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UNTHINKING THE DESERT

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## DESERTING ARBOREAL (BIO)POLITICS

Diana K. Davis

Our archetypal opposite of the Desert, the Forest, is burning throughout much of the American West as I write this in the fall of 2020. The biggest of these “mega-fires” is by far the largest in California history, covering over one million acres and christened with the new name “giga-fire.” It burned through the Mendocino National Forest along with three million other acres torched throughout California in the worst fire season ever recorded. Climate change, of course, contributed to this inferno, by causing hotter, drier conditions and a shorter rainy season, desiccating vegetation. Years of drought weakened and killed trees, making them vulnerable to any spark.

But two practices related to our centuries-long fear of the desert, and adoration of trees, have contributed even more: fire suppression and the suppression of livestock grazing. In a very real sense, our desert anxieties have helped to destroy our forests, all

the while idolizing trees. Where did these twin anxieties about fire and grazing originate and when? They are tightly entwined throughout a long history and also closely related to our most common notions about deserts and forests. We need to understand this to be able to properly envision a sustainable Future Desert that will be free from problematic arboreal (bio)politics.

### THE ASCENDANCE OF ARBOROCENTRISM

Before the advent of European exploration and imperialism, deserts were perceived in the West simply as a natural part of the environment in certain regions of the world.<sup>1</sup> From the classical period through the Middle Ages, for example, deserts and dry locales, primarily encountered around the Mediterranean basin, were not interpreted as deforested or degraded. Rather, they were described as places where it was frequently hot, sometimes sandy, difficult to travel, and home to people who often looked very different from European norms. In some places, incredible riches could be found, like large herds of livestock or precious metals and frankincense. In other places, “strange” people “scorched by the sun” or frightening “spirits” were encountered. A more complex layer was added with the rise of Christianity and its attendant associations of heaven and hell with the desert. On one hand, the desert was often perceived as a site of punishment for sin but, on the other, also as a sacred site where saints lived in ascetic, pious devotion.

Various religious and cultural views also helped to shape Western attitudes towards forests during this period. The Greeks believed the forest was the original home of humans and revered sacred groves of trees as the home of spirits and gods. Many “pagan,” non-Christian, groups throughout Europe also considered the forest to be the gods’ abode and thus protected it.<sup>2</sup> The Romans, though, seemed to have a more “proto-capitalist” view of nature and are often credited with trying to create a “second nature” by felling

1 Because “Western thought,” in the form of Anglo-European thinking, writing, and legislation, has been strongly dominant in shaping global knowledge and policy regarding deserts and drylands, this chapter focuses on these authors and actors. Indigenous, local knowledges and practices regarding living in drylands have been dismissed and suppressed to distressing degrees until quite recently.

2 Michael Williams, *Deforesting the Earth: From Prehistory to Global Crisis* (Chicago: The University of Chicago Press, 2003), 100–115.

trees, expanding agricultural fields and otherwise remodeling the environment to be more productive for human use. Christianity held related views about “mastering” nature and proving one’s piety by clearing and improving land for different types of agricultural production. It must not be forgotten that royalty and nobility controlled a great deal of forest land which was primarily reserved for hunting, often at the expense of peasants who depended on many forest products for survival.

The wood, timber, and food needs of the expanding population up to the time of the Black Death in the mid-14th century, however, combined with technological innovations dependent on wood, resulted in the “great forest clearances” of the Medieval period, despite lingering pockets of tree worshipers. Indeed, most in Europe came to see the forest as an economic resource or as a scary and dangerous place during the Middle Ages. The deforestation of this period was so significant that by the 13th century, fears of wood shortages and related efforts at forest protection, complete with new forest laws, started to appear in several parts of Europe and England. Although, many fields became reforested in the aftermath of the Black Death, which killed millions, attitudes favoring forest protection, heightened by the needs of royal navies, were maintained and came to have a notable impact.

The thirteenth century, then, marks a watershed in thinking about forests that began to strongly favor their protection. France became a center of ideas and action favoring forest protection with a flurry of edicts governing forest rights and the establishment in 1291 of the national forest service, *Les Eaux et Forêts*.<sup>3</sup> Many further laws and edicts in France followed, and by 1669 France passed the hugely influential and very strict Forest Ordinance which was aimed at preserving timber, especially for the navy, and severely restricted customary rights in the forests of France. Other European countries adopted similar legislation and policies over time.

The 17th century marked the consolidation of “tree-centric” attitudes in Western thought that led, over the subsequent centuries, to a bias favoring trees over other vegetation that could be termed “arboreal chauvinism” or “arborocentrism.” By the

3 Williams, *Deforesting the Earth*, 134.

mid-19th century, arborocentrism reached the level of ideology that governed most Western thought as is illustrated by the influential author George Perkins Marsh. He announced in 1864 that “there is good reason to believe that the surface of the habitable earth ... was, with few exceptions, already covered with a forest growth when it first became the home of man.”<sup>4</sup> Also prominent in Marsh’s book are the anti-fire and anti-grazing sentiments that were also widespread at this time and closely related to the dominant arborocentrism.

Fire and grazing in European forests became regulated and restricted at least as early as the 15th century as is evident in edicts in France that meted out steep fines for lighting a fire in the forest and others that forbade grazing in certain places.<sup>5</sup> Stephen Pyne has written that “forestry demonized fire” and noted that this attitude was widespread by the 17th century, particularly in France.<sup>6</sup>

But forestry also demonized grazing livestock and their herders. Anti-fire attitudes and laws were accompanied by anti-grazing attitudes and laws in most parts of the Anglo-European world by the time the landmark French Forest Ordinance of 1669 was promulgated.<sup>7</sup> Both attitudes were grounded primarily in the common goal of securing timber for major construction, including ships for commerce and for naval defense. So common were anti-grazing sentiments that George Perkins Marsh proclaimed in 1864 that “forests would soon cover [even] many parts of the Arabian and African deserts, if man and domestic animals, especially the goat and the camel, were banished from them.”<sup>8</sup> Such ideas would have profound implications as the West turned its attention to the East.

4 Marsh read voraciously in many European languages, and so this magisterial tome is an excellent synthesis of Western environmental thought at mid-nineteenth century. It was widely influential, translated into several languages, and is still in print today. George Marsh, *Man and Nature: Or, Physical Geography as Modified by Human Action* [1864], ed. D. Lowenthal (Cambridge, MA: The Belknap Press of the Harvard University Press, 1965).

5 Clarence J. Glacken, *Traces on the Rhodian Shore: Nature and Culture in Western Thought from Ancient Times to the End of the Eighteenth Century* (Berkeley: UC Press, 1967), 342–5.

6 Stephen J. Pyne, *Vestal Fire: An Environmental History, Told through Fire, of Europe and Europe’s Encounter with the World* (Seattle: University of Washington Press, 1997), 112.

7 Glacken, *Traces on the Rhodian Shore*, 491–4.

8 Marsh, *Man and Nature*.

## ENVIRONMENTAL ORIENTALISM, DESICCATION, AND THE DE-HUMANIZED DESERT

Deserts and drylands in the pan-Mediterranean region remained, in Western thought, the relatively benign spaces they had been imagined to be from the classical era until about the mid-18th century. Explorers and naturalists who visited the region we now know as the Middle East and North Africa largely described the dry, sparsely vegetated landscapes dispassionately, without lamentations of deforestation. Most concluded, as did Carsten Niebuhr in the 1760s, that these deserts had so few trees simply because the climate was dry and droughts were frequent.<sup>9</sup>

Around the mid-18th century, however, a significant change occurred in western writing about deserts, particularly those in the Middle East. A new story of ruin, deforestation, desiccation, and a fall from former glory began to be told, perhaps most influentially with Baron de Montesquieu’s 1748 tome *The Spirit of the Laws*. Developed in large part in reaction to the Ottoman Empire, Montesquieu’s theory of “Oriental despotism” included, in addition to environmentally determinist interpretations of weak governments in the hot zones, the claim that even the environment of the Middle East had been ruined and turned to desert by the stronger invading Tartars, herdsman, from the north.<sup>10</sup> Within 50 years, the notion of much of the Middle East having been turned to desert by deforestation and overgrazing had become widespread and informed major scientific expeditions including the *Description de l’Egypte*, written during and after Napoleon’s invasion of Egypt in 1798.

Such a conceptual leap was greatly facilitated by the development and spread of desiccation theory during the 17th and 18th centuries. Desiccation theory, as elegantly excavated by Richard Grove, is the belief that rainfall is decreased by deforestation, resulting in greater aridity, and that planting more trees can increase rainfall, and therefore restore the “normal” climate.<sup>11</sup> Popularized and propagandized first in France and early French colonies, desiccation theory became globally influential and promoted the protection of forests and the planting of trees in nearly every corner of

9 Diana K. Davis, “From the Divine to the Desertified: The Foundational Case of Deserts in the Middle East,” *Global Environment* 12, no. 1 (2019): 56–83.

10 Davis, “From the Divine to the Desertified.”

the globe. By the early 19th century, a large and growing number of influential people, from scientists to politicians, to colonial administrators saw deserts and drylands as desiccated former forests that were in critical need of reforestation. Only replanting forests, and protecting what were perceived as forest remnants, would restore drylands to a climate suitable for “civilization” comparable to that in Europe.

The examples of the “ruin” of former empires in the Middle East were invoked as a kind of morality tale of what would happen to Europe if forests were not protected. In 1799, for example, an influential French scientist warned that if France did not protect its forests from devastation it would become a frightful, sterile desert like those in Africa and Asia.<sup>12</sup> This representation of the drylands of Asia and Africa by Europeans that depicted them as “ruined and defective” compared to the “normal and productive” environments of Europe resulted in a kind of environmental orientalism that was broadly applied.<sup>13</sup> It became widely believed by the turn of the 19th century that deserts and drylands were dry because the indigenous peoples, or invaders, had deforested and overgrazed, thus diminishing rainfall and creating deserts.<sup>14</sup>

The apogee of European colonialism, the 19th century, thus was calculated and administered through the lens of an ideological environmentalism that revered trees and equated only European levels of forest cover in any given territory with civilization. Without adequate forest cover, “savages” were to be found and the degeneration of colonists might ensue. Deserts and drylands, as an intimate corollary, were often perceived as places of sinfulness where indigenous peoples had ruined their previously lush, forested, and fertile

11 Diana K. Davis, *The Arid Lands: History, Power, Knowledge* (Cambridge, MA.: The MIT Press, 2016); Richard H. Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600–1860* (Cambridge: Cambridge University Press, 1995).

12 Antoine-Alexis Cadet de Vaux, “Agriculture,” *La décade philosophique, littéraire et politique* 8 (1799): 453–462.

13 Diana K. Davis, “Imperialism, Orientalism, and the Environment in the Middle East: History, Policy, Power, and Practice,” in *Environmental Imaginaries of the Middle East and North Africa*, ed. D. K. Davis and E. Burke III (Athens, OH: Ohio University Press, 2011).

14 Desiccation theory has been debunked repeatedly for most environments around the globe.

land, or were punished with divinely wrought drought. I have written in detail elsewhere how this attitude developed and how it was executed, through practices, policies and legal instruments, in many parts of the globe, especially through British and French colonialism, to the detriment of local peoples and environments.<sup>15</sup>

These rather vague notions equating forests with civilization became more well-defined and were even quantified in French colonial Algeria during the 19th and 20th centuries. Approximately 75% percent desert, Algeria presented a significant challenge to French colonial actors. In response to this unfamiliar environment, a false environmental history was constructed for Algeria and North Africa. It blamed indigenous groups, especially but not only nomads, for continuing a tradition of deforestation and overgrazing originally introduced by the invading “Arab hordes” in the 7th and 11th centuries that had allegedly desertified much of the land.<sup>16</sup>

An insidious ethnic bias permeated this narrative that extolled the Berbers’ stewardship of the land. At the same time it was widely claimed, as in the 1867 words of prominent colonist François Trottier, that, because Arabs allegedly hated trees and deforested and desertified the land, “[T]he Arab is a plague, he has always been so[;] ... civilization must annihilate him, because he exists against providential destiny.”<sup>17</sup> Indeed many colonists believed their own existence was at stake.

It was believed by many that the forested area of Algeria would have to be at least tripled so that, in the words of Trottier, the French “race will conserve its European faculties; we must act against this climate if we do not want to be degenerated and absorbed by it; the tree must be the anchor of our salvation.”<sup>18</sup> This influential colonist calculated, about a decade later in 1876, that the rate of forest cover, the *taux de boisement*, should be at least 33% to

15 Diana K. Davis, *The Arid Lands: History, Power, Knowledge* (Cambridge, MA.: The MIT Press, 2016). It should be noted, though, that there have always been exceptions, even among colonial actors, and small numbers of people did not perceive the desert and its peoples in this negative light. Such exceptional people, however, very rarely influenced policy and action.

16 Diana K. Davis, *Resurrecting the Granary of Rome: Environmental History and French Colonial Expansion in North Africa* (Athens, OH: Ohio University Press, 2007).

17 François Trottier, *Notes sur l'eucalyptus et subsidiairement sur la nécessité du reboisement de l'Algérie* (Algiers: Typographie et Lithographie de F. Paysant, 1867).

achieve climate equilibrium and therefore civilization. The solution seemed clear: massive “reforestation” in places assumed to be deforested. Exotic species such as eucalyptus were heavily promoted and planted with many problematic results.

By 1882, if not before, this seemingly scientific statistic of 30–33% percent forest cover had been taken up by French foresters in Algeria and back home in France.<sup>19</sup> It was so influential and widely believed that a 30% *taux de boisement* was actually written as a target into the landmark 1903 Algerian Forest Code. It was at this time, the turn of the 20th century that the idea of a proper *taux de boisement* became normalized and spread extensively in European scientific circles, and in many places around the globe.

The *taux de boisement normal* (normal rate of forest cover or woodedness), as it was known, became so influential so quickly in so many places in large part because reforestation techniques for sandy areas and mountains began to be taught in the national Forestry School at Nancy, France, starting in 1876. The decade from 1875–1884 saw all British foresters sent to India trained only at this school; British foresters were trained at Nancy for another decade after that, until 1893.<sup>20</sup> Moreover, the publications in which Trottier and others published their *taux de boisement* calculations came to be read and cited by both French and British foresters and scientists during the last quarter of the 19th century.

The idea and the goal of 30% forest cover became very influential in forestry in colonial India, the colonial Maghreb, much of colonial Africa and beyond, and remains influential to this day with problematic afforestation programs that often disadvantage local peoples and harm local ecosystems.<sup>21</sup> As noted by French scholar Joanny Guillard, by about 1925, the notion of the *taux de boisement normal*, necessary for a proper climate and civilization had more or less become dogma in most colonial territories around the world.<sup>22</sup>

18 Trottier, *Notes sur l'eucalyptus*, 32.

19 Diana K. Davis and Paul Robbins, “Ecologies of the Colonial Present: Pathological Forestry from the *taux de boisement* to civilized plantations,” *Environment and Planning E: Nature and Space* 1, no. 4 (2018): 447–469.

20 Foresters from many other countries, both in Europe and elsewhere, were trained at Nancy for many decades since it was and is one of the premier forestry schools in the world. Gifford Pinchot, the first chief of the US Forest Service (USFS), studied at Nancy from 1889–1890. During his tenure at the USFS, forest cover in the US increased roughly 600%.

Where deserts were concerned, the confluence of all these ideas led most often to the conclusion that deserts had been created primarily by reckless deforestation by nomads and that they were said to be either empty—because ruined and not suitable for civilization—or that the few inhabitants were not civilized, that is, less than human. In other words, deserts came to be understood as de-humanized for the most part and the drive was strong among colonial/imperial agents to repair these “defective” spaces. This was achieved with blueprint development programs that usually included sedentarization of nomads, grazing and fire suppression, tree plantations, and in some cases large irrigation schemes for “proper” agriculture. Along the way countless millions of indigenous peoples from the nomads of the Middle East, to Native Americans, to herders in sub-Saharan Africa and Asia, were sedentarized, corralled in reservations, and not infrequently exterminated in the world’s drylands well into the 20th century.

#### THE TYRANNY OF TREES AND THE (BIO)POLITICAL ASSAULT ON DRYLANDS

After a French forester working in North Africa coined the term “desertification” in 1927, plans to “fight desertification” with tree plantations and fire and grazing suppression, became more and more prominent in programs and policies to “develop” arid and semi-arid lands around the world. This colonial knowledge construct, that reveres trees and loathes the desert, was transferred rather seamlessly from colonial and imperial agents to national governments, international agencies like the United Nations (which hired a great many former colonial experts), and a plethora of NGOs and other institutions in the post-WWII era.

The United Nations had an entire program devoted to improving deserts and semi-arid lands, the Arid Zone Program of UNESCO, which spread conventional, colonial knowledge throughout the world. The devastating and widespread drought and famine that hit the Sahel in the 1970s with spectacular human and livestock mortality brought the specter of desertification to the world’s

21 Davis and Robbins, “Ecologies of the Colonial Present.”

22 Joanny Guillard, *Au service des forêts tropicales: Histoire des services forestiers français d’outre-mer, 1896–1960* (Nancy: AgroParisTech, 2014).

attention and galvanized international thinking and action. More political than natural, this famine was largely blamed on desertification and indigenous improvidence. The resulting international plan of action was anchored in sedentarization schemes, suppressing grazing and use of fire, and “restoring” tree cover everywhere possible. This helped to cement the colonial attitudes and prescriptions for the drylands for decades to come.

So strong was this environmental ideology that few in positions of power gave serious consideration to the fact that the world’s great deserts, including the Gobi, the Namib, the Atacama, the Kalahari, and the Sahara, are at least 65 million years old, and that indigenous peoples, especially livestock herders of various kinds, had been living sustainably in and around these drylands for thousands of years. Even science itself was colonized by arborocentrism and its related environmental ideology. Beginning in the 19th century, what we now know as plant ecology adopted arborocentrism in its methodologies for determining “proper” or “natural” plant cover in a given region. This bias, which continues in some countries today, has resulted in many biased floristic inventories and flawed theories of vegetation succession and “climax,” as well as vegetation maps showing deforestation and environmental “degradation” in places that had few or no arboreal species but were not degraded.<sup>23</sup>

Now, however, for more than 30 years, a growing body of scientific research in drylands has demonstrated that most drylands around the planet are not desertified and that estimates of deforestation and land degradation have been greatly exaggerated.<sup>24</sup> This research further shows that dryland ecosystems are quite resilient, not fragile, as they are well-adapted to aridity, heat, and drought, and often to fire and grazing.<sup>25</sup>

- 23 Davis, *Resurrecting the Granary of Rome*; Davis, *The Arid Lands*.  
 24 Roy H. Behnke and Michael Mortimore, eds., *The End of Desertification? Disputing Environmental Change in the Drylands* (Springer: Dordrecht, 2016); Michael Mortimore, *Dryland Opportunities: A New Paradigm for People, Ecosystems and Development* (Gland: IUCN, 2009); James F. Reynolds and D. Mark Stafford Smith, “Do Humans Cause Deserts?,” in *Global Desertification: Do Humans Cause Deserts?*, ed. J. F. Reynolds and D. M. Stafford Smith (Berlin: Dahlem University Press, 2002).  
 25 Alistair W. R. Seddon, Marc Marcias-Fauria, Peter R. Long, David Benz, and Kathy J. Willis, “Sensitivity of Global Terrestrial Ecosystems to Climate Variability,” *Nature* 531, no. 7593 (March 2016): 229–232.

One of the primary reasons that the drylands are so resilient is that, in a majority of places, ecological dynamics are not at equilibrium due to the paucity of annual precipitation and its high variability from year to year. In such environments, non-arboreal vegetation predominates, such as various grasses, because they are so well-adapted to aridity and drought. Thousands of years of co-evolution with herbivores also makes these grasses and other dryland vegetation well-adapted to grazing and often also to fire.

Deserts, for example, often appear “barren” because much of their biomass exists for months or years below ground, effectively invisible, in the form of seeds or bulbs that will grow with the next rain.<sup>26</sup> Even many of the animals will stay out of sight, seeking shade under rocks or underground to escape the heat of the day. Although not seen by many who have visited the desert, deserts and drylands are actually usually high in biodiversity.<sup>27</sup>

Planting trees, especially trees that need a lot of water, in drylands such as deserts, shrublands, grasslands, and savannahs has been shown to be ecologically harmful in many cases.<sup>28</sup> Research shows that this kind of afforestation often leads to disrupted hydrological systems, lowered water tables and desiccated and damaged soils, negatively altered nutrient cycles, lowered agricultural yields, and reductions in biodiversity.<sup>29</sup>

Despite decades of this kind of detailed scientific research, the drive for tree-planting as environmental panacea has continued into the 21st century and has reached a fever pitch in the last two decades as “the best solution” to our climate change crisis. Both the Bonn Challenge and the Trillion Tree Campaign exemplify this near hysteria for tree plantations, now in the name of carbon sequestration and climate equilibrium.<sup>30</sup> However, not only will planting trees not

- 26 Kamal H. Batanouny, *Plants in the Deserts of the Middle East* (Berlin: Springer-Verlag, 2001).  
 27 Julie Laity, *Deserts and Desert Environments* (Oxford: Wiley-Blackwell, 2008).  
 28 Joseph W. Veldman, Gerard E. Overbeck, Daniel Nregeiros, and Gregory Mahy, et al., “Where Tree Planting and Forest Expansion are Bad for Biodiversity and Ecosystem Services,” *BioScience* 65, no. 10, October 1, 2015: 1011–1018.  
 29 Karen D. Holl and Pedro H. S. Brancalion, “Tree Planting is Not a Simple Solution,” *Science* 368, no. 6491, May 8, 2020: 580–581 and Rob Jordan, “Poorly Designed Tree-Planting Campaigns Could do More Harm than Good,” *Stanford Woods Institute for the Environment News* (June 22, 2020) <http://news.stanford.edu/2020/06/22planting-trees-threatens-forest/>.

solve the climate crisis, but such plantations are increasingly being shown to be harmful in several ways.<sup>31</sup> Indeed, grasslands are now being recognized as more reliable, and just as sizable, carbon sinks compared to forests, especially in drylands.<sup>32</sup>

The United Nations, the IUCN, the World Resources Institute, a majority of national governments, and countless NGOs and institutes have jumped on this idea. This has transformed arborocentrism into a kind of “tyranny of trees” in the global imagination.<sup>33</sup> The primary targets of this frenzied tree-planting are most often the semi-arid lands in the global south that are wrongly assumed to be deforested.<sup>34</sup> Although driven by the colonial body of environmental knowledge detailed in this chapter, such errors are often termed ecological “misperceptions” by the scientists leading the critique.

30 Vicky Temperton, Nina Buchmann, Elise Buisson, Giselda Durigan, and Łukasz Kazmierczak, et al., “Step Back from the Forest and Step Up to the Bonn Challenge: How a Broad Ecological Perspective Can Promote Successful Landscape Restoration,” *Restoration Ecology* 27, no. 4 (2019): 705–719.31 Pawlok Dass, Benjamin Z. Houlton, and Yingping Wang, “Grasslands May Be More Reliable Carbon Sinks than Forests in California,” *Environmental Research Letters*, 13, no. 7 (2018): 1–8. Such short-cycle plantations (usually for timber) can contribute carbon rather than sequester it, harm the environment, and are increasingly being shown to have negative socio-economic impacts on poor populations in countries around the globe. Despite this, petroleum and related industries have enthusiastically embraced such carbon off-set projects that have been shown to be profitable to them while creating what has been termed “carbon colonialism” in the poor parts of the world and distracting global attention from reducing emissions. Adam G. Bumpus and Diana M. Liverman, “Carbon Colonialism? Offsets, Greenhouse Gas Reductions, and Sustainable Development” in *Global Political Ecology*, ed. Richard Peet, Paul Robbins, and Michael J. Watts (London: Routledge, 2011); Erle C. Ellis, Mark Maslin, and Simon Lewis, “Planting Trees Won’t Save the World,” *New York Times* (February 12, 2020), <https://www.nytimes.com/2020/02/12/opinion/trump-climate-change-trees.html>.

31 Dass, et al., “Grasslands.”

32 Joseph W. Veldman, Gerard E. Overbeck, Daniel Nrengiro, and Gregory Mahy, et al., “Tyranny of Trees in Grassy Biomes,” *Science* 347, no. 6221 (January 2015): 484–485.

33 Forrest Fleischman, Shishir Basant, Ashwini Chhatre, Eric A. Coleman, and Harry W. Fischer, “Pitfalls of Tree Planting Show Why We Need People-Centered Natural Climate Solutions,” *BioScience* (September 16, 2020): 1–4, <https://doi.org/10.1093/biosci/biaa094>; Joseph W. Veldman, Julie C. Aleman, Swanni T. Alvarado, and T. Michael Anderson, et al., Comment on “The Global Tree Restoration Potential,” *Science* 366, no. 6463 (October 18, 2019) (10.1126/science.aay7976).

We must recognize that these are not benign or accidental misperceptions but rather the results of a centuries-old body of knowledge created by powerful (imperial) elites and designed to gain control over land and peoples for various kinds of profits. The power of arborocentrism is so great today, even in scientific circles, that scientists have been reported to say: “[I]f we found [that] forest loss cooled the planet, we wouldn’t publish it.”<sup>35</sup> This kind of arboreal ideology is not capable of guiding a reasoned, logical and sustainable response to our environmental and climate crises.

## SPACES FOR HOPE

The mega-fires devouring California and the American West are fueling a quiet revolution in thinking about forest and fire management. The crisis of fire suppression is becoming more widely recognized, and prescribed burning, modeled in large part on the sophisticated knowledge and methods of Native Americans, is becoming more widely adopted. This “good fire” was and is used by Native Americans, and other indigenous populations around the globe, to encourage certain kinds of plant growth, prevent infernos, and also to attract game to the regenerated plants and grasses.<sup>36</sup> Signaling a hopeful change, the “experts” are beginning to listen and learn.

We desperately need a similar revolution in thinking about the deserts and the drylands of our world. Pastoralists and small farmers have a similarly rich and sophisticated body of indigenous knowledge about the arid and semi-arid lands, including how important extensive and highly mobile grazing is in these unpredictable environments. In many parts of the world, nomadic

34 Forrest Fleischman, Shishir Basant, Ashwini Chhatre, Eric A. Coleman, and Harry W. Fischer, “Pitfalls of Tree Planting Show Why We Need People-Centered Natural Climate Solutions,” *BioScience* (September 16, 2020): 1–4, <https://doi.org/10.1093/biosci/biaa094>; Joseph W. Veldman, Julie C. Aleman, Swanni T. Alvarado, and T. Michael Anderson, et al., Comment on “The Global Tree Restoration Potential,” *Science* 366, no. 6463 (October 18, 2019) (10.1126/science.aay7976).

35 Quoted in Gabriel Popkin, “How Much Can Forests Fight Climate Change?,” *Nature* 565, no. 7739 (March 2019): 280–282.

36 Valerie Trouet, “What turned California forests into a tinderbox? Fire suppression, paradoxically,” *The Guardian* (14 September 2020), <https://www.theguardian.com/commentisfree/2020/sep/14/california-fire-suppression-forests-tinderbox>.

pastoralism is simply the most productive and most sustainable land use. Drawing on contemporary ecological science about the drylands and this rich body of indigenous knowledge, we can dismantle the colonial and capitalist notions of the drylands as empty, worthless and deforested. Doing so will require us to desert arboreal (bio)politics and see the resplendent desert with our eyes, knowledge, and imaginations fully decolonized.

## THE VERTICAL DESERT

Alfredo González-Ruibal

Westerners like myself tend to imagine the desert as a skin of sand swept by the wind. We think the desert horizontally, like the ocean or the ice sheets of the Arctic. Such images are not innocent: there is a colonial history under metaphors of the desert that links flatness, blankness, and the cartographic imagination. The desert is empty and has to be filled. It is, thus, the perfect colonial space, because it can be inscribed with whatever the colonizer wants: fantasies of desire and terror, stories, cities, military bases, dumps, or oil wells. It is the space of least resistance to the colonial imagination.<sup>1</sup> This imagined flatness also has a historical dimension. The colonial trope of the desert—like the neocolonial one of mass

1 See Alison Bartlett, "Desire in the Desert: Exploring Contemporary Australian Desert Narratives," *Antipodes* 15(2), 2001: 119–123; Hsu-Ming Teo, *Desert Passions: Orientalism and Romance Novels* (Austin: University of Texas Press, 2012).



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