

DENGUE MOSQUITOES ARE SINGLE MOTHERS: Biopolitics Meets Ecological Aesthetics in Nicaraguan Community Health Work

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This transformation of one's self by one's knowledge is, I think, something rather close to the aesthetic experience.

—Michel Foucault, interview with Stephen Riggins, 1982

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This system of destroying mosquito larvae is . . . essential. . . *Caring* for the cisterns, water barrels and containers is the essential work.

—William Gorgas 1915, emphasis added

Doña Jamaica was an entomological technician with the Nicaraguan Ministry of Health. Her job was to train community health workers (*brigadistas*) to search out the breeding spaces of *Aedes aegypti*, the mosquito that transmits the dengue fever virus. On a warm morning in 2008, she led a group of brigadistas through a neighborhood near the main health center in Ciudad Sandino, a low-income city of some 150,000 residents on the northern periphery of Managua. Her walk was interrupted by regular pauses, during which she would point out new breeding spots (*focos*). In just a few minutes, Jamaica found larvae in an eggshell, a soda bottle cap, and a water bucket. “The mosquito will lay her eggs wherever she can,” she explained, “but you won’t find focos in mud puddles or streams. She likes clean water.” “Just here,” she pointed out another bottle cap, “she can lay dozens of eggs!” She overturned the cap with a black-booted toe, and we all crouched

to watch the gray larvae wriggle on the dusty ground. Soon, the brigadistas and I found ourselves examining the dark corners of house lots, crooking our heads into piles of garbage and over abandoned car tires. We delighted in the discovery and killing of this intimate insect other.

The brigadistas saw another benefit in this work. “The brigadista has the opportunity to visit all the barrios of the city,” one woman told me, “because the mosquito colonizes all parts of the household, all parts of the city. Being a brigadista, you get to learn all about her habits.” About 90 percent of Ciudad Sandino’s brigadistas were women. Many had worked at other jobs, notably in *maquiladoras* (apparel factories), but they had few opportunities to explore the city. Another brigadista elaborated, “For me, it’s out of the routine. I get to learn, and I like to walk . . . because normally there’s nowhere for you to go, you know?” The work of following mosquitoes opened up the landscape in exciting ways.

The seed of this article is a rather simple observation, but one that was nonetheless a persistent element of my notes on work with brigadistas. The gist of it was, “Looking for mosquitoes is not just learning. It is *fun*.” My June 2008 field notes include the following passage:

When I look now on a pile of soda bottles, mouths to the sky, full of greenish water, I [anticipate] the satisfaction of throwing out that water. . . . A big part of me WANTS to find larvae.

Ae. aegypti breed most often in household water supplies, both formal (sinks, barrels, buckets) and impromptu (crooks of trees, garbage, coconut shells). Once we learned to find these focos, the impulse to continue was compelling. Our fascination with the human–insect world was renewed with every upturned palm frond and discarded CD jewel case.

A kind of fascination is also identifiable among entomologists. A scientist from the U.S. Centers for Disease Control’s dengue branch told me in an interview that the more he studied *Ae. aegypti*, the “more respect” he had for her: her ability to find new places to breed, and her ability to feed on his blood—in his apartment, the apartment of a professional entomologist!—with seeming impunity. Grasshopper expert Jeffrey Lockwood puts it another way. His studies, normally focused on learning about grasshoppers (to find better ways to kill them), also permitted him to learn ethical lessons from grasshoppers, specifically the power of stillness and resignation (Lockwood 2002:3). Such learning occurred in the process of what he calls “dancing”: that is, movement with grasshoppers (Lockwood 2002:19–20; cf. Raffles 2010). In this article, I analyze this form of exploratory

learning, a form that has entanglement among people, mosquitoes, and their habitats at its core. Brigadista work afforded a “transformative” recognition of this entanglement (Foucault 1997), a recognition to which I refer as “ecologically aesthetic.” My aim is to use ecological aesthetics to contribute to discussion about the politics of life amid a process of mutual becoming, in which “life” is the unfolding, often incidental attachments and affinities, antagonisms and animosities that bring people, nonhuman animals, and materials into each other’s worlds (Deleuze and Guattari 1987; Haraway 2008; Ingold 2011).¹ Lockwood claims (wrongly in my view) that ethical engagements with landscapes, like bioethics, must be “anthropocentric” (1999:366). To destabilize this anthropocentrism—an anthropocentrism that seems also to mark biopolitical analysis—I use the case of dengue prevention to show how aesthetic “transformations,” including emotional experiences of pleasure and care, can and do exist recursively with transformations in biophysical ecology (Bateson 1979; Foucault 1997; Harries-Jones 1995). Women brigadistas became with mosquitoes, who became viral vectors, while barrels, buckets, coconut shells, trees, and humans became their shared habitat. Women community health workers’ shared sense of the meaning of their work, I argue, was informed by taking part in this collective encounter.

AESTHETICS AND PUBLIC HEALTH

Late in 2007, Ministry of Health officials in Ciudad Sandino hung a cloth sign outside the health center. To the right of the blood-red words, “De vos depende . . . Prevenir el dengue” [Dengue prevention depends on you], the sign featured a drawing of a menacing mosquito. The sign summarized Nicaragua’s dengue strategy: household control of *Ae. aegypti*. The female *Ae. aegypti* lays eggs in small, usually anthropogenic bodies of water and feeds exclusively on human blood. It is females that transmit the dengue virus, but only among humans. (Monkeys and mice make poor hosts, even in experimental settings, except when scientists have created genetically modified “mouse models” for immunological studies.) In educational messages from the Ministry of Health (*Ministerio de Salud*, henceforth, MINSA), these mosquitoes were poised to do harm, unless citizens agreed to rid their homes of potential breeding sites (see Figure 1).

MINSA delivered these messages in seasonal, house-to-house education campaigns led by brigadistas. The strategy emphasized that good housekeeping was the only way to stem the threat mosquitoes posed to public health. As they distributed brochures about mosquitoes and their habitats, the brigadistas also treated water receptacles with a larvicide. The need to collect data on mosquito populations



FIGURE 1. A dengue control banner, Ciudad Sandino Health Center, 2007. (Photo by author.)

meant that the brigadistas also had to document the focos in each house. MINSA provided them with official worksheets for recording each type of foco. Brigadistas had to count and record the focos on the worksheet, apply larvicide and note the quantity on the worksheet, explain the mosquito life cycle to the householder, and, again, mark the worksheet. The worksheet rendered life into bureaucratic form: boxes ticked, larvicide accounted for, habits corrected. It placed organisms, assumed to be boundable and knowable, into precise relation to the similarly static objects that constituted their environment (Ingold 2011:79). Together with the educational materials, the worksheet made of human–insect relations a prescriptive metaphor for human–human relations. They promoted a particular aesthetic vision: a tidy household in which humans were insulated from dangerous insect others (see Figure 2).

The home environment symbolized the orderly habitus of the human occupant (Robbins 2007). Combined with the exhortation to kill virus-laden mosquitoes, we might see this ordering work as a spatial rationalization or “medicalization” or even an “aesthetic governmentality” (Foucault 1984; Ghertner 2010).

This begs the question: why should controlling household mosquitoes in the name of public health not give good citizens pleasure?² Although discipline and order have long been central to the discourse of dengue control, ambivalence about dengue mosquitoes has been documented. In Villavicencio, Colombia, a study found an urban population that was pointedly unwilling to see the vector as a “Tropical Godzilla” (Suarez et al. 2005:499). For householders in Villavicencio, *Ae. aegypti* was “part of . . . everyday life” (Suarez et al. 2005:499). For them, its presence evoked neither fear nor, it must be said, fascination. For my brigadista consultants,

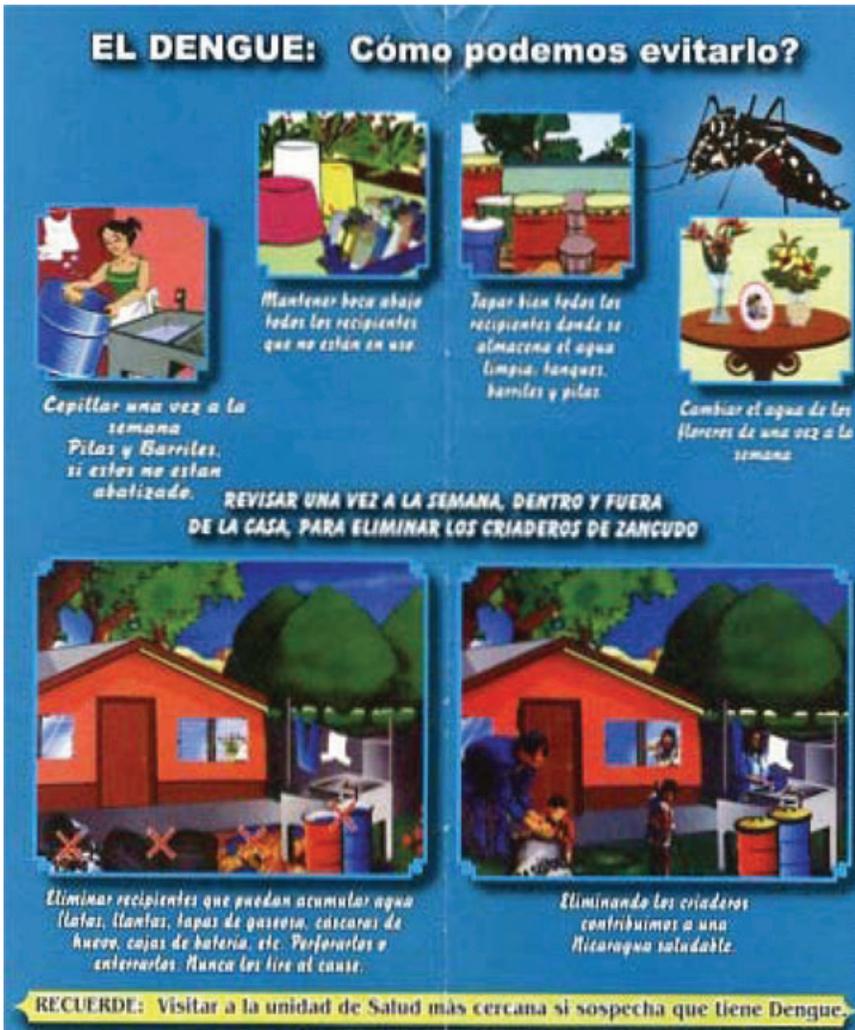


FIGURE 2. “Dengue: How Can We Avoid It?” A MINSA brochure.

however, who actively rather than passively encountered *Ae. aegypti*, the mosquito’s appearance was not quite so unremarkable. As I show later, brigadistas’ searches were more akin to adventure than to exorcism.

Although brigadistas’ pleasure in those searches might affirm the rationality of the enterprise, it also suggests another possibility. Regimes for the management of urban space hinge on the alienation of people—and in the case of dengue, women in particular—from urban natures (Harvey 1996). By taking pleasure in the search, Nicaragua’s brigadistas uncovered an open-ended alternative to this

alienation. I identify this sensibility as an “ecological aesthetic.” The ecological aesthetic originates in Gregory Bateson’s late work about the ethical implications of human entanglements with the nonhuman. Although Bateson’s insights remain in the background, the ethical and aesthetic possibilities of entanglement have been explored recently by scholars working in such diverse contexts as undersea microbial research (Helmreich 2009), human–dog training (Haraway 2008), mushroom hunting (Tsing 2010), and alligator wrangling (Ogden 2011). In her ethnography of whale hunters–turned–whale watchers in the Azores, Katja Neves found pleasure and fascination wholly commensurate with hunting and killing. “Chasing whales” yielded a recognition of the “pattern that connects” humans and cetaceans—a pattern perceivable only in the event of hunting (Bateson 1979; Neves-Graça 2005). Neves contrasts the classical aesthetics found in the ordering of home or landscape with Bateson’s ecological aesthetics, the senses of beauty and pleasure that emerge in the realization of our entanglement in the world. The difference between classical aesthetics and ecological aesthetics is one between knowing about the world and knowing in the world. While classical aesthetics has human control over life at its core, the latter privileges a relational knowledge of life (Neves 2009:147).

Brigadistas seemed motivated by something other than a desire merely to order their world. In the search for mosquitoes (even dangerous ones), they displayed a capacity for what Tim Ingold calls “astonishment” (2011:75), a will to respond to the environment in an open fashion, with “care, judgment and sensitivity.” To adapt the words of mosquito control pioneer William Gorgas (Shaw et al. 2010:380), the relationships among people, mosquitoes, and their shared material habitats are “caring,” rather than alienated. For Ingold, “enjoyment of” and “care for” the environment are most elusive when we try to categorize and order it (2011:115). Along these lines, recent studies of community gardening and nutrition identify a practical role for ecological aesthetics. Viewed as an aesthetic practice, gardening affords a “recognition of degrees of shared ontology between humans and . . . other biological entities,” which may lead to more relational views of health (Hale et al. 2011:1854; Litt et al. 2011; Neves 2009:146). I wish to pursue that insight in this article. Although gardener–plant relationships are rather peaceful, relations between humans and mosquitoes are usually antagonistic. Still, human–insect relations are more similar to gardening projects around nutrition than they might first seem. Both involve a combination of control over collective bodies (or “multiplicities on the move” [Foucault 2009:125; cf. Deleuze and Guattari 1987]), with an ethic of care and a sense of fascination with the world. In my conclusion, I consider how ecological aesthetics might be deployed in an anthropology of entanglement



FIGURE 3. Brigadistas “passing inspection,” Ciudad Sandino, 2008. (Photo by author.)

that is also concerned with the racialized, gendered (and anthropocentric) politics of life.

AESTHETICS AND THE IMMANENCE OF ROUTINE

Three of the antidengue campaigns in which I participated were led by Don Francisco, Ciudad Sandino’s lead entomology technician. Don Francisco took time each week to brief the brigadistas. He would stand before them, clipboard in hand, carefully explaining their progress on a map of the city. Through what he called a *guerra biológica* (“biological war”), he hoped to “chase” the mosquitoes from the barrios on the shores of Lake Managua, into the countryside west of the city, and over the ridge that led into the Pacific, systematically driving them out of town. The militarism of the strategy was matched by the daily ritual of *pasando revista*, in which Francisco examined each brigadista’s equipment: pencil, worksheet, *abate* (organophosphate larvicide), and chalk for marking the outsides of each house inspected. Every morning, each brigadista stood ready with this equipment, well-dressed, with proper walking shoes, cap, and a satchel for carrying it all (see Figure 3).

Don Francisco liked to remind the brigadistas of their dual responsibilities as “technical” and as “social” workers. “Muchachos,” he said, one week into a 2008 campaign, “We’re starting off badly. Three more dengue cases this week.” He let

this sink in. “If we start off badly, we end badly. And I don’t understand it.” He paused again. Then he asked them all, rhetorically, what they would think if one of those cases was one of their relatives. The brigadistas shifted on their feet, not daring to talk back.

Don Francisco asked, rhetorically again, how each of the brigadistas started her day. “I, as a Catholic, pray each morning, then I greet my wife and my children,” he said. “And when I leave the house and I see my neighbor on the corner, do I pass on my way like an animal [*como un animal*]? [*animal* is colloquial for insect.] NO! I greet him. ‘Good morning, how are you, have a nice day . . .’ Right? We greet each other because we’re not animals, and because greeting others is good for your health.” This was the kind of behavior he expected of brigadistas: rigid techniques for mosquito abatement had to be supplemented by sociality.

After *pasando revista*, the brigadistas would fan out into *brigadas* (brigades) of four or five, each headed by an entomological technician. They would walk to a barrio, where the technician would assign each brigadista specific blocks for inspection. With every home came an environmental challenge. As the brigadistas were at pains to explain, *Ae. aegypti* could “colonize” the most unexpected places: the crooks of trees, drainpipes, bottle tops, dog dishes, and car engines, in addition to water barrels, buckets, and wash sinks. Brigadistas knew that Don Francisco and the other technicians would be checking their work and that if they missed a *foco*, they would risk reprimand.

Despite the pressure, the brigadistas relished the opportunity to hunt for mosquitoes. My friend Morena was known for being a wily inspector. On a normal day, we could expect at least ten percent of the households we visited to be either “closed” or *renuente* (“unwilling,” refusing to let the brigadista inside). The protocol was to mark the “closed” houses with a chalk *C* and the *renuentes* with an *R*. Morena knew, though, that she needed to visit as many houses as possible, and she was willing to wiggle her way across barriers. Often, she could charm her way into the house of a *renuente* by complimenting its occupant on a fruit tree or an adornment or starting a conversation about the telenovela that was on at the moment. If a house was closed, chances were she could get herself in next door. Ciudad Sandino’s urban landscape was marked by a peculiarly cellular construction. Each house lot measures 10 meters wide by 30 meters deep, and many have slim partitions between them. This meant that if a brigadista crossed the threshold of one house and reached its back patio, she could peer into the patio next door, scanning for untended barrels, sinks, and *calaches* (items lying on the ground exposed to rain).

When we found ourselves behind a house that was divided from its neighbor only by barbed wire, she would turn to me, handing me her clipboard and satchel. “*Toma*. I’m going to jump.” Then, making a pincer with her fingers, she would bend the wire low enough to swing her leg into the neighboring patio, bucking the fence and slapping the rust off of her thigh as she reached the other side. With a flourish, she would tour the empty yard, calling out what she found: “Two chicken troughs. One tire. A sink. Two barrels. Two focos.” Finding and eliminating focos made it worthwhile. Soon, I found myself with my eyes pegged to the ground, peering into the cavities of the broken bottles cemented to the tops of patio walls, delighting in the sound of crunching eggshells and coconuts under my feet.

When they gathered for lunch, the brigadistas would trade stories. As Morena told of subverting property lines, others would chastise her.

“One day someone’s going to come at you with a machete,” the technician scolded.

“I don’t care. I don’t like to leave houses behind,” Morena responded.

The story wheel went on.

“I found a foco on a roof today!” Nereida exclaimed. “But when I was climbing up there, the dog got loose, and there I was, standing on top of this broken chair, while the old man in the house tried to pull away this crazy dog, barking and barking! And here I am swatting at him with my clipboard and my bag of abate!” Nereida stood up and mimed the action. Everyone laughed and hollered, breaking into a litany of similar stories. Encounters with aggressive dogs (*perros bravos*) were a known hazard of the trade.

Génesis countered with her own story. “Well, I got into this house with a beautiful patio. Fruit trees everywhere, mangoes, limes, passionfruits. *Gente gruesa*” (*gruesa*, lit. “thick”). She held her thumb and forefinger in front of her nose, miming a wad of cash. “In the middle, the *señora* had this big pool . . . I said to myself, ‘What a huge foco!’ So then I start tossing in bags of abate. Three, four of them.” She mimed the tosses. “And as I’m turning around, here comes the lady screaming, ‘No! My turtles! You’ll kill my turtles!’”

Everyone gasped.

“*Ay, dios mio,*’ I said. So we started fishing through the pool pulling out all the sachets and all the turtles, washing them off.”

“Well, did they survive?”

“Yes, and I’m glad they did, because the lady was kind. She gave me this bag of mangoes.” The brigadistas swarmed.

As they traded stories of such encounters, they would trade food and advice about children and men. Conversation turned from the ripe fruits of the season to the beans, meat, or cheese we had brought for lunch. Sharing stories and food during lunch—what the brigadistas called “the sacred hour”—was an indispensable part of the work routine. “How can I say it?” Xochitl asked rhetorically in an interview. “I had the *honor* of meeting these people, and getting to know the *barrios*. . . I felt fulfilled [*satisfecha*].” Xochitl, like many other brigadistas, had worked on factory lines in free trade zones, where employees were prohibited from speaking to one another. She had also run a small laundry business out of her home, where chances to talk with other women who were not relatives were few. The lunchtime meetings, like the conflicts with *perros bravos* and the emergency rescue of reptilian pets, were valued parts of the social practice of dengue prevention. As homemakers, brigadistas understood houses as occupied by many “other than human” cohabitants. Cultivating fruit trees and aggressive dogs (as well as hoarding water in barrels as a hedge against Ciudad Sandino’s routine stoppages in supply) were all part of the unfolding process of household reproduction. Women undertook such activities to produce what Shillington (2008), discussing Nicaraguan home gardening, calls “livable” spaces. Although these activities took place outside of (or even in spite of) the dengue control program, they were, in the “social” vision outlined by Don Francisco and elaborated by the brigadistas, also productive of health.

Every campaign reached a point, however, at which the social side of the endeavor had to be sacrificed to the bureaucracy.³ The work of Don Francisco’s brigadistas and their supervisors was itself supervised, and three to four weeks into each campaigns, Don Francisco found himself having to retract his recommendation to the brigadistas to “socialize” with the neighbors they visited. Eventually, as he put it in August 2008, “we have to balance *quality* with *quantity*. If we can’t complete all the *barrios* efficiently, the director will call in the army to do the job.” The brigadistas had seen this before. During a 2007 outbreak, soldiers had joined them. The soldiers efficiently visited every house they were assigned, but there was no small talk, no socializing, and certainly no exchange of fruit. Each campaign was marked by a familiar trajectory: excitement and engaged inquiry in the beginning, followed by increased regimentation and calls for speed and “quantity” near the end.

FAILURE? OR A HISTORY OF ENTANGLEMENT?

In the early 1990s, “participatory” dengue programs, run by community members like brigadistas, were lauded as a sustainable response to a growing

dengue problem in the Americas. In places where governments seemed incapable or unwilling to devote the time and resources to abatement, citizen participants were seen as a potential solution (Kendall 1998). Frustratingly for scientists and policymakers, however, evidence of the long-term effectiveness of this approach has been hard to find, largely because of the problem of efficiency (Heintze et al. 2007; cf. Perez et al. 2007).

In 2009, I began attending dengue prevention conferences and visiting research centers in Nicaragua, Puerto Rico, and Cuba. In interviews and impromptu conversations, I asked 14 experts to explain the “failure” of the participatory model. I received three types of explanations. “There was never any science behind it,” said a CDC official. One of his colleagues identified the problem as “assigning a great deal of agency to very strapped people.” A prominent microbiologist and early proponent of participation drew his own conclusions about the problem: “People always want to cheat their governments.” The assessments were thus that experts could not manage community contributions (meaning that “participatory” interventions were unscientific); that they had expected too much of them; or that participants tended to willingly defy authorities. Respondents drew on ideas analogous to anthropological notions of biopolitics and the political economy of health, as well as a sensitivity to the fact that household realities might interfere with the mosquito control project.

An entomologist, however, suggested that participation was simply underdeveloped: “I would kill more mosquitoes if I had a social facilitator in each community than if I had an exterminator.” The discourse of “failure” elided deep social entanglements that continue to exist among people, viruses, *Ae. aegypti*, and the landscapes they inhabit. Most participatory models presume a predictable, linear connection between the “rational” decisions of people and the “natural” habitats of mosquitoes. In other words, they presume a world of discernable separation of discrete species, what Ingold (2011:69) calls an “inverted” view of the organism. By this logic, the mosquito and the virus are “matter out of place”: matter that, once identified, will be consensually removed by the participant (Douglas 2002). This implies a separation between humans and things, humans and insects, and among humans, insects, and the other elements of their habitat. Such separations, as demonstrated in Timothy Mitchell’s seminal (2002) essay on the place of *Anopheles* mosquitoes in the technopolitical projects of colonial modernity, ignore the entangled history of people and insect vectors.

The historical entanglement of *Ae. aegypti*, dengue viruses, and people was well understood by the dengue experts with whom I carried out my fieldwork. The

CDC, for example, breeds an *Ae. aegypti* control colony, known as the Rockefeller colony, which for more than 50 years and countless generations has had a population identical in behavior and reactivity to insecticides as its ancestors. Colonies like this have been bred to stop adapting. Their homogeneity provides statistical control for entomologists. “Field-derived” *Ae. aegypti*, however, have adapted to different altitudes, temperatures, and environments previously believed to be inhospitable. In the mid-2000s, CDC scientists in Puerto Rico found them breeding in old septic tanks. It took months of retesting to prove that this adaptation had taken place (Barrera et al. 2008). For dengue scientists I interviewed (although not necessarily for entomologists), adaptations such as these were further signs of the “failure” of mosquito control. Chemical, environmental, or participatory approaches might have worked with standardized strains, but standardized strains were patently unnatural.

Or were they, in their isolation, unsocial? To an entomologist, *Ae. aegypti* is a “domestic” creature. The “field” is the barrio.

To explain changes in the pattern of dengue’s spread, including mosquito adaptations, entomologists routinely point to processes of economic, political, and social change. The dengue virus probably originated in Southeast Asia, likely as a “sylvatic” pathogen circulated among primates by *Ae. albopictus* mosquitoes (later known as Asian tigers). As human settlements encroached on the forest, perisylvatic transmission, in which humans could acquire the virus from apes but weren’t particularly good at passing it to one another, became more common (Arguello 2009). Because *Ae. albopictus* was not a house dweller, cases of dengue in humans were probably isolated, rarely resulting in widespread transmission (Gubler and Kuno 1997).

Meanwhile, in eastern Africa, another perisylvatic mosquito, *Ae. aegypti*, slowly began to change its habits, settling in villages and towns and feeding exclusively on humans. As people moved from place to place, *Ae. aegypti* moved too. Already accustomed to laying eggs in gourds and ceramic bowls, it moved along caravans and trade routes, stowing away on slave ships, traveling from the Indies to Africa and the Americas (Endy et al. 2010). Trade in and out of Southeast Asia brought more people to ports, and as the region urbanized, *Ae. aegypti* thrived. As it turned out, the African *Ae. aegypti* was a highly competent carrier of Southeast Asian dengue—even more competent than its cousin *Ae. albopictus*. By the mid-18th century, at the height of the slave trade, dengue epidemics were occurring regularly in port cities (Slosek 1986).

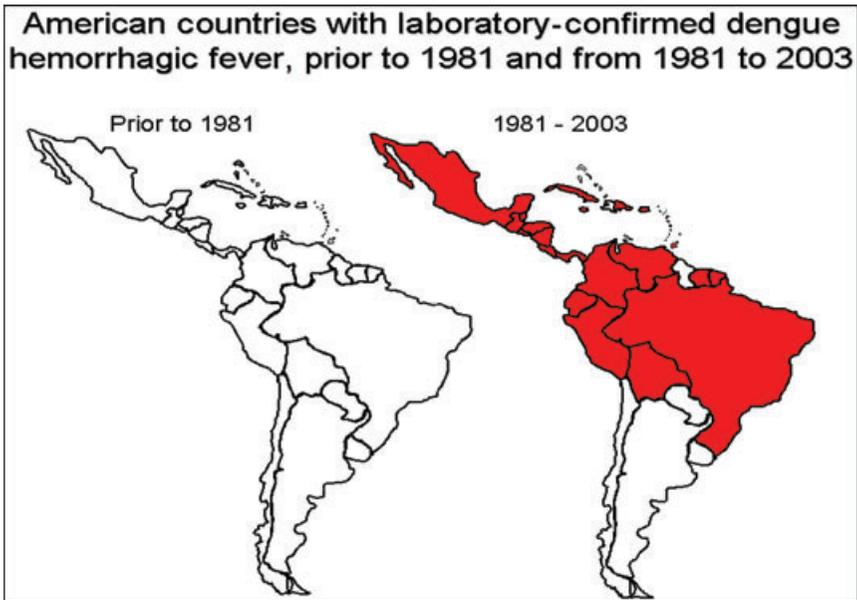


FIGURE 4. Sites of severe dengue cases in the Americas. Source: PAHO–CDC–WHO.

Through the 19th- and early 20th centuries, dengue remained a relatively minor epidemiological problem. World War II was a watershed moment for the illness. The Pacific theater was the site of road building, airstrip construction, and shipping, and the bombing and clear-cutting of the Southeast Asian landscape allowed mosquitoes and viral strains to spread as never before. A massive campaign against malaria, yellow fever, and dengue mosquitoes began in the years after the war, with the insecticide DDT as its centerpiece. By 1970, DDT helped eradicate *Ae. aegypti* from most of the Western Hemisphere. It took just 20 years for the mosquito to return, years in which public health services in Latin America were dismantled by structural adjustment. When austerity measures met with the rapid development of global transportation and trade infrastructures in the late 1980s, dengue emerged as a serious health problem in Nicaragua (Castro et al. 2010; see also Figure 4).

Even as entomologists understand it—although few use these terms—dengue and the insect and human bodies that carry it are dialectical productions (Levins and Lewontin 1985). People, mosquitoes, and viruses were entangled, sometimes literally, in what Gilles Deleuze and Félix Guattari, who were thinking in part of viral zoonoses and epidemics, call “lines of flight” (1987:10, 242).

What might such an insight do for theories of biopolitics?

Although dengue is certainly an example of how political and economic processes demolish species borders, global health has centered on a compulsion to redraw the lines between people, bugs, and viruses, often in the name of “biosecurity” (Lakoff 2008; Shukin 2009:183–184). In his work on security, Michel Foucault suggested as much: the ordering of the environment reflects a governmental ethic that is productive and conservative of “life,” narrowly defined as the vitality of *human populations* (2009; Rose 2007). As Ingold argues, however, “life” it is not a result of exclusion, negation, or even ordering. Rather, Ingold, like Deleuze and Guattari, sees life as a “becoming,” as something that happens *within* an environment where things—animate and inanimate—mingle (Ingold 2011:3–4, 210). This reverses a view of living beings (incl. people) as locked in competition, divided by “boundaries of exclusion” (Ingold 2011:117), and prompts us to question a view of health as the *disentanglement* of people, things, vectors, and pathogens. Models like the worksheets gave brigadistas straightforward patterns for such disentanglement, but brigadistas also learned about health through encounters with insects, dogs, fruit trees, and other people. Brigadistas neither refused to kill mosquitoes nor denied that dengue was a “disease.” The question for brigadistas was how to make mosquitoes, dangerous but “significant” others, “killable” (Beisel 2010; Haraway 2008).⁴ The answer to the question, “How to kill mosquitoes?” lay not in *separating* species from people from things; rather, it lay in navigating a household environment, a “zone of entanglement,” whose “generative” capacity (its “life”) was collective (Ingold 2011:210). To live a healthful life was not to order the world, but to be entangled well within it.

PETS OR SINGLE MOTHERS? METAPHORS THAT BRING WORLDS TOGETHER

Brigadistas who could engage householders long enough might tell them about what they saw as the insect’s peculiar characteristics. For example, the mosquitoes that carried diseases were female *Ae. aegypti*, so the colloquial Nicaraguan word for mosquito, *zancudo*, was incorrect. Technically, she was a *zancuda*. The brigadistas liked to correct one another on this. They also loved to talk about what a prolific breeder she could be, and they routinely parroted Doña Jamaica: “In one of those little soda bottle caps, she could lay tens, *hundreds* of eggs!” Yet when they matured, *Ae. aegypti* wouldn’t swarm like the more common Nicaraguan household mosquito, *Culex pipiens*. *Ae. aegypti* took refuge for most of the day in dark corners. Unlike the *Anopheles* that carried malaria, she would feed mostly during daylight, in the

early morning hours and at twilight, when members of the household—especially women—were about the home cooking and washing. This meant that, unless you were already sick and in bed, a mosquito net wouldn't do any good. Finally, there was the question of flight. This little mosquito might travel 100 meters for a blood meal. House lots in Ciudad Sandino measured 10 meters by 30. "And she doesn't respect the boundaries of your house," a Nicaraguan entomological technician liked to remind us. "She goes, she colonizes, she bites where she wants to."

Her ecology was disarmingly congruent with our own. During the 2007 dengue epidemic in Ciudad Sandino, a neighborhood block committee, outraged that a "dirty" neighbor was harboring mosquitoes, registered an official complaint with the local hospital's department of hygiene, which arranged a meeting with the city's epidemiologist. The epidemiologist listened as they described the piles of garbage in the offending family's home and the "clouds" of mosquitoes that would emanate from the patio at all hours. They demanded that someone fumigate, someone send in the brigadistas, someone send in the police. The epidemiologist might have entertained their demands, but he told them, as he was fond of saying to people who brought in these kinds of complaints, "We all live with mosquitoes as if they were pets."

The epidemiologist couldn't agree with the idea of singling out one family for punishment. You never knew where you'd find *Ae. aegypti* next. After DDT, the idea of "eradicating" the insect was passé. Mosquitoes were here to stay. They could only be "controlled" or "managed." I was reminded of this when the CDC entomologist confided to me that his work had given him "more respect" for *Ae aegypti*, especially its ability to avoid human defensive responses to bites. This adaptation developed over 1,000 years, as the African mosquito migrated to the ports of Southeast Asia, where it became entangled with the dengue virus. The unpredictability of "field" mosquitoes—the unpredictability to which the Rockefeller colony stood in opposition—provoked both fascination and fear. *Ae. aegypti* was hardly wild. She was "other," but also, in the parlance of entomology, "domestic." For the Nicaraguan epidemiologist, pests were not too distant from pets. He assumed the gaze of one whose "habits" (and those of his animals) are under his "control." The brigadistas in Ciudad Sandino knew that perros bravos, for instance, were desirable pets. Indeed, brigadistas who could afford it had a perro bravo or two chained in their own patios to ward off intruders. Being attacked during a mosquito inspection was normal, and it didn't necessarily reflect badly on a householder.

But mosquitoes were not pets. For the largely female brigadistas, the appropriate metaphor for describing them was more feminine. In the straightforward,

bureaucratic script, mosquitoes were not to be “domesticated”; they were to be “controlled.”

“The mosquito is a single mother,” another Nicaraguan epidemiologist (this one female), told a group of brigadistas at the start of a training session. She was speaking about mosquito life cycles, trying to explain the female mosquito’s need for blood as a part of reproduction. *Ae. aegypti*’s preference for laying eggs in houses was something brigadistas were at pains to communicate. The doctor’s attempt to gender the mosquito was, of course, behaviorally informed. It is the female *Ae. aegypti* who feeds on blood to reproduce. Males do not bite us. The joke also referenced a gendered knowledge about life in the barrios of Ciudad Sandino.

“Males,” the doctor explained, “provide the seeds and then they fly off or die. They don’t stick around.” Her extension of the conceit drew an uproarious laugh. I was reminded of this two years later at an international dengue conference, when a Cuban entomologist made a similar reference. “You don’t want to quibble with her. She is in charge of the children, she has to go find the food, and the man—he’s nowhere to be seen!” Mosquito jokes that draw on the trope of the overworked woman almost always get a laugh, even among the stiffest of academic audiences.

Jokes like these anthropomorphize the mosquito. Anthropomorphisms assign familiar human motivations to nonhuman behaviors. The “humanizing” of animal others, as Matei Candea argues, following Kay Milton, actually underscores a sense of distance between human and nonhuman (Candea 2010:252). In anthropomorphism, as in Orientalism, the strange behavior of the animal “other” becomes recast in the vernacular of the human self (Said 1979). It is possible, however, to identify characteristics common to humans and nonhumans without any reference to humanity or animality. What Milton calls “egomorphism” is a recognition that the nonhuman other is “like me” rather than “humanlike” (Candea 2010:252). For the brigadistas, the single mother metaphor fits this description. Their egomorphic gendering of the mosquito emerged from the shared history I glossed above. Although not directly referenced, that history “haunted” the discursive space in which the single mother joke emerged. Much as dog breeds like Presa Canarios or pit bulls, associated with the bodies of racially marked human “others,” “conjure” what Carla Freccero (2011:178, 190) calls “spectral . . . histories of racialized power,” mosquitoes conjured histories of gendered power. As an ecological aesthetic form, then, the single mother joke was not an expression of distance between human and nonhuman, but an expression of spatial, historical, and social intimacy.

The single mother joke was funny because it reflected how brigadistas understood their work. Mosquito hunting was public service, but it was also “home”

work. As Cecilia put it, “this kind of work is better for women; men go to work in Managua, in construction, in offices. This is work inside the home. Women are more comfortable with that.” Yamileth added, “men are just too direct; you have to make people understand, and women are more suited to that.” Doña Josefina put it this way: women possessed “more intelligence for time management.” They were better at adjusting to the vicissitudes of urban life. Men didn’t know their way around the market, how to find food and clothing; they didn’t know how to cook and clean; and most wouldn’t be able to balance all this with a job working “in the streets.” Women were also “*más dinámicas para el trabajo*” [more dynamic (flexible) in their work]. They had the social skills to communicate and to understand the struggles of others like them. In other words, their qualifications were based on negotiation, persuasion, and empathy: the very sociality to which Don Francisco appealed.

Still, choosing to do brigadista work was not easy, as Cecilia and Morena explained:

Cecilia: I like to work but my husband doesn’t like it . . . in the street, he doesn’t like it.

Morena: We have that in common. *My* husband doesn’t like me going out in the streets either or that I work, just like her husband.

Alex: But you two, you two like [brigadista] work?

Cecilia: Yes.

Morena: Yes, of course.

Cecilia: And now, no . . . that I am not in the campaign. It’s been difficult to find work.

Mosquito inspections took place in the context of households in which, as Cecilia said, “The man is the head of the family, and you know he needs to earn more money, . . . and we the women, what we earn is to cover some of it.”

Women brigadistas saw their adaptability and intimate knowledge of the household—rather than their suitability for careers “in the streets”—as their contribution to the dengue prevention process. More than any other reason, when I asked female brigadistas why they predominated, the answer was simple: “Women are smarter.” The special knowledge and experiences that women possessed—especially young, single women—gave them an unprecedented level of responsibility for health. Whereas a reading of mosquito control as a process of human self-governance is tempting, it does not fully account for the way in which brigadistas understood their work. They recognized the insufficiency of models, worksheets,

and diagrams for understanding the household habitat. The single mother metaphor was a way of articulating the tangled presence of women, mosquitoes, viruses, and things. Both were implicated in public health through ostensibly domestic activity. If, as Susan Leigh Star asserts, “power is about whose metaphor brings worlds together, and keeps them there,” then the single mother metaphor was more than just a successful joke (Star 1991:52). It was more accurate than the domestic “pet” analogy. Having become together, neither mosquitoes nor single mothers would abide simply being the controlled objects of a health intervention. The joke recognized both a similarity and a difference between women and mosquitoes. They were not just casually alike; rather each made up part of a whole, a living environment (Neves-Graça 2005).

The ecological pattern that made *Ae. aegypti* both a “domestic” creature and a “public” threat was fittingly overlaid onto patterns of remixed gender roles in neoliberal Nicaragua, where women celebrated the domestic character of public health work. Nicaragua’s 1979 Sandinista Revolution celebrated gender equity, women’s political involvement, and economic independence, and it was through the Sandinistas that gender-based movements for labor, reproductive, and legal rights emerged. Starting in the 1970s, women enjoyed an unprecedented level of involvement in civil society, notably in community health committees (Garfield and Williams 1992). After the demise of the revolution in 1990, however, even militant Sandinista women began to feel drawn back into domesticity. Women saw power as emanating from moral and economic guardianship of the household (Babb 2001:201). Most of the brigadistas I met came of age in this period, when state investments in public health and urban infrastructure declined, precipitating a momentous ecological coincidence. It was precisely when structural adjustment began to replace social solidarity as the guiding principle of Nicaraguan political life that *Ae. aegypti* found her “domestic” niche (Castro et al. 2010).

The single mother metaphor made sense in a habitat that women and mosquitoes shared, even if they shared it as antagonists. They understood that more than likely it would be women who would have to take out trash, look for impromptu foci, and clean out water receptacles. Any “failure” to control the insect was a gendered one. Killing mosquitoes was possible and even desirable, but to be satisfying, such killing had to occur—paradoxically—in an “inclusive” fashion (Tsing 2010). Don Francisco was right. The “biological war” was social. The search for mosquitoes was an opening up, rather than a closing, of brigadistas’ worlds. It thus should not be too surprising that at the end of a day of mosquito inspection, I would note groups of brigadistas describing the strange new places in which they

had found evidence of mosquitoes, all the while showing one another what they had collected on the day's route: a few spare mangoes or limes or, perhaps, some aluminum cans to sell to the recycling broker near the market. Mosquitoes were here to stay. There would always be new focos to find, new natures in houses.

CONCLUSION: AESTHETICS AND BIOPOLITICS

The recognition of a homology between insect's and women's lives problematizes public health strategies that depict insects as enemies and those who harbor them as unsanitary, undisciplined, even unethical subjects (Peterson and Lupton 1996; Suarez et al. 2005). Joking and storytelling about the search for mosquitoes affords a rereading of MINSA's technocratic public health intervention. The recognition of a material-semiotic entanglement between women and mosquitoes points not to a conventional scientific moment of "surprise," in which new knowledge reaffirms that the world "can be held to account" by rational ordering but, rather, to a moment of "unsurprised astonishment," a fascination that admits of vulnerability but also affirms a caring engagement (Ingold 2011:75). Embedded in the brigadistas' fascination with *Ae. aegypti* lie some lessons for biopolitics. Although Foucault certainly understood public health as a set of techniques for the management of populations, as Angela Garcia (2010:31) points out, the pastoral power on which public health depends may also perpetuate "ethical ideas of caring." In the case of insect-borne and zoonotic diseases, the "politics of life" involves a population of entangled beings and things including insects, houses, water, blood cells, dogs, and fruits (Davis 2006; Keil and Ali 2007; Lowe 2010). What, then, makes biopolitical subjects in such worlds caring subjects? For Foucault, aesthetics gave a meaningful, ethical thrust to the governance of "life," narrowly construed as the vitality of human populations. Ecological aesthetics helps us understand what becomes of such meaning when we recognize life as more than human: as a collective, generative "multitude of livelihoods" (Kirksey and Helmreich 2010:544, 555–556; see also Ingold 2011).

Foucault saw aesthetics and biopolitics intersecting in two ways. In a rational, technical sense, aesthetics are about discovery through "a hermeneutics of suspicion," centered on the body and its surroundings (Milchman and Rosenberg 2007:56). "Knowledge of the self" becomes a rational duty, rather than an individual choice (Foucault 1997:266, 269). Dengue programs might be interpreted in this sense. House-to-house inspections should instill a suspicion of the home environment: a search for objects—and people and insects—"out of place" (Douglas 2002:41). A "dirty house," namely, one that contains mosquitoes,

signifies the presence of an ethically questionable—albeit bounded and knowable—human subject within. This form of aesthetics is environmental but not ecological. It entails “ordering things” (Rose 2007:53).

In another sense, however, aesthetics might be about caring for selves and environments. Foucault’s alternative aesthetics, those of self-fashioning, operate not on suspicion but on discovery, entanglement, and even pleasure. Those who recognize themselves as subjects of an ordering power/knowledge can, in an aesthetic “transformation,” free themselves of its disciplining constraints (Foucault 1997:131; Tobias 2005:66). This requires that persons be able to recognize themselves as regulated and disciplined by “regimes of truth” (Tobias 2005:82; see also Foucault 1997:292). This recognition opens up a space of “care.” I have tried to show in this article that moments when people perceive the “shared ontologies” between themselves and nonhuman others—the ways in which they become (and die) together—might be generative of such care (Neves 2009:146). To conclude, I return to dengue and a few further thoughts on the implications of this for anthropological conceptions of health.

Ecological aesthetics are not only about visualizing ethics—seeing right and wrong—but also about the how, why, and whom of relationships (Harries-Jones 1995). In MINSA’s pictures and brochures, the clean home is an expression of the healthy self and her fit into a healthy social order. Applying larvicide, eliminating *focos*, and breaking households into bureaucratic boxes were techniques for reinforcing detachment between people, mosquitoes, and the spaces they occupied. Doing brigadista work well, however, required a passion for learning about and hunting out mosquitoes, along with an admiration for their refusal to be found. That observation may seem counterintuitive, but as Candea suggests, “detachment,” a studied posture of scientists and amateur ecologists alike, coexists with, rather than opposes, relationships. Detachment in this sense is a form of openness. It “[allows] things to appear in their own time and form” (Candea 2010:253). Detachment, seen as a way of relating, is akin to “unsurprised astonishment” (Ingold 2011:75). Brigadistas were enthralled by the presence of so many significant others (mosquitoes, of course, but also dogs, plants, turtles, and trees) in their urban habitat. As an ethical project, health came not from the strict separation of these elements but from engaged participation in their entanglement.

I earlier referred to three explanations for the “failure” of participatory dengue control programs: a lack of “scientific” rigor; an overdependence on poor, strained individuals; and the tendency of people to disobey the orders of medical authorities. There is a fourth explanation. I heard it from both international experts and from

Nicaraguan brigadistas and hygiene workers. It is, in brief, that the imagined “participant” is the wrong person. The mosquito intervention should be directed at children, not adults. “Children have the ability—the *desire*—to learn new things,” a MINSA hygiene worker told me, “Adults are passive, apathetic. So I say, teach the children.” At the CDC Dengue Branch in Puerto Rico, I heard numerous anecdotes from scientists about the effectiveness of harnessing children’s fascination with nature. Indeed, SC Johnson once produced a dengue-related video game for Puerto Rican schoolchildren that allowed them to go on a virtual “hunt” for mosquitoes in a digital backyard (using SC Johnson insecticides, of course). Capitalists and scientists alike intuited that for children, hunting mosquitoes could be fun: it could be “play.” Play is in this sense an individuated, psychological indulgence of the naive, but play can be something more. Ecological aesthetics points to ways in which the play of metaphors and jokes, like physical play, is “serious fun,” a parody of an otherwise troublesome set of gendered, raced, and speciated relations (Bateson 1979; Haraway 2008; Neves 2009). Even in the absence of slick marketing, brigadistas, too, were fascinated by mosquitoes. They embraced this second kind of play, but in the discourse of participatory “failure” and rational public health—as in conventional biopolitical analysis—its value may go unnoticed.

ABSTRACT

Nicaraguan Ministry of Health protocols for the control of Aedes aegypti, the mosquito that transmits dengue fever, hinge on an aesthetic ordering of the urban household, one in which mosquitoes, like garbage and dirt, do not belong. Management regimes such as this appear to rely on an alienation of people—and in the case of dengue, women in particular—from the urban natures in which they live. In this article, I draw on 18 months of research with Nicaraguan community health workers (brigadistas) for whom mosquito abatement involved an opening, rather than a closing, of the landscape. Brigadistas, especially female brigadistas, took deep pleasure in learning about mosquito–human lifeworlds, a pleasure I call “ecological aesthetic.” Ecological aesthetics—patterns of connection that are identifiable only through performance—contrasted to the more familiar aesthetics identifiable in the ministry’s ordering of the household. Although the latter aesthetic has human control over life at its core, the former emphasizes entanglement, a relational knowledge of life. I suggest some implications of this idea for future anthropological studies of “the politics of life.” [health, human–animal relations, aesthetics, biopolitics, Nicaragua, dengue]

NOTES

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1. The term *entanglement* places the present work dialogue with what has become known as “multispecies” ethnography (Kirksey and Helmreich 2010), although I avoid the term *multispecies*. The case of dengue prompts an anthropological questioning of species borders.
2. It is crucial to reiterate that the dominant discourse among local brigadistas and global health policymakers is not one of mosquito “eradication” but one of “control.” Brigadistas used the terms *control de focos* or *abatización* (lit. application of *abate*). This discursive shift changes the relationship between technique and experience, allowing for different kinds of pleasure. Although it is conceivable that eradication, or what a previous generation of mosquito hunters called “species sanitation,” would induce pleasure or mania (participation in mass killing must surely interpellate the killer in some meaningful way), control calls forth different emotions. I am grateful to Viranjini Munasinghe, Eric Carter, Paul Robbins, and an anonymous reviewer, whose comments provoked me to think more about this distinction.
3. In a study of insect control in Arizona, Shaw and colleagues (2010) distinguish between bureaucratic “verticality” and participatory “horizontalism.” The latter was marked by a “commitment to . . . immanence, where bugs are not easily separable with environment” (Shaw et al. 2010:379). That binary maps roughly onto the brigadistas’ social–technical distinction and resonates with the historical findings of Carter (2012) on Argentinean malaria programs.
4. A link between caring for nonhumans and killing them has a long anthropological heritage. Nadasdy (2007) indicates in a critical reassessment of this scholarship that relations between Kluaene hunters and their quarry resemble competitive “gift” exchanges. Like Neves-Graça (2005), Nadasdy argues that hunter–quarry relationships can be respectful and unequal—even antagonistic—at the same time. The difference in the case of dengue is that mosquito killing takes place in the context not of an exchange between partners but in an inhabited world that includes mosquitoes, peoples, viruses, and other living and nonliving things. Vector-borne epidemics demonstrate that conflict is part of “becoming.” As Deleuze and Guattari (1987:242) suggest, “That is the only way that Nature operates—against itself.”

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