Poetry Review*, *The Sewanee Review*, and *Poetry*. She was a 2013-2014 Hodder Fellow at Princeton University, and is currently Assistant Professor of English at Ball State.

Peter Flemming is a full-time artist, part-time professor and some-time curator in Montréal who exhibits and works internationally. Research interests include ad-hoc architecture, intuitive physics, informal engineering, neuromimes, solar power, waste harvest, fermentation, and saunas. Flemming's work considers natural and technological ecologies, in site-specific projects that are resolved intuitively

and experimentally. Flemming is the 2019 Québec Arts & Letters Council Artist-in-Residence at the Künstlerhaus Bethanien in Berlin.

Anne-Lise François is a literature scholar. She is Associate Professor of English and Comparative Literature at UC-Berkeley. Her current book project *Provident Improvisers: Parables of Subsistence in the Time of Enclosures* traces the contradictory logic of modern capitalism's ways of enclosing time and stocking reserves, and looks to alternative, seasonal ways of living "without reserves" in various parables of subsistence. Essays related to the book have appeared in the collection *Anthropocene Reading* and in *Qui Parle, Essays in Romanticism, Minnesota Review*, and *Postmodern Culture*.

Jaimey Hamilton Faris is a critical theorist and contemporary art historian. She is Associate Professor at the University of Hawai'i at Mānoa and writes about new visual approaches to global systems, infrastructure and ecologies. She's written articles for *Art Journal*, *October*, *Art Margins* and more. Her first book *Uncommon Goods* (2013), explores artistic responses to neo-liberal trade and her current book project, *Liquid Archives, Liquid Futures: Art and Climate Change*, proposes the importance of new liquid imaginaries in the era of climate change.

Eva-Lynn Jagoe is a writer and scholar. She is Associate Professor of Comparative Literature and Latin American Culture at the University of Toronto. She teaches and writes about experimental critical writing, environmental humanities, theories of individuality and collectivity, and film and culture. Her book, *Take Her, She's Yours* (Punctum Books, forthcoming), is a critical memoir about psychoanalysis, subjectivity, and feminism. Her previous book is *The End of the World as They Knew It: Writing Experiences of the Argentine South* (Bucknell UP, 2008).

Adam Morris is a writer and literary translator. His essays, criticism and translations have appeared in the *Times Literary Supplement*, *Los Angeles Review of Books*, *Salon*, *The Believer*, *The Point*, *n+1*, and elsewhere. He has translated novels by Hilda Hilst, João Gilberto Noll, and Beatriz Bracher, as well as shorter works by Nuno Ramos, Joaquim Maria Machado de Assis, Carol Bensimon, Vivian Abenshushan, and others. His first book, *American Messiahs*, is forthcoming in 2019 from Liveright/W.W. Norton.

Rodrigo Nunes is a philosopher. He is the author of *Organisation of the Organisationless. Collective Action After Networks* (Mute/Post-Media Lab, 2014) and is a Professor at the Pontifical Catholic University of Rio de Janeiro (PUC-Rio), Brazil. As an activist and popular educator, he has been involved in initiatives like the first editions of the World Social Forum (Brazil), the Justice for Cleaners campaign (London), and the Climate Camps in the United Kingdom. His new book, *Beyond the Horizontal: Rethinking the Question of Organisation*, is forthcoming with Verso (2019).

Jackie Orr is a teacher and performance theorist. She is Associate Professor of Sociology at Syracuse University, and the author of *Panic Diaries: A Genealogy of Panic Disorder* (Duke, 2006). Her recent work on magical subrealism, catastrophe and enchantment, and the slow violence of petro-culture has appeared in *Catalyst: Feminism, Theory, Technoscience; Social Text // Periscope*, and in the edited book *Critical Trauma Studies* (NYU, 2016). Her performance piece, *Slow Disaster at the Digital Edge*, has been presented at the University of Chicago, Goldsmiths, Stanford, and the Rhode Island School of Design.

Imre Szeman is a scholar of energy and environmental studies, critical and cultural theory, and social and political philosophy. He is University Research Chair and Professor of Communication Arts at the University of Waterloo. *On Petrocultures: Globalization, Culture, and Energy* is forthcoming this year.

Nomeda and Gediminas Urbonas are artists, educators and co-founders of Urbonas Studio: an interdisciplinary research practice that facilitates projects that transform civic spaces and collective imaginaries. Their work has been exhibited at the Venice, São Paulo, Berlin, Moscow, Lyon, Gwangju, Busan biennales, Folkestone Triennial, Manifesta and Documenta exhibitions. Gediminas is Associate Professor at the MIT Program in Art, Culture and Technology. Nomeda is researcher at MIT and NTNU.

Jeanne van Heeswijk is an artist who facilitates the creation of dynamic and diversified public spaces in order to "radicalize the local". Recent notable projects include *Freehouse*, *Radicalizing the Local in Rotterdam* (September 2008- present) and *Philadelphia Assembled in Philadelphia* (2015-2017). Her work has been featured in numerous books and biennials such as those of Liverpool, Shanghai, and Venice. She

Contributors (cont'd)

was the 2014-2015 Keith Haring Fellowship in Art and Activism at Bard College and she has received the 2012 Curry Stone Prize for Social Design Pioneers, and in 2011, the Leonore Annenberg Prize for Art and Social Change. She lives and works in Rotterdam.

Marcel Van Der Meijs is an urban and environmental designer. He is senior Urban Designer and partner at Palmbout Urban Landscapes in Rotterdam. His work connects the different scales of planning, landscape and public space to foster more holistic and sustainable cities. With Waterland Design Inc. he works in projects combining urban layout and water management for comprehensive climate resilient local solutions. For this work they won the Rebuild By Design competition project on Long Island, New York. He also works in projects on new imaginaries for public space, through collaborations between urban design and visual arts and has contributions to the Shanghai Biennial, China (2008), Cultural Capital Ruhr, Germany (2010), and Parckdesign Brussels Belgium (2012).

Snoweria Zhang is an architectural designer, researcher, artist, and mathematician. Currently, she conducts research at the MIT Senseable City Lab, focusing on mobility, future cities, and the boundary between human and technology. Her personal research interests include gender and space, bicycle safety, and the Supreme Court of the United States. She also illustrates a weekly comic about design and politics.



Tropic Editions is a 501(c)(3) non-profit publishing imprint that produces artists' books and related publications imbued with a sense of place. By activating the climatic framework of the tropics to challenge the assumptions of Western geopolitical hierarchy, the imprint hopes to contribute to an existing global discourse on tropicality, postcolonialism, and creative production in the tropics. Based in Honolulu, Hawai'i, Tropic Editions is run by artist and designer Marika Emi.

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