

ECOCENTRIC FUTURES

The ways we articulate and design around the threats of climate change often maintain a dangerous distinction between environmental health and human existence. We act accordingly, separated by scales of time and cultural notions of the discrete elements of the earth. Human-centered and sustainable design recognize growing connectivity, but they are often too near-sighted and rarely take as their objective our inability to cross the social, categorical distinctions between Humans and Nature. Design must take a less reactive approach to these contexts, and instead seek to reframe the context itself. If climate change is the result of a cognitive failure, how might we design new thinking?

Particularly in the face of rising climate chaos, can design can play a role in shaping new perceptions of the nonhuman in order to promote other ways of being?

Focused on the context of climate change, our work seeks to redefine radically sustainable design by promoting new thinking processes and creating new design practices. We reframe nonhumans as actors rather than resources; we seek technological systems that engage with ecological systems through a nonhuman logic; we explore different languages for communicating with the vibrant matter around us in order to foster a more holistic understanding of our existence.

OUR TEAM

Elena: I grew up in Beirut, a city that carries in the lines of its infrastructure multiples narratives of religions, languages, memory and loss. As a result, I constantly find myself thriving to connect different worldviews and create spaces for negotiation. Particularly interested in environmental narratives, because of my long-term involvement with oil spill cleanups in the Mediterranean Sea, and disappointed with the inconsistency of activism and sustainability approaches, I am exploring how speculative design can create new spaces for debate and juxtapose multiple perspectives—both human and nonhuman.

Corey: I grew up in rural Kentucky where I played video games and got lost in the woods. I began filming stories there, atop mountains destroyed for coal, and eventually followed our fossil fuel legacy all over the country. Through design, I have been exploring the politics of language and the practice of inclusion, and the ways we design for each

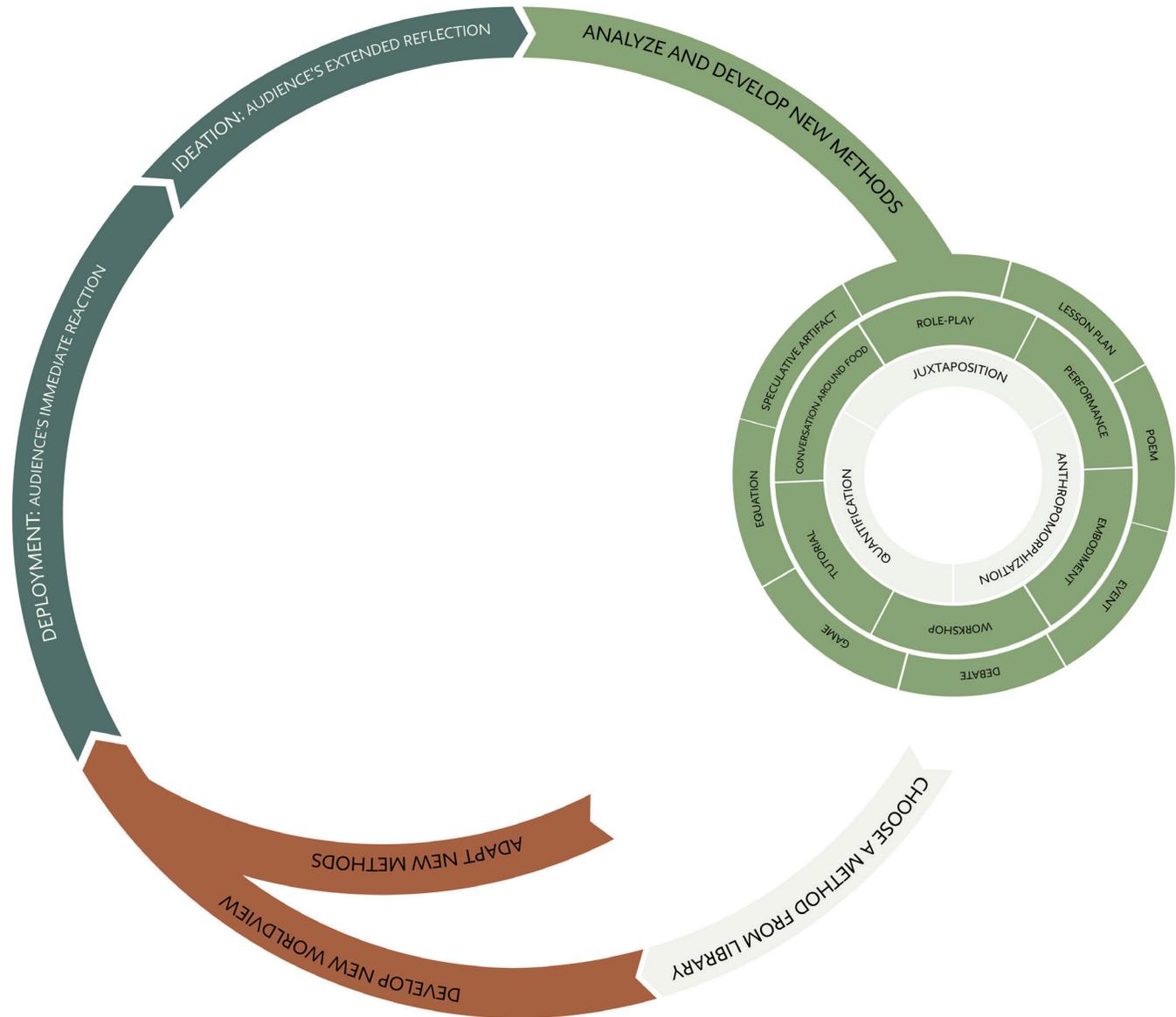
Melika: I never learned any Persian word for nonhuman, but grew up reading poems to the purple Hydrangea and playing in my grandparents' garden. Now, as my home country, Iran, struggles with a prolonged drought, I have seen how a culture with such appreciation for nonhumans fails to translate that into its policies. As a designer I explore interaction in design at its highest scale, where humans not only focus on their immediate relationship with their environment, but relate to bigger systems that consider the other.



DESIGNER'S PROCESS

We aim to articulate some of many possible opportunity spaces where designers might intervene to create new thinking dealing with human wicked relationship with nonhumans. In this effort, our focus is not only on designing ways to make these action spaces fertile, but also on compiling tactics we might use within them. In our early experimentation, we explored different forms of communication with the Hudson, including reverse empathy, possible futures, the embodiment of others, critical juxtapositions and quantitative formulas for qualitative values. Through a series of probes, we began to develop linguistic tools for translation:

- (1) **the syntax of anthropomorphization** (for us, languages associated with human experiences like grief, health, and sentimentality);
- (2) **the syntax of quantification** and other appropriations of apparent scientific objectivity;
- (3) **the syntax of juxtaposition** (the meaning derived from experiencing symbols or thoughts in intentional progression).



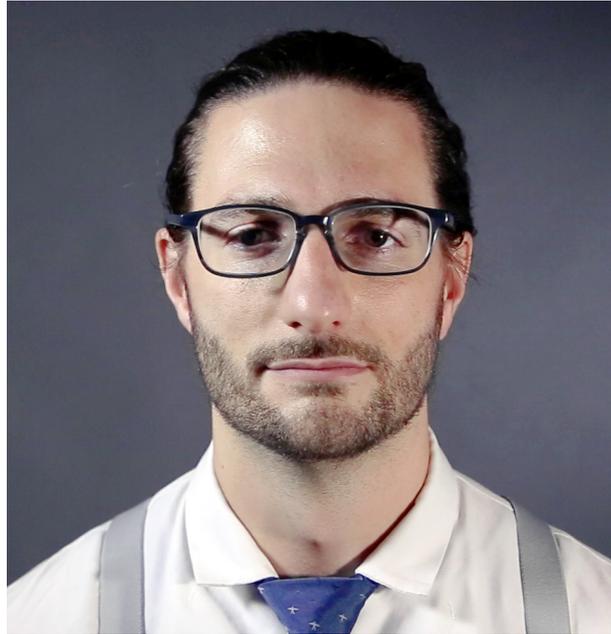
DESIGN-LED RESEARCH

Drawing from a library of tools, we create speculative probes, then build discussion and new tactics around them.



RIVER DINNER

We designed an experiential dinner workshop as an experiment in future ecocentric professions. The River Dinner Theater at Thoughtworks, NYC asked technologists, environmentalists, practitioners of law, and ethics advocates to embody different rivers around the world. They were then addressed by four professionals from a future in which rivers have represented agency—an ambulance-chasing lawyer looking to help the river make a quick dollar off its past injuries; a cleric delivering the river's last rights, eulogizing its life and impact on its human kin; a politician pitching new nonhuman policies and appealing for campaign donations; and a primary care physician looking at the general indicators of the river's health. We chose these four professions to demonstrate a breadth of relationships—from health and grief to representation and rights. In all four cases, the professionals (and the river characters) had to collectively debate how we frame what the river is, and what methods we might have to speak with it and judge its preference. The professions insinuated a mutualistic system that could be further colored by attendees. What other professions are possible? How do these systems articulate interdependencies? What impact do they have on a yet anthropocentric field of practice? And what ripples do they create out from there?



“But that is just one highlight in our long track-record of success—whether it’s securing withheld royalties from hydroelectric employers, filing an injury claim against runoff perpetrators, or instituting cease-and-desist orders for heavy-metal discharge between waterways, our lawyers are here to help.”

—River Dinner Theater Lawyer



TOP RIGHT
Lawyer from the River Dinner performance.

BOTTOM RIGHT
A workshop participant creates a tool for the spiritual guide to hear final fears of the river.



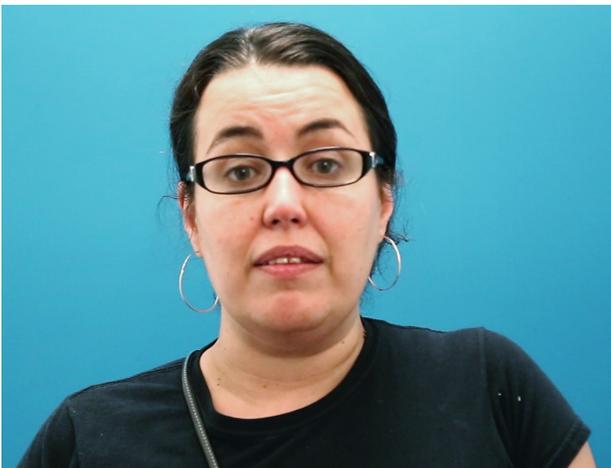
TOP
Participants from River Dinner workshop

BOTTOM COLLA
Participants advocating river's voice after the immersive workshop.

“Mr. Politician, are you representing me, or my fellow rivers?”



“If I dry up, am I actually dead, or am I just adjusting to a new mode of existence?”



“How will you solve this problem with international rights? I live between two countries...how are they going to agree about something that pertains to my body and my rights?”



RIVER HELPLINE

Often in times of need, we seek the counsel of experienced elders. In response to the divisive presidential election, we created and tested a prototype communication tool called the Hudson River Helpline, which passersby could use to access the great wisdom of the Hudson. Those who stopped could listen as the river consoled them through poetry about pain and resilience.

Many passersby were very intrigued. One witness left the note: “It’s not what you can do for us, it’s what we can do for you, Mother Nature.” Another said he enjoyed having a moment to pause and be mindful of the Hudson’s legacy in New York. The tool reframes the river, with its thousands of years of experience—as the greatest supporter in difficult times. Communication is a bidirectional project. This prototype helped us articulate a reason for conversation other than human land management.

What other reasons might humans and nonhumans have to communicate? What kinds of exchange do different devices afford? And what might the politics of these media be?

RIGHT & BOTTOM

River Helpline prototype in New York Streets after presidential election



THE HUDSON EQUATION

$$n_t = \frac{(C_d + C_e)^a}{P_p \cdot P_c^2 \cdot \Delta e} L_t$$

- n_t = value of river x for a given period of time (t)
- C_d = wealth generated through direct activity with river x, including consumption, energy, cultural, aesthetic and waste sectors
- C_e = wealth generated through activity with other elements in the ecosystem supported by the river, including agriculture, fishing, recreation, and health sectors
- a = distribution of wealth enabled by the movement of river x
- P_p = wealth enabled/deterred by the differing legal protections in neighboring nation-states
- P_c = wealth enabled/deterred by the colonial privilege of neighboring nation-states
- Δe = rate of change in the value of C_d and C_e , due most significantly to anthropogenic climate change
- L_t = share of wealth generated by the population using outputs of river x for a given period of time (t)

HUDSON EQUATION

How might we illuminate and act with respect to the river's value? Can we create an economic system that provides value to its nonhuman constituents?

In 1930, the City of Tacoma built two dams on the Skokomish River in western Washington, in large part to divert water to hydroelectric power plants. Opposition by the Skokomish nation was swift, but not simply reconcilable—as attorneys for the utility company argued, the tribe's definition of value couldn't be determined within the framework of Western economics. Yet, political ecologists J. Stephen Lansing et al observe, "an assessment of the value of the river based entirely on its power to drive turbines is no more than a bookkeeping convenience, illustrating not the power but the limitations of conventional economic analysis."⁴⁶ If we see value then not as an inherent, objective property but as social construction, we can begin to imagine how different perspectives might define it. How might the river articulate its own value? There is a tradition of essentializing economic axioms, and with that in mind we devised the Hudson River Equation, a proposal for calculating the precise value of a river. The equation specifically focuses on down-river benefits, and the causal relationships and interdependencies that are rarely considered within axioms that require isolating units of measure. In testing this exercise with the Regional Plan Association, we were satisfied to see a long process of debate toward a value that may never be solvable.

LEFT
The Hudson Equation, designed for the Regional Plan Association, challenged quantitative thinkers to articulate river value.

ISFAHAN, A DEAD RIVER

What is a river and what is our relationship with it?

On the Iranian Plateau, the city of Isfahan spreads out from Zayanderud—literally, “Life-Giving River”—, where damming upstream has left its footprint dry most of the year. This was the case when we traveled to Isfahan to interview locals about their experience of the drought, and the role the river plays in their lives. We centered our research on three questions: What were your memories with the river? Do you still have hope for it to come back? What did the river mean to Isfahan?

Residents expressed their grief in various ways: some by writing and dedicating poems to the river, others by singing songs to it, and others by sitting on the parched riverbed reminiscing, waiting for it to “come back.” Some described it as a “dying human being,” others as a lover that was far away. Many described it as dead. Many said the city of Isfahan itself was losing its identity. One man remarked, “You know how the death angel comes during our sleep to take our lives, and our families wake up to our sudden passing? The same happened to Zayanderud.”

During this research, we were moved by the ways Isfahanis celebrated the Zayanderud—particularly the ways they anthropomorphized the river. Their expressions of loss—in some sense romanticized (they were in no danger of going thirsty, for example)—recalled the river through song, through eulogical poetry, in the way one might a deceased relative, with genuine gestures of affection. These moments made us reflect on the ways we become acculturated, and the differences across cultures and geographies.

TOP RIGHT

These Isfahani women picnic on the shore of the Zayanderud, as they used to when the river was still running.

BOTTOM RIGHT

Old paddle boats sit on the banks of the dried river Zayanderud, the largest river of Central Iran.



GUEST SPEAKERS: NONHUMANS IN THE CLASSROOM

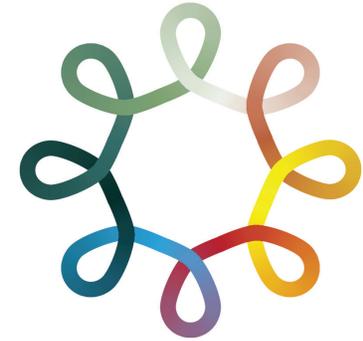
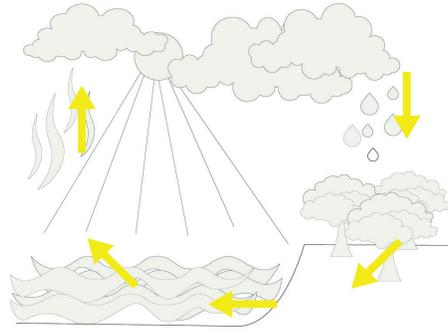
We argue that many forms of institutionalized education reinforce a separation between human and nonhuman actors. How might we reframe pedagogical tools to represent our interconnectivity and change students' understandings of the world?

To the right of the water cycle is another diagram that charts water as it interacts with humans and other nonhumans. In it, water loops through the human body, breeds microorganisms in waste streams, boils in the cooling towers of human power plants, absorbs sulfur dioxide in the lower atmosphere, falls into the ocean, and is worshiped along the way. Where its precursor fails, this model represents the exchanges that happen as water evaporates and precipitates, at many different scales.

As a first attempt to explore other ways to represent learning tools and how they shape our perception, we hosted Assumptions in the Anthropocene, a transdisciplinary design workshop hosted at VergeNYC¹. We led teams of teachers, designers, and other professionals to reinvent the ways we teach about nonhumans, specifically by investigating and subverting the process of othering nonhumans.

We designed frameworks for participants to deconstruct three science models: a flood map, an anatomical diagram of a frog, and the water cycle. First, we asked people to list the human elements (broadly defined) represented within those diagrams, then list the nonhumans. Next, participants discussed the overlap of those categories, discussed our interconnectedness, listed relevant parts of those non/human systems that were not originally represented, and finally redesigned more inclusive models.

In the flood map, participants discussed floods as human constructs (a danger to whom?),
1. VergeNYC is an annual transdisciplinary design conference at the intersection of practice and the academy.



the economic values of rivers, insurance, and scales. While re-envisioning the representation of a frog's anatomy, participants listed things like amphibian lifestyle, shared ecosystems, reproduction, and gender conversion.

This workshop was a compass for us. It placed our ecocentric futures worldview within the field of pedagogy and allowed us to explore the tools of our formal acculturation.

“We decided to follow the cycles that water would go through in different ways...through the circularity of it. The idea is that there is no beginning and no end to this so that you could step into this experience at any point.”

—VergeNYC Participant, Assumptions in the Anthropocene.



TOP

Water cycle model taught in high school science classrooms to left. New model designed at VergeNYC to the right.

MIDDLE & BOTTOM

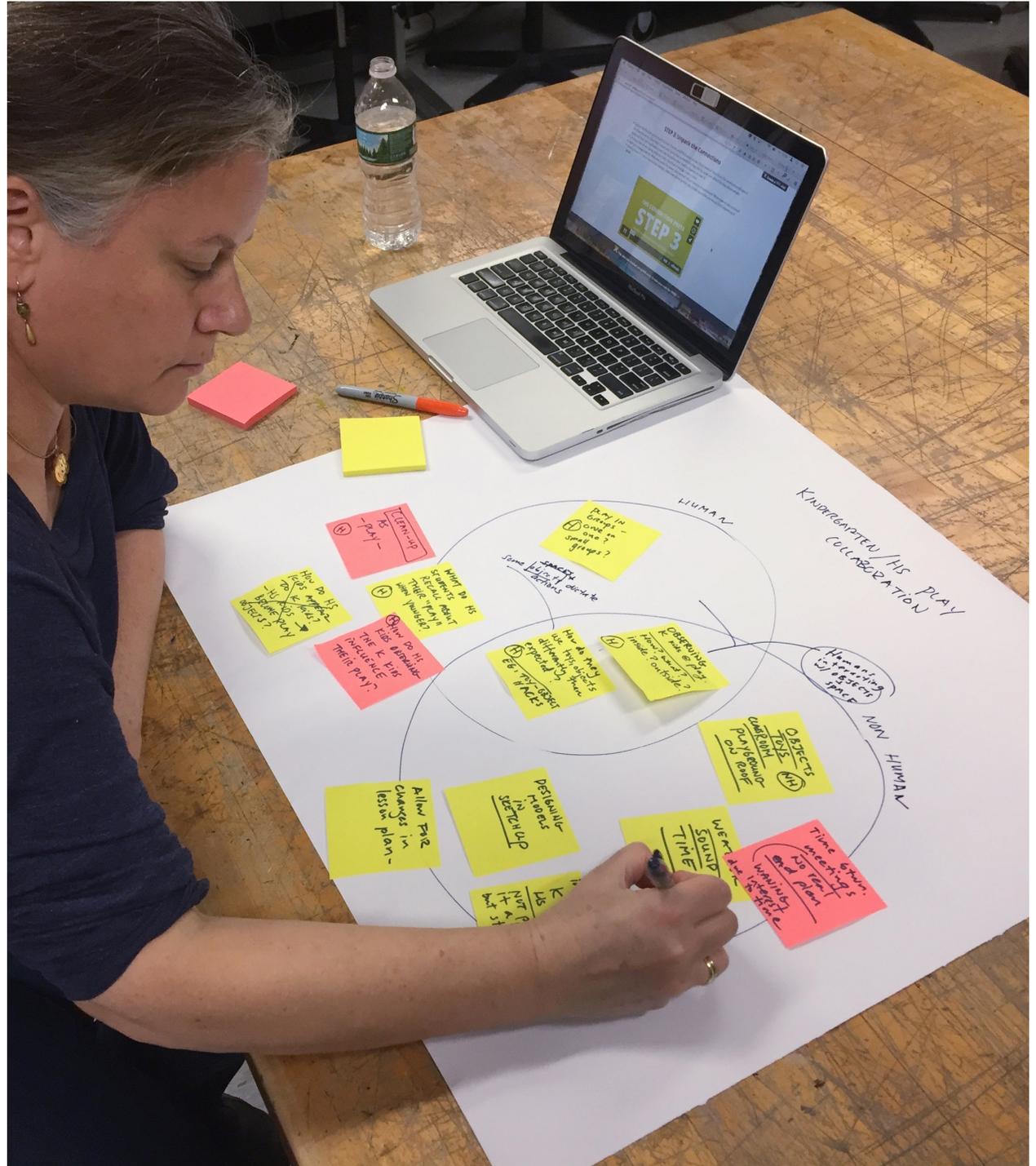
Workshoppers at VergeNYC design a new model to represent water's cycles at different scales.

CONNECTION PRESS

Would it be possible to walk faculty through the process of creating an ecocentric curriculum, so that they might be able to develop something they are comfortable teaching?

We created a standalone, online platform called the Connection Press that led viewers through the framework we tested at VergeNYC, using their lesson plans instead of educational models. We tested the platform with two Dalton teachers, both of whom were quick to take up the tool and find generative ways of using it—just not the ways we had expected. One teacher used it as a way reflect and rebuild a course focused on sensory experience in playground construction, and another teacher came up with ideas to revise teaching as a practice, specifically in refugee camps. Neither redesigned lesson plans addressed nonhuman/human interconnectivity directly.

While testing the Connection Press, we discovered both teachers were very comfortable with design frameworks—many open source lessons include them, and they are adapting new ones they see during work with other designers. We saw this as a pathway, a medium through which we might offer tactics from our Middle Table research.



RIGHT

The Dalton School teacher analysing their course on connection press framework.

CASE STUDY

—RIVER SPEAKS

Based on our Design-led research we concluded that designing new curriculum would give us an opportunity to embed the linguistic tools for translation we developed into assignments or classroom prompts.

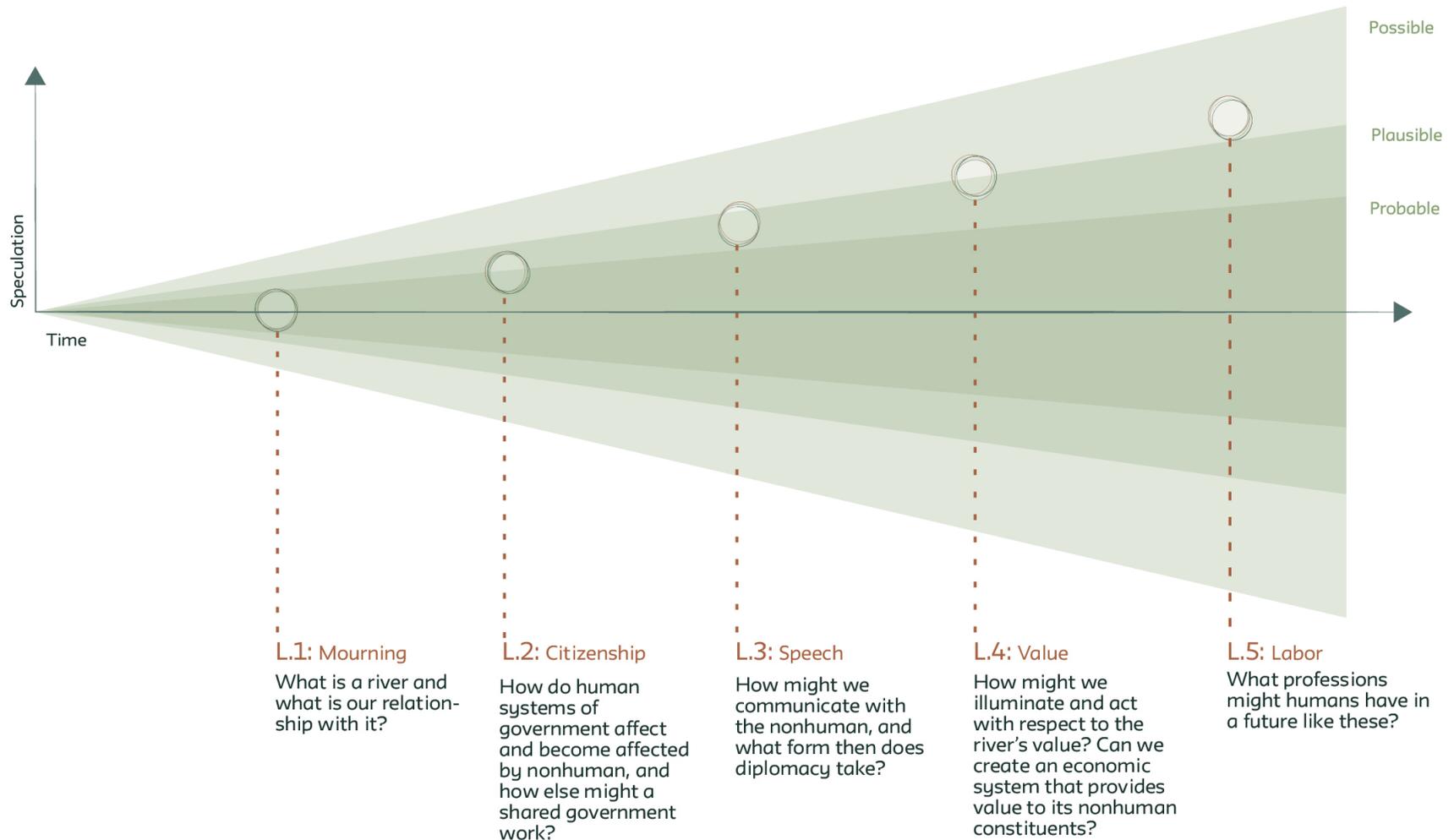
From these hypotheses, we have designed The River Speaks, a set of lesson plans that challenges traditional notions of the nonhuman. The lessons prompt students to speculate on possible new definitions, institutions, perceptions relationships, rituals and technologies that might be needed in a reality that recognizes nonhuman agency; reflect on the cultural shifts that might happen (both good and bad); then backcast onto our contemporary condition.

In this context, design fiction might work best. Rather than only creating a new learning tool, we can design a new world around it, rich with different prompts a teacher and her class might use to explore it. The personas and institutions that we created, because they are fictitious, avoid the polarized and predictable debates around environmental issues and draw students into an original co-creation of a world in which nonhumans have recognized agency.

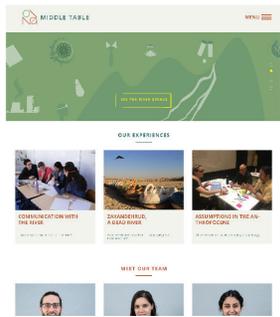


LESSON PLAN

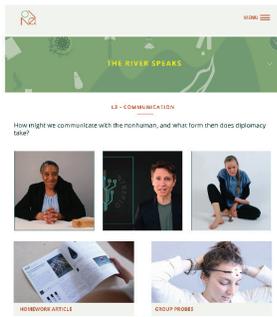
The following sub-chapters describe the conceptual reasoning for each of the lessons, discusses specifically the way each builds on the prior, and serves to foreground the essential questions students might be tackling. Following these overviews, we describe in greater detail the specific teaching tools, strategies, prompts and learning objectives we developed for Lesson 3—which we used to test and iterate the entire curriculum. The final chapter describes the ways *The River Speaks* might be implemented into high school curriculum.



A TEACHER'S JOURNEY



ONLINE: Teachers access Middle Table stories and blogs.



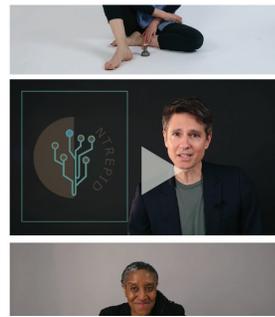
ONLINE: Teachers download frameworks and probes.



HOMEWORK: Students read "The Communication Race".



IN CLASS: Teachers group students and distribute probes.



IN CLASS: Students watch worldview videos.

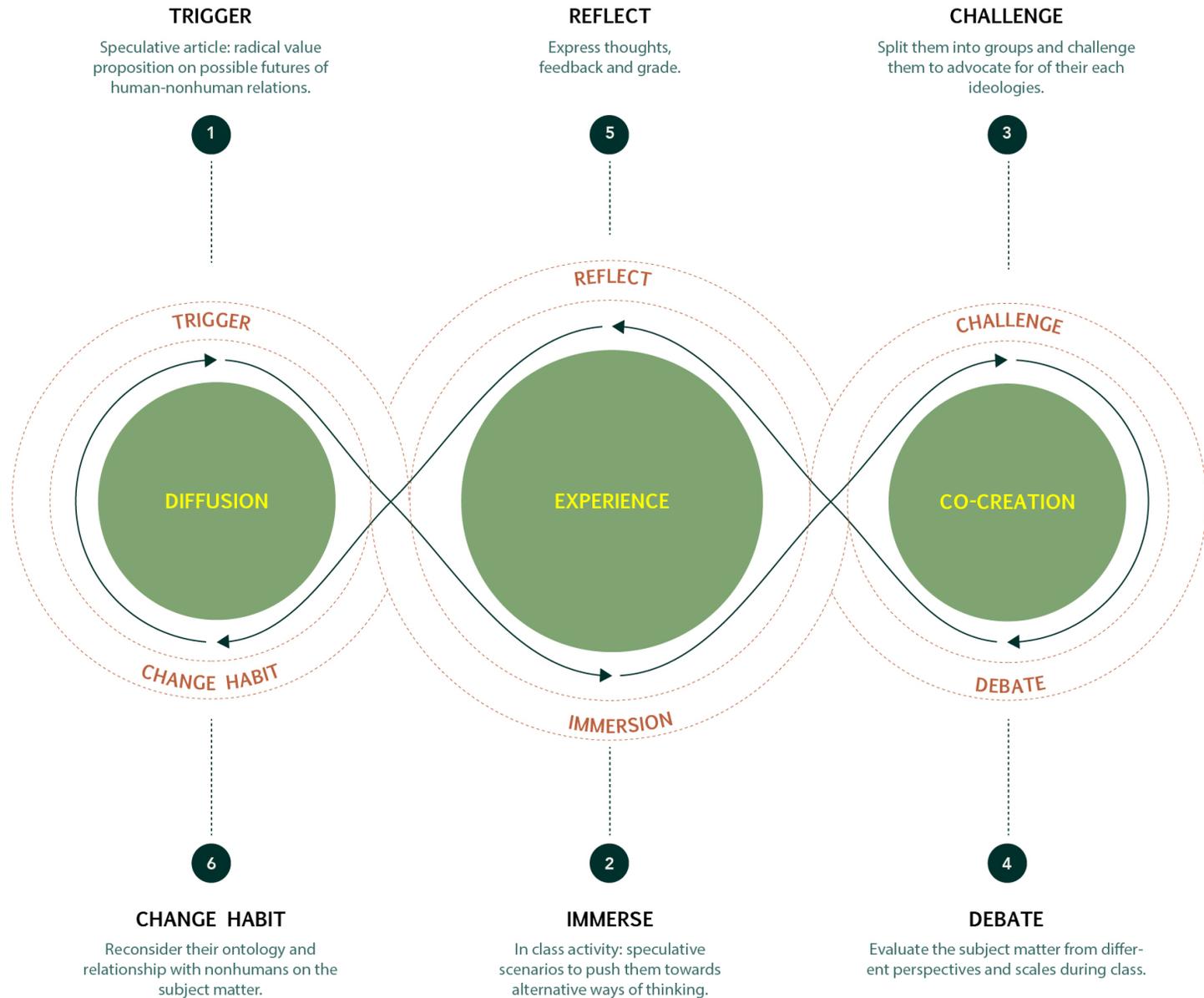


IN CLASS: Students use frameworks to guide discussion.



HOMEWORK: Students reflect and respond to the prompts.

A STUDENT'S JOURNEY THROUGHOUT THE CURRICULUM



The pre-class read: Postscreen magazine, published a review on different communication tools invented by three groups in 2042. The article, "The Communication Race: Who Understands River Best?" foreshadows a stark difference of opinion between different groups of humans about how best to communicate with the river.



Postscreen

The Communication Race: Who Understands The River Best?

By Martha Heidan
April 23rd, 2042

Following the passing of the River Restitution Act last month, the industry was abuzz with attempts to address the lack of technological solutions, while activists were proclaiming that they (as "part river" themselves) had the authority to speak on the river's behalf. Today, Congress announced a design challenge and a special funding stream for the development of new communication technology and nonhuman diplomacy. As developers and activists from around the world take up the challenge, we will review three precedents on the market today.

01 Bioengineered Forensic Microbes

Developed by the Earth Systems Embassy



This kit is only accessible for approved ESE. These carbon footprints meet the highest standards.

The ESE was the first organization to reveal a solution for limited communication with the river. Created in partnership with seven North American universities including Princeton, UPenn, CalTech, and MIT, their engineered microbes allow ESE diplomats to identify the point in a river's life cycle when it was damaged. These microbes will interact with the genetic histories of the river derivative trauma measured in microbial DNA. Depending on historical pollution, these chain reaction experts standing by. According to officials, two drops of the microbial solution are enough to accurately estimate damage to up to 130 square meters of river water.

This tool helps ESE employees determine the source and timing of river-based pollution and thus compile proper legal documentation for the distribution of river reparations. These microbes are packaged in a set of three vials, protected by fingerprint security.

02 Grindsh

Grindsh is a novel communication tool that allows nonhuman entities to interact with humans. It is a small, handheld device that can be used to communicate with the river. It is a small, handheld device that can be used to communicate with the river. It is a small, handheld device that can be used to communicate with the river.

While we do have to take the time to develop the technology, the benefits are worth it. The river is a living entity, and it deserves to be heard. The river is a living entity, and it deserves to be heard. The river is a living entity, and it deserves to be heard.

As the ESE, we have a responsibility to the river. We have a responsibility to the river.



The Grindsh is a novel communication tool that allows nonhuman entities to interact with humans. It is a small, handheld device that can be used to communicate with the river. It is a small, handheld device that can be used to communicate with the river.

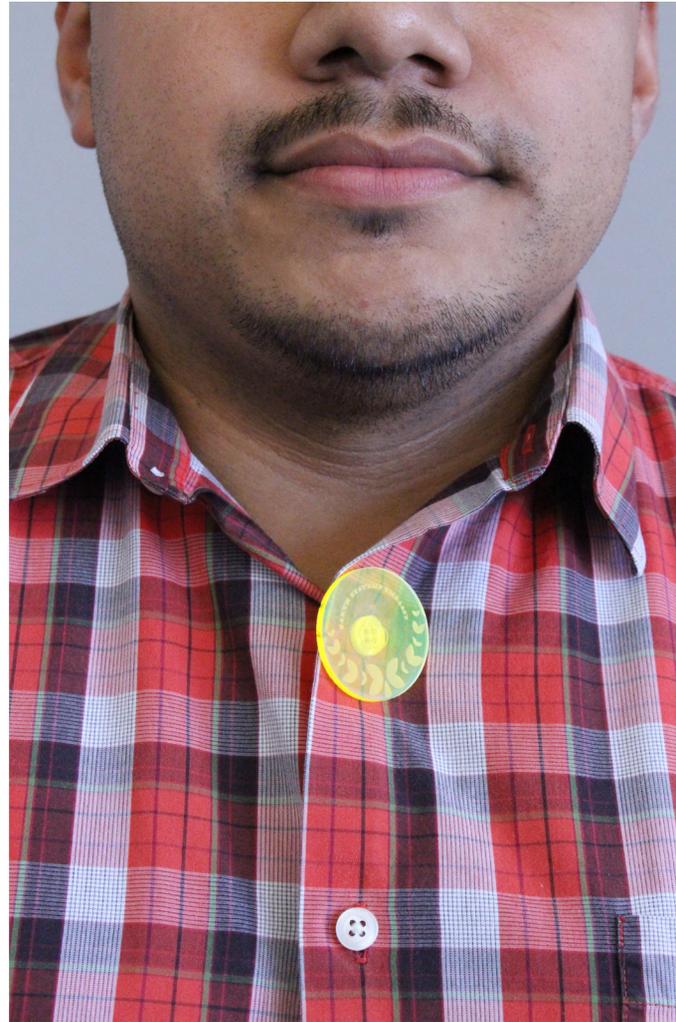
03 Inventor Unknown

A human need to create new gadgets to communicate with the river. Some would say no—like any number of gadgets already out there. The river is a living entity, and it deserves to be heard. The river is a living entity, and it deserves to be heard. The river is a living entity, and it deserves to be heard.

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TEAM IDENTIFIERS

After dividing students into three groups, teachers will distribute probes for each. The probes's purpose is to help students immerse faster in their roles and engage in fun interactions. Intrepid, Earth System Embassy and Intercons each have their own identifiers.



IN-CLASS EXPERIENCE

The latter is a set of three recruitment videos produced by groups of humans with diverging worldviews, all of whom are attempting to communicate with the river. Using role-play and embodiment, the training videos appeal to their new recruits, make clear the specific worldview of the organization's leadership, and clarify some of the stakes they see attached to the project of nonhuman communication.

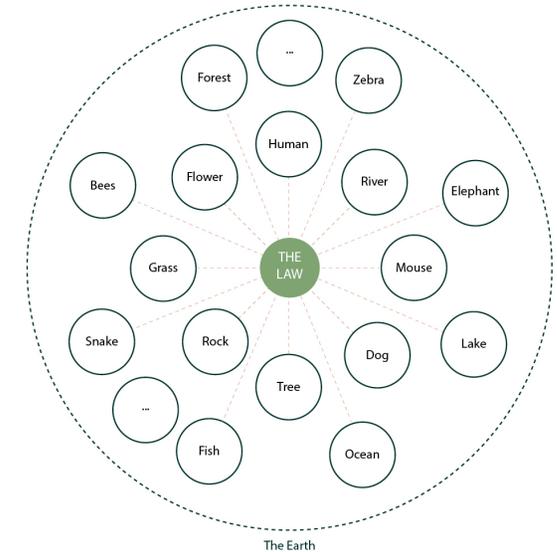
EARTH SYSTEM EMBASSY



The Earth Systems Embassy has been entrusted with the responsibility of deciding the size, source and eventual use of reparations paid to the river. Positioned as a kind of public gatekeeper, they are seeking new strategies for communicating with nonhuman constituents, and for determining the river's preference for how it might want its awarded money spent. "The Communication Race" article features ESE's bioengineered forensic microbes, which interact with the genetic histories of the river metabiome to catalyze different signal patterns based on derivative trauma measured in microbial DNA.

Crafted in part as a reflection of Latour's "parliament of things,"⁴⁷ the Earth Systems

Embassy is another possible manifestation of nonhuman voice in governance. Though it may be mired in bureaucratic process, the embassy is, at its core, formed to serve its nonhuman constituents—perhaps similarly to an ethos of stewardship,⁴⁸ but slightly less anthropocentric (is it patronizing to assume humans are needed to protect nonhumans? What about nonhuman infractions upon human citizens? Their cultural contributions?). The embassy may be subject to political wranglings in the halls of human government, but ultimately it is not a commercial institution; its assets are based on strong relationships, not financial investments.



TOP LEFT

Still from a training video of the Ambassador of the Earth Systems Embassy addressing new recruits.

TOP RIGHT

The Earth Systems Embassy's bioengineered forensic microbes.

BOTTOM RIGHT

The Earth system Embassy's vision of communication with rivers. They use law as the communication tool for managing humans/ non-humans relations.

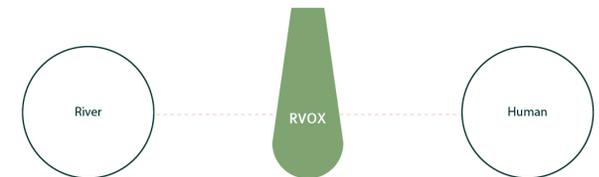
NTREPID



nTrepid, an ecological tech start-up, is perhaps at the forefront of this communication race, and has just entered a compelling bid on the embassy's RFP. As discussed in "The Communication Race," RVOX is a smart-sensor with a sophisticated understanding of river health, calculated through a triangulation of water pollution readings, fish mercury levels and evaporated water quality on the river surface.

nTrepid's leadership has enormous confidence that technology can solve this language barrier, and they have set out to develop a device that will serve as interpreter. Despite their lofty aims, nTrepid is dealing with conflict-of-interest complaints on the grounds that any new technological developments may not be completely objective, given the company's investors likely owe a fair sum in river reparations.

Students playing the role of technologist must begin either to define the river and its voice in a measurable way—like the Hudson River Equation—or seek to reimagine a technology that makes its judgements based on something else. They are cast as technological optimists, yet because of the allegations calling their neutrality into question, they must proceed with a deliberateness and attention to competing perspectives. Students ultimately explore how the tools we use affect our ontologies.



TOP LEFT

Still from a training video of nTrepid CEO introducing their newest technology.

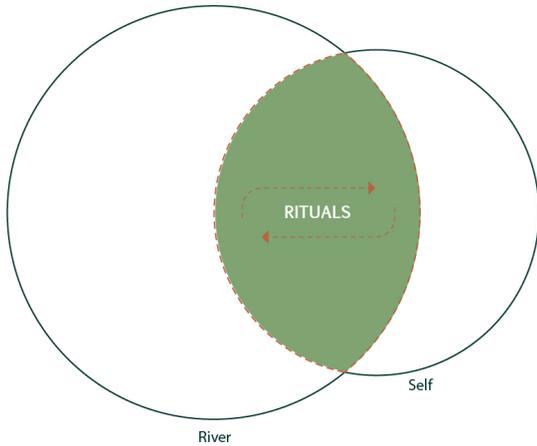
TOP RIGHT

nTrepid's newest product on the market RVOX, which reads river's speech through its sensors.

BOTTOM RIGHT

nTrepid's worldview diagram: communicating with rivers through sensors and technology.

INTERCONS



TOP RIGHT

Still from a training video of the Intercon addressing new recruits.

TOP LEFT

Intercon's grinder is a tool used during ritual ceremonies to thank the river.

BOTTOM LEFT

Intercon's vision of communication with the river: they consider themselves as one with the river and have developed rituals to maintain this relationship such as languages and grinder tools.

The intercon, as they call themselves, are an affinity group who have been so completely acculturated to understand their interconnectivity with nonhuman actors that they no longer identify simply as humans, but as networks of species. They have developed new language, including a new pronoun, that better expresses this identity. Most intercon spend their days finding ways to subvert institutions they view as anthropocentric, or staffing elaborate cooking exercises designed to make palatable all manner of matter pulled from the river's ecosystem.

Their logic for the former is that these institutions, by maintaining a separation between the networked elements of an ecosystem, further assert an antiquated colonial-industrial fracturing of the world, and often fail (or refuse) to acknowledge the preferred identity of the intercon. Their logic for the cooking rituals stems from a

desire to demonstrate their interconnectivity through a rejection of industrialized agriculture and a return to hyper local consumption. In fact, "The Communication Race" attributes the development of the Grindsh, a powerful but primitive grinder used in these cooking rituals, to the intercon, though no specific inventor is known.



ESE

You are the diplomat by the "Earth Systems Embassy" such as river

Given your group's particular viewpoint about the river, who might be the most in river reparations?

01

→ big corporations that pollute the river
→ polluters



nTREPID

You are the Tech firm founder, you are tech oriented, like a startup, twist, and you

Your newest technology

Given your group's particular viewpoint about the river, who might be the most in river reparations?

01

Corporations that have polluted and damaged environment in ways such as deforestation, pollution and global warming

03

ASSIGNMENT: Pick one of the following and record a video appeal. Upload to the google folder located here: goo.gl/INPwSt

Make a case to nTrepid that they should include humans in their algorithm.

Make a case to the ESE for why they should give you reparations.

Make a case to the ESE for how river reparations should be spent.

Make a case to nTrepid about what they should measure in their technology.

Make a case to nTrepid about what roles technology could have that aren't about measurement.

Make a case to nTrepid about what roles technology could have that aren't about measurement.



INTERCON

You are the activists at heart. Activist might not even be the right word to describe you because doing this is not something you do but something that you are. An identity you identify with. You and the river are one. You believe that the water you drink from the river, enters your body and your body become a core vessel of the water cycle, and you are finally joining a "community" of like-minded thinkers that will claim their rights.

You even have your own pronoun. You refuse to go with the very "human centered" You pronoun and instead go with RE as your pronoun. You are so in sync with the river that you've added the river sound to each verb in your language. You embody the river and the river embodies you. You eat from the river itself, you have sets of tools: rock grinder, seaweed curler, soil mixer etc.

01

Given your group's particular viewpoint about the river, who might owe the most in river reparations?

02

What do you and your group agree and disagree with about the viewpoints and technologies of the other two?

Evil corporations that destroy RE's ecosystem ESE because they have a responsibility to us

ESE doesn't take RE seriously nTrepid doesn't take RE into account - they aren't making tech for RE

03

ASSIGNMENT: Pick one of the following and record a video appeal. Upload to the google folder located here: goo.gl/INPwSt

Make a case to nTrepid that they should include humans in their algorithm.

OR
Make a case to the ESE for why they should give you reparations.

OR
Make a case to the ESE for how river reparations should be spent.

OR
Make a case to nTrepid about what they should measure in their technology.

OR
Make a case to nTrepid about what roles technology could have that aren't about measurement.

DEBATE

Immersing students in three worldviews—often in tension with one another—generated lively conversation about the plausibility of expansive river rights. Even though the videos were situated in the future, the ideologies they were conveying were quickly compared to analogous situations in contemporary socio-political debates. Students, asked to make decisions on behalf of an imagined constituency, began to lean on more familiar politics. That fusion led to useful debate.

BOTTOM LEFT
Students doing the challenge and discussing the ideology within their team (Intercons)

BOTTOM RIGHT
nTrepid's recruitment video playing in class during the testing session.

