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Radical Water

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> Water is everywhere before it is somewhere. . . . It is a terrain that challenges assumptions, reminds us of our fallibility, accommodates complexity, and locates our horizon. (Anuradha Mathur and Dilip da Cunha 2014, x–xi)

"There it is—take it!" With this legendary short dedication speech, William Mulholland, superintendent of the Los Angeles Water Company, opened the Los Angeles Aqueduct in 1913 (Mulholland 2000, 246). As chief engineer, he envisioned and supervised the project to bring water from the Owens River Valley across 220 miles of rough, mainly desert terrain to Los Angeles through an elaborate system of canals, syphons, tunnels, and pipes. More than one hundred years later in 2020, on the other coast, New York City mayor Bill de Blasio warned citizens of the potential effects of Tropical Storm Isaias: "Take this very seriously" (Schuman 2020). This seems to be a big leap forward. The mayor's warning recognizes that water is not just a passive substance to be funneled into human projects. It recognizes that water has power: the power of deadly flooding, the capacity for wreaking havoc on human structures. The mayor's call can be seen as a call to war on water. Water is the enemy, the Other. We need to arm ourselves and fortify the city: the water will come.

Here I argue for another way of taking water seriously: a relational way. This perspective acknowledges that water is always in relation; it is not the enemy, the Other. Water has become the enemy because of our own engineering designs for controlling it and separating it from us, from the land. To acknowledge water as intrinsically relational opens a different sense of water and a different water. It entails a shift from modern water to relational water. In this shift it is no longer water as such that causes floods and problems, but *modern* water that is at fault. I show how water, in engendering this move, has agency. I argue that water, therefore, is radical.

Jamie Linton coined the term *modern water*. The term elucidates how water in the modern era (from the Scientific Revolution in the seventeenth century and the eighteenth-century Enlightenment until now) has become homogenized and universalized into H_2O and how this reduction came to be understood as water's true essence, its basic nature. It denudes water of its ecological, cultural, social, and political dimensions and relations, making it easier to manage (Linton 2010, 7–8). Maria Kaika points at the "productivist instrumental rationality that came to permeate all facets of modern life," fueled by a strong belief in "human emancipation through the domination of nature." This nature/society dualism came with "a fragmentation of everyday experience, and the increasing commodification of everyday life" (Kaika 2005, 12–13). Modern water, "as the dominant, or natural way of knowing and relating to water, originating in Western Europe and North America," had come to operate "on a global scale by the later part of the twentieth century" (Linton 2010, 14). Linton argues that the so-called crises of water scarcity, of water pollution, are not crises of water per se, but crises of *modern* water: "modern water itself establishes the epistemological conditions that inevitably give rise to crisis" (23). He calls for the adoption of more flexible hydrosocial relations. It is the "relation that defines the essence of what water is" (223). In this primacy of relation, knowing water is a product of engagement. Radical water is relational.

In "Indigenous Peoples and the Politics of Water," Melanie K. Yazzie and Cutcha Risling Baldy develop the notion of *radical relationality* (Yazzie & Baldy 2018, 2). It is a term "that brings together the multiple strands of materiality, kinship, corporeality, affect, land/body connection, and multidimensional connectivity coming primarily from Indigenous feminists. . . . It provides a vision of relationality and collective political organization that is deeply intersectional" (2). Relational water is no longer a resource, but a relative "with whom we engage in social (and political) relations premised on interdependence and respect" (3). Fostering radical relationality is part of a collective, cooperative struggle to build "vibrant alternative futures. . . . How we struggle is how we remember, how we live . . . It is how we *relate*. This is what water teaches us" (12). Leanne Betasamosake Simpson in *As We Have Always Done: Indigenous Freedom through Radical Resistance* (2017) emphasizes the central place of storytelling in imagining radical futures. Radical resurgence happens through the radical diversity of everyday stories.

Modern water, homogenized and contained, is cut off from stories, from relations. It means other entities have also been cut off, contained, and homogenized. Swamps and wetlands are drained, aquifers pumped dry, rivers diverted—to be used for agriculture, for development. Water's isolation, water's separation from relation, makes water bodies measurable, static, determinate, facilitating domination, exploitation, commodification, and colonization of water and of everything with which it was in relation. Furthermore, by separating water from relation, making it modern, a line is drawn which makes water the Other; in crossing this line, modern

water creates the notion of flood. Relationality, on the other hand, entails absence of hard boundaries; its intrinsic diversity displays fuzzy boundaries of indeterminacy and complexity and, therefore, is harder to control. There is unpredictability and uncertainty. Contained and restrained water becomes modern water, global water, a commodity, an asset performing increasingly well on stock markets.

Contained, diverted, dammed, homogenized, cut off from its relations, water snaps, as in Sara Ahmed's (2017) "feminist snap," a "collective snap," not "a single moment of one woman experiencing something as too much," but "a series of accumulated gestures that connect women over time and space" (200). With many different bodies of water impacted, water's "series of accumulated gestures" includes a range of manifestations. The disappearance of springs, the shrinking of small lakes, the rising of the sea level, which pushes the groundwater up and makes pollutants, stored in the soil for years, for decades, suddenly surface, bleeding in the air, in the water. Stratified rivers keep flooding houses built all the way to the waterfront, washing away cars, streets, vegetation, things, animals, humans. Melting glaciers crashing into dams leave small villages covered in mud floods laced with debris. These are, in Linton's terms, the crises of modern water.

When water snaps, it becomes radical. It refuses to be reduced to simplicity, to the impacts of modernity. Stressed to its limit, water demands radical change—change in how we deal with climate change, with hydroelectricity, with irrigated agriculture, with river "management," with city planning, with building codes, with plastics, with fracking. Radical water demands radical change in our thinking and doing.

Water is radical because it provokes fundamental questions. As Mathur and da Cunha state, water "is a terrain that challenges assumptions, reminds us of our fallibility, accommodates complexity, and locates our horizon" (Mathur and da Cunha 2014, xi). What is not in its terrain?

Fluid and ephemeral, water is the bedrock of the world. Water orients us, shows us how boundaries are interrelated, and not just hard walls; water shows us soft versus hard approaches. It teaches a shift in mentality, in modes of thought, in ways of operating; it teaches us how to live *with* water instead of conquering and dominating it. Underlying this mentality shift, in which water is taken seriously, is a radical incommensurability with the modern conceptualization of water, with how we think we can manage and control "it." Radical water demands a radical overhaul of our conceptualization of water, of our planning and managing water as a separate entity. The incommensurability is on the level of epistemology, ontology, ethics, and aesthetics. It changes what counts as progress, certainty, justice, efficiency. It affects how we conceive of boundaries, time, place, space, relations.

Radical water is multiple. There is not just one way of water. There are many ways of water, and many ways of knowing and experiencing water. Multiplicity and complexity are intrinsic to water. Water is always in relation; it *is* relation. Therefore, it is multiple. Humid, wet, fluid, and frozen, it makes mountains crumble, trees stand straight, people fight and celebrate. Water rhizomes into relations, ramifications,

and constellations. It is omnipresent, evanescent, liquescent, ephemeral, multidi-mensional, gestational, conceptual, virtual. Water engages actively and passively; it drips, sits, sinks, mists, dissolves, melts, oozes, flows, freezes, rains, cascades, evap-orates. Because of its relationality, it does not let "itself" be reduced to simplicity, to an incapacity to act. Its "self" is many. Its being *is* becoming. It embodies concepts, rituals, politics, ideas, and ideals. Embodied, it is in other bodies, in other environ-ments, and provides environments for other bodies. Inside and outside, interior and exterior interchange; water is mist, rain, a terrain, mud, microbial, intesti-nal, virtual, and cyborgial. It gives life and takes lives; it can be abundant, scarce, present, absent. It challenges clear-cut divisions and oppositions, undermines categorizations, messes up lines of separation, laughs at institutions, builds and resists infrastructures. It leaks, overflows, erodes, spreads, disappears, dilutes, and pollutes. Being in relation, water is fundamentally indeterminate. Radical water undermines its own categorization as a clear-cut separate entity. It cannot be cut. When it gets cut, it bleeds. When it is confined, it snaps.

Water is complex in its ontological, sociological, political, hydrological, epistemo-logical, religious, cultural, ethical, experiential ways. Water itself shows the above, as we will see below. Water engenders activism and advocacy. Water is prehuman, posthuman, nonhuman. We are not at its center. It is at our center. Water is radical.

In this chapter I look at how we live with water differently by transitioning from modern water to relational water. I look first to "hard" responses to events such as Hurricane Sandy in New York and the beginnings of such responses with the Dutch and nineteenth-century "progress" as lenses for close examination of the colonization of water. I then turn to New Orleans to weave in an Indigenous per-spective of relational water. I argue that colonizing water is already made visible by mere lines on maps. Seeing these lines as instrumentalities of progress distorts our very understanding of water, cutting us off from relational water. I present an integrated understanding of water that could reengage our relationality with water. This mentality shift looks to the notions of sedimentation and reactivation in the philosophy of Merleau-Ponty, as well as to the actual workings of sedimentation and reactivation in the processes of meandering—the dynamic relation between water and land/sediment. Finally, recent thoughts from designer Dilip da Cunha and engineer Klaus Jacob on the relation between water and land and the impact of colonial thinking on water round out my considerations of modern water. I end with how we might liberate water and ourselves by embracing radical relationality, by looking to water to guide us.

MADE LAND

Mulholland's pointed 1913 dedication speech, "There it is, take it," was the inau-guration not just of an aqueduct, but of an era, a new mentality, a new lifestyle, a new mode of water: modern water. Water was to be taken as part of a "trajectory of modernity, of progress by controlling nature for human use" (Klaver and Frith

2014, 520). One hundred years later, New York City was compelled to take the water seriously. In October 2012, Hurricane Sandy hit New York, "flooding more than 88,000 buildings in the city, killing 44 people, and causing over $19 billion in damages and lost economic activity" (Goodell 2017, 147). Sandy was fresh in New York City's memory when eight years later Mayor Bill de Blasio warned NYC citizens about Tropical Storm Isaias: "Take this very seriously." Goodell called Sandy a "transformative event" (147). But to what extent did it change relations with water *radically*?

When the Dutch expanded their colony of New Amsterdam on Manhattan Island in the early seventeenth century, they had already mastered an extensive engineering know-how of windmills used for milling grains and reclaiming land from water (Klaver 2016a). The colony was initially built around Fort Amsterdam (1626), to protect the beaver pelt trade of the Dutch West India Company against looming attacks from other European colonial powers in contestation over the entrance to the Hudson River. The fort functioned as a warehouse for company goods, but also as a safeguard for the settlers' farms and investments. To legally guarantee the safety of the new possessions, the Dutch had "purchased" the island of Manhattan from the Indigenous population in 1625. The new "owners" built sawmills and flour mills, turning the island's many creeks into hydropower. Flour became an important trade good, as did beaver pelts. Flour barrels, beavers, windmills, and the presence of Indigenous and colonizer populations are all symbolized on the seal of the City of New York (figure 3.1).

The City's website describes the two men supporting the shield as follows:

> Supporters: A sailor on the left, his right arm bent, and holding in his right hand a plummet; his left arm bent, his left hand resting on the top of the shield; above his right shoulder, a cross-staff.
>
> A Native American of Manhattan, his right arm bent, his right hand resting on top of the shield, his left hand holding the upper end of a bow, the lower end of which rests on the ground. Shield and supporters rest upon a horizontal laurel branch. (NYC Green Book Highlights n.d.)

The shield shows "the sails of a windmill. Between the sails, in chief a beaver, in base a beaver, and on each flank a flour barrel." By the time the English took over and changed the name to New York in 1665, the colonial water activities of the Dutch had changed the complex water-land relations of the island.

Two hundred years later, New York had become the most important trading port and the largest city in the United States. In 1865, topographical engineer Egbert Ludovicus Viele (1825–1902) captured Manhattan's original water features, such as its shoreline, creeks, underground waterways, springs, and meadows, together with the new sewer lines, in a detailed map, his *Sanitary & Topographical Map of the City and Island of New York Prepared for the Council of Hygiene and Public Health of the Citizens Association* (figure 3.2). Viele had been a military officer in
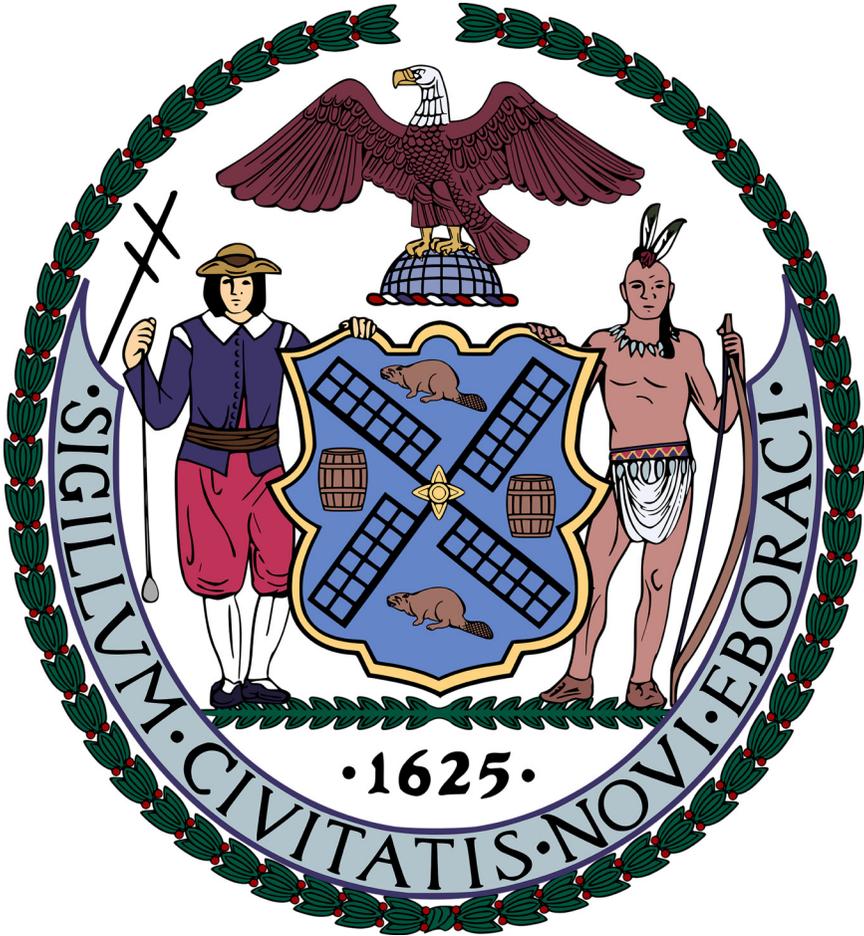
FIGURE 3.1. The Seal of the City of New York; 2015 colored rendering by K. Lefebvre of Paul Manship's authorized 1915 sculpted version of the seal.

the Mexican War (1846–48) and established a military camp at the Rio Grande close to Laredo, where several of his men died of cholera. Upon his return to civilian life, he had an important role as a civil engineer for New York City's parks. He was in charge of planning Frederick Law Olmsted's concept for Central Park, and he designed Brooklyn's Prospect Park (Segovia 2010). Then, between 1861 and 1864, Viele had various functions in the Union army in the Civil War. He was struck by the fact that the mortality rate from epidemic infectious diseases, such as typhoid, cholera, malaria, and measles, was twice as high as deaths from battle wounds (Sartin 1993, 580). Apparently, "it was said that the suffering he saw, caused by poor sanitation, motivated him to help sewer engineers by mapping the city's

FIGURE 3.2. *Sanitary & Topographical Map of the City and Island of New York Prepared for the Council of Hygiene and Public Health of the Citizens Association. [U]nder the direction of Egbert L. Viele, Topographical Engineer, 1865.*
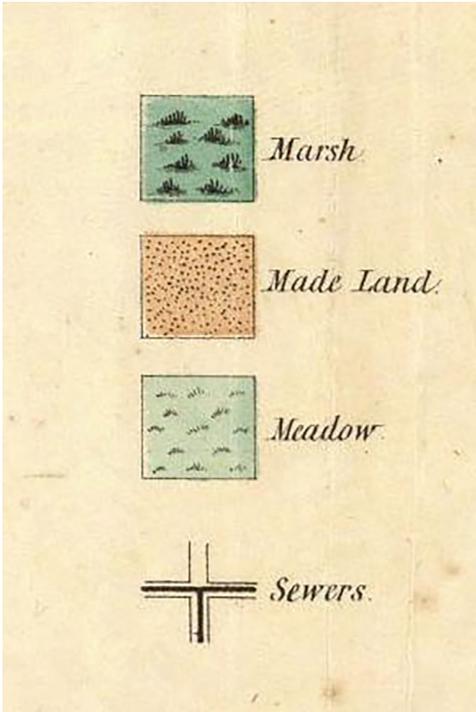
FIGURE 3.3. Legend of the Viele
Map (detail), showing three landforms
and sewer system.

streams" (Kurutz 2006). Cholera was rampant in the mid-nineteenth century, with
violent outbreaks in London in the summer of 1854 and in Pittsburgh during the
same year. Experience with the lack of sanitation pushed Viele to his meticulous
rendering—with military precision—of a new sewage map of Manhattan.

In 1874 Viele had the map republished, lifting it out of the *Report of the Coun-
cil of Hygiene* and publishing it as *Topographical Map of the City of New York:
Showing Original Water Courses and Made Land / Prepared under the direc-
tion of Egbert L. Vielé, topographical engineer*. The map showed sewer lines and
a street grid superimposed upon three different landforms: Marsh, Made Land,
and Meadow (figure 3.3). It revealed how Manhattan was once laced with pools,
ponds, creeks, streams, springs, meadows, and marshes. Modern urbanization of
the island drained, depleted, and diverted these complex water bodies; it stratified
them, paved them over, buried them under high rise buildings, and pushed most
of them off the map.

At the same time, the very incorporation of Viele's "original water courses" in
a map inscribed them in the modern project. The very act of capturing them as
static, precisely lined bodies of water on a map reduced them to modern water.
Furthermore, the very fact that Viele republished his map from the *Report of
the Council of Hygiene* independently and renamed it *Topographical Map of the
City of New York: Showing Original Water Courses and Made Land* indicates that

he foresaw that these "original water courses," captured as topographical items, would be of importance in the controlling of New York's water-land relations. And, indeed, his making visible of these already invisible waterways made and still makes Viele's map extremely valuable. It is the only map that shows the old water-ways, which is still vital information for civil engineers today in their design of buildings and site developments (Kurutz 2006). If engineers do not take them into account, these water features very likely will become "problems;" they will create a crisis. Reduced to lines instead of breathing water, sinking and soaking in the soil, bubbling in a spring, they are captured and separated. They have become modern water. They have lost their relationality. The very fact that they are captured *on* the map gestures to their fate of being pushed *off* the map.

Another significant aspect of Viele's map is his category of "Made Land." We see how by 1865 the coast of Lower Manhattan had been enlarged with a finely grained, light-brown colored ribbon of "Made Land," surrounding the end of the land arm, tight as a mitten (figure 3.4). When Hurricane Sandy hit New York City in October 2012, most of these areas of Manhattan were under water. The human-made, reclaimed land forms a hard boundary line with water: a line to be crossed, creating a flood. Being lower-lying land, it is more vulnerable to such flooding.

Furthermore, its vulnerability was increased by the human elimination of storm buffers, such as salt marshes and oyster beds. When the water came, there was nothing to slow it down. The water reclaimed its coast.

Hurricane Sandy created new words, new professions, new offices, and new projects. Whether it truly transformed a way of thinking is still to be seen. In 2018, the city's new Office of Resilience and Recovery "planned to break ground on what's called the East Side Coastal Resilience Project, a ten-foot-high steel-and-concrete-reinforced berm . . . the first part of a larger barrier system, known informally as the Big U, that someday may loop around the bottom of Lower Man-hattan" (Goodell, 146). The Big U is a typical example of a "hard" approach to water: "a solid wall—a modern rampart against the attacking ocean" (146). Instead of relating to the water, that is, working and living with it, the hard approach fights the water, walls it out. Costing billions of dollars to construct (147), the project shores up efforts to further control and contain water with more—literally "Big"—technology and engineering. As with most infrastructures that divide, the pro-posed wall building is fraught with politics: "You can't wall off the city's entire 520-mile coastline, so how do you decide who gets to live behind the wall and who doesn't?" (Goodell 2017, 148). Questions such as who is deciding, who will be ben-efiting from it, and who will be suffering from it are riddled with environmental justice issues, which are often racial issues.

The emblem in the upper-left corner of Viele's map (figure 3.2) reveals how these issues were part and parcel of the beginning of New York, at the beginning of New Amsterdam. The small emblem in the title of Viele's map is a clear reference to the official seal of the City of New York (figures 3.1 and 3.5). Like the official seal, it portrays an Indigenous man and a white man at opposite sides of a shield, which
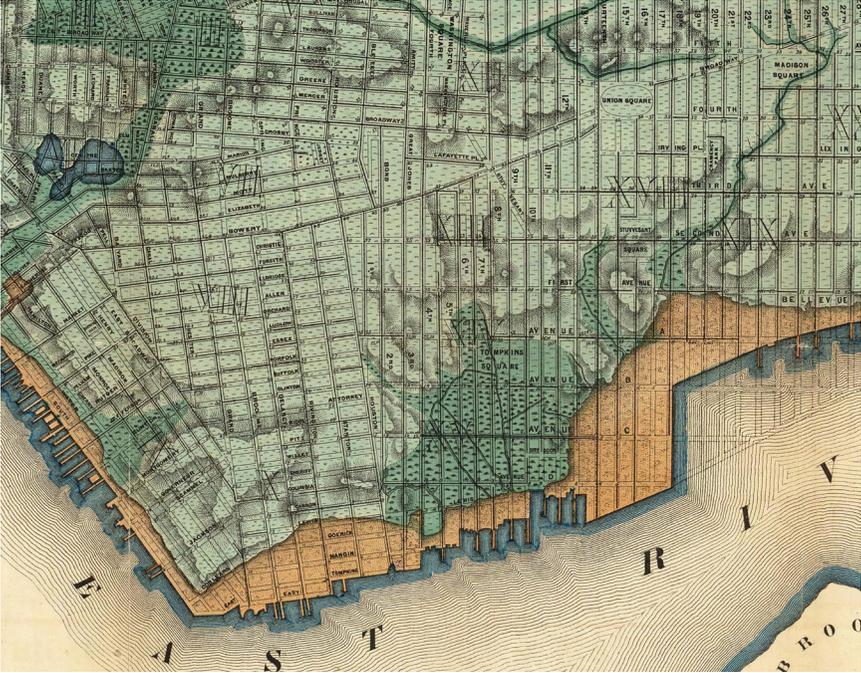
FIGURE 3.4. The Viele Map (detail), showing part of Manhattan's East Village as Meadows and Tompkins Square Park as Marsh, flanked by Made Land.
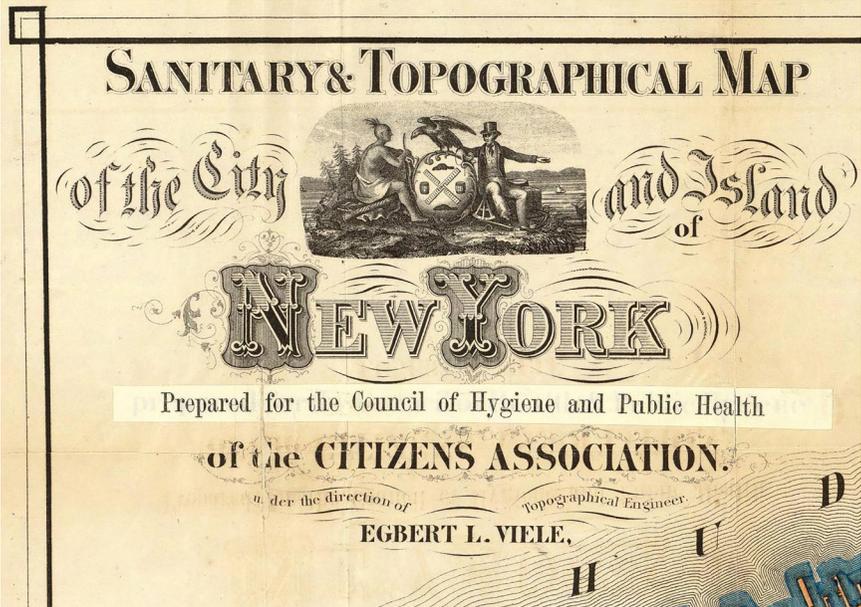

FIGURE 3.5. Title and emblem of the Viele Map (detail).

also depicts a figure X of four windmill sails, again with a beaver in the upper and lower space and a flour barrel in the left and right space. Yet, there are significant differences. The Indigenous man, now at the left side, sits on an animal hide, trees around him in the background, a cloth over his loins, a bow in his right hand, and a quiver with arrows at his right leg. He is no longer looking us in the eye; we see him in a side view: he looks attentively to the white man, seemingly listening to him. The white man is also sitting, looking partially at us, partially at the Indigenous man. He leans against the shield on his right forearm in a relaxed pose, while his left arm stretches out, gesturing over the water, over the horizon, to the wide expanse of land. A sailing ship passes by in the background, indicating more trade. The white man sits on a bale of wheat and has a measuring instrument at his feet. He is dressed in a suit and a top hat. He radiates that he is in charge. He is Man the Maker. He has the dominant position: he measures things, stakes out property, sets up his business, controls nature by subduing it. He is no longer a simple sailor, but a master of the land, the developer, the businessman. The eagle, a symbol of power on the city's seal above both men, seems now allied with the white man, eyeing the Indigenous man in a slightly threatening pose. This scene brings out the colonial relation, more subtly buried in the city's seal, where the sailor and the Indigenous man seem to have a more or less equivalent standing posture. However, the shield—and the sheer presence of a shield as such—reveals how dynamic land and water relations were on their way to being radically changed into disembodied private property lines; how Indigenous peoples and their ways of life were being driven away or eliminated; how waterways became hydropower, used for milling activities; how marshes were pumped dry; how beavers, reduced to pelts, became a valuable asset.[1] Killing beavers killed two birds with one stone by delivering lucrative pelts for trade and by eliminating streams "erratically" engineered by the beavers, keeping waterways under the control of men.

SWAMP LAND

Where the city seal of New York gestures at the transition from Indigenous ways of life to a modern settler colonial occupation of the land, Viele's emblem, and especially his map, show how by the late nineteenth century a modern mindset had become the dominant and dominating power. A long tradition of Indigenous resistance ensued. As Nick Estes writes in his book with the telling title *Our History Is the Future*, "There is one essential reason why Indigenous peoples resist, refuse, and contest US rule: land. In fact, US history is all about land and the transformation of space, fundamentally driven by territorial expansion, the elimination of Indigenous peoples, and white settlement" (2019, 67). Privileging of land is foreign to Indigenous ways of life: land was—and is—intrinsically related to water and all other beings. Estes gives a powerful account of Indigenous resistance at the

Standing Rock Indian Reservation from 2016 to 2017 to block the construction of the Dakota Access oil Pipeline (DAPL), threatening the reservation's water supply. The protesters called themselves Water Protectors; their message: "WATER IS LIFE." They stood "for something greater: the continuation of life on a planet ravaged by capitalism" (15). As Estes asserts with his title *Our History Is the Future*, Indigenous ways of life hold the future. The ways the Indigenous peoples of the large Mississippi delta lived with the complex dynamic water-land relations exemplify Estes's title. They hold the future.

At the mouth of that river delta, Jean Baptiste Le Moyne de Bienville "still roams the streets of New Orleans, the city he platted out of swamp land in 1718" (Howe 1994, 109). LeAnne Howe gives an ironic account of how the "Father of New Orleans" acquired the land for his city:

> My Choctaw ancestors called Bienville, *Filan-chi*, which is short for, "Our Frenchman, The Nail Biter." They liked him, although he was nervous and could never take a joke. The first time they invited him for dinner he started making problems that have continued until now. (109)

Howe tells how dinners in those days were collective events, carefully orchestrated, lasting days, a week, full of jokes, gossip, exchanging information about what was going on where, what other tribal bands were up to, and what the white men were doing. Tone deaf to cross-cultural understandings, Bienville scoffed at the etiquette. He was out to do business. Calculated and efficient, at least in his sense of the word, he tossed "some third-rate glass beads on the ground" before the meal, and asked brusquely "if my relatives would trade them for "*un morceau de terre*" (a morsel of land somewhere) (109). Offended by the insensitive gesture and impertinent question:

> Some wanted to kill him right on the spot; others thought of torture. Elders prevailed and decided to have some fun and give him what he wanted. Sort of. They traded him the swamp land that belonged to our cousins, the Bayogoulas. That's right. Swamp land. (109)

In exchange, the Frenchman gave the Choctaw tools, pots, rifles—and, yes, also the beads. They shared everything with their cousins.

> When my relatives told the Bayogoulas what happened, they went four paws up, laughing, because the land that had been traded was a huge flood plain. Six months out of every year it was knee deep in water, snakes and alligators. Nowhere were there more mosquitoes than on that piece of land. (109–10)

Quite some time passed.

> Then one afternoon a group of Choctaws were tramping through the area and stumbled across *Filan-chi* and his soldiers camping, now get this, in two feet of water. . . . My grandfather called to him from higher ground. . . . "*Filan-chi* what are you doing

down there?" . . . He was flailing his arms like a lunatic and babbling on and on. The gist of his harangue . . . was that the land was his. The end. (110)

Bienville went on to say that

the bayous had overflowed so furiously that he and his men had been four months in waist high water. My grandfather had to turn away to keep from laughing himself silly. . . . my relatives left him there, soaked to the skin, standing in the middle of "*New France.*" And it wasn't until much later that we realized the joke was on us. (110)

Bienville founded New Orleans in 1718. When he saw the natural levees—the result of the sedimentation of the meandering river—in the crescent bend of the Mississippi, he saw protection from river floods, from hurricanes, and from tidal surges. And he saw unlimited promise for trade, being "near the mouth of an enormous system of navigable waterways," with the Gulf of Mexico as "a gateway to the ports of the Americas, Caribbean, and Europe" (Kelman 2003, 6).

In *A River and Its City: The Nature of Landscape in New Orleans*, Ari Kelman calls the Mississippi delta "otherwordly" (2003, 4).

It is a place of seemingly endless interconnected marshes, swamps, and bayous, with little solid land anywhere in sight. Cattails, irises, mangroves, and a wide variety of grasses thrive in the delta's soggy environment. Muskrats, otters, minks, raccoons, and of course alligators all inhabit this watery world, while crawfish . . . burrow in a constantly replenished supply of muck. Much of the delta remains a wetland wilderness—a great place for fish . . . but a forbidding location for a city. Yet that is exactly what people have done there.

The white settlers, that is. The Indigenous peoples, including groups of Choctaws, who lived in the delta for millennia, did not establish static settlements; they accommodated the dynamic water-land configurations, living and moving with constantly changing constellations. As LeAnne Howe narrates:

Among Indian tribes in the southeast, there was a continual rhythm of exchange. They gave, we gave. We gave, they gave. That's how things had been done for about 2000 years until *Filan-chi* showed up. I'm not kidding; no one had ever wanted land, forever. This was an anomaly. This changed all rules of government-to-government cooperation. We had no idea how to proceed. (Howe 1994, 109)

The Choctaw had no idea how to proceed in the modernization and colonization of their lands into private property. The settlers had no idea how to proceed in the watery, muddy bayou lands.

One year after its founding, the new settlement experienced its first flood: for six months it was under half a foot of water. The French didn't leave, but dug in. They dug drainage canals in the mud and raised artificial levees on top of the natural ones. It was hard work. Bienville had taken care of that part: he had brought the first African slaves to New Orleans. They did most of the backbreaking labor: "By

the 1730s, slave-built levees stretched along both banks of the Mississippi for a distance of nearly fifty miles" (Kolbert 2021, 35–36).

The settlement of the city entailed a new relation: no longer a relational approach of accommodating the fluid water-land dynamics, but one of controlling the water into a river that needed to stay within human-made "banks." The river didn't conform. A game of cat and mouse ensued: miles of higher, broader, and longer levees were erected—and breached. By the twentieth century, the U.S. Army Corps of Engineers was in charge of extensive levee systems, navigation locks, concrete revetments, and engineering feats such as the Old River Control Auxiliary Structure, even more near "otherworldly" than the Mississippi delta itself. "The Corps was not intending to accommodate nature. Its engineers were intending to control it in space and arrest it in time," writes John McPhee in *The Control of Nature* (1989, 10). The Auxiliary Structure was built to keep the Mississippi from jumping course into the Atchafalaya and destroying New Orleans, Baton Rouge, and all the industries built around the river. As McPhee writes, for the Mississippi, such a change of channel was completely natural: it had "jumped here and there within an arc about two hundred miles wide" (5). Major shifts like this happened roughly once a millennium. McPhee doesn't use the term, but Elizabeth Kolbert mentions that these dramatic leaps are called *avulsions*. "Because the Mississippi is always dropping sediments, it's always on the move. As sediment builds up, it impedes the flow, and so the river goes in search of faster routes to the sea" (2021, 33). The Mississippi has avulsed six times within the last seven thousand years (33). However, since the last natural shift, McPhee explains, "Europeans had settled beside the river, a nation had developed, and the nation could not afford nature" (1989, 6). Nature "had become an enemy of the state" (7). At the end of his epic saga of this ongoing battle, McPhee asked a district geologist "if he thought it inevitable that the Mississippi would succeed in swinging its channel west . . . 'Personally, I think it might. Yes. That's not the Corps' position though. We'll try to keep it where it is, for economic reasons'" (92).

One of the consequences of keeping the Mississippi where it is, to keep it from "flooding," jumping course, and spreading its waters and its sediments in dynamic ways, is that Louisiana is one of the fastest-shrinking areas in the world. "Since the 1930s, Louisiana has shrunk by more than two thousand square miles. . . . Every hour and a half, Louisiana sheds another football field's worth of land" (Kolbert 2021, 32). Kolbert adds: "And so a new round of public-works is under way. If control is the problem, then by the logic of the Anthropocene, still more control must be the solution" (32).

Hurricane Katrina made landfall in southeast Louisiana at the end of August 2005. Klaus Jacob, a geophysicist specializing in disaster risk management and resilience to climate change, wrote a radical opinion piece in the *Washington Post* of September 6, 2005, "Time for a Tough Question: Why Rebuild?" According

to Jacob, the effect of Hurricane Katrina "is not a natural disaster. It is a social, political, human and . . . engineering disaster" (2005). Moreover, Jacob had warned New York City for years that a hurricane like Sandy might occur. Together with other scientists, he published a report in 2011 carefully describing the threat and the ways the city and the region could protect themselves from storm surges. A year later, Sandy happened.

Jacob deems it inevitable that New Orleans will ultimately fail, and he is not alone: "Government officials and academic experts have said for years that in about 100 years, New Orleans may no longer exist. Period" (Jacob 2005). He suggests a radical revision of the modern approach. Instead of the defensive strategy of the Army Corps of Engineers to protect New Orleans from the water, he advocates a living *with* the water. He envisions a "floating city," or "a city of boathouses, to allow floods to fill in the 'bowl' with fresh sediment" and restoration of wetlands, mangroves, and other buffer zones. Jacob's advice follows basically the way the Choctaws had been accommodating the complexities of the water-land dynamic, living with the changing relations. Let the waters rise and fall. Move with them. Accommodate them. Invite instead of fight. Jacob concludes his opinion piece: "It is time to constructively deconstruct, not destructively reconstruct" (Jacob 2005).

The "joke" was not on the Choctaws, after all.

MENTALITY SHIFT

Constructively deconstructing the model of a rebuilding of New Orleans, as Klaus Jacob suggests, requires a different mindset from the modern mode of controlling and fighting water. It demands a mentality shift toward a relational mode of water as lived and practiced by Indigenous peoples such as the Choctaws. In this last section, I explore what such a shift entails.

I begin with Maurice Merleau-Ponty's understanding of the nature of thinking. In his June 1, 1960, Working Note in *The Visible and the Invisible*, he writes that the fundamental problem of philosophy is sedimentation and reactivation:

> In fact, it is a question of grasping the *nexus*—neither 'historical' nor 'geographic' of history and transcendental geology, this very time that is space, this very space that is time, which I will have rediscovered by my analysis of the visible and the flesh, the simultaneous *Urstiftung* of time and space which makes there be a historical landscape and a quasi-geographical inscription of history. Fundamental problem: the sedimentation and the reactivation. (Merleau-Ponty 1968, 259)

He notes that he has *re*-discovered that time and space are co-originary—that there is a simultaneous fundamental initiation, or, origination (*Urstiftung*) of time and space. Any temporal event has a spatial sedimentation; any sedimentation is partaking in time, changing, moving. *The* fundamental problem is the dynamic between the two: how does stability form and how does renewal or innovation emerge from this stability (Klaver 2016b, 117)?

In the preface to the *Phenomenology of Perception* (1962), Merleau-Ponty emphasizes the importance of renewal by foregrounding the beginning nature of philosophy, the inchoative atmosphere of phenomenology. Invoking Husserl, he states: the "philosopher . . . is a perpetual beginner. . . . It means also that philosophy . . . is an ever-renewed experiment in making its own beginning" (xiv). He concludes: "True philosophy consists in relearning to look at the world" (xx–xxi).

The "relearning to look at the world" is another way of stating that the fundamental problem of thinking is sedimentation and reactivation. Sedimentation and reactivation constitute *meandering*, an invocation of the *re-*, the again. Klaus Jacob's appeal to rethink our way of thinking about the way we design our cities is an example of a reactivation of a sedimentation. Another example is Einstein's saying that we cannot solve our problems with the same thinking we used when we created them. Or, consider Audre Lorde's assertion: "the master's tools will never dismantle the master's house" (Lorde 1984).

The "relearning to look at the world"—no longer by fighting the water with hard barriers, but by working and living with the water—opens up new modes of so-called soft approaches to landscape design projects that will make places such as New York City more resilient against storm surges. No longer fighting the water with hard barriers, soft approaches focus on working and living with the water. The nonprofit Billion Oyster Project works with people across the five boroughs to rebuild the New York Harbor oyster population, which was wiped out in the twentieth century. Restored oyster reefs will function as a buffer to protect the city from wave impact from major storms, to reduce flooding, and to prevent erosion. The project plans to have one billion oysters in New York Harbor by the year 2035.

Similarly, SCAPE Landscape Architecture, with design studios in both New York and New Orleans, designed "Living Breakwaters," partially submerged nearshore rubble mounds that provide habitat for fish and reefs for oysters in the Lower New York Harbor. This shallow estuary once supported commercial fisheries and shell fisheries. The nearest town was historically called "The Town the Oyster Built." The "Living Breakwaters" create a living and dynamic structure that absorbs wave action and prevents further erosion.

These kinds of soft approaches are examples of a larger pulse in innovation in landscape architecture where "the point and counterpoint between positivism and post-positivism, and between art and science, give life to the nature of complexity of adaptation in the built environment" (Keenan 2017, 7).

MEANDER *MĒTIS* RIVERSPHERE

In the following, I relate the nature of complexity to the processes of sedimentation and reactivation in the movement of meandering. I present an approach I have developed in various other works (Klaver 2016; 2017; 2018). This approach embodies a mentality shift: from a modern mentality toward a relational mentality. It

entails a different way of thinking based in a meandering mode, a *mētis* mode, a spherical mode. It is not invoked by a crisis, a disaster, but could be a precondition to preventing further disasters insofar as it is no longer an Anthropocene-based mentality of control. Relationality, intrinsic in water, guides the way.

Meandering in its material movement is predicated upon the dynamic relation between water and land/sediment in an ongoing process of sedimentation and reactivation. As we saw above, the Mississippi River is permanently in interaction with the land and waters around it. Meandering conveys the nature of the nonlinear—symbolically and metaphorically. It allows for ambiguity, uncertainty, and hybridity, for that which cannot easily be measured or replicated. Its activity of sedimentation and reactivation is based in the unpredictable workings of the material realm not ruled by structures of scheduled time. Avulsions and storm surges might form occasional extremes, but meandering on every scale is basically unpredictable: it is messier than the straight line. It entails a rethinking of progress through complexity instead of through a modern controlling of nature.

Linearity has been the privileged paradigm of progress and its leading model of efficiency; its concomitant mindset has been goal-oriented or teleological. Bienville's goal was creating a European-style city. Faced with a first inundation, he made water the enemy—the beginning of a long history of fighting the water, rather than inviting it with a changed conception of how to live with the water. Such a change would have been a form of meandering. Convoluted and seemingly undirected, meandering is seen in the modern paradigm not just as the opposite of efficiency, but as being in the way of efficiency. Revaluing meandering has a train of effects on a variety of concepts and practices. It engenders a different way of thinking about efficiency: it might be more efficient in the long term to take more time and explore possibilities, just as a river does when it meanders through a basin. It is a slower process than water running through a concrete channel; it takes more factors into consideration. Making New York's coast more resilient through the "Living Breakwaters" project, for example, entails working with local people, scientists, politicians, biologists, and landscape architects.

Meandering invokes, elucidates, and hints at a different imagination, another mindset, a new epistemological and ontological model, and a cultural and political framework that diversifies what counts as progress and efficiency, as expertise, knowledge, and politics. It bespeaks the social-political necessity of taking time to explore terrains, to elucidate attributes, relations, problems, and solutions, as a gateway to new constructs of imagination.

The movement of meandering is predicated upon an ongoing beginning and reveals how beginning works. Beginning does not take place in a vacuum, is not a *creatio ex nihilo*, but is always building on past experience, or on a break with this experience, as in the case of avulsion, an intensification of reactivation.

Meandering relies on the complex interaction of many material vectors and factors. Its workings are analogous to how complex practices such as knowledge,

power, politics, ethics, and aesthetics operate in the everyday: lateral traversing, picking up material and depositing, re-activating in the process. Meandering stands for an ethics of relationality, intertwinement, and entanglement, for a politics of practical engagement, enabling deliberation for experiment, tinkering, and "thinkering," emergent and transient. Meandering brings the social, political, technological, and natural together in an ongoing dynamic. Meandering does not elicit a straight line but a sinuous back and forth, symbolized linguistically by the prefix *re-*, the notion of the again and again, the exploration through wandering, the essay in Michel de Montaigne's original sense of trial and attempt.

Meandering seems to be a slower process than the straight line of progress; yet this is only the case for the simply defined objective, for the short view of time. Meandering proceeds by covering more ground, percolating into deeper depths, listening to the murmurs of more voices, being what it is when and where it is observed. Meandering makes room for what cannot easily be measured, what does not lend itself to be measured, for the slow and the unexpected, and for the workings of the material realm beyond by the structures of scheduled time. Meandering is messy, unpredictable. It echoes Édouard Glissant's indeterminacy as he describes in his *Poetics of Relation*: "The science of Chaos renounces linearity's potent grip and, in this expanse/extension, conceives of indeterminacy as a fact that can be analyzed and accident as measurable" (Glissant 1997, 137).

From early modernity onward, natural meanders in rivers "had to be" engineered away to facilitate major modern projects, such as commercial river transportation and city developments, as exemplified in the endeavors to control and stratify the Mississippi. In the modern mindset, meandering acquired a negative connotation, synonymous with aimless wandering and rambling through a long-winded argument. In the later part of the twentieth century, a reevaluation of meandering emerged: new understandings of chaos and complexity have become foundational in many fields and significant in the cultural imagination (Klaver 2016b). Meandering as a metaphor for a different sort of thinking is founded in and summarizes the nondeterministic models used in many fields of science that were once the hallmark of linear, positivist thinking.

This different mode of thought, which emerges in the revaluing of nondeterministic models, resonates with the ancient Greek *mētis*, a practical intelligence that became overshadowed, backgrounded, and pushed aside by the dominant Greek epistemic of privileging logic. In *Cunning Intelligence in Greek Culture and Society*, Detienne and Vernant (1978) show that *mētis* appears in implicit ways, at "the interplay of social and intellectual customs." It escapes simple definition—it "always appears more or less below the surface, immersed as it were in practical operations . . . applied to situations which are transient, shifting, . . . which do not lend themselves to precise measurement, exact calculation or rigorous logic" (3–4). Detienne and Vernant emphasize that *mētis* materializes as multiple, many-colored, and shifting because:

its field of application is the world of movement, of multiplicity and of ambiguity. It bears on fluid situations which are constantly changing and which at every moment combine contrary features and forces that are opposed to each other. (20)

James Scott, in *Seeing like a State* (2008), demonstrates the significance of *mētis* for academic fields, such as the social sciences, geography, and architecture. He invokes the term *mētis* "to conceptualize the nature of practical knowledge and to contrast it with more formal, deductive, epistemic knowledge" (6). Scott asserts:

There may be some rules of thumb, but there can be no blueprints or battle plans drawn up in advance; . . . such goals can only be approached by a stochastic process of successive approximations, trial and error, experiment, and learning through experience. The kind of knowledge required in such endeavors is not deductive knowledge from first principles but rather what Greeks of the classical period called *mētis*. . . . [It is] the kind of knowledge that can be acquired only by long practice at similar but rarely identical tasks, which requires constant adaptation to changing circumstances. (177–78)

Mētis is the epistemological equivalent of meandering; both are predicated upon a process of relating and adjusting to circumstances. Its ethical equivalent is an ethics of relationality instead of a rule-based ethics.

Mētis had already become backgrounded in the Greek intellectual and philosophical world. In modernity it all but disappeared as a legitimate mode of knowledge, replaced by the expertise of engineers, scientists, and designers whose models of nomothetic-deductive logic appeared very efficient and successful, but often came with long-term devastating consequences. As Scott explicates: "The utilitarian commercial and fiscal logic that led to geometric, mono-cropped, same-age forests also led to severe ecological damage" (309). A similar logic of apparent initial efficiency but long-term *in*efficiency and harm emerges in the creation of modern water, such as in dam building and draining of swamps.

Detienne and Vernant show how a *mētis* mode of thinking is closer to Chinese and Indian modes of thought than to Greek philosophy, which is characterized by a dichotomy between being and becoming as follows:

On the one hand there is the sphere of being, of the one, the unchanging, of the limited, of true and definite knowledge; on the other, the sphere of becoming, of the multiple, the unstable and the unlimited. . . . Within this framework of thought there can be no place for *mētis*. *Mētis* is characterised precisely by the way it operates by continuously oscillating between two opposite poles. (5)

Mētis is beyond dualistic thought, like meandering with its movement of sedimentation and reactivation. Through a *mētis* lens, water emerges in its polydimensional, nondeterministic, and dynamic character. This includes a multispherical dimension. Rivers are more than lines on a map such as Viele's, more than their basins, watersheds, or drainage areas. They influence the geology, the air, and the

soil around them, life around them, cultures around them. They create their own hydrosphere, biosphere, and atmosphere. They form intricate networks of relations, conditions of possibilities.

I specify the concept of riverine atmosphere as *riversphere*, to examine rivers as places of multiscalar and multivector connectivity and complexity. My sense of riversphere resonates with Gernot Böhme's (1993) concept of atmospheres:

> Atmospheres are indeterminate above all as regards their ontological status. We are not sure whether we should attribute them to the objects or environments from which they proceed or to the subjects who experience them. We are also unsure where they are. They seem to fill the space with a certain tone of feeling like a haze." (Böhme 1993, 114)

Riversphere is a thick, profoundly relational concept. It negotiates and blurs separate spheres—such as hydrosphere, geosphere, atmosphere—and adds social, political, cultural, aesthetic, and affective dimensions to our water conceptualizations and praxes. It enriches the conceptualization of rivers in the cultural imagination, intertwining hydrological, biological, ecological knowledge and experience with lived experience, social-cultural and political activities, storytelling, and more. LeAnne Howe's piece on the founding of New Orleans by *Filan-chi* (Bienville) gives a rich example of the relationality of multiple spheres embedded in narrative. This spheric relationality can also pertain to hybrid waters, such as infrastructural waters. Nikhil Anand (2017) develops a notion of hydraulic citizenship predicated upon the deep intertwinement, the entanglement, of the dynamic of infrastructural water in pipes and pumps, with citizens, technicians, politicians, plumbers: a complex vibrant and relational mix of stories, theories, facts, and experiences. In "Accidental Wild," I describe how the hybrid water of a flood control detention pond becomes a place for multicultural and multispecies encounters (Klaver 2015). The precondition for this relationality to happen is to not overcontrol the area, but to leave it relatively wild, indeterminate. At the same time, such a hybrid model assures that the detention pond has enough room to rise and fall in the case of intense rain events and the rise of the creek, and to prevent flooding in town, which is designed, as are most modern towns, with concrete channels and impervious surfaces of streets and parking lots.

Jamie Linton, who coined the term *modern water*, shows how in the reduction of water to modern water the hydrosphere has become a strictly separated domain from the socio-sphere: "the hydrological cycle conditions an understanding that keeps water and people in separate, externally related spheres" (106). Within a meander, *mētis*, and riversphere approach, geometrical and homogenizing models of water give way to models of complexity and indeterminacy (Klaver 2017), thereby giving room to multiple materialities and relationalities.

Based upon their work in the Lower Mississippi River Valley in the 1990s, landscape architects Anuradha Mathur and Dilip da Cunha came to see the river

as an invention of colonizing practices in which land and water have become strictly separated. Da Cunha convincingly elaborates this perception in his book *The Invention of Rivers: Alexander's Eye and Ganga's Descent*. He contrasts the line of the river Ganges with the ubiquity of the rain-driven wetness of the goddess Ganga's descent from heaven. It contrasts a thinking in terms of unity of rivers with that of the indeterminacy of rain. He invokes a new imagination anchored in rain, in Ganga's descent, "one that drives the design of new infrastructure and an alternate edifice of myths, facts, ideas, practices and frameworks of critique" (2019, 293). Da Cunha's analysis entails a radical relearning of looking at the world.

> Ganga does not flow as the Ganges does, in a course to the sea; she is rather held in soils, aquifers, glaciers, living things, snowfields, agricultural fields, tanks, terraces, wells, cisterns, even the air, all for a multiplicity of durations that range from minutes and days to centuries and eons. She soaks, saturates, and fills before overflowing her way by a multiplicity of routes. . . . The only anchor she offers people is the time of her descent. It is celebrated each year at the coming of the monsoon. (40)

Da Cunha contrasts Ganga's descent with the invention of the river Ganges, created by Alexander's eye, that is, the eye of the conqueror Alexander the Great of Macedon. In 334 BCE he set out eastwards, not only with his army of soldiers but with an expedition of scholars, scientists, zoologists, surveyors, artists, and historians, collecting "new cartographic data" (25–27).

> His campaign gathered information for science, described places, and affirmed ideas. More seriously, however, it called out a ground—an earth's surface constituted of land and water to begin with—that . . . was 'unknown even to the Indi.' It was perhaps Alexander's most lasting legacy . . . It involved articulating things with a line that could be drawn on a map, more conveniently perhaps than on the ground. (27)

That line was the river. Alexander did not reach the Ganges, but gave the river its name, drew it on a map, brought it into existence (29). Still today, two millennia later, the lines he drew, the rivers he created, are "an essential feature not just in maps of India but on the ground in riverbanks, riverfront projects, regulations, and flood control schemes" (30).

With the dominant creation of water in the shape of a line—a river—a worldview of dualistic thinking developed, including the dualism of land versus water. Only when such a line is drawn do floods appear. Floods don't exist beyond the line. Da Cunha radicalizes Klaus Jacob's stance that Hurricane Katrina is not a natural disaster but a man-made social, political, and engineering disaster. For da Cunha there are no natural disasters, only design disasters. Jamie Linton argued a similar position: there are not crises of water per se, but only crises of *modern* water.

Da Cunha is convincing in his presentation of the river as colonial invention. However, one can conceive of rivers as contingent emerging wholes, which are not necessarily to be seen as unitary. Geographers Philip Steinberg and Kimberley Peters (2015) present this possibility with their notion of "wet ontology,"

which has ontological ramifications similar to those I develop in the meander-*mētis*-riversphere approach. Moving away from a "linear and lateral narrative" in geology toward "complexity-based understandings of chaos-inspired" accounts, they come to a Gilles Deleuze–informed "'assemblage' approach that presupposes a world of immanence and becoming. . . . Key to an assemblage is that the parts of which it is composed are heterogeneous and independent, and it is from the *relations* between the parts that the temporary, contingent whole emerges" (225, emphasis in original). They refer to Stephanie Lavau's work on sustainable water management in Australia as embodying their "'wet ontological' perspective, in which flow is, on the one hand, a singular force but, on the other hand, composed of multiple chaotic processes. For Lavau, water, in both its singular and multiple existences, incorporates and confounds human intervention" (257). Management strategies that allow for a coexistence of multiple "ontologies of thought" reflect "water's persistence as a vibrant matter that has agency in its 'unruliness, variability, mobility, and fluidity'" (257). In these approaches, too, relationality is the key to escaping the homogenizing and unifying force toward modern water. As Lavau states, cited by Steinberg and Peters: "Embracing relational materiality leads us to ontological multiplicity, to attending to the different realities that are produced in particular socio-material orderings" (257).

RADICAL RELATIONALITY

There are convergent resonances in the many positions presented here. A common thread is formed by relationality. All of them acknowledge an agency of water in and through relationality.

Water offers counterontologies, counterepistemologies, counterethics, and counteraesthetics, radically rooted in relationality, including the intrinsic relation between water and land, decentering the human and the notion of the individualized subject. Water is not radical because it is root-like. It is radical because it does not allow itself to be reduced to one root, to simplicity. It embodies a relational being, knowing, thinking, judging, designing, and living *with*. These ways with water accommodate and follow the multiple ways water is, travels, acts, relates and cognates. This takes us out of a language of containment, out of rigid ways of categorizing, into regenerating flexibility, places of messiness in orders. It entails listening for the granular grammar of water, becoming lost in translations of its countless dialects, its rain and waterfalls, its almost inaudible hush of being pumped through mazes of capillaries in plant, animal, human, and infrastructural bodies, under the ground, through mountain veins, gurgling, writing its hieroglyphs in the mud, in sandstone.

Radical water teaches us to take water seriously, not because we are afraid of it, not because it has been made the Other, the enemy that is out to get us, but rather to take water seriously because we know that it is relational, knowing that

water guides the way and thereby becomes radical water. In its fluid gentleness, its violent persistence, it teaches us relationality, it teaches us to change: to live *with* it, instead of controlling it. This entails changing and innovating not just technologies and designs, but ways of thinking, being, acting, engaging. Water teaches relationality in our decisions, interventions, conscious changes in policy, economics, culture. Radical water teaches us to take water seriously, that is, relationally; we can't just "take it" anymore.

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NOTES

1. During summer 2020, after many racially-charged events, various cities and organizations in the nation began questioning racist imagery in official monuments, documents, and naming practices. New York City mayor Bill de Blasio expressed willingness to reconsider the imagery on the seal of New York City. Executive director of the Lenape Center Joe Baker and President of the Seneca Nation Rickey Armstrong Sr. both welcomed de Blasio's intent. Baker: "The seal ignores the history of violence and destruction inflicted on Indigenous people by settlers" and "presents a caricature and negative representation of Native culture." Armstrong: "It is our hope that . . . the conversations taking place around these important issues in New York and across the nation will lead to greater respect, fairness and justice for Native people and our rich culture" (Culliton 2020; Eckstrom 2020; Associated Press 2020).