

Conversations between Artists, Writers, Musicians, Performers, Directors—since 1981

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Domesticating Waves in the Netherlands by Stefan Helmreich

Two years back, in the midst of anthropological research about the science and culture of wave monitoring and modeling in the Netherlands, I joined in an event called *Waterwolf 2016*, a flood preparedness exercise staged in the small municipality of Marken, just twenty kilometers outside Amsterdam. I'd been learning about computer models of ocean waves and wanted to take a break from all the screen time I'd been logging. *Waterwolf*, I had learned, was the Dutch name given to a folkloric, zoomorphic figure that once stood for the threatening, eroding power of waves.¹ In one canonical seventeenth-century representation, the waterwolf is portrayed being pinned down by the Dutch lion. An accompanying poem exhorts the lion to "Enclose this perilous beast with a dyke," and to "Let the Lord of the Winds with his fine mills, Empty the Water Wolf into the sea," so that land may be "won for the Lion by spinning gold from foam"²—this last line an evocation of Golden Age dreams of windmill-powered pumps transubstantiating watery waves into wealth.

When, in early November 2016, I arrive in Marken, population about 1800, the town is just waking up, its compact, forest-green houses luminous in the morning sun. Residents are preparing for the day-long *Waterwolf* event, getting set for their simulated evacuation from an imaginary flood. Back in 1916, this island town, situated on a large saltwater bay, was inundated by waves rolling in from the breach of nearby dikes—waves that drowned sixteen people. *Waterwolf 2016* is a one-hundredth anniversary readiness exercise, and when I show up on this day, people are beginning to mill about, excited to visit with neighbors while engaging in what I will come to think of as a combination of conscientious civic action, sober emergency systems assessment, and extemporaneous open-air community performance.

I had emailed an organizer of *Waterwolf 2016* prior to arriving in Marken, asking if I might, as an outsider, join in the exercise. I was welcome to participate, he told me: "You can be a tourist who got stuck on the island. I think that's a nice bonus."

When I arrive at the town center, I am provided with a name tag that reads "Evacu e: gezond. Bij nood roep 'NO-PLAY!' (Evacuee: healthy. If in real distress, say 'NO PLAY!')." Like everyone else, I am also given an identifying knit hat, screen-printed with a logo specially designed for the event.

The dozens of people gathered to participate turn out mostly to be the town's retirees, primed

i



for a change of routine. When I explain that I am an anthropologist, one self-described grandmother takes me under her wing to make sure I am provided with a piece of typical Marken cake. Marken has been of interest to anthropologists before, treated as a kind of time capsule for antique Dutch customs. Johann Friedrich Blumenbach, in 1828, and later, Rudolf Virchow, in 1877, even speculated that inhabitants of Marken possessed throwback body types, though it turned out that the characteristic sloping of Marken skulls that fascinated these naturalists was likely the result of Marken children wearing tight caps in their early years.³ I imagine myself a quite different kind of anthropologist—though, with people excited to talk Marken culture with me, I am quickly filled in on some ritual events of early 2016, when schoolchildren around Marken (now not an island, but, with a causeway added in 1957, a peninsula) made papier-m ch  sculptures of the waterwolf to burn as a sign of conquering the waves. As pleasant as everyone is to me, I half-worry that I have walked into an old-time movie about a small town with a grim secret.



1. Anthropologist Ghassan Hage notes that "in the Western imaginary, the wolf is the ultimate representative of the threatening undomesticated Other of nature." *Is Racism an Environmental Threat?* (Cambridge: Polity Press, 2017), 549–551.

2. From "To the Lion of Holland" by Joost van den Vondel, first appearing in "Provisional Draft Plan and Proposal for the Diking of the Large Lakes,"

published in 1641. Held at Bijzondere Collecties, Universiteit van Amsterdam. Poem quoted and translated in Shannon Kelly, "Dancing with the Water Wolf & Choreographing Urban Ecologies," in *Strootman: Strategies for the Sublime*, eds. R. Strootman, et al (Seoul: C3, 2012).

3. Jan Schild, *Leven met het Water* (Stichting Mooi Marken, 2015).

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Effigy images of the waterwolf bolster my developing sense that, for many in the Netherlands, waves can be imagined simultaneously as mischievous agents (from which the country is mostly safe, owing to an intensive dike and dam infrastructure) and as nervous-making presences: haunting figures from disasters past and, if one isn't careful, a flooding future.

After a detailed pre-evacuation briefing in the town center, the one hundred or so of us who have signed on for the event (all, except for me and one Swedish woman, are Dutch) are escorted to a church to obtain life jackets. We are told to imagine the water rising up around us and are referred to markers of the 1916 flood carved onto some of the stilted houses nearby. A few people who are not participating walk by us in amusement, including a couple of girls in hijabs, returning home from the local market. Members of the Dutch police, army, and Red Cross (who have been preparing for weeks) take charge, with some townspeople (prepped in advance) feigning confusion and injury; some have even covered themselves with fake blood. The event takes on the cast of a dressed-down zombie parade and makes me think of the social-situation art of Tino Sehgal (pseudo-spontaneous crowd events) as well as of the simulated evacuations that show up in Don DeLillo's 1985 novel of white American anxiety, *White Noise*. Members of a "Psychosociaal Opvangteam" wander about. I walk alongside a Dutch woman who tells me that, after forty years of living in the town—she's from nearby Monnickendam—she's still considered a visitor, even though she has long been dedicating

herself to dressing once a year in traditional Marken costume. She shows me photos. I find myself surprised when she suddenly seems to have a psychotic break, wandering off into the woods in an apparent dissociative fugue, only to be retrieved by a soldier whom she then beats with her handbag as she holds on for dear life to a pet crate holding what I later realize is a stuffed animal.

Red Cross workers escort us to Zodiac escape boats, which ferry us at high speed across a segment of water to Monnickendam, to "safety" (an endeavor that, at a time when migrants across the Mediterranean are drowning for want of life jackets, strikes me as more than a little surreal). We are meant to imagine the waves chasing us, the waterwolf at our heels. I am reminded of a work of flood-themed installation art: the *Waterlicht*, a "virtual flood" rendered in wavy lines of LED-generated blue light projected against steamed-up air, an ephemeral work that first blanketed the town of Westervoort—and later Amsterdam—to visualize what water levels would look like without Dutch water defenses in place.

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In the end, all of us in the *Waterwolf* exercise end up back at the center of Marken, safely at sea level, debriefed about what went well and what—this report seems to be primarily for the police, army, and medical professionals—still needs work. I take a train back to my temporary home in Utrecht, safely scurrying up to thirteen meters above sea level.

Almost everywhere I go in the Netherlands—especially after moving among the invisible waves of *Waterwolf 2016* and learning about the evanescent light waves of the *Waterlicht*—I find phantom waves, representations of waves as hauntings from the past or loomings from the future. Some manifest in the

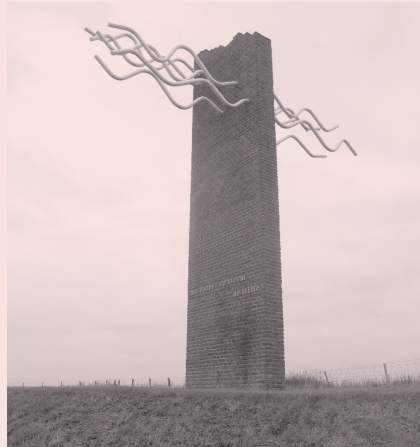
form of sculptures commemorating floods. Marken has one:

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A great many sculptures remind us of the worst flood in Dutch memory—the Disaster of 1953, which killed 1800 people (about the same number as perished in Hurricane Katrina). At the Flood Museum in the town of Ouwerkerk, I see this:

v



And later, in another Zeeland town, this:

vi



Waves, remembered and feared, past and future, are a persistent presence hovering over and haunting the Dutch landscape.

No wonder, then, that the Netherlands has such a robust and famous tradition of modeling waves—necessary in order to construct ports, build dikes, and protect the country's North Sea coast. Shortly after visiting Marken, I accompany a Dutch wave scientist to a remarkable site dedicated to the history of this tradition: the "Waterway Forest," or, in Dutch, the Waterloopbos.

The Waterloopbos is a now-overgrown-with-forest area of land where Dutch hydraulic engineers once built scale models of ports in the Netherlands and elsewhere. Starting work in the 1950s, they used tools that today look to the untrained eye like enormous steampunk gears fallen into rusted ruin. These devices, now sitting in slow, stagnating water, were once state-of-the-art wave-making machines.

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Before they were phased out by newer models elsewhere and by computer simulations, these apparatuses reliably generated scale-model waves so that real-world counterparts might be tamed. The Waterloopbos is now a national "nature monument," a curated archeological site that invites visitors to look back on the accomplishments of Dutch hydraulics.⁴ The artificial waves made in the Waterloopbos were pretty uncomplicated, producing ups and downs and backs and forths, nothing like those forms now generated by computer models that employ

4. It has also been used as a stage for environmental art. See Karin van der Molen, ed. *Drift: Art in Nature Laboratory*. Stichting Rerun Producties, 2012. And see Marinke Steenhuis, Lara Voerman, Marlies Noyes, and Joost Emmerik. *Waterloopkundig*

Laboratorium: Cultuurhistorische Duiding, Ruimtelijke Analyse en Essentiële Principes. Schiedam, Netherlands: SteenhuisMeurs, 2015, and Frans Bosscher and Margot Maljaars. *Het Waterloopbos*. Wageningen: Blauwdruk, 2017.

complex nonlinear mathematics. What did the waves at Waterloopbos look like? Perhaps like those recorded in a 1941 documentary about Delft Hydraulics—a film in which one key scene shows an engineer marking on a notepad wave heights and periods as they scroll by in an indoor tank, a modern, rational practice of measuring watery nature into legibility.

viii



There is something nostalgic or folkloric about the wavemaking machines I see at the Waterloopbos. They materialize dreams of doubling, shrinking, and taming the wildness of waves. If, in Marken, the fantasy waves we confronted were at the scale of human experience—or even loomed larger in the theater of our imagination—then here in the Waterloopbos, one finds evidence of Dutch enterprise seeking to scale itself up, to be *larger than* waves. Waves become entities that might be controlled through learning how properly to leverage knowledge against them. The waterwolf might be domesticated.⁵

That work might, in turn, be exported—and, indeed, Dutch hydraulic engineers have for a long time been offering and circulating their expertise internationally (perhaps a lingering trace of the imperial, transoceanic enterprises once captained by the Dutch East India Company during the Golden Age). When I visit the Waterloopbos, I am shown a 1963 photo of Thai engineers who, seeking to model the port of Bangkok, found themselves faced with an unseasonably cold winter that made their model (set up over an area equal to about half a soccer field) freeze over. With nothing else to do, they were then invited by their colleagues to enjoy the typically Dutch pastime of skating—on the model! The photo is weird, scripting these engineers as visitors from an emerging nation being tutored in European technique and culture, though a technique and culture much scaled down, diminished, from the days of its once imperial reach.

Scale turns out to be central to Dutch apprehensions of waves. The country features a great many flood and water museums in which visitors are encouraged to take a God's-eye view of the country. The Netherlands is laid out in these museums as a

landscape or map of puzzles to be solved by citizens, who are imagined as actively developing their hydrological engineering intuitions. (Madurodam Park, a tourist attraction, features 1:25 scale model replicas of noted Dutch landmarks and cities⁶). The project of draining the Zuiderzee—the sea that caused so much damage in Marken in 1916—and the subsequent transformation of this sea into a fresh water lake (the IJsselmeer, dammed off from the North Sea by a long dike, the Afsluitdijk, finished in 1932) was celebrated in one editorial cartoon that made the scalar aspiration explicit. (It also offered a striking representation of Cornelis Lely, the civil engineer who envisioned the draining of the Zuiderzee, as an eminently practical Dutch washerwoman!)

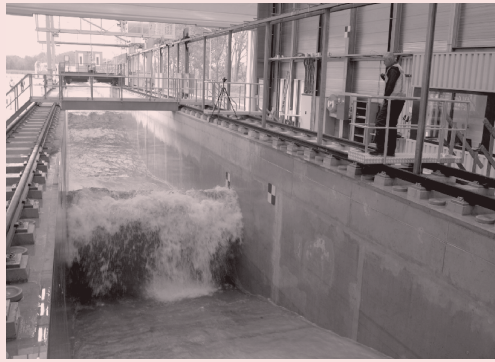
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Physical models have not vanished in the age of computers. They are alive and well at an organization called Deltares—at once a private company that is the descendant of Delft Hydraulics, a research center that works in the Dutch national interest, and an academic research facility closely linked with the Delft University of Technology, to which it is adjacent. In 2015, Deltares unveiled the Delta Flume, a 300-meter long, 9.5-meter deep, and 5-meter wide channel. A 10-meter-high “wave paddle” can be moved back and forth by hydraulic cylinders at one end of the channel to generate waves of up to 4.5 meters height, permitting water waves to be modeled at a 1:1 scale. The meeting of human and wave scale here at the largest wave flume in the world signals a readiness to meet waves on their own terms.

When I visit Deltares to see the Flume, hydraulic engineer Marcel Van Gent, whom I contacted in advance, generously takes time to give me a tour. On the day I visit, though, the Flume is empty. Three workmen are building a wall inside, made of a material a Deltares client is seeking to test against an “actual size” wave for its durability as a part of a breakwater system. The wave will be unleashed two months from now.

x



Van Gent tells me that the water that will eventually be pumped into the flume is stored underground. In fact, all nine million liters of it are just beneath us. It has been kept out of the sun to protect it from filming over with algae, going green. I imagine the water sleeping, waiting to be formed into a wave in two months' time—a waterwolf, reanimated just before its crashing death, its height and speed measured in order to tame its future real-world analogs. This wave flume is a stage for pre-enactment, a stage, perhaps, for the domestication of waves. Maybe this wave is a ghost like the others I've seen, though this time around, it is a ghost of waves future.

Wave modeling practices like those at Deltares come with a certain optimistic dedication to future planning (and how could, or should, they not?). The more I research popular representations of water and sea in the Netherlands, the more it seems that waves may be moving from being foes to friends in the dominant Dutch imagination. In the wake of recent national and state reimaginings of water as an ally (a notion pitched and publicized in the early 2000s with the slogan "The Netherlands Lives with Water"), waves might be apprehended as domesticated partners in making the Dutch land and seascape, just as rivers are now encouraged to follow their natural paths through the national "Room for the River" program.

Take as an illustrative case of this new view of water and waves a recent massive "nourishment" of sand on the North Sea coast just west of The Hague known as the "Sand Motor," which means to enlist waves as agents in a slow and deliberate resculpting of the beach, a resculpting aimed at protecting the coast from erosion. When I interview one of the Sand Motor's key framers, hydraulic engineer Marcel Stive, he fills me in, speaking specifically to the question of waves:

There are two parameters dominating the process of changing beach morphology: wave height and direction. Transport is proportional to the square of wave height, so a two-meter wave height is four times as powerful. For direction: the sine of two times the incident wave angle is proportional to the longshore transport, with most happening at forty-five degrees.

So, the whole idea is that waves in the subaqueous realm and wind in the air domain are thought of as being the two engines for making the Sand Motor.

Here, waves move from being figured as *animals* to being *engines*—though I am reminded of Theo Jansen's famous *Strandbeests*, movable beach sculptures that make use of wind to "walk" on the shore, stealing wind from waves.

xi



Waves also become *infrastructure*—something exemplified by surfers heading to the Sand Motor to take advantage of the particularities of waves on this engineered shorescape. (These waves might be imagined as relatives to those precisely sculpted waves appearing in new artificial surf pools, like Kelly Slater's California facility, which reliably generates long, open-barrel waves⁷). Take as one Dutch symbolic affirmation of the possibility of controlling waves—treating waves as infrastructure—"The Wave" apartment building in the city of Almere.

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5. The notion of taming the waterwolf is a trope that appears from time to time in literature on Dutch hydrological engineering. See Wouter T. De Groot, "Van Waterwolf tot partner: het culturele aspect van het nieuwe waterbeleid." *Milieu* 2 (3), 1987, 84–86.

6. When I check in at www.madurodam.nl, as I write this in

October 2018, I see that the current exhibit is called "Defeat the Waterwolf!"

7. Lauren Goode, "Kelly Slater's Artificial Surf Pool Is Really Making Waves," *Wired*, September 5, 2018, www.wired.com/story/kelly-slaters-artificial-surf-pool-is-really-making-waves/.

Waves as animals, waves as engines. Maybe this piece of city architecture also suggests that waves could become organized rationally, as nonhuman agents that can be made to hew to values of reason and measure. Self-consciously expressed Dutch virtues of tolerance for difference here become extended to a world beyond the human, to waves (even as the figure of the “wolf” migrates to Islamophobic far-right European discourse to associate Turkish and Moroccan migrants with “lone wolf” terrorists, in turn to be confronted by Trumpian populist ideologues like the Netherlands’ Geert Wilders, who calls himself a “liberty wolf”⁸).

Once upon a time, between 1880 and 1960, Dutch society was organized into “pillars,” vertical, parallel social identity groups—Roman Catholics, Orthodox Reformed Protestants, social democrats, liberals—each of which had their own schools, unions, social workers, political parties, universities, newspapers, and more, even as their membership nonetheless “crosscut categories of class, hierarchy, region, [and] ethnicity”⁹—up to a point; Frisians and Hollanders, for example, are usually considered ethnoracially white. Members of different pillars, “living apart together,” were meant to share common national cause; pillarization was a strategy to allow for “the general tolerance of social heterogeneity by bounding difference and minimizing its social threat while containing it in the larger commonality of Dutch society.”¹⁰ In practice, of course, difference was still often raw material for inequality and hierarchy—a fact that has become evident in recent debates about immigration and assimilation. Think fancifully of this, then: waves as members of populations—wave groups, wave sets, wave trains—that conform to reasoned measurement and pragmatic apprehension, that can be treated as partners, not enemies, and that are most valued when they are not wolfish, but ordinary. Think of waves brought into Dutch hydrological discourse as Dutch nonhumans.

The wave science in which Dutch practitioners have been active and to which they have contributed so vitally has also become an international venture, with crucial American, British, German, French, Italian, Russian, and Japanese traditions crosscutting the field’s research and theory. The future of Dutch wave science and hydrology may exemplify such internationalism. Think of sites like Rotterdam, the largest port in Europe, whose mayor, Ahmed Aboutaleb, has been central to organizing international conversations about how low-lying cities might adapt to sea-level rise. In 2017, a delegation from Dubai was invited to the city to learn from Dutch hydraulic engineers as well as to contribute their own expertise, their own modes of dealing with water and waves.

It may still, of course, be that waves have uncontrollable animacies of their own. Writer Jim Shepard’s 2009 short story, “The Netherlands Lives with Water,”

is set in Rotterdam in the year 2024 and delivers an apocalyptic warning in which all the planning in the world cannot stop the inundation of the country.¹¹ The narrator sums up the Dutch’s uncanny approach to waves as frenemies:

We’re raised with the double message that we have to address our worst fears but that nonetheless they’ll somehow domesticate themselves. Fifteen years ago Rotterdam Climate Proof revived “The Netherlands lives with water” as a slogan, the accompanying poster featuring a two-panel cartoon in which a towering wave in the first panel is breaking before its crest over a terrified little boy, and in the second it separates into immense foamy fingers so that he can relievedly shake its hand.

I haven’t been able to discern whether Shepard’s tale points to an existing poster or whether he has conjured this image to indicate how anthropo-zoomorphisms reveal cultural ambivalences about watery, wavy nature in the Netherlands. But the point is clear. If domestication, which draws on the word *domus* (household), “obtains its dramatic force from the exclusion, control, and domination of the wild, the outside,”¹² waves are uneasy occupants of this outside. They are both others and the self. Perhaps they do not so much, as I suggested earlier, hover above the everyday, but flow through and beneath it, in the material netherland of imagination and lived experience.

8. See Hage, *Is Racism an Environmental Threat?*, 2017. And consult *Smash the Pillars: Decoloniality and the Imaginary of Color in the Dutch Kingdom*, eds. Melissa Weiner and Antonio Carmona Báez (Lanham: Lexington Books, 2018).

9. Karen-Sue Taussig, *Ordinary Genomes: Science, Citizens, and*

Genetic Identities (Durham: Duke University Press, 2009), 25.

10. *Ibid.*, 28.

11. Jim Shepard, “The Netherlands Lives with Water.” In *McSweeney’s Thirty-Two*. 2024 A.D. (2009): 189–212.

12. Ian Hodder, *The Domestication of Europe*. Oxford: Basil Blackwell, 1990, 45.