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“Unruly environments” serves as a useful concept for thinking about specific research areas and broader approaches to environmental history. A central issue in using the term is whether unruly environments are a general state or condition; in other words, does the idea capture our experience that nature—the combination of all other species and the physical world—is generally a challenge for humans? By implication we are in a constant state of opposition with nature—a battle for control—and unruly environments impinge on all human societies. Or perhaps we should use the term in a narrower sense, with unruly environments being the spaces and processes at the edges of control of states, power holders, and human settlements.

There is no single interpretation of “unruly environments,” but the papers in this volume conceptualize them at the edges of both control and settlement: the intrusion or resurgence of certain species into spaces from which they had formerly been banished, including indigenous species—such as tigers and leopards, as in the paper by Siddhartha Krishnan—and exotics such as invasive plants. The notion of invasion is partly dependent on the idea that these were previously controlled spaces. The edges of human control developed not least during the expansion of settlement. For example, the environment in which the Panama Canal was built became newly hostile and unruly to those who constructed it, as we see in Paul S. Sutter’s essay. Christof Mauch’s contribution on floods, wildfires, and landslides in Malibu similarly considers environmental unruliness in the face of expanded human settlement and control. This interpretation of “unruliness” implies a certain bias: it perceives environmental relationships largely from the vantage point of humans. Sajal Nag’s essay on the tribulations of dealing with heavy rains illustrates this. Humans thought there was too much rain; the natural world, by contrast, responded to these rains that are so vexing to humans to produce cherished biodiversity.

Both of these understandings of unruly environments can provide food for thought. Environmental unruliness impinges on all societies; all encounter some degree of environmental uncertainty, and the concept sits at the heart of theorizing the relationship between people and nature. Dealing with such uncertainty shapes how societies order...
themselves: this includes sparse populations in environments hostile to humans, but also the most powerful empires and the densest cities. The immanence of environmental unruliness influences so many practices that it comprises an intrinsic element of our social order that is difficult to describe and conceptualize in its totality. It encompasses, for example, how we deal with water, vegetation, fire, earth, and waste. Ordered human society has sought to impose a degree of predictability and manageability on nature, and in this sense responses to unruliness are omnipresent in our designs for living. The concept of unruliness also helps us to understand the potential fragility of human control, or at least the challenges presented by the environment for social order. There is some analogy here with violence; even where violence is largely controlled, its potential shapes and orders human society in many ways.

Control and Human Power

Centers of human power have more capital, science, and technology at their disposal—and so greater power to shape nature. Yet even today, natural disasters regularly have an impact in advanced capitalist countries, from Hurricane Katrina in the United States to the recurring British floods. Are civilizations vulnerable in spite of their technological resources, or precisely because of them? Here it is valuable to include a temporal as well as spatial dimension in thinking about such unruliness; historical examples suggest that environmental uncertainty can be overcome at the heart of civilizations for particular periods, but these are sometimes vulnerable to “collapse.”

In his book of the same title, Jared Diamond finds a range of examples around which to expand this concept. He is aware of the problems of environmental determinism in analyzing social and political “collapse” of empires and has been criticized for his analytical approach, but he highlights the implications of environmental fragility and unruliness. In this volume, Samuel Temple’s essay on the history of colonial control over Algeria’s marshes demonstrates how environments constitute such unruliness, whether they are themselves actors or acted upon. The potential of environmental unruliness and vulnerability is at the heart of all human societies, as well as human attempts to confront and conceptualize such forces.

For me the question is not so much arguing for or against environmental factors in shaping societies but thinking about them in relation to other forces. Environmental history opens up our capacity to think beyond conflict or other—for example economic—determinisms, and to develop totalizing explanations. Environmental forces have clearly been significant in the “collapse” of a number of pre-capitalist contexts from the Anasazi to Great Zimbabwe. J. R. McNeill, in *Mosquito Empires*, has given us a wonderful new example of environmental unruliness in the shape of disease influencing the scale and character of empires: unpredictable susceptibility to yellow fever limited British and French expansion in Latin America.²

**Settlement Peripheries**

Turning to the second meaning of the concept, unruly environments often seem more obvious at the peripheries of settlements—at the frontiers of human order. It is difficult to generalize about environmental history as a subdiscipline, but it is remarkable how often authors have been drawn to frontiers as a metaphor and topic of analysis. I suspect environmental history has thrived on frontiers because these are attractive places to see rapid change and to analyze where nature can strike back. Environmental historians are generally champions of nature, and most of us celebrate or at least are intrigued by the idea that the natural world figures in human history and that there are limits to human control. In this case littorals and the maritime world are particularly interesting conceptual avenues into the notion of unruliness on a global scale, as seen in Christopher L. Pastore’s essay in this volume on the ordering of the water’s edge.

Frontiers and edges of settlement are often conceptualized in relation to expanding empires, but they can equally be experienced at the village level. In writings on long-established agrarian communities in Africa and India, there has perhaps been less emphasis on unruliness and more on resilience. The growing literature on biocultural diversity tends to see “indigenous” people and smallholder communities as thriving on indigenous nature. However, even long-settled regions undergo environmentally provoked shifts and changes in settlement patterns. Aloka Parasher-Sen discusses how heterogeneity and continual adjustment shaped settlements on the Deccan Plateau;

there is a “continuous negotiation between order and disorder.” In late nineteenth- and early twentieth-century East Africa, epizootics, epidemics, and drought disturbed the frontiers of pastoralist and peasant settlements, contributing to major outbreaks of sleeping sickness. While the above examples show how unruliness results from humans attempting to expand their range of influence and assert control over nature, unruliness also frequently emerges when the opposite occurs: when humans withdraw or reduce their presence, flora and fauna thrive in these newly created habitats and create new challenges.

The thrust of conservation activities in many countries is towards maintaining uninhabited protected areas and renaturing—or at least the expansion of spaces where human settlement is restricted and less dense. This creates, in effect, new frontiers of nature, and such interventions can lead to unpredictable results that ripple out from core protected zones. Jackals, once nearly controlled in the sheep-farming districts of South Africa, have benefited from national and provincial parks, as well as wildlife farms, and reinvaded private property. Gorillas protected in the Virunga National Park, Rwanda, reportedly cross the boundaries to smallholdings because farmers plant or encourage Australian eucalyptus. The gorillas have found a way to peel back the bark and suck the eucalyptus gum, which they seem to like. Whether it is good for them is another matter. Conservation has been very much related to the entire habitat and critically the bamboo shoots upon which gorillas depend. But now the gorillas are exploring alternative, human-produced food sources. The problem is that local people perceive them as dangerous. This is just one example of many, but it demonstrates the complexity of such renaturing, which can include exotic as well as indigenous species.

Simultaneously, shifts in the global location of production free up other opportunities for plants and animals. I don’t believe that the world as a whole is in a post-industrial or post-agrarian phase; more manufactured goods are produced globally than ever before, more food is produced, and more commodities are traded. However, the changing spatial distribution of production leads to deindustrialization or deagrarianization in some areas. The example of the eastern United States, where secondary forest has expanded, is often cited. Space has been created for species that adapt well to living in the interstices of such human-influenced environments. Some of these have

become more unruly places. Radhika Govindrajan’s paper outlines how this process often works: following the abandonment of agricultural fields, forests grow up, which become habitats for wild boar and deer, and these animals, in turn, attract leopards, bringing the predators into close contact with human settlements. I came across a similar phenomenon of the spread of bush pigs in rural communities on the east coast of South Africa during recent research. It is difficult to be certain as to the reasons, but factors include the expansion of protected areas providing a safe breeding ground, decreased hunting as youths are less inclined to pursue this challenging animal on weekend-long excursions, and dietary adaption by the wild pigs to crops and plants. These animals make a direct impact on maize cultivation, creating further environmental unruliness.

Conservation itself is not necessarily an unruly practice: on a global level it is easily containable within a new spatial organization of global capitalist society, and in fact such protected space, along with private wildlife farms, can generate a good deal of revenue. But unruliness, in the form of nature fighting back, has different consequences for different people. For wildlife farmers, more lions and elephants can represent a major source of income from trophies; however, for local villagers on the banks of the Zambezi, the success in regenerating Nile crocodile populations means more deaths for fishermen. The increase in leopards, tigers, and bush pigs in densely populated India is an exciting conservation achievement, but it can have consequences for people at the margins.

**Urbanity and Human Unruliness**

Perhaps surprisingly, there is another area in which nature is reasserting itself: no longer on the margins, but in the very midst of human settlement. Urban areas have generally been seen as zones of control and ruliness. This is a theme of urban environmental history: frontier cities are sites for processing commodities wrenched from nature, as in William Cronon’s *Nature’s Metropolis*, or as hubs for organizing frontiers.\(^4\) Cities are in some senses the antithesis of unruly environments, if such environments are conceptualized as “wild.” But there are two qualifications to pursue. Firstly, city

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landscapes do sometimes allow renaturing over the longer term; for example, the northern suburbs of Johannesburg are now dense with trees in contrast to the sparser vegetation prior to their suburbanization, and New Delhi streets were planted with a selection of Indian trees when originally laid out. Some species, such as rats and cockroaches, do adapt well to human settlements and potentially threaten them. Secondly, if we expand the notion of unruly environments to include built environments, then many city zones can be conceived as unruly—both socially and environmentally. Cities are often crucibles of crime and of pollution. We would need to debate further whether such an extension is a valuable use of the concept of unruliness, since it is an idea that is primarily deployed here to think about the interaction of natural environments with social order.

This may lead us to a further question. The idea of unruly environments provides a perspective of human-nature relationships from the vantage point of humans. Can other species be unruly simply by being themselves and seeking their own advantage? Or are humans the truly unruly species? Humans, after all, are by far the most disruptive, and there may well be too many of us.