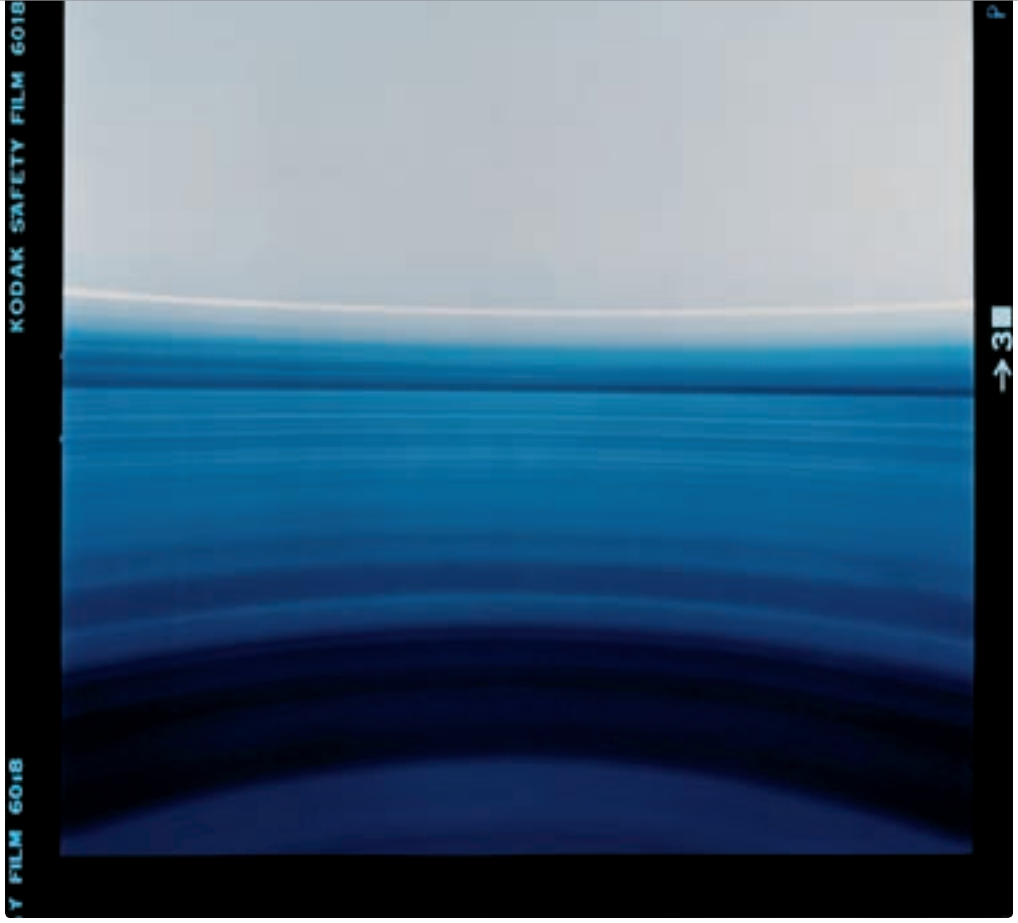

a FUTURE HISTORY *of* WATER

ANDREA BALLESTERO

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a Future History

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Andrea Ballestero

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PARA LIOLY, LINO, RÓMULO, Y TÍA MACHA

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PREFACE

I was walking toward the exhibit in the 2009 World Water Forum held in Istanbul, Turkey, when I heard someone call my name. Surprised, I turned around to see Lucas, a friend from Ceará, in northeastern Brazil, who at the time worked at the Water Management Company created in the 1990s when the state revamped its water institutions. I was happy and surprised to see him. After we greeted each other he told me he had collected a couple of things that I would find interesting and handed me a poster and a brochure he had picked from an NGO in the exhibit I was trying to get to. As I unrolled the poster I was astonished. Without knowing, out of the dozens of stands, Lucas had picked up and was handing me a poster produced by an organization in Costa Rica that I had been following for several years. I thanked him profusely, and after we said goodbye I found myself pondering how all the particularities of location that I had imagined would ground my research had just been troubled. Geography and location were too performative, too flexible to use as grounding devices for my research.

Lucas and his colleagues from Brazil, the NGO, and state representatives from Costa Rica, and I were all fellow travelers in this international water circuit. They all were giving talks about their experiences in shaping the political materiality of water, telling stories about how they were mobilizing categories, challenging legal infrastructures, questioning economic models. Their talks described particular experiments, new attempts to change the future of water, and the specific tools they were using to do so. All their stories were about the possibility of different futures, narrations where the materiality of the present—rivers, water pipes, rain patterns, evapotranspiration rates, land titles, and water pumps—was experienced as an anticipatory event, as a trace of the yet to come.

Without being able to rely on geography to stabilize my research, I quickly refocused on those futures and the technical crafts involved in bringing them about. Understanding the ethical possibilities for the future that they inscribed in their technical craft required me to pay attention to practices and artifacts that often seem unremarkable, or even worse, uninteresting tools of familiar economic and legal systems we wish to undo. In this book I suggest that those knowledge forms and the practices by which they are brought to matter are devices with wondrous capacities to transgress ontological boundaries, even while seeming to merely replicate what currently is. Rediscovering these devices and their wonder reminds us of the intensity by which everyday life, including technocratic life, constantly shapes the limits of the possible.

In philosophical terms, wonder takes over when knowledge and understanding cannot master what they should. It arises when, "surrounded by utterly ordinary concepts and things, the philosopher suddenly finds himself [*sic*] surrounded on all sides by aporia" (Rubenstein 2006). Wonder (*thaumazein*) is regarded as the point of origin of Western philosophy (Socrates/Aristotle). Yet, as with many origins, this one is also imagined as in need of being superseded because of its pathos (Aristotle), its heretical implications (St. Augustine), and/or its lower value as a passion that is closer to the feminine and the childish (Descartes!). For ethnographic analysis, however, the task when thinking with wonder is different. If wonder strikes when people, things, and other beings encounter each other in concrete times and places, the analytic task is to trace how those encounters redefine wonder as an affective disposition. This is what the process of doing the research for this book and writing it did to my own thinking. The four devices I present in this book reshaped the sense of ethnographic wonder with which I embarked on the project. In dry technocratic procedure, I found space for wondrous wonderings. Thus, rather than defining wonder as a particular vision of the world, I want to invite you to think of wonder as an underlying epistemic mood.

In its Western philosophical trajectory, wonder has ended up resembling the concept of marvel or enchantment. But that is not the only meaning wonder has. Wonder is instability, confusion, maybe even frustration. It entails a fluidity that, while rendered enjoyable and desirable in much anthropology, also entails a type of difficulty and disorientation that is not necessarily a pleasurable sensation.

When denuded of its positive valence, wonder is much more textured

and less idealized. It entails openness and the potential expansion of possibilities. It is more than the comfortable position of the modest witness, or the point of view from nowhere, or the God trick. It is dirty, messy. It can make you allergic, want to avoid it. From this point of view, one could not limit an anthropological wonder to worlds that differ radically from the liberal tradition (Scott 2013).[1] Social analysis that begins with wonder is moved by a "peculiar cognitive passion that register(s) the breach of boundaries" (Daston and Park 1998: 363), regardless of where those boundaries were originally placed. Wonder opens up familiar worlds for rediscovery. The predecessor of this type of wonder is the early modern collection of oddities and its attempt to reorganize worlds and beliefs.

Surfacing throughout Europe in the sixteenth century, after Christopher Columbus's imperial travels to the Americas, collections of "all curiosities naturall or artificial" began to proliferate in Europe (Hodgen 1964: 114). First put together by the aristocrat, merchant, or eccentric personality, the collection of oddities gathered "books, manuscripts, card-games, coins, giants' bones, fossils, . . . zoological and botanical specimens" (Hodgen 1964: 115). The items in the collection were extraordinary as well as unremarkable. Smaller items were stored in cabinets or cupboards following the design of the apothecary shop. Larger artifacts were suspended from walls or ceilings, enveloping the body of the observer. The result was high density and the accumulation of semiotic charge until it could barely be contained. Due to this aesthetic uniqueness, these collections came to be known as *les cabinetes de curiosités* (cabinets of curiosities) or *Wunderkammer* (cabinets of wonder).

Part of the power of the cabinet of wonder resided in how it took the familiar form of the geologic and botanical collection, repurposed it, and transformed it into something very different. While those collections recorded "natural" taxonomic ontologies, the collection of oddities reconsidered inherited hierarchical structures and the limits of nature. It was a "force-filled microcosm" unlike any other, since each collection was a unique and unrepeatable assemblage (Frazer 1935: 1). Due to this transgressive nature, the collection reinforced a sense of chaos at a time of major cosmological transition, an era when European colonists confronted a world that no longer was what they thought it used to be.[2] By grouping artifacts of radically different origins and forms, collectors challenged inherited orders and made new ones possible. This openness showed the power of setting things side by side in one formation, even if the things brought

together did not seem to belong next to each other—a manufactured tool, a doll, and a leaf could all be part of a single heterodox set.

This collecting impulse, and its accompanying sense of wonder, was not limited to artifacts that could be placed inside a drawer. Another type of object, one that did not lend itself to easy placement, was also pursued: the manner or custom. Impossible to hang from a wall or put in a drawer, the custom was suspended on the page of the printed book. It required description, translation, and illustration, and had to be connected to ideas such as nation, society, and civilization. In Europe, the most popular and well known among the early collections of customs was *The Fardle of Façions* by Johan Boemus, translated into English in 1555 (Hodgen 1964).[3] The book describes cultural groups by way of their laws and institutions, including marriage systems, religion, funeral practices, weapons, diet, and apparel (Hodgen 1964: 287). Boemus wrote the book with two objectives. First, he wanted to make accessible to a broader audience existing knowledge about the variability of human behavior. Second, the book was written to improve the "political morality" of his readers and expose them to "the laws and governments of other nations," with the purpose of developing intelligent "judgments" as to the best "orders and institutions" to be fitted into new colonial lands (Hodgen 1964: 131). In today's terms, the book was a collection of case studies, an early modern repertoire of techniques for colonial control so successful that it was reissued at least twenty times and translated into five languages.[4]

Fast forward five centuries, and the collection of customs, with its analogical structure and the wonder it inspires, still prevails as a means to imagine sociomaterial improvement and cultural difference in many circuits, including the World Water Forum. Described as compilations of best practices and policy tools, and brought together in documents such as manuals, frameworks, and anthologies, these contemporary collections circulate nationally and internationally with the purpose of "improving" the "political morality" of water. These documents juxtapose "models" from different countries, environments, and societies to offer possible answers to collective questions, such as how to improve community participation in water management, how to charge just prices for water services, or how to guarantee the human right to water for all.

And also just like Boemus's, these collections are not cohesive arguments about the proper, but heterogenous samples of the possible. Their constituting items can contradict, complement, expand, or oppose each other,

and yet the collection remains viable as a summation of items that preserves their odd asymmetries. This book replicates that epistemic gesture. It takes you into a particular collection of devices, into their histories and the actions by which they are activated to produce what the professionals among whom I worked see as the necessary ethical bifurcations to transform a world that always resists change.

The curatorial work behind this collection takes "odd" technocratic devices that we often take for granted and suspends them on the page of the book. The devices I bring together come from different parts of the world and are not homologous in any way. Each is a microcosm of selected histories and possible futures that conveys an expansiveness that is difficult to capture. At the same time, each device gives the sense of being a thing in and of itself. But just as with the premodern collection of oddities, what I want to emphasize is how, when we put them together into a collection, these devices invite us to wonder about what we take as self-evident. I imagine this book as an invitation to linger in wonder, as we encounter familiar worlds.

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INTRODUCTION

Around noon on the fourth day of the World Water Forum, held in 2006 at Mexico City's convention center, fifty out of the ten thousand participants managed to sneak in the necessary tools to stage a surprise protest. As the demonstrators went through the metal detectors that turned entry doors into security checkpoints, the guards inspecting their personal belongings ignored the water bottles, small coins, and folded pieces of cloth that they were bringing into the building. The would-be protestors walked briskly toward the lobby, where three levels of meeting rooms connected through an intricate system of balconies and escalators, creating an ideal stage for attracting an audience. Within minutes, empty plastic water bottles emerged, coins were dropped into them, and cloth signs unfurled. The protestors began shaking their bottles rhythmically and chanting: *El agua es un derecho, no es una mercancía! El agua es un derecho, no es una mercancía!* (Water is a right, not a commodity! Water is a right, not a commodity!)

With the opposition between a right and a commodity, the demonstrators were not invoking just any right; they were referring to the human right to water. Their voices were tactically recruiting water's universalism to denounce the injustices and dispossession occurring around the world as a result of its commodification. Their chant was more than a mere demonstration slogan; it was a calculated rhetorical move marking the practical and material distinctions between human rights and commodities. The demonstrators were convinced, as were many other participants in the forum, that water should be a universal human right accessible to all, and for that reason should never be commodified. But they also knew that those distinctions need to be produced in all sorts of places; courts were not the only spaces where rights were enacted, and markets did not hold a monopoly over commoditization practices.

Figure I.1. Disposable water bottle turned protest rattle.

The sound of the shaking bottles in the protestors' hands immediately attracted security guards, who approached from all corners of the building and threatened to detain them unless they stopped. After heated exchanges, the protesting voices slowly quieted and the plastic-metallic rattling of the bottles stilled. What had been a hub of intense energy dissolved, quickly reverting to the hum of a controlled, professional environment. If you had entered the lobby at that moment, you would not have imagined a vigorous protest had just ended. The significance of that historical moment had become precarious—a happening whose energetic exuberance had been effaced.

Among all of the things one might find intriguing about this protest, the shaking bottles are what continue to captivate me so many years later (see figure I.1). Inhabiting the space previously occupied by water, the coins inside the bottles insinuated that water had been transubstantiated into money, the ultimate commodity. While the demonstrators' chant created a clear structural bifurcation between human rights and commodities, the coin-filled bottles confounded the clarity of that contrast. With their rhythmic movements up and down and the penetrating sound of metal pounding against plastic, they complicated the clarity of the protestors' words. These bottles were sound-making instruments and statements

about water's confounding nature. They were conceptual things, material abstractions.

These protest bottles, with their unruly embroilments, became the conceptual locus of my research on the technolegal politics of water. What kind of relation was there between the activists' words, with their clear partitions, and the bottles in their hands, with the transubstantiation they suggested? If water is to be a human right, and not a commodity, how do you differentiate these two legal and economic formulations? And more generally, how do people create distinctions and bifurcations if the world in which they live constantly drifts toward entanglement, blurring stark oppositions?

These questions are not only relevant to our thinking about the politics of water, they go beyond. Human rights and commodities directly shape or distantly hover over much of the organization of value, collective life, and nature. The relations between property and body parts, health and healing, food, nature, and even access to the internet are all discussed through similar oppositions: should they be human rights or "just" commodities? As we see, commodities and human rights are generative ethnographic objects; they are classifications already shaping the world. From theological discussions of natural rights, to moral arguments about property, all the way to the universalisms that defined human dignity in the twentieth century, these two notions continue to establish the conditions of possibility for life and death in the twenty-first century. Not surprisingly, however—as the shaking bottles teach us—what from a distance seem to be clearly distinct ideas, under closer inspection are far from that. For example, does paying for water automatically turn it into a commodity? Is the collective responsibility to care for water enough to transform it into a human right? Can a legal definition transform a commodity into a human right?

This book is designed to address the nuances of these questions. I conducted most of the fieldwork for this project in two Latin American countries: Costa Rica and Brazil. I selected these sites because these two countries were among the few in the region that had not formally incorporated an explicit recognition of the human right to water into their national laws or constitutions. This omission created a climate of ongoing struggle among the activists, experts, and public officials I worked with. Their struggles included the promotion of legal reforms, creating more just water pricing systems, and experimenting with more democratic water management programs. Given that they could not fall back on the symbolic power of the law to promote the human right to water, they took those processes

as opportunities to affirm the distinctions they are committed to, the distinctions between a human right and a commodity. This book centers on that work and examines the affective, epistemic, and political work of making distinctions matter.

The people with whom I worked in Costa Rica and Brazil devote their energy and time, and sometimes even their lives, to creating a difference that matters, a separation that they hope will make clear what practically, and even morally, sometimes seems blurred.[1] They do that work from a variety of locations: NGOs, bureaucratic offices, scientific institutions, and even their respective congresses. They are economists, lawyers, engineers, environmental scientists, philosophers, sociologists, farmers, schoolteachers. They consider their technical work—a combination of legal, economic, and hydrologic knowledge—a tool to attain ethical goals. For them it is not sufficient to state that water is a human right, as if the mere act of placing it under a general category accomplishes the outcomes they hope to achieve. They are interested in what exactly that difference means and for whom, what forms of collective life are implicated by creating a distinction. But this does not mean they are all in agreement. My interlocutors hold different political ideologies, represent contradictory interests, and have built their political and technical authority on their active involvement in or opposition to policy-making efforts. At the same time, they are all active participants in national and international networks, such as the World Water Forum, where people share the latest frameworks for action and participate in training workshops and technical talks.

Since 2003, I have talked to this group of activists and experts in their offices, on field trips, at workshops and community meetings, and in many other settings where they have had to articulate for themselves and others how they define the difference they want to see in the world. I also met with them in other countries where we were all attending international water meetings, such as the World Water Forum. I conducted interviews and fieldwork in Spanish, Portuguese, and English. To prepare for our conversations, I had to learn about the technical dimensions of their ideas, which in turn required delving into legal doctrine, economic theory, and organizational techniques. Across those different locations and areas of knowledge, my interlocutors always brought me back to the question of how a human right and a commodity are made different. They emphasized that to act in the world is to change the future by defining differences that are ethically important.

This book centers on the imaginative work they do to create these valued distinctions. I analyze the work necessary to separate categories that resist separation—a condition that is experienced by all sorts of people around the world, anthropologists included. Following what the protestors and their shaking bottles taught me, my analysis does not take us to the usual locations. I do not trace human rights in courts or commodities in markets. Instead, I follow water activists and experts as they attempt to create those separations across other kinds of locations: cubicles, community meetings, international workshops, and even Excel files. Throughout those locations, they attempt to produce the preconditions of futures where differences become plausible and entanglements do not preclude the viability of the distinctions necessary for a more just form of sociality. Through that work we will see how water is kept mattering through the everyday bureaucratic and technical decisions whereby its very materiality is at stake. Through that work we can also understand how people connect their everyday work to a future that has not yet arrived. The chapters in this book focus on the assumptions imbued into the technical tools through which the work of differentiation is performed; they show how people touch the future with their technolegal tools. I specifically focus on four instruments people use: a formula, an index, a list, and a pact. I show how each participates in making the future history of water while attending to how these technolegal tools have become staples in the organization of all sorts of legality and authority (Johns 2016). As I show, these tools quietly determine the limits of the possible by both narrowing down certain options and opening the possibility of creating different, and maybe better, worlds. This book attends to that dual potential and this introduction elaborates on the conceptual work that potential requires.

BIFURCATIONS

As I conducted fieldwork for this project, I became more and more captivated by my interlocutors' commitment to create distinctions despite the slipperiness of the worlds they were part of and the slippages between the concepts that guided their work. Thus, I came to see the differentiations they worked for as forms of bifurcation, "moments when terms cannot be taken as self-evident and require explicit reference [not only] to their meaning" but also to their semiotic tensions with other terms (Strathern 2011).

I find two things particularly helpful in the idea of a bifurcation. On the one hand, it shows how things that seem to be unitary are in fact separations waiting to happen (see figure 1.2). On the other hand, the notion of a bifurcation reveals that once a first separation has been produced, if we continue looking, we realize that what seems to be just one of two is in fact an already entwined line requiring a new differentiation, a new bifurcation. In the world of water, for example, it looks like this: if regulators decide they will keep the price of water tied to inflation to make it a human right, once they have performed that operation they still have the problem that water continues to be a commodity people are paying for. Thus, they need to perform a new differentiation to affirm, in some other way, its humanitarian nature. Following the lines in figure 1.2 makes this dynamic visual.[2] This never-ending bifurcating mesh reveals that there is no end point to this kind of work: once a bifurcation is effected, a new one becomes necessary for each of its branches. Thinking about making differentiations in the world in this way emphasizes that such processes occur in time, as ongoing attempts that are never fully finalized.

Keeping things clearly separated and distinct has important consequences (see also Candea et al. 2015; Roberts 2017). In the cases I studied, making things distinguishable helps people decide whether a water valve is legally closed, what kind of price increase would preclude profiting from water, and who is held responsible for water supply at times of scarcity. But as soon as those separations are successfully put in place, what was clear blurs, revealing unexpected consequences that seem to undo the clarity people like my interlocutors worked hard to achieve. It is as if the separations they put in place are political and moral arguments that "take off in one direction by rendering another [direction] also present" (Strathern 2011: 91). Because of this dynamic, the bifurcations they produce are a mesh of distinctions that sidestep any simplistic dualisms; the only clear-cut effect a bifurcation produces is the need to determine new and future distinctions.

The time I spent with my interlocutors showed me firsthand how the world of bifurcations operates. Converting water into a human right entailed keeping the implications of its commodification at the forefront; arguing for its commodified exchange depended on mobilizing humanitarian logics of universal access. In this kind of bifurcating mesh, a human right and a commodity are absent presences to each other, figures that shape each other's respective forms from within and preclude any easy reduction-

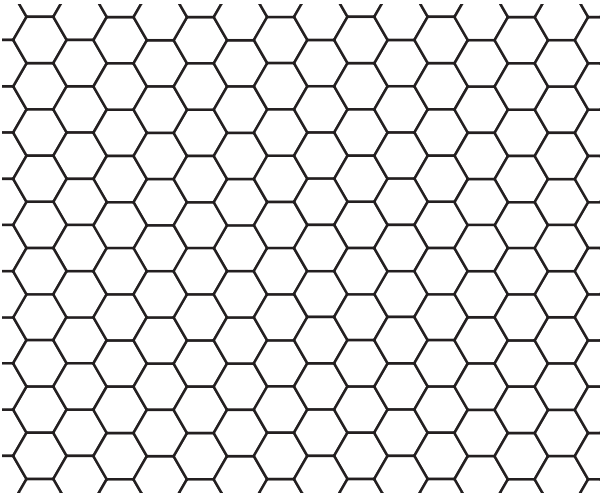

Figure I.2. Mesh of never-ending bifurcations.

ism. It is in this situation that my collaborators' work becomes a constant effort to make distinctions recognizable, since the more you try to clarify and separate, the more you bring about mutuality. As I will show, these differentiation struggles turn water into a planetary archive of meaning and matter (Neimanis 2012: 87), an archive that is constituted through ongoing processes of abstraction and materialization where word and matter, formalization and substance, are inseparable (Barad 2003; Helmreich 2015). But there is more. As I will show, it is through these processes that people like my interlocutors are quietly and constantly elucidating profound questions about the meaning of life, property, and subjectivity at the beginning of the twenty-first century—a time when science has diagnosed the Earth as being already anthropogenically transformed and when the notion of the Anthropocene occupies those with a planetary imagination.

Making differences is not an easy or innocent task, though. The water professionals I worked with create these differences from a subject position that is far from any idealized modern imagination of the individual as the master of history. The dream of *Homo faber*, as the fabricator of the world bringing permanence, stability, and durability (Arendt 1959: 110) to make events match her desires has been long dissolved, if it was ever there at all. Inherited and long-standing economic asymmetries, the inertia of legal systems too baroque for their own good, a bureaucracy that moves extremely slowly, and all-too-uncontrollable environmental events

quickly dissolve any sense of control to produce radical transformation; there is too much path dependency and too much recalcitrance (see also Riles 2013). In place of that maker of linear histories of cause and effect, we find a humbler figure whose capacity to act is directed toward tactical modifications—transformative shifts that are unpredictable. This subject locates the possibility of change not in a historical metanarrative but in the concrete junctures where she conducts everyday political and epistemic labor to effect bifurcations. These junctures include things like a legal definition, a percentage, a variable in a formula, or a promise. I conceptualize each of these junctures as a technolegal device, and I make the device the organizing analytic of this book.

DEVICES

Each chapter in this book centers on one of four devices—formula, index, list, and pact. All of these devices are inscribed in larger processes of water price setting, legal reform, or the promotion of care for water. They are also pieces in even larger trajectories of globalization, the financialization of water, the judicialization of politics, and even the nationalist, neoliberal redefinition of the public sphere we are witnessing. We could begin analyzing these devices by asking questions about those macrohistorical processes, bounding their significance to a specific role in those larger happenings. That approach would turn each device into a token of larger political and economic contexts, namely the history of welfarism in Costa Rica or oppressive patron–client relations in northeastern Brazil. In this book I want to sidestep that token relationship and take a different approach. I will remain close to the morphology of the device, attending to its variations and textures, to its crevasses and revelations, in order to capture the power of seemingly minor technopolitical decisions to shape the abstraction and rematerialization of water. By attending to the form and liveliness of these devices, we gain a different analytic entry point to see how people mobilize history, knowledge, affect, and ethics in their daily professional and political lives. I take this approach because while we search for new macroschemas to adequately address ongoing struggles over things as basic as water, many fundamental ethical questions of our time are being answered quietly, almost inadvertently, through devices like the ones I study. I believe that better understanding their intricate details allows us

to imagine new forms of technopolitical mobilization; these devices can open space for new future histories.

A device is a highly effective instrument for organizing and channeling technopolitical work.[3] It is a technical instrument that merges practices and desires with long-standing assumptions about sociality that have been embedded in legal, economic, and other technical vocabularies and institutions. A device is a structured space for improvisation; it is embodied in the actions of specific persons, but it is also a braiding of long histories of economic, legal, and political systems. In my conceptualization, a device both affirms and destabilizes social categories and institutions, while providing a way to identify the particular practices, offices, computer files, and conversations whereby that material-semiotic labor is performed.

Given this capaciousness, I think of a device as an intense node of temporalities and passions, a combination of diverse technical inheritances (the history of ideas) that open the possibility for other possibilities.[4] A device opens space for technical improvisation even if it is often described by highlighting its fixity, as if its components were already predetermined. People constantly engage these devices through tweaks and hacks that make the technical traditions that seem to be already ordained more flexible and open than they appear. That simultaneous fixity and openness gives a device its capacity to affirm and destabilize social categories and institutions. But, as I mentioned above, it also gives the device its concreteness, allowing us to identify the particular subjects, practices, and locations where we can study them ethnographically.

Although producing diverse constellations and forms of water, the devices I analyze in this book are deceptively humble. In our conversations and work together, my interlocutors were not shy about reminding me that they were fully aware of the precarious nature of their devices, yet, at the same time, they insisted that despite such precariousness, their work consisted of pushing those tools to their limits and getting them to do as much work as possible. Inaction was not an option. While having an unassuming appearance, these devices have the capacity to effect important differences. After all, as the history of Christianity shows, an iota of difference, a barely perceptible divergence, can divide nations, religions, and the histories of whole continents.[5] Some of the devices I study in this book emerge from a particular body of knowledge, as in a mathematical formula; others result from people's lived experience, as in the creation of a pact to care for water. And

while formulas, indices, lists, and pacts are portable and can travel across geographic locations, the results of their activation are never homogeneous. Each time a device is used, its outcomes vary in small and large ways.

I encountered these devices in the manner that other anthropologists encountered necklaces and arm-shells when they asked people in the Trobriands about their valuables (Malinowski 1920; Weiner 1985, 1992). When I asked my interlocutors about the future of water, they explained the need to differentiate a human right from a commodity and immediately referred to the devices they were using to achieve that goal. What I originally imagined were going to be discussions about moral values and ethical futures quickly shifted to explications of the tasks of calculating a formula, designing an index, delineating a list, and securing a pact. As it turns out, these devices are the means by which people clarify moral preferences and enact temporal assumptions about the "goings-on" of life. I imagine these devices as something akin to a gadget, a small thing with aptitudes to crystallize regimes of technopolitical value and relationality. These seemingly small devices help people carve out a sense of what a good common life could be, though they may also often undo that very same sense.

Understood in this way, the devices in this book possess capacities similar to those of complex words (Empson 1977). They create space for the play of ideas and their "histories, transformations and divergences," while exerting pressure on that creativity to stay within particular parameters (Swaab 2012: 272; Williams 1977). These devices create conditions that make some decisions predictable, as when an inflation index is the go-to resource to adjust the price of water, while in other cases they compel people to lift the rug to see what things have been "swept under" it in the rush to deal with pressing problems, as when people unwittingly generate a taxonomic list to legally define what water is.

In this conceptualization of a device I attend to its semiotic charge as developed in linguistics when we talk about a stylistic device or device of speech. I also attend to its technicality as investigated by science and technology scholars who remind us to ask questions about epistemic histories and material configurations. And, I also pay attention to the political capacities of a device as mapped through governance projects that depend on disciplinary associations of knowledge/power as diagnosed by Michel Foucault. But these theoretical markers are labels that I assign to them a posteriori, after having encountered them in the world. So, while I offer these ideas as guideposts for the reader, I am more interested in developing

the potential of the device as an ethnographic category. If these devices are practices in the world, they also affect the world by creating new categories. I want to suggest that devices are not only good things to think with, but also good thoughts to act with—for ethnographer and interlocutor alike. They help us create concepts to make sense of the world, and they make worlds in relation to concepts.

Consider, for instance, the act of haphazardly producing a working list of types of water to be covered by a constitutional reform to recognize water as a public good and human right in Costa Rica (see chapter 3, "List"). Such a device, the working list, has a dual power. On the one hand, it reveals what seems implicitly reasonable: the types of water that should be considered a public good to guarantee universal access. On the other hand, the items on the list open an opportunity to propose a different arrangement, to come up with an unconventional answer for the simple question of why things are the way they are. What if, say, rainwater were included in the list of public goods? How would that change the distribution of matter, entitlements, and costs? How might that alter the very idea of a human right? In Costa Rica that list has occupied more than fifteen years of congressional sessions devoted to the discussion of constitutional reforms. While taken seriously by some and used by others as an excuse to ridicule the idea of a human right to water, the list and the procedure that made it possible have functioned as a wedge, carving out space for discussions of the strategic, the self-evident, and the nonsensical. The list's capacity to absorb the energy of those participating in its construction has turned it into a symbol of effervescent political polarization that has almost exhausted the will of those promoting the human right to water.

What follows, then, is an examination of how categories, practices, and devices animate social worlds. I have put together a collection of four devices, three from Costa Rica—formula, index, list; and one from Brazil—pact. The three Costa Rican devices are all highly technical instruments that required a lot of effort to make sense of. I not only had to follow practices that are not readily available for observation, many of which included people sitting at their desks; I also had to familiarize myself with economic and legal technical languages, and with the rules of congressional procedure. All three of these devices are critical passage points in bureaucratized processes. It is not surprising that studying the creation of differences in Costa Rica takes this form. Today, environmental politics and really most mobilizations to address collective life in relation to the state take a frag-

mentary and piecemeal approach. There is no sense that all-encompassing change is possible in the country. Rather, there is a feeling of things being stuck the way they are. If by a stroke of luck transformations are brought about, they are piecemeal, only one small step at a time.

When my research in Brazil began, it was striking to me how different the political mood and sense of possibility was in comparison to Costa Rica. In my first days of fieldwork, particularly in early visits to the state of Ceará's regulatory agency, I encountered technopolitical devices similar to the ones I followed in Costa Rica. Lula da Silva, Brazil's leftist president, was in power and in Ceará a conservative governor was in his last term. The whole country was wrapped in a mood of profound transformation. There was an intoxicating sense of openness. A year or so later, after I arrived in Ceará again, I found something else was happening besides what I had noticed in the regulatory agency—there was a process that was touching, in one way or another, almost all the water activists and experts that I knew. That process was the creation of the Water Pact (WP), an ambitious statewide effort to promote care for water among all of Ceará's citizens. To me, it was notable how the pact was predicated upon the possibility of massive change, of transforming society as a whole. The rationale and techniques the pact organizers relied upon were geared toward "large-scale" visions, ways to aggregate the political will of "all of society." While the devices in Costa Rica focused on more narrow issues, the pact was an attempt to effect larger-scale change. I switched my focus and made the pact the focus of my fieldwork.

That is how this collection of four devices, one from Brazil and three from Costa Rica, came into being. I have preserved the distinct tones of each device throughout my writing, in part to keep in mind that there is nothing set in stone about the form, scale, intent, or motivation of a device. All of those are questions that have to be ethnographically elucidated. Furthermore, I have also tried to preserve their asymmetric scales in order to convey the sense of fragmentation, lack of closure, and comprehensiveness within which my interlocutors conduct their work and attempt to change their worlds. Yet, all of the devices I have followed are experienced as one possibility among many. My interlocutors commit to that possibility, accepting its legacies and hoping for its potential to be achieved, but they are aware that with their selection they have no monopoly over the future. The devices that they use to help organize their technopolitical labor are, most of all, just one of many possibilities.

By analyzing these devices, along with the intellectual and affective passions they ignite, I want also to mirror the temporality of social life as it is experienced by my collaborators: amid unknowns and without the certainty of hindsight. Theirs is a world in process, experienced from within the instabilities of the present. This temporal orientation allows me to keep in sight how my interlocutors selectively activate certain histories and how docile they are in the face of dominant stories of the past (Bergson 2002; Chakrabarty 2000). This temporal orientation also keeps us attuned to the contradiction and trepidation inherent in all technical acts. I will argue that this temporal orientation is necessary if we are to carefully interrogate the contradictory possibilities of all technical processes, and even more so at a time when water's tendency to change material form disorients our inherited environmental, political, and economic categories. Under these temporal conditions, neither dreams of intimate access to people's worlds nor the promise of distant structural diagnoses of historical developments can do the necessary analytic work. We need alternatives to this prevalent analytic dyad. I propose using the device as an one such analytic alternative.

WATER, WORD, AND MATTER

Because of its universal multiplicity and predisposition to vary its material and abstracted forms, water often confounds any attempt at fixity (Helmreich 2015; Linton 2010). Water's significance for the sustenance of life makes its symbolic meaning multiple (Strang 2006). But its material form is also multiple, destabilizing any schematic rendering of what a water body is. For one, water's defining trait is its tendency toward the formless, its obsession with gravity, its material inclination to change. The French modernist poet Francis Ponge describes this condition by saying that "water collapses all the time, constantly sacrifices all form, tends only to humble itself, flattens itself onto ground" (Ponge and Brombert 1972: 50). Alternatively, we could say that it is not its lack of form but water's magnificent capacity to take a huge variety of forms, the infinite metamorphoses it is capable of—spouts, streams, pools, fast or slow flowing, whipped into turbulence, pulled by the moon, soaking things, and finding its level at rest—that creates the challenge of finding ways to engage its significance for life (Marilyn Strathern, personal communication, April 6, 2018). This characteristic tendency toward morphological reinvention (Ballestero 2019)—water's

proclivity to flow, freeze, and vaporize—confounds the institutional and organizational protocols we use for its scientific exploration and political organization.

This kind of unstable relation between knowledge and material bodies is not unfamiliar to us. Feminist scholars of science and technology studies (STS) have taught us to think about it in terms of the material-semiotic and to consider how corporeality is, at once, a force that shapes knowledge and a substance that is shaped by it.[6] Bodies, human or watery, are not preexisting entities, nor are they purely ideological. They "are effected in the interactions among material-semiotic actors, human and not" (Haraway 1992: 298). Matter, as concept and thing, "is itself culturally and historically specific and, as such, contested terrain" (Willey 2016: 3).

Feminist STS scholarship has helped us see how the types of knowledge and tools doing the morphological work of defining material bodies are scientific. But we sometimes forget that they are also legal and economic and that all of these forms of knowing can work together to specify what water is. Regimes of exchange, for instance, accord certain materials with some values and properties but not others. The water in a bottle bought at a grocery store is a different substance from the water poured into a bottle from a well on public lands. It looks different, and often tastes different (Spackman and Burlingame 2018). Take the case of Ceará, where people in the rural areas install fences made of wire and dry wooden branches to create property lines. These fences often cut across water bodies, small or large ponds. When the dry season sets in, most water bodies dry out slowly, revealing to landowners that their carefully placed fences hang in the air, clinging to the shores of a pond that was, might again be, but has disappeared. These hanging fences now cut the air in two, as if mocking the figure of property, at once showing the violence and absolute fragility of the separations they produce. These appearing and disappearing water bodies, and the fences that cut them through, not only shape everyday household and agricultural routines by demarcating where water is accessible and for whom, they also reveal the seasonal specificities of legal and economic relations forged around the presumed stability of a property regime that allows landowners to sell water for profit, commodifying its life-granting properties. These cyclical transformations of sociomaterial forms marked by hanging fences capriciously activate and mute obligations, the movement of cattle, amity and dispute between neighbors, political relations of

debt, and the power of the state to move water in cases of emergency. Property lines attempt to define water morphologically.

As this example reminds us, regimes of knowledge (science), obligation (law), and exchange (economy) constantly shape what we count as material. They determine the matter we enroll into relations of credit and debt, into the very definition of what a basic human need is, and into the categorization of nature as such. The point I wish to emphasize for us to keep in mind throughout this book is that in the making of matter, not only scientific word and measurement are entangled with substance (Barad 2003). Legal and economic forms of knowing also perform those kinds of material configurations and, more often than not, they do so from a distance.

From this point of view, apprehending water materially cannot be limited to a supposedly stable form of H_2O from which we can infer cultural or political consequences of its presence or absence. Thinking about the materiality of water entails querying, first of all, what its corporeality might be, how something becomes a water body in a particular time and place, and how that body is always a technopolitical entity. It entails attending to how its contingent presence is brought about by much more than our scientific capacity to comprehend bonds between hydrogen and oxygen (Sawyer 2017).[7] As I will argue, we need to remain attentive to the capacity of technolegal devices to implode the supposed material certainty of the molecular. We need to trace water itself beyond pipes, dams, rivers, and oceans. Thus, in what follows, I focus less on watery scenes, fluid locations, and aquatic environments, and instead focus intentionally on water elsewhere, in places where we might not usually explore its material politics.

Diagnosing the existence of such entanglements between legal, economic, and scientific word and matter is not enough, though. Stopping at this diagnosis would leave us at the point where we should just be starting. One of my central interests is to think about what comes after material-semiotic entanglements have been diagnosed. What do people do when entanglements are part and parcel of their sense of the world? As I show, one of the things people do is to reflexively separate that which they encounter and understand as already knotted. They try to undo the entanglements they encounter. This returns us to the issue of how people create bifurcations amid the intense relationality of word and matter. The devices I study in this book help people transform fusions into momentary separations; they allow people to create separations to cut and redirect relations so that

bifurcations can be effected. Furthermore, it is through their devices that people channel their efforts to theorize and organize the ethical responsibilities that emerge from the ontological surgeries they perform (Jasanoff 2011; Valverde 2009). Creating separations is sometimes the only ethical way out.

HUMAN RIGHTS, COMMODITIES, AND THE SPACE BETWEEN

During the first decade of the twenty-first century, the international establishment saw the idea that water should be a human right as contentious. All sorts of interpretations circulated about its implications. A water policy expert from the United Kingdom whom I met at the Stockholm Water Week in 2009 told me emphatically, "The problem is that those who want water to be a human right don't understand that somebody needs to pay to bring it to people's houses. They want water to be free. And that is just unviable." He was among the progressive proponents of universal access, yet he feared that such universalism could be made so profound that it would cause the financial collapse of the water sector. His worry was universal, totalizing. I was surprised by his argument, in part because none of the Latin American activists with whom I had worked for years had ever suggested that water should be completely free. They had a nuanced understanding of the financial and physical challenges of moving liquids across vast open landscapes or packed urban conglomerates—the difficulties of controlling pressure, flow, and leakage, and the monitoring toil of keeping water molecules as pure as possible. Yet the message that "activists" wanted water to be free carried a lot of weight and was mobilized by many to discredit the aspirations of those demanding more democratic access (see also Schmidt 2017).

By 2015, only six years after my conversation at the Stockholm Water Week, the terms of the debate had changed drastically. The international establishment seemed much more accepting of using human rights language to make the politics of water speakable. Perhaps this was due to the fact that in 2010 the UN General Assembly officially recognized the existence of a human right to water and sanitation through resolution 64/292, which cited multiple preceding declarations, events, and projects showing that this was a decision long in the making (see figure 1.3). Or maybe it was because eleven Latin American countries, among others around the world, had modified their constitutions or passed new water laws to formally rec-

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[without reference to a Main Committee (A/64/L.63/Rev.1 and Add.1)]

64/292. The human right to water and sanitation

The General Assembly,

Recalling its resolutions 54/175 of 17 December 1999 on the right to development, 55/196 of 20 December 2000, by which it proclaimed 2003 the International Year of Freshwater, 58/217 of 23 December 2003, by which it proclaimed the International Decade for Action, "Water for Life", 2005–2015, 59/228 of 22 December 2004, 61/192 of 20 December 2006, by which it proclaimed 2008 the International Year of Sanitation, and 64/198 of 21 December 2009 regarding the midterm comprehensive review of the implementation of the International Decade for Action, "Water for Life"; Agenda 21 of June 1992;[1] the Habitat Agenda of 1996;[2] the Mar del Plata Action Plan of 1977 adopted by the United Nations Water Conference;[3] and the Rio Declaration on Environment and Development of June 1992,[4]

Recalling also the Universal Declaration of Human Rights,[5] the International Covenant on Economic, Social and Cultural Rights,[6] the International Covenant on Civil and Political Rights,[6] the International Convention on the Elimination of All Forms of Racial Discrimination,[7] the Convention on the Elimination of All Forms of Discrimination against Women,[8] the Convention on the Rights of the Child,[9] the

Figure I.3. United Nations General Assembly resolution recognizing the human right to water and its international law precedents.

ognize the human right to water (Mora Portuguez and Dubois Cisneros 2015). News about the passing of each law or constitutional reform circulated through the activist and water policy circles I was part of as evidence of a better future that would soon arrive. Human rights offered something of a counterweight to both the privatizing efforts that had swept the region during the 1990s and the hype for public–private partnerships to modernize water management of the 2000s.

A YouTube video of Nestlé's CEO, watched by thousands globally, provides more evidence of how quickly things had changed. The video showed a 2005 interview conducted in German with, depending on the version of the video you saw, a slightly different translation of the CEO's words. In all versions, however, he claimed that water should be managed through markets, like any other commodity, and should not be treated as a special right.

A few years later, Nestlé's CEO reversed his position. Explaining that his former comments were taken out of context, he began presenting himself in venues such as the World Economic Forum as an avid supporter of the human right to water. Reversals like this have led people to regard human rights as weak anticapitalist tools. If, during the 1990s and early 2000s, activists and some water policy experts had trust in what the recognition of the human right to water could accomplish, today, their commitment is more nuanced. The boundary between a human right and a commodity is blurrier than ever. Nevertheless, they continue to push for the human right to water but with much more modest expectations.

The widespread worry over the commodification of water among the activists and experts I worked with is far from unwarranted, despite the slowing down of the privatizing fad of the 1990s. In the early 2000s, for instance, *Fortune* magazine reported that only 5 percent of the global water industry was in private hands, leaving a great potential for untapped business opportunities for the expansion of private enterprise. Global banks such as HSBC advertised their services by posing questions about the financial value of water, narrowing its existence to a luxury or a commodity (see figure I.4). Supplying water to people and industry was at the beginning of the twenty-first century a $400 billion-per-year business, equivalent to 40 percent of the oil sector (Tully 2000). More recently, RobecoSAM (2015), a financial company based in Switzerland that focuses on environmental and sustainability financial investments, considered water "the market of the future" and described its current financial landscape in the following terms: "Recent estimates put the size of the global water market at about USD591 billion in 2014. This includes USD203 billion from municipal capital expenditure, USD317 billion from municipal operating expenditure, USD1 billion from industrial capital expenditure, USD 37 billion from industrial operating expenditure, USD12 billion from point of use treatment and USD3.7 billion from irrigation. Market opportunities related to the water sector are expected to reach USD1 trillion by 2025" (20).

It is striking that of those US$591 billion that they calculated in 2015, US$500 billion are invested, allocated, or directly managed by municipal or public entities. While environmental analyses emphasize that most of the world's water, between 70 and 85 percent, is used for irrigation, the overwhelming majority of the "market share" RobecoSAM is interested in is public or municipal provision for human consumption and industrial use. In other words, the distribution and structure of the financial universe

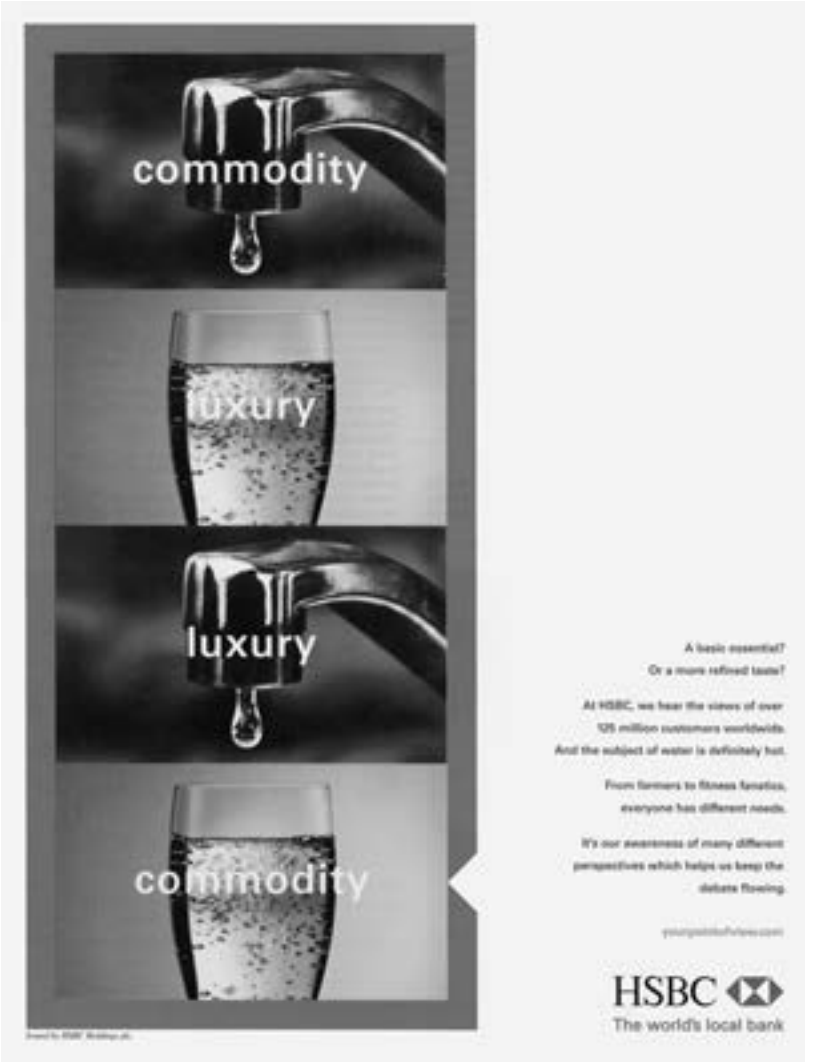

Figure I.4. Banking ad using water to establish a universe with two possibilities: commodities and luxuries.

does not match the hydraulic universe. Tracing where most H_2O flows to and from does not necessarily take us to the areas where most financial attention is put. This means that the way water prices are set, the legal categories countries adopt, and the quantity and types of subjects they recognize as users entitled to the human right to water are all decisions that directly shape desires for financial returns, international investments, and the global relation of water to capitalist wealth and profits. Financialization affects the routes, pressures, and qualities of the flow of water as well as the global accumulation and distribution of "market" opportunities to increase returns.

In schematic terms, commodification is the process of making an object commensurable with other objects so that its exchange is possible within market-like formations. In Marx's famous formulation, commodification turns qualities into quantities through a variety of technical and magical means that make things that are intrinsically different appear, if only temporarily, as equivalent. As things are commodified, boundaries are rearranged, social relations and significations are transformed (Helgason and Pálsson 1997: 465), and relations between people and things take the form of relations between things (Gregory 1982; Mauss 1967). Of course, this is not a mechanical or smooth process. Water is, to use Radin's (1996) words, a "contested commodity" that poses cultural and affective difficulties for its complete commodification because it remains embedded in different, unstable meanings, and for that reason is always gesturing toward the possibility of forestalling the equivalence on which its commodified exchange depends. For Polanyi (1957), water is a "fictitious commodity" because no labor has transformed its essence and hence it fits better in the realm of "society" and not in the realm of the capitalist economy. But also in this sense, the character of water is slippery. Within a single community, people can think of water as sacred, store it, reject its exchange, or pass it on as a gift of nature. They can also pay a water bill at the end of the month, buy bottled water from a store, and pay a neighbor to connect to their line. Even if at some point water is commodified, its social life entails a moment of decommodification to be ingested, shared, or bathed in. The economic biography of water is always a rich series of transformations of its value form (Appadurai 1986; Kopytoff 1986).

In order to understand such mutability and the different obligation regimes associated with it, anthropological analyses of commodified forms of exchange rely on a contrast with gift economies to make the particu-

larities of each clear. Building on Marcel Mauss's (1967) foundational text, anthropologists conceptualize gifts as singularities, things whose value is not assessed through universal equivalences but brought about in singular regimes of exchange that differ in temporalities and rules from those organized around commodities (Munn 1986; Strathern 1988; Weiner 1985). If commodities facilitate the smooth exchange of value given a predetermined medium of equivalence—money—gifts enact exchange via the intensification of particularities and their variations according to context, social status, gender, and history.

Put in this way, the contrast between gifts and commodities seems much more stark than it really is. Ethnographic examinations of these modalities of exchange since Mauss have shown that gifts and commodities are not alternative regimes but idealized types of sociomaterial relations that coexist in all kinds of creative combinations.[8] The rich economic biography of water is also evidence of this. Nevertheless, it is not the ethnographic record that interests me here. Instead, I want to consider what happens if we dispense with the analytic prevalence of the gift–commodity dyad—and more to the point, what happens if we think instead of the commodity–right relation.

While marginal in comparison to the gift/commodity opposition, the relation between liberal rights and commodities has not been absent from cultural analysis. If gifts and commodities have been imagined as an opposition, rights and commodities have been conceptualized homologically—that is, as operating on similar principles and structures. Isaac Balbus's (1977) classic work, for instance, offers a powerful theorization of these two figures. Building on the work of the Marxist legal scholar Eugeny Pashukanis (1980), Balbus shows that the law operates under the same assumption of equivalence that allows commodities to exist. If commodification is the process of turning a use value into an exchange value that can be expressed in a common medium, fundamental rights work in the same way. Individual citizens with all their particularities and idiosyncrasies are made commensurable to each other through their fundamental entitlements as rights-bearing subjects. Fundamental rights perform the magic of equivalence by erasing the marks that birth, gender, social rank, education, and political affiliation leave on our embodied experience. This commensuration makes possible representational democracy and market ideologies alike, as they similarly depend on purported equivalencies (Balibar 2004; Collier, Maurer, and Suarez-Navaz 1997).

I return to these classic texts because their insights create a point of convergence between scholarly works and my collaborators' own theorizations of their water conundrums. On a number of occasions, as we analyzed the legacies structuring water inequalities in Brazil and Costa Rica, my collaborators and I engaged in extended conversations on whether and how Marxist theory helped make sense of this homology. The question for them, and for me, has been the following: Once you are aware that commodities and human rights are, in a sense, the same thing—entities that share a structural form—what can you do about it? This homology between human rights and commodities poses crucial questions about how to imagine the possibility of making a difference—and changing the world—through these figures. Thus, it is not surprising that for the people among whom I worked, as well as for others for whom rights and commodities are important categories for the organization of social life, the act of creating distinctions is a critical one.

AS IT IS, BUT DIFFERENTLY

On one occasion, after sharing my initial findings with colleagues at Ceará's water agency, a geographer in the audience posed a piercing question. He asked me whether I had considered how Karl Marx had analyzed the issue I was interested in. He reminded me of Marx's ideas about commodification and class struggle. At the moment, I was unsure about how to answer his question but I took his observation to heart. I later returned to Marx's work, particularly to a lively passage in volume 1 of *Capital* (1976) where he explicitly addresses the problem of the relation between rights and commodities and the question of singular or multiple worlds. Marx notes how seeing liberal capitalist society from two different perspectives reveals two coexisting, yet distinct, spheres of action. From one point of view, an observer can see the order of rights where an individual can legally express her willful existence as a subject. That, Marx tells us, is "[t]he sphere of circulation or commodity exchange . . . the very Eden of the innate rights of Man" (280). But when the observer leaves this sphere, what seemed equal is revealed as asymmetrical, and the "physiognomy of our *dramatis personae*" changes drastically (280). The money owner becomes the capitalist, and the one who sells labor power becomes the worker. The relation between them is now asymmetrical and the equality that liberalism promises is revealed as only illusion.

With Marx's assistance, activists and experts in Costa Rica and Brazil take on the challenge of puncturing this illusory relation between different spheres of action and the homology between human rights and commodities. They know all too well that rights and commodities are not as radically different as they once seemed. With this recognition they try to deal with the differences between these spheres of action while inhabiting a world that they do not have the luxury of leaving, a world that has no radical alternative, an Otherwise, readily available. Thus, instead of attempting radical alternatives, they search for differences through a practice of proximation as the only way of "noticing particular moments . . . where interesting forms of friction or tension emerge" (Gad and Winthereik n.d.: 3). In this world, making a difference requires getting closer to, not distancing oneself from, what is already in place.

Many anthropologists and activists have considered the question of one or many worlds. At locations such as the World Social Forum, activists entertain the question of multiple worlds by saying that *otro mundo es posible* (another world is possible). This phrase signals a commitment to a politics that assumes that the world can be organized differently. But I want to call our attention to the fact that this imaginary of other worlds, held by activists and ontologists alike, depends on a sense that combines multiplicity and exteriority in a quintessentially modern form. During premodern times of theological social order, the world was one way, and that singularity was preordained by a superior entity, God. There was no outside or exteriority to that order. In modernity, we understand that it is up to us and to our social institutions to structure the worlds we live in. It is only in this world that the very possibility of being otherwise is conceivable. While one could assume that the technical worlds and discussions that I analyze here belong to a modern understanding of a world that is to be molded to one's desires, I found the opposite. In my collaborators' technical worlds, multiplicity and exteriority are absent. For the people with whom I worked, the world is one and it can only be rearranged using existing resources and ideas. The world that is possible is the one that is done and undone in front of them. In this world, ontological difference can only be rendered as opinion, not fact. Thus, rather than seeking a new perspective from which to access a different world, they mobilize to create a difference in the world that is. The picture people see is singular, a sort of legal and economic mononaturalism (Descola 2013) that challenges the very foundation of the modern liberal order: the belief that that there is an outside waiting to be inhabited.

In such conditions, when the world in front of us is the only actionable one, the issue is how to make a difference emerge, how to create the conditions to make difference visible in a world where the precise terms of a bifurcation are never stable and what currently is seems to leave no space for things being Otherwise. The epistemic and ontological problem here is how to create enough separation so that distinctions are possible even if the world seems to preclude any permanent differentiation. Put another way, the people working to have water recognized as a human right imagine a difference that makes a difference without resorting to radical alterity to create a contrast in perspectives.

I want to suggest that this practice of creating a difference without resorting to radical difference or the Otherwise is a project that entails committing to the world *as it is, but differently*. That is, it is a commitment that entails a mode of purposeful engagement that unfolds without presuming that one's desires or systematic interventions have the power to produce a radical difference in the course of history, yet recognizing that within that apparent immutability there is open space for play. This orientation requires a form of inhabiting the world that is not pluralistic, not organized around a multiplicity of worlds that can be placed side by side for an observer to choose which to step outside of and which to enter. After all, that dream of stepping outside of what is—of being illiberal or aliberal—is one of the most fundamental assumptions of modern liberalism. Instead, in this world difference has to be worked from within, as a labor of recuperating that which has been discarded as inconsequential. This is a commitment to the world as it is while trusting that there might be a chance to qualify it differently and, by doing so, to inhabit it more purposefully. Understanding how people act tactically in that world requires us to hold in abeyance our anthropological assumptions about difference as self-evident multiplicity.[9] Another implication of this is that rather than presuming that difference is the "natural" condition of social worlds, we begin to see differentiation as one possibility among many and, for that reason, one that necessitates considerable epistemic and ontological labor to be accomplished. And finally, engaging the world as it is, but differently leads to a peculiar relation to the future.

FUTURE HISTORIES VS. HISTORIES OF THE FUTURE

So far, I have referred to Costa Rica and Brazil as locations where I have conducted fieldwork. I have also mentioned the World Water Forum, that triennial event that attracts world water elites, as a space I shared with my interlocutors. But I have not settled on a single geographic site as the location for the stories that you will find in this book (Gupta and Ferguson 1997; Marcus 2006). One reason for this is that this book is better located in time than in space. It is ethnographically grounded in the device, with its impetus to "improve" futures. Here, I am not suggesting a dichotomous separation between time and space. Rather, I am engaging in an exercise of emphasis, making the choice to put more pressure on one analytic thread, the device and its temporality, to find out what interesting insights it can generate.

This emphasis on the device as an intense node of temporality is crucial to understanding its character as simultaneously precarious and hopeful. In my conceptualization, the device opens up a conditional temporality where encounters between the material world, the body, tools, ideas, and representations (Bear 2014: 20) shape collective senses of accountability and plausibility (Greenhouse 1996, 2014). Those encounters occur in community aqueducts, bureaucratic cubicles, signature collection campaigns, international meetings, and moving vehicles promoting citizen participation in water management. My ethnography will convey those specificities. Yet the everyday work occurring in those locations is also connected to medieval economic history and notions of profits (chapter 1, "Formula"), inflation rates and the collection of household objects (chapter 2, "Index"), political communities that challenge Leviathan's singularity (chapter 4, "Pact"), and attempts to draw the material borders of water bodies (chapter 3, "List"). How can one keep all of those connections in sight? This book attempts to do so by thinking about nonlinear future histories of water. It attempts to show how people relate to future histories without falling into predictive modes. It shows instances where engaging the future does not necessitate having an image of how that future looks.

While analyses of the future often emphasize its openness and unpredictability, the future is anything but empty. We are surrounded by, or have the habit of looking for, proleptic images. Even if we know that those images are not certain, we still rely on their contents. This is the paradox of modern futurity: while we are taught to believe that the future is unpre-

dictable, we live in a world saturated with future-consciousness (Rosenberg and Harding 2005: 6). A history of the future, Rosenberg and Harding note, shows how futures—as (meta)narratives that foresee, predict, imagine, divine, prognosticate, or promise—encounter people's everyday lives (9).

Through the devices that I study in this book, I engage the future in another way: I move from histories of the future to conceptualizing future histories. By inverting these two concepts I want to tap into the nonimaginable dimension of the future. But this nonimaginable future is not unimaginable because it is too traumatic or extreme. Rather, it is unimaginable because of its unpredictability. There are no metanarratives to connect it to people's everyday lives. The uncertainty is too deep here and is the result of an awareness of the interminable practices, material processes, imaginaries, and mere coincidences that ultimately shape the yet-to-come. For me, it is not surprising to find this mode of addressing futures within bureaucratic-like spaces (Mathur 2016). This is not a modern future. It is not foreseeable, predictable, or imaginable. And yet, despite its "unimaginability," it is engaged through the density of everyday action. Thus, my conceptualization of a future history signals happenings that will be recognizable as meaningful only from the future; only by looking back will what counts as the history of an event be recognizable. The devices I analyze have the potential of becoming that future history or, at least, of creating its preconditions.

Anthropology's record of thinking about the relation between sociality and time has produced rich analyses of people's orientation toward the past—from evolutionary theories to recent and personal histories (Munn 1992). Recognizing the future as a "cultural fact" (Appadurai 2013: 285), anthropologists have shown the medium term can be evacuated from collective preoccupation (Guyer 2007), how the future can be ossified as a site of nuclear disaster (Masco 2014), how "anthropocenic" ends of the world are diagnosed (Cohen 2016), and even how the future has operated as the very ground of anthropological analyses (Ringel 2016).

Feminist thinkers, on their part, have also long reflected on the future. I am interested here in the work of feminist scholars who have invited us to think about how the future can be "conceptualized in different terms" (Grosz 2002: 13). I take this invitation to search for alternative conceptualizations as a call to replace the quest for what the future looks like with the question of what counts as the future in the first place. Within this frame, we can move from a search for narratives of beginnings and ends,

in the form of images of rebirth or apocalypse (Wiegman 2000), to a focus on questions of duration and of the political possibilities of the in-between. In that space, the question of affirming the worlds that we want to inhabit acquires a more intimate scale, challenging the comfort of critique, if critique is defined as a distant diagnostic of negativity (Braidotti 2008). Rather than undoing worlds or focusing on documenting their lacks, this feminist future poses questions about the ways in which worlds are remade in what we understand as the goings on of the present.

Other academic and professional disciplines—such as neoclassical economics, statistics, and more recently environmental and earth sciences—constantly attempt to produce the future by relying on visions of the world to come. Using sophisticated techniques of calculation, modeling, and planning, and relying heavily on computerized procedures that process large quantities of data, these disciplines routinely produce image-like iterations of how the future might look (Mathews and Barnes 2016). Inscribed in the methods by which those visions are put together we can find assumptions of what is possible and what is plausible. Those assumptions about what counts as relevant information for future making result in a picture of how things could be (or not). They result in a future that is seen in the body of an inflation percentage, a number of people with access to clean water, a situation where all water is managed by privatized utilities.

For some social commentators, the devices in this book might seem tools to make exactly those kinds of visions of the future concrete. But I will argue otherwise. I will show how, given their openness, these devices allow people to not engage the future as if it were an exhibition, a display you could step into, or even as a narrative figure. My interlocutors do not use the liveliness of their devices to produce a utopic, dystopic, or merely unremarkable image of the yet to come. This refusal to treat the future as an image is not capricious. It is intrinsic to the work of creating bifurcations between terms when you know those bifurcations are inherently temporary, and when you are aware that any difference created in the present is unstable and contradictory, despite the potentially brutal effects it might have. Rather than talk about the future they want to see come about, they speak about responsibility, principles, and shortcomings in their technical acts. This is how they create a future history, not by talking about what that future looks like, but rather by acting in the present with all its constraints and limitations.

When people activate the future and their devices in this way, they

stretch themselves between different moments in time simultaneously. They activate the legacies inscribed in their tools, they mobilize what they recognize as the present, and they project both into a sense of the future as something one is responsible for in the here and now. In other words, they create a temporality that folds linear order onto itself. Futures and pasts are brought into the present, turning now into something more than what we think it currently is.[10] Instead of a chronological unit, that moment is a simultaneity full of conditionals, dependencies, and uncertainties that cannot be compressed into an image. If that moment is turned into an image, it has been turned into something else. It has become a predictive, and hence incomplete, vision.

Thus, instead of relying on a fixed image of the future, my collaborators deal with that simultaneity by thinking and acting from the future anterior, that upcoming moment that "is not calculable from what we know, [because it is] a future that surprises" (Fortun 2012: 449). In this temporal orientation, the devices people use and the multiple bifurcations they negotiate are processed with the expectation that they might work as preconditions that pave the way for something that is different from what is. Yet, despite their technicality, my interlocutors cannot know exactly what the preconditions they help create might accomplish in the future. This future anterior is actualized in those practices of the present that embrace the future's impossible calculability, without relegating it into the unthinkable or into a realm of ideas that cannot be acted upon. In this folded temporality, people act by setting up "structures and obligations of the future" (Fortun 2012: 449), despite the difficulties they have with producing any specific image of what that future might look like.

Analyzing that temporality complicates our ethnographic confidence in the historical as a fait accompli waiting to be described. Here, ethnographic analysis cannot be limited to a narration of events that have already occurred as if their significance lay in their pastness. Nor can analysis be guided by the temporality of nonevents, those everyday actions that are illegible and insignificant for dominant collective schemas. An ethnographic analysis of the future anterior traces a three-way temporality: the possibility inscribed in future differences, the past legacies shaping accountabilities, and the present opportunities mobilized to foster unanticipated plausibilities. In this temporal mode, people act to set up structures and obligations for the yet-to-come, despite their inability to visualize that

future precisely. This book shows how people engage in that work. It is not that they pose the question of temporality as a topic to be discussed; rather, I show how they produce differentiations when their everyday work is already marked by a particular sense of the yet-to-come.

An ethnography written from this temporal orientation can leave one's desire for completion unsatisfied. The future anterior is not built on non-events, those happenings that go completely unnoticed or unrecognized by dominant forms of reason (De la Cadena 2015: 145–48). Rather, narrating difference in the future anterior depends on *quasi-events*, things that are not privileged by a sense of full existence but instead unfold without "quite achiev[ing] the status of having occurred" (Povinelli 2011: 13). The devices this book examines are quasi-events themselves: lists put together without ever becoming law, percentages of surplus never increased, promises aggregated without having their fulfillment verified. Discarding those occurrences on the basis of their lack of "effects," where effects are predetermined by what we can recognize in the present, would close off our access to possible futurities. It would keep us tied to the familiarity of the predictable. This means that writing ethnography from the uncertainties and conditionals of the future anterior is writing what might become a future history, something that from the future might provide insights into how what currently is has come into being. This is why I want to argue that dwelling in what in the present seems to be ineffectual is a worthy analytic endeavor.

In an effort to attend to that temporality, I explore the collection of devices I have curated by spending time within folds and tweaks so that we can recognize the efforts people make to set up future differences, or at least to create their preconditions, even if we cannot round off their stories with an end point. This approach allows us to create an "opportunity to arouse a slightly different awareness" not only about "the problems and situations mobilizing us" (Stengers 2005: 994), but also about the ways people confront those problems. This attentiveness also has the peculiar effect of making certain bifurcations more perceptible, turning significant that which otherwise may seem irrelevant. And finally, this approach also affords us some time to wonder: to keep relations visible, to keep tensions at the forefront, and to inhabit thresholds where questions about distinctions can be entertained without being shut off because they do not answer clearly to the crisis at hand.

Attending to such futures and to the work of creating their preconditions is a difficult task when we confront concrete images of the effects of the global water crisis: barren landscapes with cracked soil, children drinking from muddy ponds, women walking kilometers with water containers on their heads. Those images circulate through television, the internet, and print and are usually accompanied by pronouncements about the magnitude of the crisis. In 2016, for example, the World Economic Forum polled a group of 750 "decision-makers and experts" from the business world to ask them about the most impactful challenges facing humanity.[11] The respondents listed the global water crisis as the number-one global threat, followed by failure to mitigate and adapt to the effects of climate change and the threat of weapons of mass destruction (World Economic Forum 2016).[12] This same sense of crisis was on the minds of the activists protesting at the forum in Mexico City in 2006. Once their bottles were silenced, representatives from Brazil, South Africa, the United States, and Bolivia waited for the security guards to disperse and then addressed those of us who remained in the lobby. One after the other, the speakers told their audience about water's finite nature. They spoke about the radically asymmetric ways in which that finitude is experienced depending on people's geographic location, ethnicity, class, and gender. They explained the dramatic effects of increases and/or decreases in water flows on species loss, salinization, desertification, erosion, and the drowning or dehydration of multiple forms of life. Without exception, all the speakers ended their speeches with one prescription: the only way out of the global water crisis was recognizing the human right to water and rejecting its commodification.

Notions of crisis, like the one described by groups as different as grassroots protestors and participants at the World Economic Forum, carry with them a particular philosophy of time. They ignite desires to know the genesis of a crisis and hopes to find its timely resolution through historical pivot points. It is not surprising, then, that the task of defining the turning points when things went wrong and, by extension, the moments of transformation when, in theory, things can go back to how they should have been (Roitman 2013: 10–12) elicits all sorts of struggles over the legitimacy and adequacy of "solutions" and those who propose them. While there are multiple angles from which one could analyze the adequacy of those solutions, I am interested in something different from adequacy (Maurer 2005).

Once there is some diagnosis of a solution to a crisis, like the idea of recognizing water as a human right, what happens? We find one answer to this question among my collaborators. As it turns out, once they return to their offices from international meetings and technical workshops, the future again seems uncontrollable and any ultimate solution to the water crisis that seemed workable now appears inadequate. For instance, despite having been framed as an opposition, human rights and commodities go back to looking increasingly alike. And yet the precariousness of the human rights "solution" does not annihilate my collaborator's intentions, nor does it put them in a state of agonistic cynicism. What they do is find ways to retool not only their knowledge but their expectations (Riles 2013). At a time when the magnitude of the water crisis could override any sense of purpose, they find in their technical devices the openings they hope for; human rights acquire new forms and their relation to commodities becomes a knot waiting to be undone. This complex dynamic in a time of water crisis posed an important methodological question for my project: From what kind of ethnographic positioning should I study these devices and people's relations to them? And how do I conceptualize these devices as ethnographic objects?

If some ethnographic moments result in the ethnographers' dazzle (Strathern 1999: 10–11), these devices unleashed something different for me. Marilyn Strathern describes the dazzle as resulting from a particular ethnographic encounter that remained with her for a long time. The mesmerizing sense that encounter unleashed was due to the urge to interpret an unfamiliar observation; a lack of familiarity ignited a lasting search for elucidation. But, as Strathern notes, in anthropology we do not experience the same sense of dazzle with practices or forms of knowledge that are familiar to us because we presume to already know what they are about. During my fieldwork I was not caught by an unfamiliar object. To the contrary, the devices that people brought to my attention were fairly familiar figures, the kinds of objects that we hear about in newscasts and from activists opposing capitalist forms of exploitation. Thus, my focus on those devices did not emerge from an urge to elucidate the unfamiliar. Instead, it grew from another kind of disposition, something more akin to being unsure and hesitant about their place in the world. I came to the project having heard about these devices as world-closing artifacts, but my interlocutors saw them as possibility-creating tools. This conflict made me hesitate. So rather than ignore that hesitation, I turned it into an analytic and

affective modality from which to analyze my ethnographic material. I gloss that hesitation as wonder, and use it as a resource to open up contradictory ethnographic objects for joyful exploration. I decided that if technocracy is commonly imagined as a "wonder-killer" I would purposefully engage it as a potentially wonder-inducing ethnographic object.

I want to suggest that wonder, that condition where it becomes imperative to think carefully about things that were presumed totally ordinary, and for that reason self-evident (Rubenstein 2006: 12), is a more generative disposition than crisis to analyze how people like my interlocutors perform political work from the future anterior. It is important to remember that this sense of wonder is not a positive disposition of awe and acceptance. It is closer to curiosity and puzzlement and can bleed into dismay. I am referring to the sense of wonder that we experience when we find ourselves pondering something, unsure of its ultimate significance, ambivalent about its actual implications, willing to take an unexpected direction but concerned about the possible implications of doing so. In this sense, wonder opens up the familiarity of what seems straightforward.

Used in this sense, wonder works both as noun and verb (Swaab 2012). It is passion and thing. It signals an object that amazes and a transitive response that leaves one unsettled. Objects of wonder have "a questioning and questing aspect" (Hepburn 1980: 27). They demand a certain duration so that doubt and confusion can endure long enough to allow qualitative leaps and contradictions in our sense-making. When presented with a conundrum, rather than renouncing or ignoring it, wonder allows an expansion of time, making it possible to dwell in what seems unreasonable—such as a list challenging the physical borders of water.

The devices I study here had that effect on me. They created doubt and concern in my imagination as they claimed to turn water into a human right via a mathematical formula that instills equilibrium and harmony in society (chapter 1, "Formula"); to make the right to water affordable by effacing the subject and celebrating consumption practices of statistically abstracted households (chapter 2, "Index"); to undo the separation between subject and object by attending to the liquidity of water (chapter 3, "List"); and to create a political community by gathering promises rather than incorporating subjects (chapter 4, "Pact"). Used in these ways, the devices I study place liberal ideals about individuals and nature at the border between the acceptable and the unacceptable. They make nature and human dignity mundane, as they translate virtues and values into the

dry normality of technocracy. They make the sublime measurable, the sacred regulatable. For that reason, they may seem sacrilegious, doing more than they should, translating things that are supposed to be untranslatable. And yet, at the same time, they ignite passions, trust, and maybe even some hope. When put together in a group, these devices resemble a collection of oddities, a set of objects that challenges our familiar assumptions without being formally authorized to do so. Collectively, these devices do lively metaphysical work while subsumed under the bureaucratic morass of the technical. It is from this position of wonder that I invite you to engage with the devices in this book.

FOUR TECHNOLEGAL DEVICES

Starting from an epistemic mood of wonder, each of the following chapters explores a particular device, gesturing toward its diffuse future, to its engagement with the obstacles of the present, and to the ways in which it activates traces of the past.

Chapter 1, "Formula," examines the work of economic regulators as they calculate the price of water for human consumption. It zooms into the ways in which mathematical calculations become the acts whereby the ethics of human rights are elucidated. Regulators ponder their legal and humanitarian commitments when they navigate the numeric demands of pricing water in a way that excludes profits. This chapter shows how the morality of the profit/rights opposition is translated into a metaphysics of harmony and equilibrium. For regulators, if the variables in a formula are balanced, society will also be. This continuity, suspicious and magical at once, grants regulators space to affirm the ideal of universal access to water from within their technical calculations.

Chapter 2, "Index," shows the unexpected connections between changing consumption patterns in Costa Rican households and the cyclical adjustment of water prices to enact the World Health Organization's prescription that if water is to be an affordable human right, households should pay no more than 3 percent of their monthly income for it. Despite directing their humanistic efforts to making water accessible to the poor, the price adjustments that regulators calculate depend on an economic indicator, the consumer price index (CPI), that targets changing consumption practices across society. Thus, they have slowly reoriented the reach of the human right to water to the things that occupy the home, in the process

statistically dissipating the specificities of the human bodies they originally wanted to protect. The result is that the mathematical world of human rights is inhabited by beets, pantyhose, and other commodities, rather than by subjects affirming the intrinsic dignity of their personhood. It is as if the future of the human itself dissipated into humanitarian air.

While in the first two chapters the difference between a human right and a commodity is economically elucidated, the next chapter investigates questions of legal definitions. In chapter 3, "List," I analyze how that definitional challenge takes legislators to the material borders of water, to its very substance. Focusing on the opposition of Costa Rica's Libertarian Party to the recognition of the human right to water, this chapter shows how for Libertarians the materiality of water sets the limits of the (im)possible. Through their procedural maneuvers, Libertarians have composed a wondrous list of water bodies that, they argue, would be covered by linking the recognition of water as a human right to its classification as a public good. Proponents of the reform have argued that the two are indivisible, that the human right to water implies its fundamental recognition as a public good. In their incursion into different forms of materialisms, the Libertarians come to challenge the very possibility of using categories such as public and private to domesticate the morphological indocility of H_2O. To the activists pushing for legal reforms, such material wonderings are ridiculous—nothing but irrational tactics that cannot be taken seriously. Yet, by staying close to that list, we see surprising affinities between "materialisms" of the new wave and Libertarian tactical ontologies. Through that convergence new physical worlds are being implicitly invoked.

Chapter 4, "Pact," shifts to Brazil to examine the all-encompassing character of an initiative called the Water Pact. Here I expand the question of legal obligation to explore efforts made by the Assembléia Legislativa do Ceará (Legislative Assembly of Ceará) in northeastern Brazil to create affective commitments beyond the law. In the Water Pact a group of activists, government officials, and consultants enlist people's capacity to care for water to create an aggregate that, according to its promoters, would have the capacity to transform society's sense of shared responsibilities over water and ensure its universal access. This pact is a form of political aggregation that differs from classic liberal forms, such as Leviathan, which are organized under the premise of belonging. The Water Pact gathers thousands of participants, but does not demand their membership. It is a mechanism to aggregate public promises, and it is predicated on the

capacity of a promise to bind people together. With the pact, the organizers hope to expand the meaning and forms that collectives can take—suggesting, on the one hand, a downsizing of the subject to the promise she makes, and on the other, an upsizing of the types of political collectives promises can generate.

Together, these devices can be imagined as a juxtaposition of preconditions to futures that are not calculable from the present. They test new logics and retest old ones in order to remain open to the uncertainty of what the future may carry. Each device constitutes something of a collective attempt, an awkward juncture in which temporalities, utopian imaginations, and pragmatic tactics implode to craft what my collaborators imagine as "vigilant everyday practice": a commitment to the politics of one's expertise. Together, these devices invite a renewed understanding of things we take for granted—a reexamination of our existing worlds and their political categories, through eyes open to wonder. Such an analytic embraces the seemingly monstrous, the mundane, and the surprising in our existing politico-economic repertoires. Perhaps at a time when we are confronting a crisis of our own liberal dreams, reclaiming the wonder in ordinary technolegal procedures can be a generative practice.

NOTES

PREFACE

1. Recent anthropological works describe wonder as "an index of ontological crisis and transformation" (Scott 2013: 860). In this usage, wonder remains tied to the fantastic, to that which is difficult to imagine from the lifeworld of the anthropologist. My project is to take wonder out of that context and examine its epistemic and ontological possibilities without necessitating the existence of the fantastic as its precondition.

2. There is a strong parallel here with the effects that the recognition of global warming has had on Euro-America, a peculiar end of anthropocenic times.

3. The full title of the book is *The Fardle of Façions, conteining the anunciente manners, customes and laws of the peoples enhabiting the two partes of the earth, called Affrike and Asie*.

4. In anthropology, collecting customs and manners led to the fundamental methodology by which the larger comparative project on which the discipline was built would later unfold. James George Frazer (1935), one of anthropology's greatest collectors, put together an outstanding number of customs, practices, rituals, and institutions to illustrate what at the time were thought of as evolutionary patterns. Needless to say, we continue to struggle with the legacy of evolutionary ideas and colonial assumptions undergirding this anthropological legacy, but what remains interesting to me is the analytic presumptions that went into Frazer's collecting drive. Frazer's ever-expanding book, *The Golden Bough: A Study in Magic and Religion*, first published in 1890, consists of sixty-nine chapters densely packed with customs and manners—his chapter titles include "The King of the Wood," "The Magical Control of the Weather," "The Worship of Trees," "Tabooed Persons," "The Myth of Adonis," "Homeopathic Magic of a Flesh Diet," "The Transference of Evil," and so on. Together, the chapters create a dense field where the reader can move laterally between customs, finding her own connections

and disjunctures. *The Golden Bough* invites readers to renounce any intention of mastering content and instead opens the door to linger in wonder. Rather than setting up vertical relationships between an element and the broader complex cultural milieu to which it belonged, as Franz Boas would later do, Frazer was invested in the particularity of each item and its connection to a larger argument about history. He designed a book with analogical relations in mind.

INTRODUCTION

1. This does not imply that they are misguided by the desire to purify the world, as Latour has described it. Theirs is an effort to act ethically amid the difficulties of finding clear courses of action that reflect their commitments. They want to enact distinctions in order to make ethical options possible.

2. These bifurcations are not perfectly symmetric. Different branches have different weights and histories. I want to thank Jörg Niewöhner and the Humboldt STS lab for making this observation.

3. There is a long tradition in science and technology studies of thinking with devices, particularly material ones. Most recently, Law and Ruppert have expanded the reach of the concept to think of devices as lively, unpredictable, and tactical arrangements. There is a lot shared between my conception of the device and Law and Ruppert's, although I am particularly interested in noting the device's role as makers of separations, rather than emphasizing the fact that they are "social"—that is, that they are relational (Law and Ruppert 2013).

4. Michel Foucault's notion of *dispositif* as a tangle of lines of continuity and disruption of power, knowledge, and subject formation has also been theorized as a device (Callon 1998). Foucault's dispositif is often interpreted as operating through a form of synecdoche to the extent that it is capable of standing for an already accomplished epochal configuration. The notion of device that I examine in this book is not as concerned, at least for the time being, with its capacity for epochal diagnosis. Maybe it is more like a cell phone, which as we have seen, despite its apparently limited original significance, has radically reshaped social, financial, and material relations. Giorgio Agamben takes on this notion of the dispositif/device, which he translates as an apparatus, and expands it by noting, "I shall call an apparatus literally anything that has in some way the capacity to capture, orient, determine, intercept, model, control, or secure the gestures, behaviors, opinions, or discourses of living beings. Not only, therefore, prisons, madhouses, the panopticon, schools, confession, factories, disciplines, judicial measures, and so forth (whose connection with power is in a certain sense evident), but also the pen, writing, literature, philosophy, agriculture, cigarettes, navigation, computers, cellular telephones and—why not—language itself, which is perhaps the most ancient of apparatuses—one in which thousands

and thousands of years ago a primate inadvertently let himself be captured, probably without realizing the consequences that he was about to face" (Agamben 2009: 14).

5. The expression *an iota of difference* comes from the early history of Christianity. During its early years, when the separation or embeddedness of church within state was being elucidated, bishops and politicians differed in regard to the nature of Christ and hence the legitimacy of his and the apostles' teachings as Godly word. The controversy was based on the letter *iota* in the Greek alphabet (ι). When describing the relationship between Christ and God, some favored the use of the word *homo-i-ousios*, meaning that the son, Christ, was similar to but not the same as his father, God. The opposing group held that the word *homo-ousios*, meaning one in being or one and the same, described the relation between Father and Son, making Christ one and the same with God itself. The political implications were great, as this determined the relationship between the emperor and Christian representatives on earth, whether they were embedded into each other or not. I want to thank Andrew Mathews for suggesting thinking about the difference that a small difference can make in these terms.

6. I am borrowing Donna Haraway's notion of material-semiotic to keep alive the layered ontology of nonhuman beings in a way that might become invisible when using terms from the "new materialism" turn in the human sciences. The notion of the material-semiotic attunes us to material presence without erasing the semiotic preconditions, inequalities, capacities, and consequences that make their being possible.

7. There is a deep affinity between this approach and STS lineages that have called our attention to the material liveliness of scientific accomplishments and controversies, namely what is glossed as actor–network theory. But there is also a deep affinity between my approach and a variety of older anthropological approaches that found the world was materially constituted through objects that did not fit the Euroamerican categories that analysts assumed when studying the organization of collective life elsewhere.

8. For a recent example see Tsing (2013).

9. This is a task for which ethnography is suitably equipped. Winthereik and Verran speak about its possibilities when they analyze ethnographic stories in terms of part/whole and one/many configurations (Winthereik and Verran 2012).

10. This has also been theorized by Bergson and Deleuze as the virtual.

11. The World Economic Forum brings together private sector, banking, and state representatives to discuss the outlook of the world economy and analyze trends and risks.

12. The report is produced from a survey of 750 "decision-makers and experts" from the forum's "multi-stakeholder communities," and is taken as a gauge of the crises that preoccupy the global political and economic establishment.