NOTES

INTRODUCTION

1. Geographers, perhaps more than anthropologists, have theorized the city as a "socionatural" space, though the seminal work in this area is William Cronon's (1990) history of Chicago and the American West. Of particular interest to readers of this book will be Laura Shillington's rich descriptions of human-plant relations in urban Nicaragua, with special attention to fruit trees and medicinal plants (Shillington 2008, 2013). More general theories of urban nature—most with a deep Marxist bent—come from Gandy (2005), Harvey (1996), Heynen, Kaika, and Swyngedouw (2006), and Swyngedouw (2004). Within geography, Robbins (2007) has offered a more subtle approach, influenced as much by environmental history and feminist theory as by Marxism. Recently, anthropologists have begun to engage urban natures ethnographically (e.g., Anand 2011; Zeiderman 2012). The idea of nature and culture coproducing one another is also central to the notion of "entanglement" (Ogden 2011; Raffles 2002), which I develop in this book.

2. Standish et al. (2010).

3. In Nicaraguan Spanish, *cultura* does not refer to what anthropologists normally think of as "culture." Instead, it is more akin to what Bourdieu (1986) calls "cultural capital," embodied know-how about living in the landscape.

4. Among others, the American colonial leader Benjamin Rush described dengue-like illness in Philadelphia in the eighteenth century (Rush 1789). Jose Rigau-Perez (1998) identifies the first known use of the word *dengue* in Spanish in a letter from Queen María Luisa de Parma of Spain, who wrote to her lover, Manuel Godoy, on June 12, 1801, that she had "the cold in fashion, that they call dengue." In the decades after that letter, the term went into wide use across the Hispanic world. Through the *Oxford English Dictionary,* Rigau-Perez traces *dengue* to the Swahili phrase *ka dinga pepo* ("a kind of sudden cramp-like seizure"). The *Oxford English Dictionary* (1989) expands:

> On its introduction to the West Indies from Africa in 1827, the name was, in Cuba, popularly identified with the Spanish word *dengue* "fastidiousness, prudery." In this form it was subsequently adopted in the United States, and eventually in general English use. In the British West Indies, called by the Black population *dandy*. Both names appear to be popular adaptations, of the "sparrow-grass" type, of the Swahili name, with a mocking reference to the stiffness of the neck and shoulders, and dread of motion, exhibited by the patients; whence also another name of ridicule, the "Giraffe."

5. As I was completing the writing of this book, scientists reported the discovery of a fifth serotype (Normile 2013).

6. Other species of *Aedes,* particularly *Ae. albopictus,* also known as the Asian tiger mosquito, can be carriers (Sanchez et al. 2006).

7. Guzman et al. (2010: S8). At the time of my study, DHF was an accepted international diagnostic category, recognized in the guidelines of the WHO. Indeed, the specter of *dengue hemorrhágico* had changed public perception of the disease in Nicaragua. After I completed research, however, international specialists agreed on a reclassification of diagnostic categories, and at the time of this writing, DHF is sometimes replaced by "severe dengue."

8. Standish et al. (2010).

9. Hinchliffe et al. (2013), Keck (2008), Kelly (2012), Lakoff (2008), Lowe (2010), and Porter (2012, 2013).

10. In the formulation I have in mind, following political ecologist Arun Agrawal (2005: 165–66), "subjects" are those who are simultaneously subordinated to political and technical authority, empowered by it, and constitutive of its domain of knowledge. Subjects "make themselves" through specific, local practices.

11. The term "local biologies" was coined by Margaret Lock (1993) to call attention to the material effects of social inequality, gender, and geography on bodies. Importantly, local biologies recognize the materiality of human populations, even as they deploy symbolic, linguistic, and historical analyses of health. Attention to local biologies shows how biomedical technologies—from pharmaceuticals to surgical techniques to epidemiology and public health interventions—operate not as neutral tools but, like other technologies, in a complex interaction with the body in its cultural and material context (Lock 2001; Lock and Nguyen 2010; see also Koch 2013; Mol 2002). The literature on political ecology, and anthropology's role within it, is vast. Within anthropological political ecology, the clash of standard and apolitical narratives about the environment with local practice has been a particular point of focus (Brosius 1999; Escobar 1999; Li 2007; Lowe 2006; Nadasdy 2003; West 2006). Though Eric Wolf, an anthropologist, is often credited with coining the term "political ecology," the field has coalesced across disciplines, with human-environment geographers building a particularly impressive variety of theoretical and empirical contributions (Forsyth 2003; Goldman, Nadasdy, and Turner 2011; Robbins 2012; Rocheleau, Thomas-Slayter, and Wangari 1996). The political ecology of health is perhaps the least developed area of the field (but see Mansfield 2008). Importantly, political ecology permits a view of the body itself as an ecosystem. This move links

contemporary scholarship back to early attempts by the likes of Frank Macfarlane Burnet and Rene Dubos to understand infectious disease holistically (Anderson 2004).

12. Dengue produces what Lauren Berlant calls "modes of attachment that make persons public and collective and that make collective scenes intimate spaces" (2002: 288; Raffles 2002: 209). Writing about postrevolutionary Nicaragua, Roger Lancaster (1992: 118) has identified an "intimate knowledge" about class and gender that emerged not from political discourse—or not from that alone—but from more entrenched notions about the relationship between *machismo* and power, between power and bodily practices of labor and dress, while Cymene Howe (2013) has characterized movements for gay and lesbian rights, which were curtailed after the revolution, as a form of "intimate activism."

13. A reassessment of the concept of the site can underscore the false dichotomy between "local" action and the "global" structures that shape it. As Bruno Latour writes,

> Context-building sites [he refers to what sociologists call "global" centers of power] now look like the intersections of many trails of documents traveling back and forth, but local building sites, too, look like the multiple crossroads toward which templates and formats are circulating. . . . the number of traces becomes so great that you would have to be blind not to follow them. Sites no longer differ in shape or size, but in the direction of the movements to and fro as well as in the *nature* . . . of what is being transported: information, traces, goods . . . and so on. (2005: 204–5)

In some ways, such a perspective has been ascendant in anthropology and sociology since scholars began engaging with "practice theory" and the embodiment of power relations (Bourdieu 1977). A critique of scale as a political construct, however, does not deny its power in the world. What it might do, however, is point us to places in which alternative antiscalar social arrangements might emerge (Escobar 2008; Marston, Jones, and Woodward 2005).

14. I am drawing in part on Latour's suggestion that *having,* rather than *being,* is the quintessential social condition. As he states: "Attachments are first, actors are second. . . . the family of 'to have' is much richer than the family of 'to be' because, with the latter, you know neither the boundary nor the direction: to possess is also being possessed; to be attached is to hold and to be held. . . . As to emancipation, it does not mean 'freed from bonds' but *well*-attached" (2005: 217–18, emphasis in original). I combine Latour's emphasis on attachment with Karen Barad's (2007) and Donna Haraway's (2008) concept of "lively" entanglement, in which they suggest that encounters are best understood as "intraactions," that is, actions that occur between distinguishable beings, observers, and things observed. Intraactions are the stuff of becoming, or as Barad (2003: 817) puts it, "an ongoing process of mattering through which 'mattering' itself acquires meaning and form." Entanglement helps us account for the pathways of mosquitoes and other than human things in and out of houses and lives.

15. Haraway (2008). In Haraway's understanding, relationships are "material-semiotic means of becoming" (25–26). She opens up relationships to include "extremely

prosaic, relentlessly mundane" and "knotty" encounters among species, and among objects.

16. I am thankful to Eric Carter (2012) for calling attention to the complexity of the social-ecological dyad as it has played out in the history of global health and mosquito-borne disease more broadly. Carter shows that even when scientists and health policy makers see themselves as hybridizing the social and the ecological (modern terms like "coupled systems" come to mind), they reinforce a fundamental ontological divide between the two. One can make a useful comparison between Carter's largely empirical insights and those of Latour (2005) on the dubious tendency among sociologists to divide "context" from "action." For a longer view of how the social and the ecological have merged amid questions of health, see Mitman, Murphy, and Sellers (2004), Murphy (2006), and Nading (2013a).

17. Thus, dengue prevention constitutes a more-than-human form of biopolitics (Barad 2003; Foucault 2008). The world, as Hugh Raffles says, is marked by a "bewildering instability" (27). Ideas of nature as separate from social life, reinforced in ecological and biomedical science, mask this instability.

18. Nading (2012: 574).

19. Helmreich and Weston (2006: 108).

20. Julie Livingston (2005), discussing changing ideas about public health in Botswana, uses the term *entanglement* in this historical sense.

21. This aspect of dengue is not well understood, and findings from a research group based partially in Nicaragua have shown that prior exposure to one dengue virus may, if only temporarily, sometimes provide protection from the other three (see Zompi et al. 2012).

22. Paul Robbins's web page at the University of Arizona Department of Geography and Regional Development (www.u.arizona.edu/~robbins/) included this phrase.

23. The trope of the rhizome comes originally from Gilles Deleuze and Felix Guattari (1987), but it has been put to productive anthropological use in the work of Ogden (2011) and the Matsutake Worlds Research Group (Choy et al. 2009). Shaw, Robbins, and Jones (2010) deploy the idea to explain the spatial dynamics of human-mosquito relationships in southern Arizona.

24. There are various engagements with the concept and practice of global health across the social sciences. See, for example, King (2002, 2004) and Lakoff and Collier (2008).

25. For more on global health "partnerships," see Adams (2010), Biruk (2012), Brada (2011), and Crane (2013).

26. Lowe (2010) and Nading (2012). By the 1990s, after the success of education campaigns, antibiotic and antiviral medications, and an increase in access to health care across the globe, some experts had declared that they could safely turn their attention to alleviating work-related injuries, cancer, and psychological problems associated with "social suffering" (Kleinman, Das, and Lock 1997). By the end of the decade, however, it became clear that old diseases such as cholera, tuberculosis, and malaria were "reemerging," while new ailments, including AIDS, hantavirus,

and avian influenza, were "emerging" (Wilcox and Colwell 2005). Coming at a time (the 1980s and 1990s) when many public health systems in the third world were being rolled back, privatized, and curbed through structural adjustment, emerging and reemerging infectious diseases threatened to dismantle the progress that international health had made over the course of the twentieth century (Farmer 1999).

27. Haraway (2008: 249) quotes Don Ihde: "In this interconnection of embodied being and environing world, what happens in the interface is what's important." Entanglement and related concepts have been explored recently by scholars working in such diverse contexts as undersea microbial research (Helmreich 2009), human/dog training (Haraway 2008), and mushroom hunting (Tsing 2012). As Laura Ogden suggests, human-being "is constituted through changing relations with other animals, plants, material objects, and the like" (2011: 2).

28. Here I have in mind work on "biosociality," which examines the ways in which genomics has altered conceptions of the sovereign, bounded biomedical subject (Rabinow 2002; Rabinow and Rose 2006), as well as the work of Strathern (1992) on the multiplicity of personhood.

29. See Biehl (2005), Farmer (1992), Lock (1993), and Scheper-Hughes (1992).

30. Put more specifically, they are *biopolitical* endeavors (Foucault 1990, 2008; Rose 2007; Weir and Mykhalovskiy 2010: 22). If people begin to desire to regulate their health, the biopolitical argument goes, they come to see themselves as part of a population that is more or less "at risk" (Hacking 1991). By monitoring biological processes (birth, death, disease), states manage populations at an intimate biological level. Extremely "local" concerns (menstruation, cancer, migraine headaches) become political. By sharing spaces such as streets, parks, and commons, each posing particular dangers to the body, people come to think of themselves as parts of a more or less vulnerable population. Crucially, however, the process by which this happens is contingent. In Michel Foucault's classic formulation of biopolitics, a liberal state and its citizens hold nearly exclusive power to manage this measuring and observing work, but when states, nongovernmental organizations, and businesses *all* take an interest, as in global health, it becomes unclear where such power resides. Noting this, critical medical anthropologists share a concern with the ways in which the body, like nature, is variously experienced as a social metaphor, as a site of phenomenological experiences of pain and pleasure, and as the subject—both focus of interest and site of practice—for state and citizen formation (Scheper-Hughes and Lock 1987). Studies of reproductive technologies (Roberts 2012), therapeutic regimes (Nguyen 2010), genomics (Franklin 2007; Rabinow 2002), medical education (Wendland 2010), and medical humanitarianism itself (Redfield 2013) have begun to ask what becomes of citizens and subjects when what Lock calls "local biologies," the historically, culturally, and materially constructed bodies that contain "disease," meet with universalistic and standardized ideas about wellness and illness (Lock 2001). One clear conclusion is that specific conditions, such as AIDS, malaria, dengue, or even menopause, produce specific "healths" and specific kinds of health-seeking or health-destroying groups of subjects. (The

analogue in political ecology would be the multiple "natures" constructed by conservation regimes and the specific kinds of environmental subjects those natures call into being.)

31. Choy et al. (2009) and Kirksey and Helmreich (2010).

32. Or, perhaps, the "killability" of mosquitoes and microbes (Beisel 2010; Haraway 2008).

33. Freeman (2010: 336).

34. *Zona* is the official name of the neighborhoods in Ciudad Sandino. Although Managua has several large "districts," which encompass multiple neighborhoods (Ciudad Sandino was at one time district 1 of Managua), the neighborhoods themselves are known as barrios. In Nicaragua, the word *barrio* has another connotation: it often means "slum" or "dangerous neighborhood." In Ciudad Sandino, people would most often refer to their home neighborhoods as *zonas* and areas they considered unsavory as *barrios.* A planned subdivision would be an *urbanización.* Newly annexed areas were known as *repartos,* which could be either slums, such as Reparto Rene Schick in Ciudad Sandino, or high-end areas, such as Reparto San Juan, near the Central American University.

35. Ingold (2007).

36. Hutchinson (1996: 44).

37. Casey, quoted in Pink (2008: 178).

38. Ingold (2011).

39. Raffles (2002) and Tsing (2005: 180).

40. The lives of different creatures are thus not simply connected; the connections breed further connections, or what Tim Ingold calls the "meshwork" that connects beings that inhabit the world. For Ingold (2008, 2011), the environment is precisely the zone of entanglement. "It is not," Ingold writes, "that organisms are entangled in relations. Rather, every organism—indeed every thing—is itself an entanglement" (Ingold 2008: 1806; see also Serres 2007 [1982]). Looking for objects, we find relationships.

41. But this is not enough. If shadowing tasks—in this case, labor processes taking place in the gaps between productive life and home life—is the first step to this entangled anthropology, how do we methodologically link houses in motion? Ingold (2007) has suggested that we consider what it means to walk. He contrasts the walked-upon *trail* with the abstract *connector,* the undifferentiated line between points. For Ingold, the walk between points matters as much as the points themselves.

42. If I wanted to understand how a garbage economy confounded dengue prevention and structured the landscape in a way that permitted dengue epidemics to happen, I had to do what George Marcus (1998) called "following the thing." Marcus was advocating a cosmopolitan, multisited ethnography, but such activity is equally appropriate in a contiguous site, because by following things along pathways rather than through abstract classificatory "networks," we are able to disaggregate the environment as something beings "live in" and treat it as an "open" habitat, a fluid space of constant becoming (Bowker and Star 1999; Haraway 2008; Ingold 2011; Lien and Law 2011). Landscapes are always already multisited.

43. Donahue (1986), Garfield and Williams (1992), and Wilson (2010).

44. Andrew Lakoff (2010) has identified "two regimes" of global health, articulating the parallel rise of humanitarianism and biosecurity as dominant discourses (see also Fassin 2005).

45. In many ways, critiques of global health productively follow earlier critiques of development (Escobar 1995; Ferguson 1994; Packard 1997).

46. Farmer (1999).

47. I am sympathetic to this critical argument about disease emergence, but I believe that even such "slippery" concepts retain some analytical potential. Emergence is a particularly apt lens for studying how globalization, urbanization, and environmental change inform conceptions of health and citizenship in nonlinear, unpredictable ways. Despite its prevalence in descriptions of infections, economies, or social movements, emergence is not a property of discrete phenomena. Emergence is a characteristic of fluidity, collectivity, and relationality (see Zhan 2005).

48. For a discussion of this in the context of "clinical tourism," see Brada (2011) and Wendland (2012).

49. The deterioration of revolutionary sentiment and attachments to liberation theology has been well documented across contemporary Latin America. Brotherton's (2012) study of the Cuban health system's postsocialist reconfiguration frames a tension between individualism and collectivity as constitutive of body politics. Reichman's (2011) ethnography of a Honduran coffee-growing village traces these changes more directly to the demise of liberation theology (and Roman Catholicism more broadly) in the face of transmigration, the dissemination of evangelical messages through the internet, and the collapse of the local coffee economy due to neoliberal reform.

CHAPTER ONE

1. *Envío,* September 1981.

2. Gobat (2005) and Walker (1997).

3. For more general Nicaraguan history, with a focus on urban events, see Babb (2001), Mendez (2005), Murray (1994), and Prevost and Vanden (1997).

4. The tale of the "city of emergencies" resonates with the tales of other Latin American cities in the twentieth century, in which the building of infrastructure has been part of the reconfiguration of class, racial, or ethnic politics. Key works include those of Caldeira (2001), Donna Goldstein (2003), and Holston (2008), on modernism, violence, gender, space and class in Brasilia, São Paolo, and Rio de Jainero; Daniel Goldstein (2004) on violence and indigeneity in Bolivia; Scheper-Hughes (1992) on structural violence in northeastern Brazil; and Low (2000) on place and space in Costa Rica.

5. Philippe Bourgois (2002) calls this critical, ecological view of life in urban poverty "street history."