

FREE

Instructions for land-based learning

IABR: The Nature of Hope

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EVERYTHING CHANGE



Everything Change: Instructions in Land-Based Learning
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Everything change is an expression we borrowed from Canadian poet and novelist Margaret Atwood, as an inspiration to enlarge how we think about the changing climate.



Land based learning is a term used to describe pedagogic models where curricular material is derived from particular landscapes and informed by the learners' lived experiences.

This work was made possible through a generous collaboration between professors and students at two institutions on the Indigenous lands of Turtle Island, the ancestral name for what we call North America.

Pratt Institute, Brooklyn

situated on Lenape land

Temperate deciduous lowland forests of the northeast.

University of Texas at Austin

situated on Coahuiltecanin land

Humid subtropical prairies and woodlands of the south.



"Estrangement from our natural environment is the cultural contest wherein violence against the earth is accepted and normalized."

* hooks, bell. *Belonging : a Culture of Place*. Routledge, 2008.

Freire, Paulo, and Freire, Ana Maria Araújo. *Pedagogy of Hope : Reliving Pedagogy of the Oppressed*. Continuum, 2003.

Simpson, Leanne Betasamosake. *As We Have Always Done: Indigenous freedom through radical resistance*. University of Minnesota Press, 2017.



Despite the urgent emphasis on climate change in our society, design education continues to evolve ways of teaching and learning that are universalizing, offering dated and obsolete outcomes that fail to interrogate what *change* means.

This authority unconsciously suggests that the classroom belongs more to the professor than the students and more to the past than the future. This tendency only reinforces cycles of exclusion that unwittingly seem to entrench competitiveness into our practices.

If our suspicion is correct, then what needs to *change* first is the coercive power that privileges hierarchical relationships in the classroom, marginalizing some forms of knowledge over others, such as technical expertise over lived experience. Our simplest tools for sharing knowledge are commodified beyond recognition.

The booklet you are holding in your hands is an experiment in teaching design. At the same time, it is an invitation to join us, trade, share, and test because our times call for radical collaboration.

Across a semester of collaboration between a group of individual practitioner scholars and students pursuing landscape architecture and architecture degrees, we engaged in a messy process of *everything change*, a term borrowed from Margaret Atwood that seemed to acknowledge the effort.

The prompt was simple: How can we strengthen studio-based learning, with land-based learning—and how might that *change everything*?

Throughout the weeks together, we determined that care and compassion were largely absent in studio-based learning, but that it surfaced effortlessly when we were learning together out of doors. As teachers, we were prepared for the difficulty of asking students to share—rather than own—the outcomes of this work because we are aware that architectural education is still based on teaching individual authorship, largely through competition. What we did not expect is how far education has relocated learning into proxy environments, from model space to studio space. It turns out that

teaching/learning no longer relies on a proficiency with physical materials and real places, but on ever-evolving technologies that trust in functional substitution, abstracting real-world dynamics with a miniaturization of reality. The result is a generation of students that are skilled in how to sell projects, not in how to make them, without the tools to care for what they imagine or create.

As a corrective to learning by proxy, we experimented with a series of *land-based* guidelines to help expand creativity outside of studio and classroom settings. *Land-based* is also borrowed, and tends to describe pedagogic models where curricular material is derived from particular landscapes and learning outcomes are informed by the learners' lived experiences. The widespread absence of trust and intimacy in the classroom meant beginning with simple instructions: follow running water, dig until you find worms, collect and draw five leaves with your eyes closed.

The results of these efforts were often recorded in video format, to track and evidence the collaborative learning process.

The first time we met as an expanded class, we agreed to the following ethics that helped *change* the nature of the classroom:

~ Dedication to the land
Not sentimental affection, but concrete knowledge of a part of the earth, i.e: knowing where the water comes from, what kinds of plants flourish there, and what threatens it.

~ Relationship to the past
An expanded appreciation for how life changes, evolves, and adapts across more than human timescales, an understanding of our time on the planet.

~ Multigenerational sharing
Sharing knowledge across experiences allows ideas to move and shift, so that creativity cannot be owned. If knowledge is held on to, it becomes a commodity, and makes us consumers.

~ Ordinary kindness
Clarity and honesty with others without hesitation, protect the trust in relationships that land-based learning requires; including space for personal histories.

The instructions in this booklet are offered freely—they are a gift economy to other educators who might want to join, evolve, or otherwise contribute to the project. Each entry is intentionally short, allowing the user to fill in the blanks, and develop or inform novel methods of their own.

The instructions are a prompt, a nudge to find out more. The same is true for the reading suggestions offered on the same page. These references are just the beginning, and most of the references were read collectively in class to inform our thinking about what kinds of readings inspire the outcomes. As such, they vary widely.

The format of a booklet opens up possibilities beyond this work and its intent; it is a natural site for knowledge to converge, especially knowledge that seeks to restore the loss of collective memory because a book is never a singular experience. Books travel, get lost and muddy, are found again, read, traded, dogeared, underlined, and shelved. Here, the format is an active process that can begin again at any time, conveying endless lessons...



01

Dig into the soil until you find worms.
Toss your tool.
Gage depth with your hand.
Count the worms, three is ok, five is wonderful.
Repeat, take note, compare.

Earthworms are everywhere. They help humans find out more about whether or not soils are healthy and can breathe. In the process of their meanderings earthworms aerate the soil, literally moving the earth.

Darwin, Charles, *The Formation of Vegetable Mould, through the Action of Worms, with Observations on Their Habits*. D. Appleton & company, 1898.

Sims, R. W., et al. *Earthworms : Keys and Notes for the Identification and Study of the Species*. Published for the Linnean Society of London and the Estuarine by E.J. Brill, 1985.

02

Plants give freely, and make more of themselves,
if they find soil nearby.
But cities are hard—
Concrete and asphalt are friendly for feet,
not for spreading seed.

Plants make seedpods to hold their gift,
if wind blows nearby.
But wind is just one way—
You can be a seed saver everyday with your hands,
just take notice.

Go find dried seeds: pod, husk, or pericarp.
This package is the outcome of succesful pollination.
Ages ago, last year, it was a colorful flower.

Shake the seeds from the pod, or split along a seam,
they will fall gently into your palm.

Plants sprout from seed in the spring,
if allowed to germinate.
But ask for nothing in return—
Accept the gift, and disperse the seeds in your palm,
on receptive soils.

Beal, W. J. *Seed Dispersal*. 1898.

Raven, Peter H. "Saving Plants, Saving Ourselves." *Plants, People, Planet*, vol. 1, 2019, pp. 8–13.

Herrighty, Emma, and Christina Gish Hill. "The Seeds Are Coming Home: a Rising Movement for Indigenous Seed Rematriation in the United States." *Agriculture and Human Values*, 2024.

03

Locate a moveable rock or fragment of geology.
Position it against a neutral background.
Triangulate its surface, make a map of its folds,
dive into its shadows, and appreciate its skin.
Rotate, repeat.
Pay attention.
Return it to its original place of rest.



Benz, Willi. *Suiseki : the Asian Art of Beautiful Stones*. 1st pbk. ed., Sterling Pub. Co., 2000.

04

On a windy day, step outside and close your eyes. Turn your face until you feel it on your face. Rotate your head back and forth slowly, until you feel it equally on your left and right cheeks. This means you are now facing the wind.

Return to the same spot across different seasons. Record your observations to know your place.

Does wind blow mostly from the same direction? If so, this is the direction of the prevailing wind. Is it dry, warm, wilful, searing, gentle, vindictive? Name it. Here are some other names for wind:

Asifa-t: tropical storm in the Arabian Gulf

Bhoot: small dust devil in India

Circias: Northwesterly wind in ancient Rome

Duster: dust bearing wind in the United States

"The wind airs things. It is fluid. It appears on Earth when the movement of air—never stopping—quickens to a point where we notice it. The wind is always related to us. While air moves regardless of us, when we feel it, air becomes wind. The wind is a relative. It is already close to us."

Bendik-Keymer, Jeremy. *The Wind: An Unruly Living*. Brooklyn, NY: Punctum Books, 2018.

DeBlieu, Jan. *Wind: How the Flow of Air Has Shaped Life, Myth, and the Land*. Houghton Mifflin, 1998.

Watson, Lyall. *Heaven's Breath: A Natural History of the Wind*. New York Review Books, 2019.

05

Take a video from the perspective of a worm—
crawling across the earth.
Watch the video while lying on your back.
Stop and stare at the sky.
Flip back over and lay on your stomach.
Look at the same spot where you took the video.
Make a log of what you see.
Leaves, mulch, samaras and what else?
Design words for these connections,
Write down your new glossary.

"I want to have a more articulate talk with the land. It's just another way of knowing myself better, and my self-obsession insists that that's worthwhile. A good way to go about it is to have a more articulate talk with the furry, feathered, scaly, whooping, swooping, screaming, soaring, grunting, crushing, panting, flapping, farting, wrenching, waddling, dislocating, loping, ripping, springing, exulting lumps of the land that we call animals."

Foster, Charles. *Being a Beast*. London: Profile Books, 2016.



06

Find four branches.

Place them on the ground to create a square.

Count the number of different plant species inside the square.

Try to name them.

Estimate the percent of bare ground.

Estimate the percent of planted ground.

Step back.

Look across the landscape.

Extrapolate.

This survey does not just represent number.

It can represent compaction levels,
if there are few plants.

To learn if this is continuous or intermittent,
complete or partial, permanent or temporary
compaction—come back often.

It can represent invasion levels,
if one plant is overwhelmingly successful.

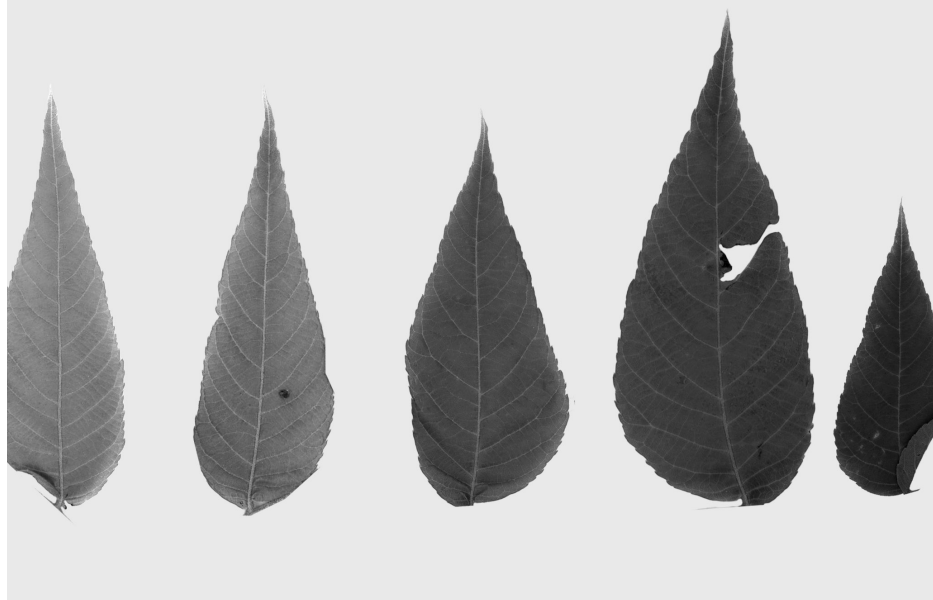
To learn if this is continuous or intermittent,
complete or partial, permanent or temporary
invasions—come back often.

Clements, Frederic E. *Research Methods in Ecology*. University Pub. Co., 1905.

Pickett, S. T. A., and P. S. White. *The Ecology of Natural Disturbance and Patch Dynamics*. Academic Press, 1985.

07

Collect a branch that fell to the ground recently.
Hopefully the leaves are not too dry.
Slowly remove each one
Arrange them by color progression.
Try and identify the species.



Watts, Mary Theilgaard. *Master Tree Finder: a Manual for the Identification of Trees by Their Leaves*. Nature Study Guild, 1963.

08

Find a flowerhead.
Close your eyes and imagine a sudden gust.
Draw at last 5 stages of the flower,
losing its petals to the wind.

“Whatever influences the changes of other things is itself changed.”

Dewey, John. *Dictionary of Education*. 1st ed., Philosophical Library, Incorporated, 2015.



09

Ask a trusting friend to close their eyes,
and reach out to hold your hand.

Lead them to a plant of your choice.

No peeking.

Ask them to touch and tussle the plant.

Notice how they use their hands to inquire.

Ask them to share five words about the plant.

Notice what words they choose.

Ask them to describe texture and shape.

Notice if they use other senses.

Play a guessing game until the plant is named.

“Whenever it is necessary to change the balance as we find it, we have to talk to the individuals involved to get their consent to the change. We have to talk to the rocks if we want to crush them into gravel to make our walkway. We have to ask the earth if we want to place our home in a certain place. We have to talk to the plants if we want to obtain their help in the healing of ourselves or of another being.”

*Geniusz, Mary Siisip, Geniusz, Wendy Djinn, and Geniusz, Annmarie Fay. *Plants Have so Much to Give Us, All We Have to Do Is Ask : Anishinaabe Botanical Teachings*. Minneapolis: University of Minnesota Press, 2015.

10

Do you know where your water comes from?

Fill a glass of water from the tap.
Take a long drink.

Close your eyes—consider how this water moved.
How far did it travel to reach you?
What waters co-mingle along the way?
Now imagine its borders along the way.
Then, before it arrives at the boundary of your city,
your apartment, your kitchen sink.

Trace on a map the path of your drinking water
from its source to the place where you live.

Attempt the waters journey with a friend.
Bring your map.
Along the way, mark the places where waters are
conveyed, impounded, or treated.
Find the waters source, or headwaters.
and then turn the map into an elevation.

Linton, Jamie. *What Is Water? The History of a Modern Abstraction*. Vancouver: UBC Press, 2010.

Spirn, Anne Whiston, "Landscape Literacy and Design for Ecological Democracy: The Nature of Mill Creek," in *Grounding Urban Nature*, eds. Henrik Ernstson and Sverker Sörlin. Boston: MIT Press, 2019.

11



Do you know what kinds of rocks you live with?

Go outside.

Collect 10 different rocks.

Line them up.

Identify if they are igneous, sedimentary or metamorphic.

Igneous rocks have a look.

They are made by cooling magma, fast and slow.

Surfaces never show layers.

Sedimentary rocks are honest.

They are made from compacted sediments.

Surfaces are deep, crumbly, layered and salty.

Metamorphic rocks are ancient.

They are evolved from other rocks, other eras.

Surfaces show bands, sheets, or stripes.

"...rocks are not nouns but verbs—visible evidence of processes: a volcanic eruption, the accretion of a coral reef, the growth of a mountain belt. Everywhere one looks, rocks bear witness to events that unfold over long stretches of time."

*Bjornerud, Marcia, *Timefulness: How Thinking Like a Geologist Can Help Save the World*. Princeton University Press, 2018.

12

Take a walk in the woods.
Look for snags or dead standing trees.

Snags might not be living plants,
but because they remain upright,
they provide so much life as habitat and shelter.

In the nutrients of decay are found nest cavities,
bark fissures, and the coarse microhabitat of
decomposition that makes home,
for manifold species.

But forestry rarely counts a snag.

As a countermeasure,
when you find a snag start counting:
The holes drilled into it by woodpeckers.
The trails of slime.
The moss on the north face.
The birds nesting in gaps.
The vines creeping along.

How many species can you find?

Elkin, Rosetta S. "The Prefixes of Forestation." *Harvard Design Magazine*, no. 45, 2018.

Wessels, Tom. *Forest Forensics: a Field Guide to Reading the Forested Landscape*. Countryman Press, 2010.

13

Find a body of water.
Small puddle, tiny pool, minor splash.
Bring paper, and get close.
Take time to notice how the surface sways.

Find something—anything suspended in the water,
use your eyes to follow it.
Is it lazy or hurried, is there resistance?
Are there long or short movements or both?
Patterns are made in erratic interruptions.

Draw each movement with a similar speed,
use a single mark.
Mark more.
Allow streaks to accumulate.

“The unfixed nature of the work is grounded by the designer’s precise and intentional decisions guiding the engagement with water...”

*Lickwar, Phoebe. “Camera-Less Photography at the Water’s Edge: Rethinking Collaboration and Exchange in the Littoral Zone.” *Active Landscape Photography*, 1st ed., Routledge, 2023.



14

Go for a walk with paper and graphite or charcoal.

Find a paved area:
a courtyard, a plaza, a parking lot, a stone patio.

Make a 1:1 rubbing of the surface.
This is called frottage.

Recompose the sheets of paper on the floor of an
interior space large enough to accommodate them.

Study the anomalies by walking across it.

Where is the surface discontinuous?
Where might water infiltrate?
Where has plant life found a foothold?
How can you tell?

"In a society that promotes efficient and effective productions– and in the context of school cultures driven by such capitalist workings and values– the slow and wayward processes of frottage work as a political act that values an inefficient and unpredictable mode of moving and working."

Dewey, John. *Art as Experience*. Minton, Balch & Company, 1934.

Ernst, Max. *Histoire naturelle*. Paris: 1926.

*Pindyck, Maya. "Frottage as Inquiry." *International Journal of Education Through Art* 14, no.1, 2018.

15

Dig a hole about a foot deep.
With a shovel, cut a slice from the wall of the hole.
Lay the soil on the ground next to you.

Look carefully for color changes.
Topsoil is usually the darkest layer.
It is entirely alive.
Measure the thickness of topsoil.
Take a small sample of soil from each layer.
Crumble some of each layer on a white paper.
Label each one with a color name of your choice.
Compare color, smell, and texture.

Back at the soil slice, look for plant roots.
Measure their depth from the soil surface.
Are they well branched with fine root hairs?
Are the roots growing sideways or balled up?
If so, this could indicate a layer of soil compaction.

Repeat in different locations to notice difference,
or compare with a friend who lives somewhere else
in the world.

16

Find a plant you know well.
Borrow a leaf, bud, seed or other.
Find out one fun fact about it.
Write this fun fact on a notecard.
Tape the plant part to the same notecard.
Place it in an envelope.
Send it to a friend,
and ask them to do the same for you.

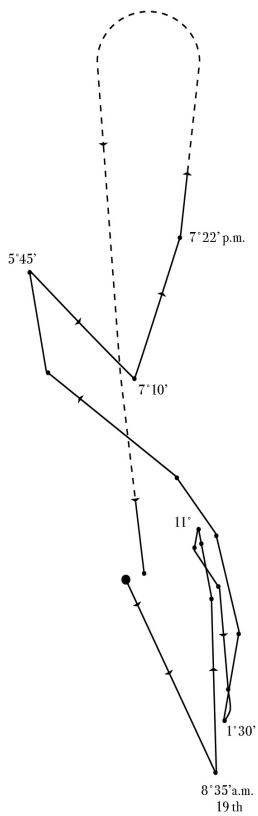
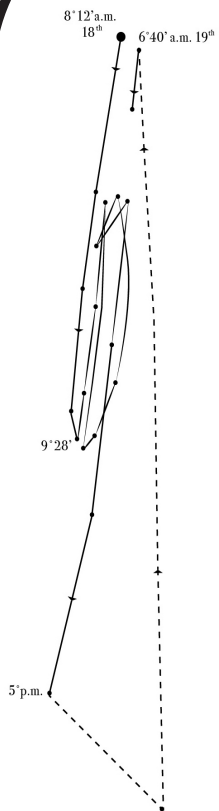


Baskin, Carol C., and Baskin, Jerry M. *Seeds: Ecology, Biogeography, and Evolution of Dormancy and Germination*. Academic Press, 1998.

Eisenstein, Charles. *Sacred Economics: Money, Gift, & Society in the Age of Transition*. Evolver Editions, 2011.

Shiva, Vandana. *Seed Sovereignty, Food Security: Women in the Vanguard*. North Melbourne: Spinifex Press, 2015.

17



Plants move, they just move differently than animals like us.
They move a lot in the locations they live,
and move to find light.

Try holding a finger up in front of you.
Using a single light source imagine that as the sun.
You will notice there is a shaded side on your finger.
Pretend your finger is a plant,
and all the auxins move to the shaded side of your finger. Bend your
finger towards the light using the shaded side. Imagine that cells are
expanding to move your finger.
Rotate your hand if this is uncomfortable.
Once you bend your finger it will be evenly lit,
but it will also be pointed at the light source.

This is one way that plants move, all day long.

Make a diagram of plant movement across a day.
Seedlings are ideal since they are young, and eager to grow.

Auxin is a plant hormone that helps plants elongate cells, or develop
in directions that help the plant move towards light, water or nutrients.

Darwin, Charles, and Darwin, Francis. *The Power of Movement in Plants*. D. Appleton and Company, 1881.

18

Walk around a large tree with your eyes closed.
Put your hand on the tree,
as you go around, let your hand guide you.
as you go around, let your feet slow you.

As you feel the changes in the crevices, begin to
count your paces in time with the folded texture.

Stop periodically, compare the cadence of your
feet, and the distances of the bark texture.
Repeat.

Invent a numerical code to compare both measures.
Unfold the circular line, using marks, dashes,
and points to draw an interspecies elevation.



Halprin, Lawrence. *Notebooks*, 1959-1971. MIT Press, 1972.

Loupe, Laurence, et al. *Traces of Dance: Drawings and Notations of Choreographers*. Editions Dis Voir, 1994.

Long, Richard, *Walking in Circles*. G. Braziller ; with The South Bank Centre and Anthony d'Offay Gallery, 1991.

19

A tree cannot be known through upright form.
Any given outline is but a trace moment,
in the life of a living plant organism.
Consider instead that a tree is a swarm.
A consortium of cells, splitting and merging.

One way to think about the breathing tree,
is to notice lentices,
those marks that look like eyes on stems.

A lentice is an interface; between the
atmosphere and the inner tissues,
it helps link the climate and the soil.
So, lentices are rather more like mouths;
inhales and exhales of gaseous exchange.

Unlike the pores of leaves that are activated by
sunlight, lentices breathe throughout the night.

Find a fruit tree, a poplar or birch with lentices.
Visit it at night.
Eat fruit in gratitude to honor the exchange.

“Life—from bacterium to biosphere—maintains by making more of itself.”

Elkin, Rosetta S. “Live Matter: Towards a Theory of Plant Life.” *Journal of Landscape Architecture* (Wageningen, Netherlands), vol. 12, no. 2, 2017.

* Margulis, Lynn, and Dorion Sagan. *What Is Life?* Simon & Schuster, 1995.

20

Flora, Fauna, Funga.

They are all around you.
Under your feet, in between your toes.
Buried in your bread, and cycling carbon.

Get to know the funga in your region,
not for their food, medicine or value.
Just because you want to know more.
Avoid exploits and extractives.

To depict a fungal association,
requires design imagination.

Try it.

"Next time you walk through a forest, look down. A city lies under your feet. If you were somehow to descend into the earth, you would find yourself surrounded by the city's architecture of webs and filaments. Fungi make those webs as they interact with the roots of trees, forming joint structures of fungus and root called mycorrhiza. Mycorrhizal webs connect not just root and fungus, but also—by way of fungal filaments—tree and tree, in forest entanglements."

Marley, Greg A. *Chanterelle Dreams, Amanita Nightmares : the Love, Lore, and Mystique of Mushrooms*. Chelsea Green Pub., 2010.

Roberts, Peter, and Shelley Evans. *The Book of Fungi : a Life-Size Guide to Six Hundred Species from Around the World*. The University of Chicago Press, 2011.

* Tsing, Anna. *Arts of Inclusion, or How to Love a Mushroom*. Manoa (Honolulu, Hawaii), vol. 22, no. 2, 2010.

21

Find a flower.

Imagine insect pollination by observing:
shape, size, scent and color.

What pollinators does this flower attract?

If the flower is funnel shaped,
it attracts the long beaks that hummingbirds probe.

If the flower is open, and stamens are visible,
it welcomes the bulbous, hairy body of a bumblebee.

If the flower is narrow and tubular,
it lures the proboscis of a butterfly.

If the flower is small and inconspicuous,
it figured out how to pollinate itself.

Wait patiently for a pollinator to appear.
While you are waiting, draw the contours,
of the flower on a postcard.

Note what insects and birds arrive as you observe.
Write their names next to your drawing.

Dafni, Amots. *Pollination Ecology: a Practical Approach*. Oxford University Press, 1992.

Darwin, Charles. *The Effects of Cross and Self Fertilisation in the Vegetable Kingdom*. D. Appleton and Co., 1877.



22

Find a straight stick that is roughly one meter long.
Push the stick into the ground,
ensure it is perfectly vertical.
Find a space with a smooth surface.
Look for the shadow of the stick cast on the ground.
Mark the end point of the sticks shadow.
Use something heavy, reliable.

Wait thirty minutes.

Mark the new end point of the stick's shadow.
Draw a line between the two points.
Stand with your left foot at the first point,
your right foot at the second point.
You are now facing north.

Take note of the cardinal directions.

Face the sunrise and you are facing east. North will be on your left and south will be on your right. Face the sunset and you are facing west. North will be on your right and south will be on your left.

Davis, Wade. *The Wayfinders : Why Ancient Wisdom Matters in the Modern World*. House of Anansi Press, 2009.

Foy, George. *Finding North : How Navigation Makes Us Human*. Flatiron Books, 2016.

Griffith, Cary J. *Lost in the Wild : Danger and Survival in the North Woods*. Borealis Books, 2006.

23

Place a small amount of soil in your hand.
Add water, drop by drop until the soil is pliable,
moist but not wet.

Squeeze the soil into a ball.

If the soil is neither too wet nor too dry,
falls apart when released, it is mostly sand.

If it remains in a ball when released,
place a small amount between your thumb and
forefinger, and push upward to form a ribbon.
Continue until the ribbon extends over your finger.

If the soil will not form a ribbon,
your soil is loamy sand.

If the soil forms a ribbon less than 2.5 cm long,
your soil is loam.

If the soil forms a ribbon 2.5 cm long,
your soil is clay loam.

If the soil forms a ribbon 5 cm or longer,
your soil is clay.

Consider this a delight.*

*Gay, Ross. *The Book of Delights*. Algonquin Books of Chapel Hill, 2019.

Smithsonian Institution Content Provider. *Resources for Teaching Middle School Science*. 1st ed.,
National Academy Press, 1998.

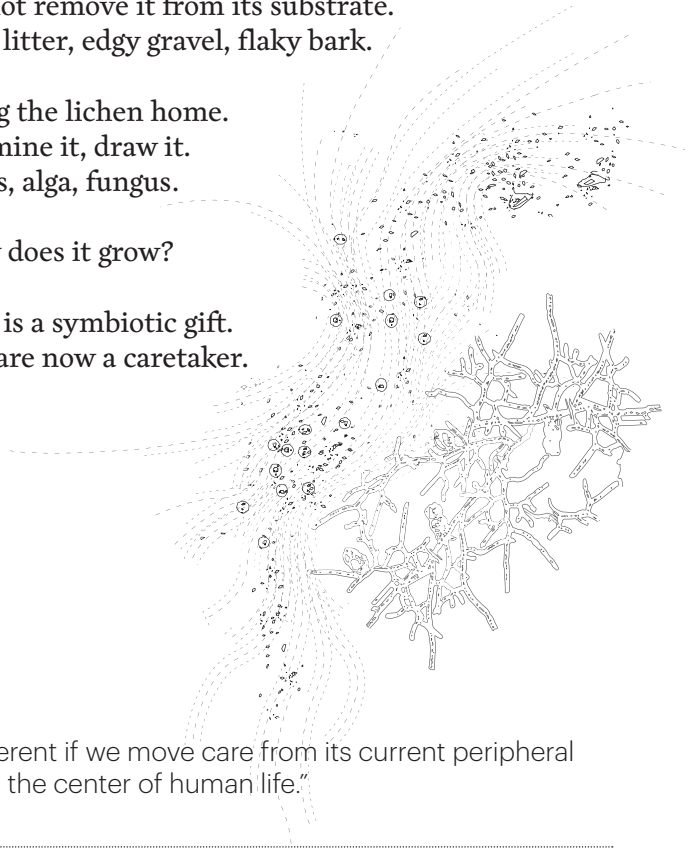
24

Go outside, find a small lichen.
Do not remove it from its substrate.
Leaf litter, edgy gravel, flaky bark.

Bring the lichen home.
Examine it, draw it.
Folds, alga, fungus.

How does it grow?

This is a symbiotic gift.
You are now a caretaker.



"The world will look different if we move care from its current peripheral location to a place near the center of human life."

Hale, Mason E. *How to Know the Lichens*. 2d ed., W. C. Brown Co., 1979.

McCune, Bruce. "Collecting and Identifying Lichens." *Macrolichens of the Pacific Northwest, Second Ed*, Oregon State University Press, 2009.

*Tronto, Joan C. *Moral Boundaries: a Political Argument for an Ethic of Care*. Routledge, 1993.

25



Push a writing tool or stick into the soil.
What percentage does it go down?
How easy was it to push in?
Does any of the soil stick?
What is the consistency?

Try one in a public park.
Try one in a garden.
Try one in a farm field.
Try one in a tree pit.
Try one at home.

Compare.

Draw a section that connects these different
observations as marks, vectors, particles.

How will you draw soil in the future?

"professors who embrace the challenge of self-actualization will be better able to create pedagogical practices that engage students, providing them with ways of knowing that enhance their capacity to live fully and deeply."

*hooks, bell. *Teaching to Transgress: Education as the Practice of Freedom*. Routledge, 1994.

Oles, Thomas and Phoebe Lickwar. "What Doesn't Kill You," *LA • Interdisciplinary Journal of Landscape Architecture* 06, 2017.

26

Take a walk after a good rain.
Look for a place where water collects,
A depression in asphalt, a small pond,
a puddle or a roadside ditch.
Bring some watercolors, small bottle.
Dip into the water to map its contours.
imagine its underwater terrain.

Water moves across land,
sinking into cracks and pores,
settling in the low places.

Land does not stop at water's edge.
Its slope is merely hidden from view.
Observe how the ambiguous edge between
water and land is always changing.
Relate this water,
and its grades of wetness,
to contours of dryness.

"Why is it that despite waters everywhere precipitating, seeping, soaking air, soil, and vegetation, collecting in interstices, pores, terraces, cisterns, and aquifers, evaporating, transpiring, and sublimating, we see water somewhere, confined within or behind lines and generally colored blue in maps?"

*Anuradha Mathur and Dilip da Cunha, "Waters Everywhere," in *Design in the Terrain of Water*, eds. Anuradha Mathur and Dilip da Cunha. New York: ORO Applied Research and Design, 2014.

Wolff, Jane. *Bay Lexicon*. Montreal: McGill-Queen's University Press, 2021.

27

Find a place outside to lie down.
Look up at the sky.
What do you see in the clouds?

Clouds are formations of water droplets or ice crystals that occur when water vapor condenses in the sky, always shifting, emerging, becoming.

What do the clouds tell you about the weather?
What future do the clouds ask you to dream?

Draw a time lapse observation,
of the clouds you see,
one drawing every 30 seconds.

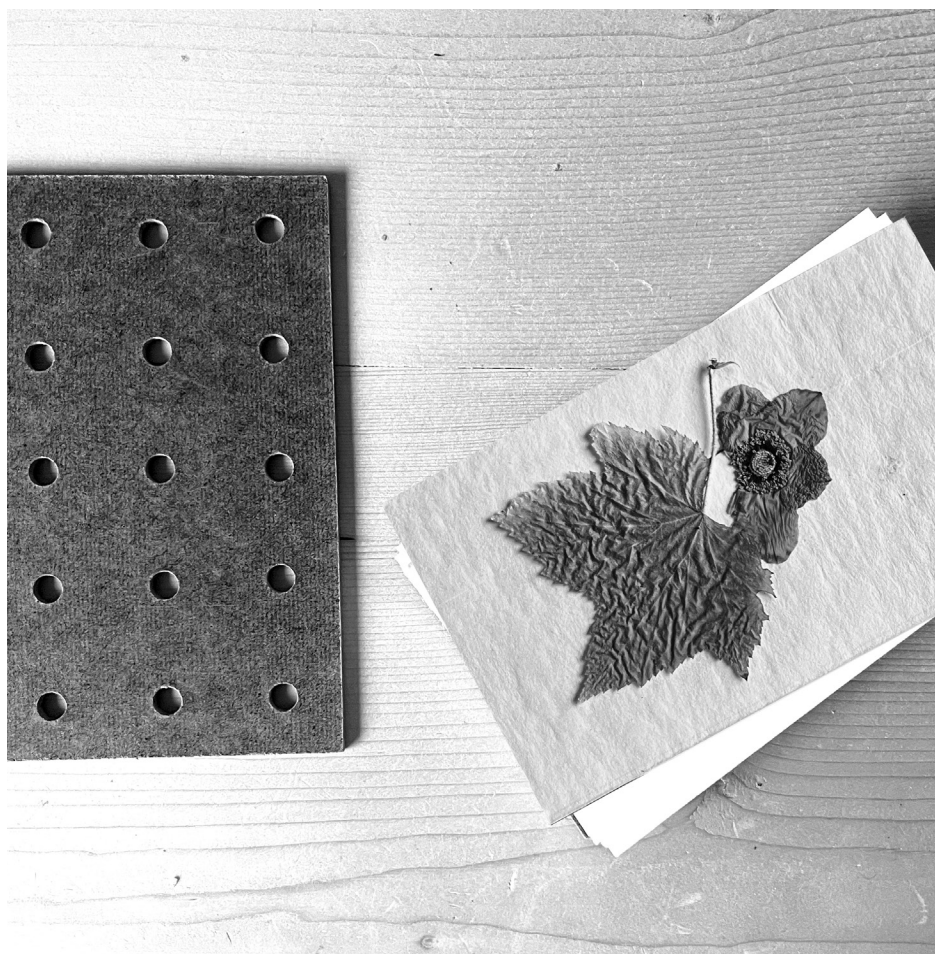
Write the name of the cloud on each drawing.
Take heed if you've written cumulonimbus or
nimbostratus....a storm is imminent.

"As the clouds gather, they are gathering people and people are gathering them. We are co-becoming.... Weather connects to and as place, and to and as other places through patterned relationships. We are connected through, for example, the clouds gathering from different places, coming, joining, and then going again, to rain..."

*Bawaka Country. "Gathering of the Clouds: Attending to Indigenous Understandings of Time and Climate through Songspirals," *Geoforum* 108, 2020.

Lickwar, Phoebe and Katya Crawford. "Looking up, Looking down," *Journal of Landscape Architecture* 09, no.3, 2014.

World Meteorological Organization. *International Cloud Atlas*. Geneva: World Meteorological Organization, 1956.



28

Begin your own herbarium of spontaneous, underappreciated, city plants.

Look for life in the cracks of pavement: crushed edge of concrete, leaf litter in gravel, urban detritus, sand carried by wind, flowing across brick, motor oil seeping, microbial life swelling, seeds floating, dropping, settling where strange soils form.

Craft your pocket collection simply: cardboard, pegboard, pressboard, leftover trace, in between stock, cut-up leaflets, compose sample, layer, bind with elastic band.

Some consider broken pavement a hazard,
Not these opportunistic plants.

As you begin to notice different plants,
Use words to identify and name them.
Attention shifts towards compassion.

"Without a just city in words, we never will get a just city in reality; without a compassionate training of the imagination, we will not, get a compassionate nation."

Clément, Gilles. "In Praise of Vagabonds." *Qui Parle* 19, no.2: Spring / Summer 2011, 275-297.

Del Tredici, Peter. *Wild urban plants of the Northeast : a field guide*. Ithaca : Cornell University Press, 2010.

*Nussbaum, Martha. "Compassion: The Basic Social Emotion." *Social Philosophy & Policy*, vol. 13, no. 1, 1996, pp. 27-58,

29

Go outside at night,
to see what you might find
in the light of a full moon.

Looking up at the sky,
you may be surprised to catch a glimpse of birds,
and hear their voices,
navigating by the light of the moon and stars.

Most migratory birds fly at night.
Calmer, cooler air makes the journey easier.
The absence of hawks, falcons, and other daytime
predators makes the journey safer.

Stand in one spot and look up at the moon.
Keeping looking,
until you see the silhouettes of birds.

Turn off your lights to honor their passage.

"Did you ever chance to hear the midnight flight of birds passing through the air and darkness overhead, in countless armies, changing their early or late summer habitat? It is something not to be forgotten."

Carson, Rachel. *The Sense of Wonder*. New York: Harper & Row, 1956.

Newton, Ian. *The Migration Ecology of Birds*, 2nd ed. London: Elsevier Academic Press, 2024.

*Whitman, Walt. *Specimen Days; & Collect*. Philadelphia: Rees Welsh & Co., 1882.

30

Look for a defined space: block, field, house.
Walk the perimeter, find your pace.

Walk it again, counting your pace.
Draw each perimeter line, on graph paper,
one pace is one square.

Walk it again, timing the duration.
Draw each perimeter line on graph paper,
one minute is one square.

Make scales for time and pacing.
Consider duration and cadence,
as a relational geography.

Compare.

"The physical landscape is baffling in its ability to transcend whatever we would make of it. It is as subtle in its expression as turns of the mind, and larger than our grasp; and yet it is still knowable. The mind, full of curiosity and analysis, disassembles a landscape and then reassembles the pieces—the nod of a flower, the color of the night sky, the murmur of an animal—trying to fathom its geography."

*Lopez, Barry Holstun. *Arctic Dreams: Imagination and Desire in a Northern Landscape*. Bantam Books, 1989.



.....

31

Take a piece of paper,
and tear a hole in the middle.

Go for a walk with your simple aperture.
Notice trees that are planted,
and trees that grow where they wish.

Compare.

What differences are noticeable?

“Our practices are set apart by how we acknowledge the spatial and temporal differences of other organisms, especially plants.”

*Elkin, Rosetta Sarah. *Plant Life : the Entangled Politics of Afforestation*. University of Minnesota Press, 2022.

32

Design your own compost.

Collect materials for your personal compost to track what you can create in a day, a week, or a year. Just start filing a jar.

Make it a daily practice:
fruit and vegetable scraps,
plant clippings,
shredded newspaper,
pine needles,
wood chips, straw, or hay.

Mix equal parts brown and green,
Add water, make it damp, not wet.

Watch as materials transform into one another.
Write a list of the decomposers you observe.
What relations do you witness?

Composting is a multispecies affair:
soil organisms and microorganisms digest and
decompose, aided by human attention and care.

Abrahamsson, Sebastian and Filippo Bertoni. "Compost Politics: Experimenting with Togetherness in Vermicomposting." *Environmental Humanities* vol. 4, 2014.

Martin, Deborah L., Grace Gershuny, and Jerry Minnich. *The Rodale Book of Composting*. New York: Rodale Press, 1992.

33

To fire, plants are fuel.
To fire, dryness is attractive.

To humans, drywood makes fire.
To humans, fire is life.

Good fuel can be graded by dryness.
Good fuel makes a sharp ‘snap’ !

Gather fuel to make a small campfire.
Gather fuel by species:

Find tinder, the light airy fibres that burn fast.
Find kindling, twigs from needle to pencil size.
Find firewood, logs that break easily.

As it burns, observe the different fuels,
As it burns, register the duration of flames.

“There was a time when the Earth did not burn, when oxygen did not soak its atmosphere, when plants did not encrust its lands. But for more than 400 million years the planet has burned.”

Brown, Tom Jr. with Brandt Morgan. *Tom Brown’s Field Guide to Wilderness Survival*. New York: Berkley Books, 1983.

Peck, Trevor Richard. *Light from Ancient Campfires : Archaeological Evidence for Native Lifeways on the Northern Plains*. AU Press, 2011.

*Pyne, Stephen J., and Project Muse. *Fire : a Brief History*. Second edition., University of Washington Press, 2019.

34

Have you ever taken the earth's temperature?

Earth temperatures are so much a part of our everyday lives that it is surprising that so little is known about them.

You can use a gage, you can read the plants, or you can dig down about a foot and place the side of your palm against the soil.

Try this in different places,
bare soil, under the lawn, in fall and spring.

Invent your own scale or numbering system to compare your findings across the year.

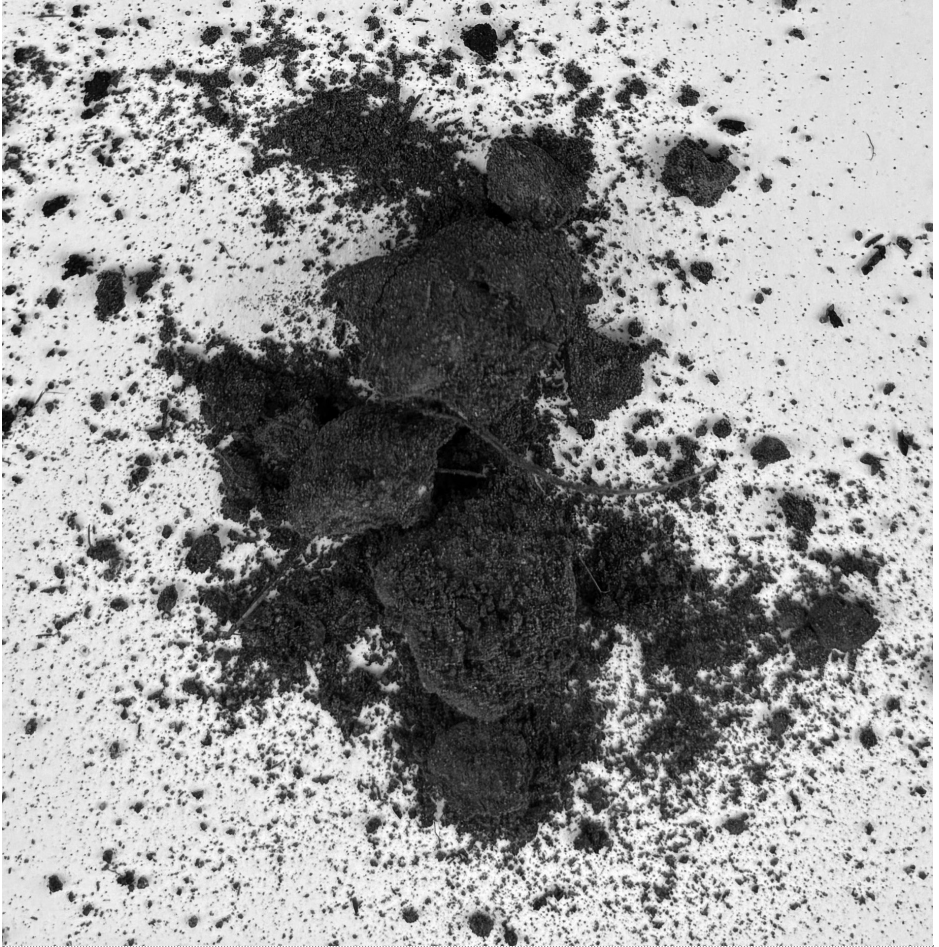
Since air temperatures near the ground are largely controlled by the temperature of the soil surface, you will learn about your landscape.

"Fifty years ago I learnt my first lessons on earth temperatures from a rabbit's air-conditioned burrow, and from the ways a mole adapted himself to winter frost by making his runs under long grass where the ground was less likely to freeze."

*Franklin, T. Bedford. *Climates in Miniature; a Study of Micro-Climate and Environment*. Faber and Faber, 1955.

Geiger, Rudolf. *The Climate Near the Ground*. Harvard University Press, 1965.

35



36

Read aloud,
the globally embracing land acknowledgment,
by Kiowa author N. Scott Momaday.

Below.
Then, consider the land under your feet,
the lands that support you and your loved ones.

Write your own acknowledgment
to honor the landscape you live with,
the landscape you were raised with,
and the landscape of your heritage.

Reflect on the kind of ancestor you wish to be.

When we dance the earth trembles.
When our steps fall on the earth we feel the shudder of life beneath us,
and the earth feels the beating of our hearts,
and we become one with the earth.
We shall not sever ourselves from the earth.
We must chant our being,
and we must dance in time with the rhythms of the earth.
We must keep the earth.

Momaday, N. Scott, and Matthias Schubnell. *Conversations with N. Scott Momaday*. University Press of Mississippi, 1997.

*Momaday, N. Scott. *Earth Keeper: Reflections on the American Land*. HarperCollins Publishers, 2020.

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Image: NASA; “Buzz Aldrin took this iconic image on the Moon during the Apollo 11 moonwalk, July 20, 1969.

